

AUTUMN 2007

Harvard Medical

ALUMNI BULLETIN



WHAT ARE DOCTORS FOR?



LUMINARY

Walter Bauer, MD, pictured here mid-twentieth century, greets a young patient—and Eleanor Roosevelt—at Massachusetts General Hospital. Bauer devoted himself to the study of skeletal-tissue diseases and published what many consider the definitive work on rheumatoid arthritis. From 1929 to 1958, he led the hospital's program for the study of rheumatic diseases and, in 1951, became the hospital's chief of medical services. At HMS, Bauer rose from research fellow to become the Jackson Professor of Clinical Medicine.

CONTENTS

DEPARTMENTS

Letters.....3

Pulse.....5
The dean offers a new vision and welcomes a new class; Harvard physicians reach out to patients in rural Cambodia; Partners in Health commemorates its 20th anniversary

Bookshelf.....9

Bookmark.....10
A review by Elissa Ely of two physician-written children's books

Benchmarks.....12
Scientists rid murine brains of Alzheimer's plaques; family and friends influence personal weight gain; a botanical may be an anti-epileptic agent; research on women's health issues

Alumna Profile.....56
Pardis Sabeti excels in the laboratory and on stage. *by Janice O'Leary*

Class Notes.....58

Obituaries.....61

Endnotes.....64
The small hours of the morning provide a glimpse into the healing role of doctors. *by Erica Seiguer Shenoy*

Cover photograph: Stephen Webster

SPECIAL REPORT: WHAT ARE DOCTORS FOR?

What Are Doctors For?.....16
The most recent phase in the evolution of the physician's role may prove to be the most problematic. *by WILLIAM IRA BENNETT*

The Machine in the Garden.....20
An increasingly sticky bureaucracy often paralyzes doctors as they struggle to preserve their healing role. *by CHRISTOPHER CRENNER*

Ritual Healing.....26
What can traditional healers teach Western physicians?
by TIMOTHY FERRIS

In Good Company.....32
As stresses on the health care system grow, physicians are finding they don't have to face them alone. *by MITCHELL T. RABKIN*

Terminal Care.....38
The strictures in this futuristic fable lead one doctor to a decision at odds with her time. *by WILLIAM IRA BENNETT*

FEATURES

The Dean Counter.....42
HMS alumni are making their mark as leaders of the nation's medical schools. *by ANN MARIE MENTING*

Fighting Chance.....50
A cancer diagnosis stirs a physician to consider her living time rather than her dying time. *by BERNADINE HEALY*

PHOTO ON FACING PAGE: COURTESY OF MASSACHUSETTS GENERAL HOSPITAL ARCHIVES



In This Issue

FIFTY YEARS AGO, SHORTLY BEFORE I BOARDED A PROPELLER AIRPLANE FOR the 24-hour trip from the West Coast to Cambridge and Harvard, I was warned that the University was a breeding ground for communists. This proved not to be true (and anyway I never really inhaled). In fact, Harvard Medical School seems to have instead become a breeding ground for medical school deans. As of last count, nine of the 126 medical schools in this country are being led by HMS graduates. Even though they have taken their work up in interesting times, their testimony in "The Dean Counter," our roundup that begins on page 42, indicates that they enjoy the challenges.

The job of a medical school dean is, of course, to keep the show on the road: preserve the institution's strengths, improve its shortcomings, and see to it that the buildings don't leak and the bills are paid. That ought to be enough, but these responsibilities come at a time when the economics and politics of health care are as problematic and contested as they have ever been. Demand for health care is expected to rise in the near future both because the baby boomers are reaching the age at which their consumption of care is likely to increase (even as boomer physicians begin to retire) and because insurance coverage is likely to be extended to a larger proportion of the population.

Do these projections mean that more physicians and medical schools will be needed? In some quarters the answer has been yes. After 20 years in which the number held steady, several new medical schools are opening or are in the planning stages. Will increasing the number of U.S. physicians actually meet the country's needs? Or will it distort the market by creating demand for a luxury product? It is possible, after all, that the population would be better served by non-physician practitioners who are trained, less expensively, to perform part of the physician's traditional role—and to do it well. Who, actually, will decide? And what are the alternatives? Can we even imagine planning the economy of health care in the United States? The current generation of deans will not be able to avoid these questions.

With this issue, we thank Janice O'Leary, our assistant editor for more than three years. Janice has left the *Bulletin* to work in the consumer publishing world. And, in a sweet symmetry, we welcome in her place Jessica Cerretani, who left consumer publishing to join our magazine. We wish Janice well and look forward to working with Jessica.

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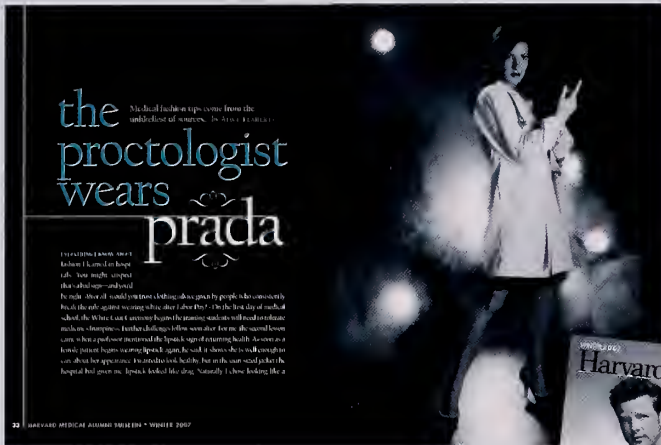
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CLOTHES MAKETH THE DOCTOR

When I first saw your Fashion Issue, I thought, *This has nothing to do with me!* But when I opened the pages, I found myself pulled in. The issue is marvelous. The design is elegant and the articles insightful, especially the history of doctor fashion. Thanks for a wonderful issue!

GEORGE RICHARDSON '46
NAHANT, MASSACHUSETTS

Beyond the Looking Glass

I enjoyed reading the article that Robert Goldwyn '56 wrote about plastic surgery in your Winter 2007 special report on fashion. In just a few paragraphs, Dr. Goldwyn encapsulated the history of the field as well as a sense of his own compassionate approach to his patients. His sly sense of humor emerged, too, just as I remember it from my encounters with him during my dermatology rotation at Massachusetts General Hospital 40 years ago. The only thing missing from the article was a glimpse of his sartorial elegance.

I hesitate to disagree with my mentor, but I would like to offer an alternative

perspective on the exchange he quoted between Pablo Picasso and Gertrude Stein. According to Stein in *The Autobiography of Alice B. Toklas*, Picasso said, "Everybody says that she does not look like it but that does not make any difference, she will." I never imagined that Picasso was referring to Gertrude's aging when he said that she would look like the portrait. I interpreted his remark to mean that Stein would realize that he had captured the essential Gertrude in oil on canvas and would will her visage to mirror the portrait. Picasso was laying claim to having captured Stein's inner soul after having her sit for him more than 80 times. His famous sitter came around to his view,

saying in Steinese, "I was and still am satisfied with my portrait, for me it is I, and it is the only reproduction of me which is always I, for me."

