

# Frontiers of Medicine

News from the UCSF Department of Medicine

Summer 2004 issue

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## How UCSF Serves Vulnerable Populations

The edifice of San Francisco General Hospital (SFGH) looms large over a multi-ethnic neighborhood nestled between The Mission and Potrero Hill. Open to all, its doors welcome a constant stream of visitors into the lobby.

Within these walls 104 languages are spoken, 100 Department of Medicine physicians conduct approximately 80,000 patient visits each year, and 450 departmental staff members keep the department and the hospital running. But San Francisco General Hospital — or “The General” — is more than just a hospital. For many, it is a virtual life-line: to healthcare, to social services, to helping hands.

The Department of Medicine’s mission at SFGH is bold and noble: to

ensure that all patients have access to and receive the best possible care while integrating the education and research programs at UCSF with the clinical programs at the hospital.

Overseeing the medical services at SFGH is Talmadge King, vice chairman of the Department of Medicine and chief of medical services at SF General.

“Many people think we’re the hospital of last resort. Indeed, we are that — and so much more,” says Dr.



Dr. Talmadge King

King. “We’re about taking care of every resident of San Francisco, from the well-to-do executive who has been in an accident to the homeless diabetic who needs insulin on a regular basis.” SFGH provides quality, culturally appropriate healthcare services to “vulnerable

populations,” which include the uninsured, homeless, children, frail elderly, racial and ethnic minorities, and people from targeted low-income neighborhoods.

### Lack of Health Insurance Threatens to Overwhelm System

More than 43 million Americans do not have health insurance. In California, 6 million (or approximately one in five) lack health insurance, and 80 percent of these individuals are working adults or their dependents. Nowhere is this more apparent than at SFGH. Dr. King estimates that 57 percent of SFGH patients are uninsured sometime during the year, and 39 percent of patients hospitalized for an acute illness are completely uninsured.

The strain on the system is real.

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### From the Chairman

Both locally and internationally, UCSF has an inviolate commitment to taking care of patients and improving their health, regardless of their ability to pay. At San Francisco General, UCSF doctors treat vulnerable populations (see story above), and at the VA Hospital, doctors on the Parnassus campus treat those who have served our country with valor. As a public institution, UCSF cares for everyone who comes through our doors.

This commitment means we have an especially large number of patients with conditions that disproportionately affect the disadvantaged, including but not limited to HIV/AIDS, infectious diseases, and chronic renal failure. In response, we have developed award-winning programs to treat the specific needs of our immigrant, poor, chronically ill, and homeless patients.

On the international front, UCSF has established major programs in Africa, Asia, and South America, where faculty and trainees deliver modern healthcare and conduct research in these countries with limited budgets that are trying to get the most out of their healthcare dollars.

In the past, these kinds of programs were funded, in part, by people of means who paid for more than the cost of their own healthcare, thereby directly and explicitly subsidizing the care of the less fortunate. With the advent of Medicare, the disadvantaged became full participants in the healthcare system and no longer needed charity care. The remaining managed care patients have insurance that barely covers our costs for their care — if at all — and certainly does not subsidize the less fortunate. But the number of uninsured in America now tops 43

million, straining the ability of public institutions like UCSF to maintain access for all.

Consequently, the Department of Medicine — which receives only 2 percent of its operating budget from the state — is essentially functioning under an unfunded mandate. How can we continue to fulfill our mission of providing quality healthcare to all patients, no matter what their economic status?

First, we do our best to maximize the revenue we deserve for patient care. Second, our phenomenal research enterprise is growing almost twice as fast as the federal research budget, which allows our physicians essentially to volunteer some of their time to the vulnerable patients. To sustain our mission and our extraordinary faculty physicians, we need private sources of funding. Third, our faculty salaries remain

slightly below the national average despite the costs of living in San Francisco. Most importantly, we must find ways for the more fortunate to continue their historic understanding of and commitment to the vulnerable populations that need our care.

Finally, it is with deep sadness that I inform you that one of our most beloved physicians has passed away. Dr. Michael Stulberg was recently honored with an Endowed Chair in Pulmonary Medicine. Please see the story about him and his extraordinary accomplishments on page 3. He will be greatly missed.



Dr. Lee Goldman  
 Chairman,  
 UCSF Department  
 of Medicine

## MEDICAL EDUCATION &amp; TRAINING

# Medical Students Receive Cutting Edge Training

*Editor's Note: This is the first of a two-part series on UCSF's training program for medical students and residents.*

As a training ground for physicians, UCSF is arguably one of the best in the country. The Department of Medicine is ranked third in the nation by U.S. News and World Report, and the residency program is one of the most competitive and selective for graduates applying in internal medicine.