GILMAN D. GRAVE, MD
BETHESDA, MARYLAND

Meter Reader

In "Girl, Interrupted" in the Winter 2007 issue of the *Bulletin*, the author, Jerome Groopman, described the diagnostic approach that Myron Falchuk '67 takes. That description reminded me of one of the most important lessons I learned in my time at HMS.

I was a hard-charging third-year student rotating through medicine at Massachusetts General Hospital when we had a guest professor, Robert Frederick Loeb, Class of 1919, of textbook fame. (Coincidentally his son was in my class.) We were on rounds when an impeccably turned out internal medicine resident presented a case of hepatitis B to Dr. Loeb. The resident recited an exemplary "general" presentation with many facts and lab results. When he had finished, Dr. Loeb, who had been quietly inspecting the patient in the bed, asked him, "Doctor, is the patient getting better?"

The resident, who certainly thought he had covered any answer to that question with his erudite presentation, looked a little puzzled but then repeated a pointed summary of data that made it obvious to the surrounding throng that the patient was better. Dr. Loeb again asked the resident if the patient was better. Again the resident, obviously bewildered, launched into a stellar, MGH-worthy presentation.

Dr. Loeb smiled gently, turned to the patient and asked, "Are you hungry?" The patient answered, "I'm starved!" Dr. Loeb then turned to the assemblage and announced, "This patient is better! Next case."

That little vignette about listening to the patient always came to my mind



“If you cannot tell me what I just told you such that I recognize it as what I thought I told you, then we have not communicated.”

—MICHAEL J. MCKEOWN '61

during my practice years when some new internist announced that he or she needed to acquire the “database” before entertaining a diagnosis for the patient.

Fortunately my practice patient encounters were managed more along the style of Dr. Falchuk, occurring as they did before the explosion of managed care with its “covered lives” instead of patients and such immoral disincentive plans as full-risk capitation. When I entered an exam room in my practice I used to emphatically set the patient chart aside on a counter, sit comfortably in a chair, lean back, look directly into the patient's eyes, and try to produce an aura of empathy and infinite time to listen. I would then ask, “How can I help you?”

I don't know if HMS now has courses on how best to interact with patients, but, if it does, I'd be happy to impart a simple tip for use in such a course. It is a loosely structured technique from a communications concept called meaning theory: “If you cannot tell me what I

just told you such that I recognize it as what I thought I told you, then we have not communicated.”

Have young practitioners test this by asking a patient, “What did I just tell you?” I have found that asking this question is immensely helpful, especially when talking with a patient with a serious, life-threatening illness such as cancer. If I believe we have not communicated, I take full blame—most patients are somewhat in awe of physicians and usually assume any lack of understanding is their fault. I then gently tell the patient this is something important and that I'm willing to take as much time as necessary to ensure both of us have an equivalent understanding of the subject. This cannot be done in a 15-minute visit!

The basic pathophysiologic, whole-patient approach I learned at HMS stood me in good stead on the front lines of a rural practice in Oregon. Unfortunately, I was forced to retire from my active OB/GYN practice in 1977 because I had developed a rare form of limb-

girdle muscular dystrophy. The full impact of managed care had by that time stripped away 30 to 40 percent of my routine office care. And because I refused to ramp up my practice volume, I only broke even in my last three months of practice, a fact that angered the aggressive new management of the group to which I belonged.

It used to be *Primum non nocere*, but it is now *Primum non redundo!*

MICHAEL J. MCKEOWN '61
PORTLAND, OREGON

Handyman Special

Permit me to express my concern that the Winter 2007 book review of *Next* poorly served your readers and the book's author, Michael Crichton '69. It is a given that *Next* was written for the general public, and for the reviewer, Elissa Ely '88, to concentrate on its literary aspects seems beside the point.

Germane to your audience and the meat of the matter was in the book's final pages, entitled “Author's Note.” Here the author describes five current, socially significant issues, including gene patenting, the use of human tissues, and the vanishing lines between the medical “profession” and business. These issues call for action and change. All are within the purview of Harvard Medical School, yet the reviewer gave them only passing mention.

An opportunity for continuing education was missed. Information and discussion were ignored. Please don't rely on the scientifically illiterate general public to take responsibility for what those in science create.

You break it, you fix it.

LENORE FRAZIER
(WIDOW OF HOWARD S. FRAZIER '53)
WINCHESTER, MASSACHUSETTS

The Bulletin welcomes letters to the editor. Please send letters by mail (Harvard Medical Alumni Bulletin, 25 Shattuck Street, Boston, Massachusetts 02115); fax (617-384-8901); or email (bulletin@hms.harvard.edu). Letters may be edited for length or clarity.

The Unfolding Vision by JEFFREY S. FLIER

HARVARD MEDICAL SCHOOL IS the greatest medical school in the world by all objective criteria, from the competitiveness of our medical and graduate programs, to the success of our alumni as they assume leadership positions around the globe, to the accomplishments of our faculty, to the size and deserved reputations of our affiliated hospitals and institutes.

When I became dean of HMS at the start of September, I faced an obvious dilemma: Should I follow the established course and maintain the excellence of this amazing institution, or should I consider a less conservative approach, one that would seek to identify new opportunities, even if they might entail some institutional change? To resolve this for myself, I considered the real questions: Are we as good as we can be? If not, should we be satisfied to remain simply as we are?

In answering such questions, we must remember why we are here in the first place. Our official mission is to create and nurture a diverse community of the best people committed to leadership in alleviating human suffering caused by disease. Although we are delighted that HMS is held in high regard throughout the world, we must remember that our goal is not to win a tournament of rankings. Our enemies are diseases and the suffering they cause, and there is no shortage of work to be done against these foes. Staying the course is not an option.

How do we assess the changes necessary to meet these challenges? First, we must remind ourselves that at its core HMS is a medical school. Our principal responsibility is to train physicians to excel in medicine and to prepare them for leadership positions. To this end, HMS is now enacting a comprehensive medical curriculum reform that was developed over the past several years. I



PHOTO: GRAHAM GORDON RAMSAY

will continue to work with our educational leaders to ensure the implementation goes smoothly and to make any necessary adjustments.

I also hope to initiate a reform recommendation that has yet to be acted upon: requiring HMS students to engage in a scholarly activity. Many of our students are already involved in such activities, often launching amazing careers in the process. But many more could be encouraged to undertake an in-depth scholarly experience, which could involve wet laboratory research, clinical research, or any number of other endeavors. Such experi-

ences would better position our graduates for leadership roles in whatever career path they choose.

At the same time, I am concerned about the indebtedness that many of our students face and the effect such debt has on their professional options. I am dedicated to finding ways to increase the financial aid to our students, to help them become the leaders they can—and should—be.

In addition to being an educational institution, HMS is a research center of amazing size and breadth. It is my responsibility to keep our preclinical depart-

ments—both the basic science and social science departments—at the leading edge and to ensure they are well positioned to respond to scientific opportunities.

I also need to be concerned, however, about Harvard faculty members who are based in the clinical departments of our affiliated hospitals and institutes. They are extraordinary in their number, diversity, and quality. Yet they could be interacting with one another far more often, a missed opportunity that raises several questions: Are we organized to capitalize on the most exciting aspects of modern science? To foster effective collaborations among faculty on the Quad and in our affiliated institutions? To interact robustly with the other Harvard schools? To take full advantage of the School's physical and financial resources? And to mentor and develop our faculty effectively?

I believe the answer to these questions is no. We need to seize more opportunities in the advancing fields of basic science, to collaborate more consistently across departments and institutions, and to use our substantial resources better. We need to augment the mentoring we provide our faculty and the leadership opportunities we afford them.

Changes in the way research centers are funded may help us accomplish those goals. In fact, a mandate from the National

Institutes of Health (NIH) will consolidate much of the clinical and translational research across our community.

Currently each of Harvard's major teaching hospitals—Massachusetts General Hospital, Brigham and Women's Hospital, Children's Hospital, and Beth Israel Deaconess Medical Center—has a General Clinical Research Center, or GCRC. For the past several decades, the NIH has funded the infrastructure for this type of hospital-based clinical research entity by offsetting the costs of the beds; nursing, nutritional, and administrative support; and the physical structures necessary for its endeavors.

Several years ago, then NIH Director Elias Zerhouni announced that all funding for these centers would end by 2010, with institutions housing the centers either closing them or rolling them into a new kind of grant. This new grant is the Clinical and Translational Science Award, designed to transform clinical and translational research both as a practice and as a career path. The award will not only incorporate funding for existing GCRCs but will also add many other required elements related to education and career development for clinical-translational researchers, community outreach, and regulatory support. The centers funded by this award will be

called Clinical and Translational Science Centers, or CTSCs.

The catch, for Harvard, is that it can have only one such center. Harvard has applied for a CTSC, and the grant would be awarded to the Medical School for distribution. With the exception of the Dana-Farber/Harvard Cancer Center, this would be our first cooperative, broad-ranging, clinical research initiative.

This sole CTSC would act as a research hub, unifying aspects of the various clinical research centers by encouraging collaborative use of resources. This consolidation would reduce redundancy across the centers, allowing the saved resources to be directed toward more infrastructure, new technology development, support for career development, and pilot grant programs. In addition, HMS, the affiliated hospitals, and the University's new Science and Engineering Committee would each commit \$16 million in new funds. The changes engendered by this grant would be transformative, and its impact on HMS would be profound.

Another area in which I see tremendous opportunity is the broad and exciting field of bioengineering. Neither the Medical School nor the University has major identified efforts in this area. Although the hospitals have many important centers of bioengineering research,

The Class of 2011

AT SUMMER'S END, HMS GREETED THE 165 MEMBERS OF the Class of 2011 in the usual manner—with a presentation of their first white coats. HMS Dean Jeffrey Flier welcomed students and commented on their remarkable strengths and diversity. The class's 77 women and 88 men hail from 63 colleges and universities in 34 states, as well as from schools in Bulgaria, Canada, China, Ghana, Jamaica, Japan, Lebanon, Nigeria, Thailand, and Zimbabwe. Thirty-three percent of the students are of Asian descent, 13 percent are of African descent, and 8 percent are Latino. Native Americans make up less than 1 percent. ■



PHOTO: STEVE GIBERTI

these centers are not coordinated intellectually with one another. We have, therefore, begun discussions with the new School of Engineering and Applied Sciences and the Faculty of Arts and Sciences on developing a plan for a major investment in bioengineering.

Human genetics research presents us with another opportunity. Breakthroughs in this field will undoubtedly lead to better understanding, treatment, and prevention of disease. Although HMS currently has pockets of excellence in this research, the field is insufficiently represented. As a result, I am working closely with Cliff Tabin, the chair of our Department of Genetics, and an executive committee to plan for a more coordinated and robust effort in human genetics, perhaps involving all of Harvard. I believe that with significant intellectual and financial investment, we can create an unparalleled program of human genetics research across the institution.

I'm also dedicated to exploring opportunities in pharmacology, therapeutics, toxicology, and chemical biology. The revolution in cellular and molecular biology has produced some spectacular science that will help accelerate the process for discovery and optimization of new therapeutics. Yet we lack a major program for researchers intent on these goals. This is an important intellectual discipline, one in which—with a few additions to our faculty and perhaps the involvement of the hospitals and the University—we can excel.

Finally, we are implementing a strategic planning process that will engage the entire HMS community. We have great value to gain by talking openly and honestly about the issues we face. And I believe our efforts in the coming years will accelerate our capacity to fulfill our core mission of creating and nurturing a diverse community of the best people committed to leadership in alleviating human suffering caused by disease. ■

Jeffrey S. Flier, MD, is dean of Harvard Medical School. He offered these remarks in the first town forum of his tenure as dean.

The Cambodian Connection

RESIDENTS OF TWO REMOTE CAMBODIAN VILLAGES NOW HAVE ACCESS TO the expertise and experience of HMS-affiliated hospitals and physicians without the expense of airline tickets or visas. Clinicians in both countries are using technology to connect rural Cambodians with Boston physicians volunteering in the Partners HealthCare Center for Connected Health.

The center—formerly Partners Telemedicine—enables hospitals to connect with patients outside the clinic using widely available technology such as digital cameras, cell phones, and the Internet. A high-risk cardiac patient, for example, can transmit vital signs to a nurse through an at-home monitoring device, enabling the nurse to help manage the patient's care from a distance and to provide necessary treatment.

In 2001, the center began an initiative called Operation Village Health in partnership with the relief agency American Assistance for Cambodia to assist Cambodian health care workers in providing more sophisticated care. Monthly clinics are held in the villages of Rovieng and Banlung. There, a nurse interviews, examines, and digitally photographs patients and emails the information to Boston, where physicians respond with medical opinions and treatment suggestions. Care is coordinated with a hospital in Phnom Penh.

"What has turned out to be really interesting is that it isn't infectious diseases we're seeing but mostly noncommunicable chronic conditions like hypertension and diabetes," says Paul Heinzelmann, an HMS clinical instructor in medicine at Massachusetts General Hospital and the project leader for Operation Village Health. While infectious diseases continue to be a problem, he says, Cambodians are increasingly diagnosed with chronic diseases that need long-term management, creating a "double burden." Nearly two-thirds of the patients visiting the Rovieng clinic are repeat customers. Each clinic attracts up to 20 patients a month, and more than 800 consultations have been performed since the program was started by volunteer physicians at Massachusetts General Hospital, Brigham and Women's Hospital, and Partners/Dana-Farber Cancer Care.