"What separates us is the rigor and academic nature of our training," states Dr. Harry Hollander, residency program director. "We have an explicit mission to develop leaders in all fields and to enrich the pool of trainees that pursue academic careers."

It all starts in the medical school, though, where students spend four years studying basic science and clinical medicine to prepare them for residency. Recently, UCSF made a bold move and restructured its curriculum.

## UCSF Implements New Physician Training Program

According to Dr. Leslie Zimmerman, professor of clinical medicine, the new curriculum is more technologically sophisticated, interdisciplinary and respectful of students as adult learners than the old model.

"During the past three to four years, we've completely overhauled our

approach to education and training," says Dr. Zimmerman. "We're developing skills in students that modern physicians need to have — how to access and process large amounts of information and make decisions quickly. And we're more efficient in delivering medical information because we're combining subject matter and disciplines in a single class." UCSF is one of the few medical schools to adopt such a cutting edge educational program.

The new curriculum limits class time to four hours a day — half lecture based and half small group activities, such as case-based discussions, labs, workshops and practical applications of knowledge on simulated (mannequin) patients.

Gone are the days of passive listening for long hours in lecture halls. "Now, students have time to process the presented material and are much more active participants in

small group learning environments," explains Zimmerman. "They may go from a lecture on the electrical activity of the heart, then to the anatomy lab to review cardiac anatomy and radiology of the chest, then to a physiology lab to practice the technique and understand the underlying physics of an EKG, and finally to a small group discussion about a patient who presents with symptoms of an abnormal heart rhythm."

The new program requires that students communicate with professors and fellow students during non-class time and have access to a wide variety of resources, including computers and the Internet. To that end, web-based curriculum for each course has been developed, which enhances and amplifies the lessons learned in class. Students participate in active online discussions, posing questions to professors and fellow students, and work through online modules that reinforce background material and promote independent research. These include interpretation of x-rays, the physiology of a normal kidney and the pathology of gastrointestinal diseases. There are even online quizzes to help students check their mastery of material before the actual exams.

"We also train students early on about evidence-based medicine, to base decisions on the best medical evidence available," says Zimmerman. "We teach students how to find and evaluate published studies on the Internet, performing a search using the medical school's vast sources of medical literature." Students must be familiar with informatics, biostatistics and study design to determine whether to accept or discard a diagnosis or treatment, notes Zimmerman. "Medical knowledge is vast, and no one can know it all. We have to make students comfortable with that, while assuring them they



do have the skills to access and interpret information efficiently and encouraging them to collaborate with colleagues, which is more like the real world."

The courses are also infused with issues of culture and behavior, so students learn about good bedside manner and how to communicate with patients who may have different cultural and personal perspectives about health and disease. First and second year students are introduced to ethical issues, the first being patient confidentiality.

In addition to standard clinical rotations, third and fourth year students participate in a new teaching technique called Observed Structured Clinical Exercises (OSCE). UCSF hires actors trained in medical interviews to present a particular set of symptoms. Students are evaluated on bedside manner and professionalism, as well as diagnostic skills. This type of training may soon become more a part of the residency program and the certification process, notes Zimmerman. ■



PHILANTHROPY MILESTONES

## Endowed Chair in Medicine Honors Marvin H. Sleisinger

UCSF has established the Marvin Sleisinger, M.D. Endowed Chair in Medicine to recognize Dr.

Sleisinger's extraordinary contributions to gastrointestinal medicine and his legacy in the field, which includes leadership of a world-renowned medical service, important research discoveries, and a legion of gastroenterologists who embody his ideals.

In the jargon of baseball, a game he loves and played well, Dr. Marvin Sleisinger was the ultimate team manager, fostering cooperation, acuity, and foresight in the professionals he gathered around him, all the while making his share of "crucial plays" in gastrointestinal research.

At the young age of 30, he became the chief of gastroenterology at New York Hospital-Cornell Medical Center. In 1968, he was recruited to UCSF as chief of medicine at the Veterans Administration Medical Center, which became a model of research and patient care in the VA system under his stewardship. He subsequently served as director of the Cancer Research Institute. His editorial accomplishments include a five-year stint as editor of *Gastroenterology*, as well as serving as the lead editor of the award-winning *Gastrointestinal Disease* and other noteworthy textbooks. To this day, he makes rounds and teaches in the clinic several days a week, en-



Marvin Sleisinger, M.D.

suring that patients are being treated with the best possible care and sharing his knowledge with yet another generation of physicians.