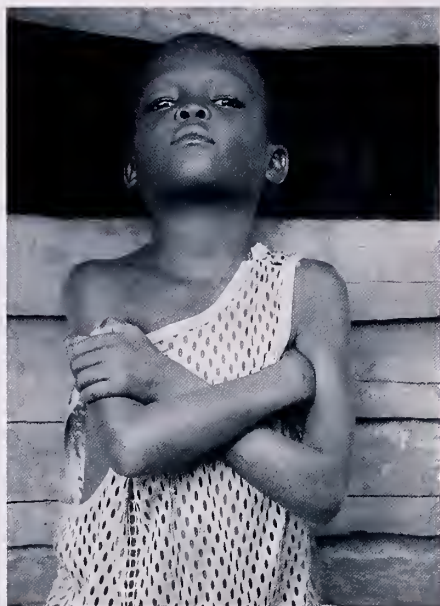
Operation Village Health has attracted international acclaim. In 2006, it was chosen as the winner of the Stockholm Challenge in the health category. The Stockholm Challenge recognizes projects that use information and communication technology to counteract social and economic disadvantages.

In the future, Heinzelmann says, the initiative aims to bring clinics to additional villages. The center is also working with Cambodian clinicians to explore the use of digital pen technology to standardize reports. Other nonprofit organizations are helping to restructure local hospitals' operations, including implementing the integration of telemedicine, which in turn will increase support for the clinics and their expansion. ■

Emily Lieberman is an editorial assistant for Focus.



PHOTO: JOHN VINK/MAGNUM PHOTOS



When Words Fail

IN SEPTEMBER, PARTNERS IN HEALTH CELEBRATED THE 20TH anniversary of its founding with an exhibit of 100 photographs depicting its work and the communities in which it has forged partnerships with patients and local health workers to combat epidemics of AIDS, tuberculosis, hunger, poverty, and injustice.

The nonprofit organization, whose cofounders include Paul Farmer '90 and Jim Kim '91, collaborates with Harvard Medical School, the Harvard School of Public Health, and Brigham and Women's Hospital to bring the benefits of modern medical science to the poor, sick, and needy in Africa, Haiti, Latin America, Russia, and the United States.

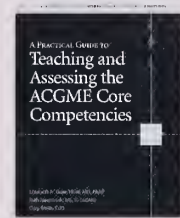
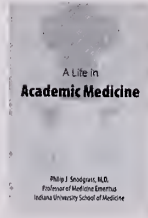
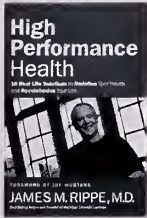
"If a picture is worth a thousand words," says Ophelia Dahl, executive director of Partners in Health, "these images are worth millions for what they have to say about human dignity in the face of intolerable suffering and criminal indifference, about solidarity, and ultimately about hope."

The exhibit is currently on display at Harvard Medical School's Gordon Hall, and there are plans to take it on the road. For more information on Partners in Health and the exhibit, visit www.pih.org. ■

RECENT DEVELOPMENTS: A striking photography exhibit marks the 20th anniversary of Partners in Health's founding.



PHOTOS: CLOCKWISE, FROM TOP LEFT: DAVID WALTON/COURTESY OF PARTNERS IN HEALTH; LORENA MEISANZA/COURTESY OF SOCIOS EN SAUD; ELIZABETH WHELAN/COURTESY OF PARTNERS IN HEALTH



High Performance Health

10 Real Life Solutions to Redefine Your Health and Revolutionize Your Life, by James M. Rippe '79 (Thomas Nelson, 2007)

Rippe, a cardiologist, believes that health is a tool for achieving a joyous and meaningful life. He contends that health should become a core value and that “high performance thinking” can help readers achieve the kind of life they want. The book provides a practical, ten-step action plan for the mind, body, and spirit. These steps include eating to fuel performance, establishing a time for solitude, and embracing active rest principles.

A Life in Academic Medicine

by Philip J. Snodgrass '53 (iUniverse, 2007)

With a fondness for his mentors and without the gloss of nostalgia, Snodgrass chronicles his rise from junior resident to chief of gastroenterology at the Peter Bent Brigham Hospital to chief of the Veterans Administration medical service in Indianapolis. He revisits his struggle to support his family on a resident’s salary while trying to juggle his clinical and research responsibilities. He also recalls the moments that bring life to memories.

Yerevan Journal

by A. Scott Earle '53 (Larkspur Books, 2007)

This book recounts the author’s experiences as a volunteer surgeon in Yerevan,

Armenia, in the years after an earthquake devastated the country. He details, for example, the numerous burn patients he saw, as an extremely cold winter led to the lighting of dangerous petrol fires in attempts to gain warmth. Earle also chronicles his observations of the tensions in the small clinic and the larger political ones of that nation.

Understanding Parkinson’s Disease

A Personal and Professional View, by Richard B. Rosenbaum '71 (Prager Publishers, 2006)

Rosenbaum, a neurologist whose father has Parkinson’s disease, combines both his personal and professional experiences with Parkinson’s to give his readers a comprehensible and comprehensive explanation of the disease, which affects nearly one million Americans. The topics Rosenbaum covers in his book include diagnosis of the disease, prognostic variations, investigations into the causes of the disease, the treatment options, and research efforts now under way.

Uterine Fibroids

The Complete Guide, by Elizabeth A. Stewart '85 (Johns Hopkins University Press, 2007)

More than 25 percent of all women have uterine fibroids, the author says, and doctors often resort to hysterectomy to remove the noncancerous growths. Stewart explains the treatment options

available to women, including hormonal therapies and the use of agonists. Helpful diagrams illustrate the surgical procedures described.

A Practical Guide to Teaching and Assessing the ACGME Core Competencies

by Elizabeth A. Rider '91, Ruth H. Nawotniak, and Gary Smith (HCPPro, 2007)

This book provides research, best practices, models, and tools for teaching and assessing core medical education competencies required by the Accreditation Council for Graduate Medical Education for residency programs. The competencies include: patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice.