To say he is a giant in the field would be an understatement. From his early days as a "young Turk" from Harvard, to his middle career when he "ran with the Titans" of gastroenterology and exemplified an enlightened management style, to his latter years as a dedicated physician and teacher, Dr. Sleisinger has remained true to the cause of curing diseases of the gastrointestinal system. His most gratifying source of pride has been watching his students go on to distinguished careers. A mentor par excellence and a champion of the highest standards in research and patient care, Dr. Sleisinger is responsible for cultivating some of the best minds in the field.

The endowed chair is also a way for former students, patients, and colleagues to pay tribute to Dr. Sleisinger and his valuable role in their lives.

### Ways of Giving

Many people who have been cared for by a UCSF Department of Medicine physician choose to express their gratitude by supporting our life-enhancing work. Thousands of other individuals also make tax-deductible gifts to help sustain medical advances at UCSF.

You can support the UCSF Department of Medicine with gifts of cash, appreciated securities, real estate, life insurance or other valuable assets. You may enjoy

important financial benefits during your lifetime by establishing a life income trust, naming the Department of Medicine (or one of its divisions) as the ultimate beneficiary. Also, bequests are a critical source of funds to help meet the department's future needs.

For further information about giving, please contact Ms. Janice Eisele, Director of Development, at (415) 502-6436.

### Twisted Movie Premiere Reels in \$50,000 for IBD Center

The Department of Medicine "went Hollywood" on February 25 at the San Francisco movie premiere of *Twisted*, Paramount Pictures suspense thriller starring Ashley Judd, Samuel Jackson, and Andy Garcia. Hosted by Kenneth Rainin and his daughter Jennifer Rainin Patterson, the fund-raiser generated \$50,000 for the UCSF Center for Colitis and Crohn's Disease.

The center, the brainchild of the Rainins, will focus on improving care and increasing research for patients with inflammatory bowel disease (IBD), a disorder of unknown causes

that afflicts 2 million Americans and accounts for more than \$2 billion annually in healthcare expenses. IBD, which includes colitis and Crohn's disease, typically strikes patients in the prime years of their lives and can often have a devastating effect not only on the patient's health but on quality of life as well.

The premiere was attended by some of San Francisco's most high profile citizens, including Gavin Newsom, Willie Brown, and Robin Williams, in addition to the movie's director Philip Kaufman, who shot the film in the City by the Bay.

■ For more information about the Michael S. Stulberg Endowed Chair in Pulmonary Medicine or the Marvin H. Sleisinger, M.D. Endowed Chair in Medicine, please contact Ms. Janice Eisele, Director of Development for the Department of Medicine at (415) 502-6436.

## The Chair in Pulmonary Medicine

Patients with lung disease have Dr. Michael S. Stulberg to thank for the dramatic improvement in pulmonary care at UCSF over the past quarter century. Hired in 1976 as the first dedicated clinician teacher in the Department of Medicine, Dr. Stulberg went on to become chief of both the Clinical Pulmonary Service and the Adult Cystic Fibrosis Program in 1990. Last year he was named Chief of the Chest Faculty Practice as well as the Associate Director of the Sleep Disorders Center at UCSF.

Dr. Stulberg's major academic focus was combining teaching with patient care. He trained hundreds of residents, fellows, and students who now treat patients with pulmonary disease all around the country. He developed the weekly Pulmonary Grand Rounds, which for more than two decades has offered a speaking venue for some of the best-known pulmonary physicians in the world, as well as a training ground for UCSF's own future academicians. He also served as a mentor for doctoral nursing students.

In addition to his clinical accomplishments, Dr. Stulberg was a principal investigator or co-investigator

on numerous NIH-sponsored research grants in the clinical treatment of chronic obstructive pulmonary disease. He lectured extensively in the United States and abroad and served as president of the California Thoracic Society.

UCSF has benefited greatly from Dr. Stulberg's tenure with us. So we honor an extraordinary man who has devoted his life to medicine and caring for others with the Michael S. Stulberg Endowed Chair in Pulmonary Medicine.

### Our Loss

Dr. Michael Stulberg died of hepatic failure due to myelofibrosis on April 18, 2004. He is survived by his family and the many patients, students, and colleagues who benefited from his kindness and care. UCSF is a better institution for Dr. Stulberg, and his absence will be greatly felt.



Dr. Michael Stulberg

## Nephrology Division's New Chief Tackles Increasing Kidney Disease

Dr. Stephen Gluck had his say, every patient would ask his or her doctor to measure their creatinine levels and kidney filtration. "It's as important as your cholesterol levels," he states.

Recruited in 2003 to be the new chief of the Nephrology Division at Moffitt-Long Hospital, Dr. Gluck says he is happy to be here. "UCSF is a terrific place — a premiere institution for patient care, research, and education with a medical center that's in the top 10 in the country."