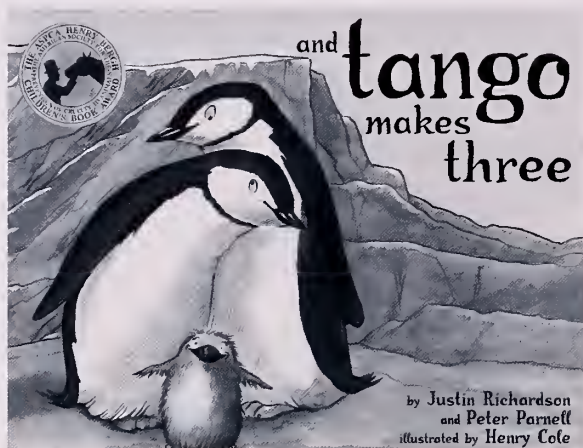
From Making Bows to Fixing Babies

by Orvar Swenson '37 (Publish America, 2006)

In this autobiography, Swenson documents his journey from child entrepreneur—making and selling fire-by-friction sets and archery equipment—to pediatric surgeon. He reflects on the defining moments in his life, including his immigration to the United States from Sweden at the age of six, the early death of his mother, his acceptance into medical school, and his career in medicine. In recounting these stories, he offers subtle advice to younger generations seeking a similar path.

And Tango Makes Three

by Justin Richardson '90 and Peter Parnell
and illustrated by Henry Cole (*Simon & Schuster, 2005*)



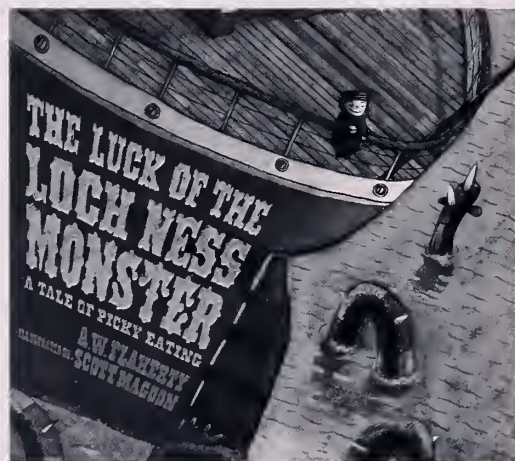
ALL RIGHT, CHILDREN. GATHER AROUND. INDOOR VOICES, PLEASE. Recess is over; it's reading time. Amanda, you need a tissue. If anyone else wants one before we start, give a quiet wave.

We have time for two books, and both are full of wonderful pictures. Be suspicious of the person who says he has never written a children's book, dears. If he doesn't have one hidden in a drawer, he has it hidden in a closet. Doctors are no different when they write such a book, though they tend to drop the "MD" after their names. Maybe this is so you won't mistake what lies inside their books for medical advice, and flee before opening them.

One of the stories today will be for the youngsters, and the other is for those who can read to themselves. *And Tango Makes Three* is famous; perhaps your parents have heard of it. The author is Justin Richardson '90, a psychiatrist, along with the playwright Peter Parnell and the artist Henry Cole. The story is true. Two chinstrap penguins in the Central Park Zoo fall in love. They set up a nest together, "nice, but a little empty." They cannot lay eggs—though they try futilely to hatch a stone—because both of them are boys.

The Luck of the Loch Ness Monster

A Tale of Picky Eating, by A. W. Flaherty '94
and illustrated by Scott Magoon (*Houghton Mifflin, 2007*)

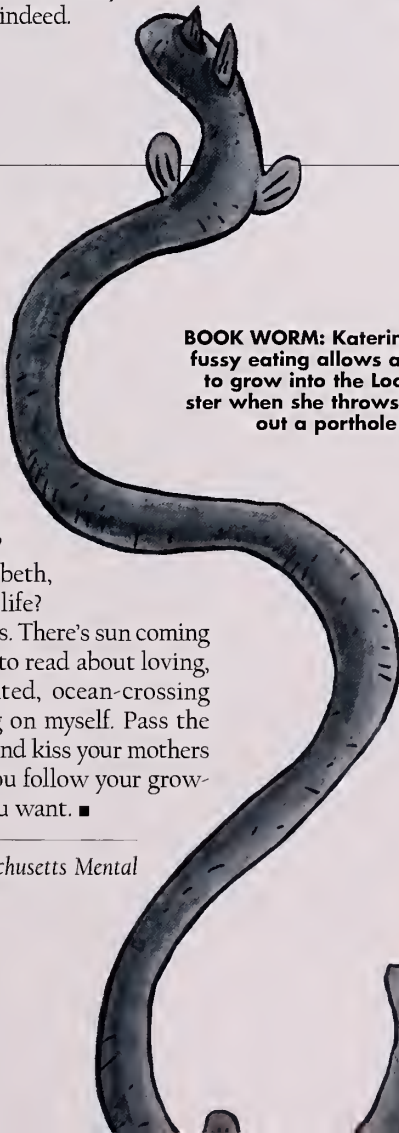


FOR THOSE OF YOU A GRADE OR TWO ALONG, HERE IS ANOTHER book. *The Luck of the Loch Ness Monster* is by A. W. Flaherty, better known to our readers as Alice Flaherty '94, a neurologist at Massachusetts General Hospital. But except for a few paragraphs on the last page about the science of picky eaters and taste buds, you would never know that. And unlike *And Tango Makes Three*, which was tenderly written with a message in mind, *The Luck* is an irreverent story written apparently for joy. The wry asides are like treasures you win under twist-off drink tops.

Flaherty conflated the names of her own twin girls to give this picky eater the moniker Katerina-Elizabeth. While traveling on a cruise ship without her parents, this plucky heroine sends her oatmeal flying out the porthole. This is a good thing for her, and also for a nearby sea worm, "no bigger around than a thread and no longer than your thumbnail." By the luck of its life, it is lounging haphazardly under the ship. Did you know that oatmeal is the sea worm's number one nutrient? Don't quote me on that, though.

Their keeper notices all this from his office and is inspired to offer them an egg in need of warmth. Months and pages later, Tango appears, “the very first penguin in the zoo to have two daddies.” They raise her with all the right penguin values, loving her dearly. Visitors to the zoo enjoy watching the whole family. The last picture in the book shows Tango snuggling with her parents at day’s end, preparing, like all families in the city around them, to fall asleep.

Now children, the American Library Association has reported that *And Tango Makes Three* (which is targeted for children between four and eight years old) was the book most often challenged in 2006. Some school libraries even tried to have it removed. People spent a great deal of time protesting the idea that their young ones might be exposed to male penguins creating a family together. They might have spent that time protesting an unnecessary war with horrific death counts, or government corruption, or iatrogenically elevated air temperatures. But they were too busy protesting penguins. These are dire days indeed.



BOOK WORM: Katerina-Elizabeth's fussy eating allows a small worm to grow into the Loch Ness Monster when she throws her oatmeal out a porthole into the sea.



One bowl leads to another, and next thing you know, we are in Loch Ness, Scotland, with a worm “as thick as an elephant’s belly and as long as the main hall of an elementary school.” Will it continue to grow? Will it ever see the founder of its feast again? Without oatmeal, will Katerina-Elizabeth, as her parents fear, become stunted for life?