### Silent but Potentially Deadly Disease

Kidney disease is on the rise in this country, in part because it primarily affects people over the age of 60, and we are an increasingly aging population. Americans are also becoming increasingly obese, a major factor in the development of type II diabetes, which is the leading cause of end-stage kidney disease.

It's a silent disease. In the early stages there are very few symptoms, and it's hard to detect. In its more advanced stages, renal failure causes patients to have problems with sleeping, nausea, muscle cramps, itching, and anemia. At the end stages of the disease, patients must either go on dialysis or have a kidney transplant.

That's why Dr. Gluck recommends that every patient ask his or her doctor for a serum creatinine test. "Even more than high cholesterol, elevated creatinine can indicate a risk for heart disease," says Gluck. The treatment depends on the underlying cause of kidney disease but always includes good blood pressure control.

"But the serum creatinine test isn't the only thing kidney doctors look at," he continues. "Doctors need to take age, body type, weight and other factors into consideration when diagnosing kidney disease."

### The Evolution of Nephrology

The kidneys act as the body's filtration system, regulating the composi-

tion of various fluids and excreting urine as waste. Kidneys are especially complicated organs; more so than even the heart or lungs. Dr. Gluck explains that as creatures evolved from amphibians to warm-blooded animals and from living in the water to living on land, they had to develop more sophisticated ways to rid their bodies of toxins than with gills and flushing water.

"That's why it's useful when studying the function of the human kidneys to understand the transfer properties of lower vertebrates," notes Gluck. "For instance, the bladders of amphibians and reptiles have given us important information about human kidney function."

Dr. Gluck believes as many as 10 percent of the population may have some form of kidney disease, often from diabetes or hypertension. Immunologic disease (glomerulonephritis) and polycystic kidney disease are also important causes. How these conditions lead to kidney disease is still not yet well understood, but all diminish the kidneys' ability to filter out toxins.

"It's very complicated," says Dr. Gluck. "For some diseases, such as polycystic kidney, we know that protein mutations are the cause. For most other kidney diseases, there's not a simple genetic cause. We don't know which genes make people more susceptible to most types of kidney disease."

### Renal Research at UCSF

Dr. Gluck's research involves the enzyme proton ATPase that helps maintain the body's acid-base balance. Gluck says it's very important that the body maintain regular composition of body fluids (such as blood and tissue fluids), including the correct levels of the electrolytes sodium and potassium, and the minerals calcium and phosphate. Malfunctions in this process can cause kidney stones, bone disease, and muscle wasting because when acidity gets too high, bicarbonates get too low. Acids are then secreted

into the bone matter, depleting mineral content. Dr. Gluck's research has also identified new ways in which glucose can lead to kidney damage in diabetes.

Other research being performed in the Division of Nephrology includes:

- Dr. David Pearce, Chief of Nephrology at San Francisco General Hospital, is looking at the mechanisms that lead to high blood pressure and sodium retention by the kidneys.
- Dr. David Lovett is studying how scar tissue develops in the kidneys.
- Dr. Glenn Chertow is researching factors that determine survival in dialysis patients.
- Dr. Chi-yuan Hsu is studying chronic kidney disease and loss of kidney function, and trying to develop better diagnostic tests.
- Dr. Alan Verkman, an international expert in water channels (the pores that allow water to move through cell membranes), is researching chloride transfer, which affects cystic fibrosis and diarrhea.
- Drs. Curtis Morris, Tony Sebastian and Lynda Frassetto are looking at diet and its relationship to high blood pressure and bone disease.
- Dr. Flavio Vincente is working on immunosuppressant drugs, their effectiveness and pharmacology in kidney transplant patients.

### Advances in Treatment

Dr. Gluck also discovered that the enzyme proton ATPase is involved in the breakdown of the bone and the formation of the aqueous humor in the eye. Pharmaceutical companies are now working on drugs to inhibit the enzyme as possible treatments for osteoporosis and glaucoma.

Dr. Chertow initiated the nighttime dialysis units at UCSF, which allow patients to receive dialysis while resting or sleeping rather than taking three hours during the day for treatments.



Dr. Stephen Gluck

Dr. Verkman has developed a new drug that can treat diarrhea by inhibiting chloride secretion into the colon. The applications for underdeveloped countries, where many people die from dehydration caused by diarrhea, could be very significant because even after the bacteria that causes cholera is gone, the toxins still reside in the intestinal system.

In the Kidney Transplant Unit at UCSF (Parnassus) — one of oldest and largest in country — more than 300 transplants are performed each year. New immunosuppressant regimens that reduce the need for steroids are helping kidney transplant patients lead healthier lives.

### Funding

Even though kidney disease is on the rise, NIH funding is not increasing, and agencies and nonprofits are not devoting as many resources to it as other fields/diseases.

"One of our goals is to make UCSF the premiere site for research and treatment of kidney disease," says Dr. Gluck. "We need more resources to do that." ■

# Renal Research is Key to Recovery

## Dr. Glenn Chertow Juggles Research With Clinical Practice

One hundred years ago, if you were a patient with kidney disease you would most surely die. There were no such options as dialysis and transplantation, and the pathology of the disease was still too mysterious for doctors to develop effective drug therapies.

Today, more than 300,000 Americans are being treated for kidney failure with dialysis, thanks to federal legislation passed 30 years ago to provide dialysis care to all Americans. In the past 15 years, advances in medications have also allowed doctors to improve the control of diabetes and hypertension, two of the major contributors to kidney failure.

According to UCSF's Dr. Glenn Chertow, associate professor of medicine, epidemiology, and biostatistics, and director of clinical services in the Division of Nephrology, the treatment of kidney disease involves two major phases. The first is aimed at preservation of kidney function and slowing the progression of disease. In the event that kidney function cannot be preserved, the second phase ("kidney replacement") must be considered. Kidney function can be replaced by dialysis or transplantation. Generally, transplantation is preferred, but the need for organs is far in excess of supply.

"Much of what we do in our clinical practice if a person has diabetes or hypertension with kidney involvement, or other forms of kidney disease such as glomerulonephritis or polycystic kidney disease, is to preserve kidney function," says Dr. Chertow. "But even when we are successful, patients are still at risk for heart disease."

### Kidney Failure Linked to Heart Disease

"The high cardiovascular event rate in patients with kidney disease speaks strongly to the integral relationship between the kidney and the

heart, and many of us are doing research on that relationship," notes Chertow, who was named a fellow of the American Heart Association this year in recognition of his research contributions related to the kidney in cardiovascular health.

Roughly nine out of 10 patients with kidney disease die from cardiovascular complications before they reach end-stage kidney failure, so a major focus in nephrology is cardiovascular risk reduction.

### Still Much to Discover Through Research

Says Dr. Chertow, "If we could understand what about kidney disease exacerbates heart disease, we could improve the health of our patients. It's beyond hypertension or diabetes alone. It might be related to the metabolic environment that the kidneys maintain, including a state of chronic inflammation, and how the body handles calcium and other minerals.

For example, minerals such as sodium, potassium, calcium, and phosphorus play very important roles in kidney disease. Although they aren't considered waste products, the accumulation of calcium and phosphorus in the body is strongly associated with mortality and cardiovascular events. UCSF recently led a multicenter US/European study examining the effects of different treatments to control calcium and phosphorus metabolism, and found that one treatment slowed progressive vascular disease.

In spite of this kind of research and available treatments, the number of patients with kidney failure

is rising 5 to 7 percent a year, with nearly 100,000 new kidney failure patients emerging each year in the United States.

Kidney failure is more common among people who are impoverished. The progression of disease is more rapid, and the burden of kidney failure is more prominent in minorities, especially African-Americans. According to Dr. Chertow, about 30 percent of dialysis patients are African-American, who make up less than 13 percent of the population. Asian-Americans and Latinos are also over represented.

"Most certainly there are socioeconomic factors involved," he says. Unfortunately, these vulnerable populations often come to UCSF with more advanced stages of the disease.

### Transplant vs. Dialysis

When a patient has kidney failure, eventually he or she must be treated with a kidney transplant or dialysis. A kidney transplant is preferred because there is nothing as good as a native kidney, says Chertow. "Our medical and mechanical techniques have become very sophisticated, but we can't compete with nature. A human kidney is more precise and elegant, and UCSF's transplant program is world-renowned."

While the number of people with kidney disease is on the rise, the number of kidney donations has remained flat. Generally, kidneys from living related donors are associated with the best transplant outcomes, then kidneys from living unrelated donors; kidneys from deceased donors fare less well. If a transplant isn't an option due to the unavailability of a donor kidney or a patient's inability to accept one, dialysis is required. Dialysis can be a bridge to a transplant — keeping the patient healthy until they get a donor kidney — or the ultimate solution.

Dr. Chertow cares for kidney disease patients at several dialysis units throughout San Francisco, where adults dialyze in shifts from 5 a.m. to 11 p.m. Generally, patients attend the clinic three times a week, and each treatment takes approximately three to four hours. While these treatments are life-saving, Dr. Chertow believes that dialysis-related outcomes (including quality of life) can be further improved.

### Improvements in Treatment

To this end, UCSF was recently selected to lead a National Institutes of Health-sponsored study on frequent hemodialysis — a modification of therapy in which treatments are provided more than three times per week, more closely matching the "around-the-clock" function that native kidneys provide.