You’re all too young for worldly worries. There’s sun coming through the windows, and it’s pleasant to read about loving, nontraditional families and high-spirited, ocean-crossing girls. But Amanda, I feel a cold coming on myself. Pass the tissues, please. Go home now, everyone, and kiss your mothers and fathers—who, one hopes, will let you follow your growing, curious noses and read whatever you want. ■

Elissa Ely '88 is a psychiatrist at the Massachusetts Mental Health Center.

ILLUSTRATIONS: HENRY COLE; REPRINTED BY PERMISSION OF SIMON & SCHUSTER BOOKS FOR YOUNG READERS (ABOVE); SCOTT MAGOON; REPRINTED BY PERMISSION OF HOUGHTON MIFFLIN HARCOURT PUBLISHING COMPANY (LEFT)

Disappearing Plaques

EXPERIMENTS BY A TEAM OF scientists at Brigham and Women's and McLean hospitals have succeeded in ridding the brains of mice of the toxic plaques associated with Alzheimer's disease. The cleanup tool: genetically engineered cells.

The scientists first induced the mice to develop Alzheimer's at an accelerated rate, then implanted them with the doctored cells. The animals' brain-muddling plaques melted away. If the research translates to humans, a debilitating disease that robs millions of elderly people of their memories could become history.

The team was led by Dennis Selkoe, Vincent and Stella Coates Professor of Neurologic Diseases at HMS, and its findings were reported August 28, 2007, in *PLoS Medicine*.

Alzheimer's involves a protein known as amyloid-beta, which forms gooey clots or plaques in the brain. These toxic clumps, along with accessory-tangled fibers, kill brain cells and interfere with memory and thinking.

The gene modification and implantation technique employed by the researchers has been used in other trials with animals that model human diseases, including cancers. The procedure involves removing cells from patients, making genetic changes, and then reintroducing the modified cells, which should treat a disease or disability. So far, this approach has produced encouraging results for cancers, spinal cord injuries, stroke, Parkinson's and Huntington diseases, amyotrophic lateral sclerosis, and blood, muscle, and eye diseases.

The Harvard team used fibroblasts from the animal's own body to introduce a gene for an amyloid-busting enzyme known as neprilysin. These skin cells were chosen because they do not form tumors, migrate from the implantation site, or cause any detectable



adverse side effects. In addition, "fail-safe" genes can be added to the fibroblast-neprilysin combo; the genes act to eliminate the implants if something starts to go wrong.

Transferable Skills

"The experiment showed a robust clearance of plaques in the brains of the mice," says Selkoe. "Such results support—and encourage—further investigation of gene therapy for treatment of this common and devastating disease in humans."

Translating the successful technique to applications in humans, however, brings many hurdles. One such obstacle, Selkoe says, is the larger size of a human brain compared to that of a mouse. That difference will require the implanted genes to travel throughout a much larger space in order to affect the needed increase in amyloid-busting activity.

The researchers are already devising ways to overcome difficulties. One suggestion involves implanting the genes and fibroblasts where they would have the best access to amyloid-beta—in the spinal fluid, for example—instead of trying to deliver the modified cells into a small target by injection. The amyloid-killing combo might be put into capsules that would secrete neprilysin into the blood that circulates in the brain, eliminating the need to hit an exact spot.

This or some other nonsurgical maneuver might eliminate the gooey plaques, but would that improve a person's memory? And would any change be long lasting? Further study is required, say the researchers, but there is a wealth of evidence suggesting that long-lasting improvements to memory would indeed be likely. ■

William J. Cromie is a former staff writer for the Harvard University Gazette.

WORD OF MOUTH

THERE MAY BE THE LAWNMOWER CHALLENGE, the accent-calar contest, and even the race to snare a spat in the “best” schaal, but HMS researchers can now point to an area where neighbors are unlikely to keep up with the Janeses: body shape and size.

According to research from a team of HMS scientists led by Nicholas Christakis '88, a professor in the School's Department of Health Care Policy, and their colleagues at the University of California, San Diego, the weight and shape of your neighbors have little influence on your dimensions. Instead, to unravel personal propensities to plumpness and beyond, the researchers suggest looking to your brother, sister, friend, or spouse. Or even to the friends of your friends, siblings, and partner.

In this country, approximately 66 percent of adults are now overweight, and the prevalence of obesity among this group has grown from 23 to 31 percent in nearly two decades. These changes occur throughout all socioeconomic groups and cannot, given the time period during which they occurred, be explained simply by genetics.

In the July 26, 2007, issue of the *New England Journal of Medicine*, the researchers report how social and environmental factors contribute to this phenomenon. Weight gain, they found, can spread through social network ties, and the weight status of one person can be linked with that of another up to three degrees of separation away.

“It's not that obese or non-obese people simply find other similar people to hang out with,” says Christakis. “Rather, there is a direct, causal relationship.”

When one person gains weight, that gain increases by 57 percent the chance that the person's close friend will gain weight, by 40 percent the chance that her or his sibling will put on pounds, and by 37 percent the chance that a spouse will add heft.

The scientists also found that individuals of the same sex influenced each other to a greater degree than

did those of opposite sex. Among siblings, a man's chance of becoming obese increased 44 percent if his brother became obese, while a woman's risk increased 67 percent if her sister became obese. And in same-sex friendships, individuals had a 71 percent increased risk for becoming obese if a friend of theirs became obese.

“The social network effects arise not because friends and siblings adapt each other's lifestyles,” says Christakis. “It's more subtle than that. What appears to be happening is that a person becoming obese triggers a change in norms about what counts as an appropriate body size. People come to think it's okay to be bigger, and that sensibility spreads.”

The study data were derived from records on 12,067 people who participated in the Framingham Heart Study between 1971 and 2003. The researchers plumbed previously unused records of participants' family changes—births, marriages, deaths, and divorces—as well as lists of their closest friends, many of whom had also been participants in the Framingham study. Altogether, the researchers analyzed information on 38,611 social and family ties of 5,124 study participants. ■



HE AIN'T HEAVY, HE'S MY BROTHER: Researchers have found that weight gain can spread widely through one's network of family and friends.

PHOTO: HENRI CARTIER-BRESSON/MAGNUM PHOTOS

Plant Cachet

IF A PAINTING'S WORTH WERE measured by the money it fetched, Vincent van Gogh's famous rendering of his friend and physician Paul Gachet would be among the most valuable in all of art. *Portrait of Dr. Gachet*—which depicts a languid man holding a purple foxglove, the plant from which the drug digitalis is derived—was sold in 1990 for \$82 million. The great and famously tortured artist had his own reasons for valuing the portrait. He suffered from severe epilepsy and depended on Gachet's prescription of digitalis to treat his debilitating seizures.

The ranks of epilepsy medications have expanded in the past hundred years, mostly owing to the addition of pharmaceutically derived compounds. Still, people with epilepsy, approximately 2 percent of the population, may continue to suffer from seizures or from secondary effects linked to their medicines.

"About two out of three people with epilepsy do not achieve the goal of therapy, which is freedom from seizures without side effects," says Steven Schachter, associate director of clinical research at the HMS Osher Institute and an HMS professor of neurology at Beth Israel Deaconess Medical Center.

Part of the problem is that epilepsy is a brain disorder that has several underlying mechanisms. A drug that works in one patient may not work in another. Yet all epileptic seizures are characterized by uncontrolled electrical activity. One way to control them would be to block substances in the brain, such as glutamate, that cause neurons to fire. Pharmaceutical companies, with limited success, have been pressing to find glutamate-inhibiting compounds.

Schachter has hit upon a compound that does just that. And he has done so by drawing upon the same centuries-old botanical tradition that yielded digitalis. He and colleagues have identified a compound derived from the spiky-looking Chinese club moss that, when tested in rodents, had the power to prevent seizures. The seizures are considered to be representative of the highly debilitating grand mal, or tonic-clonic, episodes that many patients with epilepsy experience, and which are often refractory to treatment. Schachter soon hopes to launch a small clinical trial of the compound, huperzine A.

Hup, Hup, Hurray

It will not be the substance's first foray into the medical arena. Chinese healers have long been using extracts of huperzine A to quell inflammation and fever and, recently, to treat schizophrenia. Clinical trials are under way in China and the United States to test huperzine A's power against Alzheimer's disease. And the compound is being marketed as an over-the-counter memory aid. But it has yet to be used as a treatment for epilepsy.

In Alzheimer's disease, huperzine A is thought to work by blocking the enzyme that degrades acetylcholine, a neurotransmitter associated with memory. But the compound also blocks glutamate, which suggested to Schachter that it might have potential as an anti-epileptic agent. Working with col-



IMAGE: THE GALLERY COLLECTION/CORBIS

leagues at the National Institute of Neurological Disorders and Stroke and the University of Utah, Schachter tested huperzine A in a well-known rodent model of seizures.

Brain Balm

The researchers administered the compound to the animals and then exposed them to three levels of seizure-inducing electrical currents. Huperzine A prevented seizures on all three levels. More remarkably, the doses required at the highest and lowest currents differed little. "All other drugs that are effective in this model require larger doses to stop seizures as the voltage goes up," Schachter says.

What makes the compound ready for clinical tests is that pure preparations are already available as supplements, and apparently safely so. Schachter plans to give huperzine A to about 20 patients who have not responded to available anti-epileptic drugs or who are experiencing side effects. "We'll see how well the patients tolerate different dosages of huperzine A, whether it's benefiting their seizures, and, perhaps, some indication of any effects on their memory," he says. He and colleagues will also be looking at how the compound might interact with other seizure medications.

Huperzine A is just the first of a promising pipeline of herbal extracts and extract-derived botanicals that Schachter hopes to test in humans. In some cases, he will try to improve upon nature. For example, although huperzine A worked well in rodents, it was most effective when given an hour before the rats received the seizure-inducing current. To produce a drug that is effective 24 hours a day could, Schachter says, require tinkering with huperzine A's pharmacokinetics. ■

Misia Landau is the senior science writer for Focus.

WOMEN'S HEALTH

▶ RATE CHANGE

Prescribing a commonly used anti-arrhythmia medication to women suffering from atrial fibrillation may have a serious downside, say researchers at Beth Israel Deaconess Medical Center. A research team led by Peter Zimetbaum, an HMS associate professor of medicine, has reported that women using amiodarone were nearly five times more likely to require a pacemaker to correct for slow heartbeat than women who did not use the drug. The report, published in the August 13/27 issue of the *Archives of Internal Medicine*, further cautions physicians to consider lowering doses prescribed for elderly women, since the potential need for a pacemaker increases with age.

▶ ACCEPT NO SUBSTITUTES

Researchers at Brigham and Women's Hospital have found that supplemental doses of vitamins C and E and beta-carotene do not help protect women against cardiovascular events. A team led by JoAnn Manson, the School's Elizabeth F. Brigham Professor of Women's Health, followed 8,171 women for an average of nine years. Participants in the randomized, controlled study were considered at high risk for heart disease. The findings, reported August 13 in the *Archives of Internal Medicine*, show that antioxidant vitamins, used alone or in combination, neither increased nor decreased the chance of cardiovascular events among high-risk women over the age of 40. The scientists urge women to hew to proven prevention methods: exercise, a healthy diet, and control of weight, cholesterol, and blood pressure.

▶ BON APPETIT

According to a report in the August 13 issue of *Cancer Cell*, cells grown for tumorigenesis studies need good grub to reach their full potential. Tan Ince, an HMS instructor in pathology at Brigham and Women's Hospital, concocted a new growth medium for normal human breast epithelial cells, then grew a batch of these cells in it. When he exposed the cultivated cells to genes known to transform normal cells into malignant ones, the cultivated cells formed tumors that closely resembled human breast adenocarcinomas. The tumors also showed metastatic capabilities, something almost unheard of in laboratory-grown cells. The new medium, Ince believes, could help standardize the way researchers cultivate so-called tumor stem cells, providing better cross-laboratory comparisons of results.

▶ VEIN GLORIOUS

Investigating whether vitamin E protects against deep vein thrombosis, researchers at Brigham and Women's Hospital analyzed data from 39,876 participants in the Women's Health Study who, for a decade, had taken a placebo or 600 international units of vitamin E every other day. When control and vitamin E groups were compared, the hazard for developing deep vein clots was reduced 21 percent among women with thrombosis risk factors, such as hormone therapy, and 27 percent among women without risk factors. Robert Glynn, an HMS associate professor of medicine at the hospital, reported the findings in *Circulation* on September 11.



PHOTOILLUSTRATION: RALPH MERCER/PHOTONICA/GETTY IMAGES



EARLY ADOPTER:
Hesy-Ra, one of the first
known physicians and
dentists, served the
Egyptian ruler Djoser
during the third dynasty.

The most recent phase in the evolution of the physician's role may prove to be the most problematic.

by WILLIAM IRA BENNETT

WHAT ARE Doctors for?



WAS THE MOST BASIC OF THE ANCIENT EGYPTIAN words for doctor, perhaps analogous to the increasingly quaint term “general practitioner.” Transliterated *swnw*, and nowadays pronounced to rhyme with “who knew,” the word is surely 4,000 years old and likely to be much older. Other ancient languages also had words that are more or less comfortably translated with “physician” or “doctor,” as distinct from shaman, faith-healer, priest, or magician.

We must pause, though, and ask ourselves why this is so. What real link is there between the nephrologist of today and the *swnw*, who apparently had no knowledge of kidney function? Not to mention the radiologist, the endocrinologist, and the hematologist, whose disciplines had no counterparts much before the twentieth century? Indeed, apart from some fundamental surgical procedures, relatively little in the theory and practice of medicine links contemporary physicians with

How remarkable it is that the social role has been so durable, when the knowledge, activity, and value of that role have mutated so thoroughly.