"When the body is cleansed of toxins and waste more often, the process is gentler and the patient often feels better," notes Dr. Chertow. "More dialysis means more even levels of body chemistries."

Ultimately, Dr. Chertow hopes to pursue home-based dialysis options and believes that the future will bring more innovative technologic advances, such as portable "on-the-belt" dialysis devices. For now, more attention to at-home dialysis could reduce inconvenience for patients and costs to the healthcare system.

But advancements in kidney disease therapies require financial backing. "We need funds to continue research in acute and chronic kidney disease and to continue to develop innovative prevention and treatment programs," says Chertow. "It is my hope that UCSF becomes the leading kidney disease research center in the country." ■

## Vulnerable Populations

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“We’re beginning to ration care,” states King. “If you have blood in your bowel movements (a potential sign of colon cancer) it may take weeks to be seen by one of our specialists.” Reduced access to preventive services or delays in the diagnosis of potentially curable illnesses are the kinds of problems healthcare providers face when there are significant reductions in financial support and income streams, says King.

Unlike private not-for-profit hospitals, SFGH is a public or “safety net” hospital, with an important and unique role in caring for all people regardless of ability to pay.

“If a patient is not covered by Medi-Cal (California’s version of Medicaid, which covers the indigent) or Medicare (for the elderly), we still take care of them,” says Shawn Sheffield, director of administration for SFGH Department of Medicine.

### Doing More With Less: Innovative Programs to Maintain Quality Services

“A major focus of our work as an academic medical center is to identify new or improved ways to care for our patients,” say Dr. King. To that end, many bold approaches are underway in the department.

For example, the IDEALL Project (Improving Diabetes Efforts Across

Language and Literacy), led by Dr. Dean Schillinger, associate professor of clinical medicine, and Dr. Hali Hammer, assistant professor of family and community medicine, is designed to help patients with diabetes provide better self-management.

“Diabetes is a major problem in our patient population, and poor outcomes are common,” states Dr. King. IDEALL compares the effect of technologically oriented (weekly phone calls via an automated disease management system) versus interpersonally oriented (monthly group medical visits or the usual care) chronic care disease support in diabetics with poor control of their blood sugar.

In another situation, doctors and administrators at SFGH recognized that many patients appeared to overuse the services. “So we decided to examine this ‘high user’ group,” states UCSF Assistant Professor Dr. Alicia Fernandez, who spearheaded the study. “We discovered that 13 percent of our patients were using 39 percent of our inpatient bed days.”

Defined as patients with three or more hospital admissions per year, high utilizers typically have one of five chronic diseases (HIV/AIDS, congestive heart failure, renal disease, diabetes, and/or chronic lung disease), as well as major social problems.

Fernandez discovered that these patients fell into two groups: the first group (about 80 percent of the patients studied) included the homeless, drug users or patients with a major psychiatric illness. The second group (about 20 percent of these high users) was composed primarily of elderly immigrants.

Along with her colleagues, Fernandez developed the High User Case Management Program (HUCMP) to meet the needs of the first group.

These are people who have experienced fragmented care in a chaotic situation for both the patient and the doctor. According to Fernandez, doctors working with these high utilizers felt overwhelmed and ineffective.

“The system wasn’t working for the



patients, the providers or the hospital,” declares Fernandez. “It was inhumane.” Her team found that if these patients are provided stable housing, they become more adherent to their treatment, their health improves, and health care costs drop.

Under the high utilizer program umbrella, the UCSF Departments of Medicine, Family Medicine and Psychiatry, and the San Francisco Department of Public Health (SFDPH) coordinate social workers, healthcare providers, and psychiatric professionals to work proactively with this vulnerable population. Each patient is assigned to a multi-disciplinary team consisting of a psychiatrist and internist who are adjuncts to the primary care physician. Caseworkers actually visit the hotels and comb the streets to bring patients to appointments and help them get their medications and drug treatments.

### The UCSF/SF Department of Public Health Partnership

“Our main finding, though, was that most of these patients actually had contact with a primary care physician (PCP), either here at the hospital clinics or in the community setting,” says Fernandez. “We designed this program to strengthen the patient’s relationship with their PCP, who are primarily UCSF-trained doctors working for the Department of Public Health.

Ms. Sheffield notes that many graduates of UCSF’s training programs

## SF General’s Budget

SF General Hospital is very important to the UCSF Department of Medicine. Highly ranked by the medical establishment, SFGH-Department of Medicine is essentially three enterprises: clinical, education and research.

At \$19.29 million, SFGH’s clinical operations are grossly underfunded. 15 percent of services are provided free of charge. An additional \$3 million a year is required to make up the shortfall.

San Francisco General trains about 40 percent of the medical students and residents at UCSF. Currently, education programs cost \$5.03 million annually.

In research, the SFGH-Department of Medicine comprises a well-funded, highly collaborative faculty, united by a focus on understanding disease. If SFGH-Medicine were a separate department within the medical school, it would rank approximately 30th in the nation for NIH funding.

Despite this considerable success in competing for extramural research funding, there is a major need for additional funding to ensure continued success of these programs. Chief of Medical Services Dr. Talmadge King would like to see San Francisco General receive matching private funds for the \$40.51 million in research grants it receives each year.

## Some UCSF/ SFGH Statistics

- The clinics at SF General see a variety of populations:
  - 30 percent Latino
  - 25 percent African-American
  - 20 percent Asian
  - 20 percent Caucasian
- 60 percent of the 70,000 emergency department visits each year are non-trauma.
- On any given day, approximately 200 physicians are being trained at SFGH.

have gone on to leadership positions within the department of public health. Dr. Mitchell Katz, the agency's director, is a good example.

Dr. Fernandez agrees. "The relationship between SF General and SFDPH is as unique in the country as UCSF is in academic medicine," she emphasizes. The public health department in San Francisco has a history of leadership and innovation in health care delivery, solidified during the early 1980s when AIDS was emerging as a serious and deadly disease in the city.

"SF General is part of the public health department, and together we are developing effective prevention and treatment programs," concurs Dr. King. "Our AIDS program (widely acknowledged as the best in the country) is a case in point: We educate the public so they won't get the disease, we teach them how not to spread it, and we treat the disease if they do develop HIV/AIDS."

Recruited in 1997 from National Jewish Medical and Research Center, King came to UCSF and San Francisco General because he wanted to work in just this kind of system of integrated healthcare delivery.

"The City and County of San Francisco have been fantastic supporters of SFGH," states King. "But our system faces tremendous pressure because of the current economic climate in the city, state and country."

### A Center for Vulnerable Populations

Nearly 80 percent of all US health-care costs are directly related to the care of a chronic condition (e.g., diabetes, asthma, heart failure or mental health conditions). How do you manage an alcoholic diabetic or a patient with poor access to food? How do you communicate vital medical information and treatment plans to patients who can't speak English or read in their native language, or even get to the clinic? How do you ensure that a homeless patient with a chronic disease gets the medication he needs on a regular basis? How do you encourage poor women whose lives have multiple competing demands to have

annual mammograms?

These are the kinds of questions that King and his staff hope to address with a proposed Center for the Health of Vulnerable Populations. Conceptualized as either "virtual" or within a specific space or building, the center would coordinate the efforts of each division within the Department of Medicine to realize economies of scale. The proposed center would provide the infrastructure — the statisticians, data managers, economists, social workers, nurses, pharmacists and, of course, physicians — to manage the care of vulnerable patients, with an emphasis on "bench to bedside" research, from the lab to clinical practice.

Dr. Jeffrey Critchfield, vice chief of medicine for clinical services, sees the center as the place where UCSF researchers can synergize their efforts to expand their research scope and disseminate the results of their findings to the rest of the country.

"By strengthening the superb research going on at SFGH, the center will help generate and organize data to frame the discussion about vulnerable populations, so that all concerned healthcare professionals can share their knowledge about this unique population," he says.

### Patients Inspire Doctors

Because vulnerable populations include so many ethnic and cultural groups, the study of their health, in addition to biological research, also

requires anthropological, sociological, economic, and health policy strategies, Critchfield notes. He has observed that, while many SFGH patients may be vulnerable to catastrophic events (such as developing advanced diseases due to fear of the healthcare system or the inability to seek care), they are very resilient, making up for their lack of money and/or language skills with a strong sense of community.

This often inspires the doctors at SF General. Many are nationally or internationally renowned and could practice and teach in more glamorous hospital settings. They choose

to work at SFGH, however, because it's a prestigious academic medical center with a rich tradition of service to its metropolitan community.

States Dr. King, "The faculty here is fantastic. They are extremely bright and committed to our mission. Many doctors have been at SF General for decades. Some have gone on to other jobs but continue to volunteer their time. For example, Dr. Julie Gerberding, director of the Centers for Disease Control still teaches at SFGH. We all feel that we have a responsibility to these folks," concludes Dr. King. ■

## UCSF Heroin Expert Advises West Wing Scriptwriters

UCSF's Dr. Karl Sporer is an internationally recognized expert on drug abuse, specifically heroin addiction. Working with the SF Department of Public Health, he is involved in an edge-of-the-envelope program that dispenses a drug called Narcan, which is given to heroin users when their lives are threatened by an overdose. Though controversial, Dr. Sporer sees the treatment as an intermediary step toward recovery.

"Yes, these people are addicted and that's not good, but we have a way to save their lives through with Narcan," he states. "Once we save their lives, then we can work

on getting them clean. Dead addicts don't recover."

Sporer has another claim to fame. A friend of his who works on the hit TV series West Wing asked for his advice on the episode in which Zoe Bartlett is drugged and then kidnapped. It was Dr. Sporer who gave the scriptwriters credibility when they wrote the secret service agent's line about the president's daughter being given the party drug GHB. And for the record, says Sporer, the overdose scene in Pulp Fiction ... they got it all wrong. Now you know.

NIH graph

## FACULTY PROFILE

## Dr. Koehler Discovers the Cause of Cat Scratch Fever



Dr. Jane Koehler

**D**r. Jane Koehler tells her story of discovery with obvious delight. In her first week as a fellow in the Division of Infectious Diseases at UCSF, she examined an AIDS patient with lesions that resembled the cancer Kaposi sarcoma (KS). However, when a sample from the lesion was viewed under an electron microscope, Koehler found a tumor made up of proliferating blood vessels and many bacteria in the surrounding tissue. These lesions thus represented an infectious disease, not a cancer, which was subsequently named bacillary angiomatosis (or “tumor of blood vessels caused by bacilli”). This finding was very good news; the KS cancer is difficult to treat, but the bacillary angiomatosis infection can be cured with inexpensive antibiotics.

“But we still didn’t know what kind of bacterium was causing these lesions,” says Koehler. Donning her Sherlock Holmes hat, she proceeded to grow the bacteria from patients’ lesions (the first person in the world to do so). As she cultured the lesions from different patients, she found there was not one species of bacteria causing these lesions, but two: *Bartonella henselae* and *Bartonella quintana*.

**Solving the Mystery**

“When you are looking at a newly discovered infectious disease, first you have to define the manifestations in the patient and continue to identify other patients meeting that definition. Then you look for the cause by determining what the patients were exposed to just before they got sick,” explains Koehler, who collaborated with epidemiologists at the Centers for Disease Control and Prevention (CDC) and UC Berkeley on this study. The team surveyed AIDS patients with bacillary angiomatosis and discovered that the main thing they had in common was owning cats.

So Koehler enlisted the help of some veterinarians to determine how these cats might be the source of infection. With permission from the owners, the team drew blood from their cats and swabbed their mouths to detect *Bartonella*.

“Much to our surprise,” Koehler says, “all of the cats had blood-

stream infection with this new bacterium, *Bartonella henselae*.” In fact, some had one million bacteria per teaspoon of blood, enough to kill a cat or human if it were any other bacterium.

Subsequent research showed how the bacterium was transmitted among cats. By taking fleas from infected cats and putting them on uninfected kittens, the researchers found that kittens were infected by the fleas. But the transmission does not appear to occur during a fleabite; rather, a cat scratches and inoculates itself with flea feces, which contain the *Bartonella* bacteria. When an infected cat then scratches a human with its contaminated claws, the bacteria can be transmitted to humans, causing “cat scratch disease.”

When people with a normal immune system are infected, cat scratch disease is quite mild. But those whose immune systems are compromised develop bacillary angiomatosis and serious — even fatal — infection.

**Second Bacteria harkens Back to WWI**

Having found the *B. henselae* in the cat owners with bacillary angiomatosis, Koehler turned her attention to the 30 percent of patients who did not own cats. She found that in these patients, bacillary angiomatosis was caused by the other species, *Bartonella quintana*, which was discovered during World War I when

soldiers developed trench fever from body lice. Dr. Koehler’s group investigated the AIDS patients and found that most were homeless and infested with body lice, which transmitted the *B. quintana*.

The final outcome was that Dr. Koehler was able to identify a new disease and determine from what source the patients were acquiring their infections. Most pleasing to Dr. Koehler, her research allowed patients with AIDS and other serious diseases of the immune system to keep their cats, vital companions for these sometimes seriously ill patients. And she has served on a national panel that made recommendations about preventing the disease in patients with compromised immune systems.

Koehler is now investigating the molecular mechanisms that *Bartonella* uses to cause disease as a faculty member in UCSF’s new Microbial Pathogenesis and Host Defense Training program. Her group will soon move to the new Research Center for Microbial Pathogenesis at Parnassus. Members of all the pathogenesis research groups will then be able to benefit tremendously from each other’s expertise and ideas on how to understand and cure these life-threatening infectious diseases. ■

**Frontiers of Medicine** News from the UCSF Department of Medicine

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University of California, San Francisco Box 0120  
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