PHOTO: BILL GALLERY/DOCTOR STOCK/GETTY IMAGES

the people who bore that title two hundred years ago. How remarkable it is that the social role has been so durable, when the knowledge, activity, and value of that role have mutated so thoroughly.

The common thread that runs through perhaps five millennia of doctoring is *materialism*, in the narrow sense that illness has been assumed to have a physical reality, which could be addressed through material interventions, as distinct from spiritual or magical ones. The latter are not necessarily excluded, to be sure. The *swmw* had prayers and incantations to use, but his—or sometimes her—assertion of competence was in the claim to knowledge of substances or anatomical interventions that would provide relief or cure.

A striking feature of the *swmw*'s materialism was its modesty. The surviving papyri make it clear that the Egyptian physicians recognized conditions, such as cancers, that they could not treat and which they acknowledged as beyond their competence. (Priests and miracle workers have not heeded such limitations but have laid careful groundwork for assigning the blame for failure elsewhere.)

To say that doctors were by nature materialists is not to say they were scientific. Their interventions, whether animal, vegetable, or mineral, were more often than not unfounded in a real grasp of physiology until about five hundred years ago. But beginning with the giants of the sixteenth century, medicine has made breathtaking advances in science and, therefore, in the theory of treatment.

If that were the end of the story, we could say that the doctor's role has passed through two stages. The first was the long, long epoch of faith in material interventions, unconstrained by systematic knowledge of disease and governed more by practice than theory. This epoch extends from before the oldest medical papyri to around the time of Molière's last play, *The Imaginary Invalid*. The second stage was a relatively brief and explosive

era in which medicine came to be grounded in experimental knowledge. Tradition gave way to scientific theory.

This scientific transformation had a profound effect on the physician's role. How to become a doctor and how to function as a doctor in society were altered by the emergence of scientific medicine. But we would do well to remember that in the long history of doctors, this change took effect only about a century ago, a transition marked in the United States by the Flexner Report, which in 1910 transformed the country's approach to medical education. Increasingly from that time forward medical interventions would be based on a knowledge of physiology and pathology.

But sound pathophysiological research and carefully developed theory did not always serve patients as well as medical scientists would claim. Radical mastectomy, for example, was considered a scientifically valid intervention for breast cancer until evidence accrued showing other approaches could be as effective. Thus, the emergence of statistical or, as we now call it, evidence-based medicine comes as a third phase in the evolution of the physician's role, and it may become the most problematic. Unlike scientific medicine, which supported the doctor's claim to singular competence and even a kind of intellectual heroism, evidence-based medicine has the potential to diminish—or even end?—the physician's social role. To the extent that evidence governs medical interventions, the function of the doctor becomes difficult to distinguish from that of a technician, whose work is guided by protocols.

Asking what doctors are for may sound naive, like asking what lunch is for. The answer is less obvious, however, than several millennia of medical history might lead us to believe. ■

William Ira Bennett '68, a psychiatrist in Cambridge, Massachusetts, is editor-in-chief of the Harvard Medical Alumni Bulletin.

{ WHAT ARE DOCTORS FOR? }



THE MACHINE

An increasingly sticky bureaucracy often paralyzes doctors as they struggle to preserve their healing role.

by CHRISTOPHER CRENNER



in the garden

MY PATIENT, KATHRYN SCOTT, WAS IN A PERSISTENT VEGETATIVE STATE WHEN I FIRST met her. She looked peaceful but also terribly sick as she lay on a gurney in the clinic hallway and breathed through a tracheotomy tube. An infusion pump whirred beside her, and the humidifier on the oxygen line murmured. Yet Kathryn remained silent. It was her daughter, Patricia Scott, who spoke on her behalf and who, not incidentally, was managing to keep her alive at home, with occasional

I nstead of worrying about machines, we struggle with a tangled bureaucratic and institutional system that threatens to overwhelm the humane intentions of medical care.

urgent episodes. Patricia was neither intimidated nor hampered by the complex medical machinery that she wheeled alongside her mother's gurney. It was the hospital's faceless bureaucracy that caused her frustration.

My impression of the Scotts would doubtless have been different 30 years earlier, when physicians and the public first began to worry about a new and imposing threat to humane medical care. Technological advancements had once seemed poised to overwhelm the personal side of medicine. The image of the suffering patient caught in a tangle of monitor wires, intravenous tubing, and beeping sensors captured deep anxieties about the way we treated the sick. During this era of fearful machines, physicians seemed to be losing their compassion in an overeager pursuit of technical control and scientific exactitude.

Today we no longer hear as much about the threat of impersonal technology. Yet our current anxieties wear a surprisingly similar guise. Instead of worrying about machines, we struggle with a tangled bureaucratic and institutional system that threatens to overwhelm the humane intentions of medical care. In the place of a coolly lit monitor screen and a grid of data lines, we see a maze of billing forms, survey parameters, and auditing criteria. Where once we blanched beneath the steely gaze of science, we now duck from the scrutiny of bureaucrats and adjusters. The medical system seems to offer less accommodation for individual differences and less time for nurturing a humane response to sickness.

Why are our struggles with bureaucracy and routinization so similar to our earlier anxieties? Have we banished our older demon of technological dehumanization, or has it simply returned in new attire? Such concerns came to a crisis for me through the dilemma facing Kathryn Scott's family. It afforded me an insight into the problems of both machines and bureaucracies—and how we choose to use them.

Who Runs the Machines?

By the time I was assigned as Kathryn's primary care physician, she had been shuffled between the emergency department and the hospital wards countless times, at the mercy of an ever-changing series of physicians. Kathryn, it turned out, was both profoundly ill and easily stabilized. The physicians who saw her were able to correct her recurrent infections and respiratory flare-ups. But once they glimpsed the fundamental futility of her case, they were equally ready to consign her to the next stage of decline.

From her daughter's perspective, this sporadic medical attention took a great deal of time and yielded little benefit. Patricia spent her days in waiting rooms, on hold on the phone and retelling her story to a growing list of social workers, nurses, and insurance case managers, with little to show for her efforts.

It did not take me long—though longer than I care to admit—to recognize both the temptations of this brushfire approach and its essential vacuity. I also became aware of the substantial tensions that were growing between Patricia and the physicians assigned to her mother's care. In a busy hospitalist system with a large residency program, Kathryn tended to see different doctors on each admission. And occasionally the doctors became irritated when Patricia accused them of giving up on her mother when they talked about vegetative states.

These debates—and the staff members' whispers that the daughter was keeping her mother alive just to collect disability payments—alarmed me. So I requested an ethics consult the next time Kathryn entered the hospital. I had hoped to interrupt the hastening spiral of mistrust. But I learned that mistrust wasn't the only source of tension.

Bearing Witness

My sense of the ethics in Kathryn's case had been shaped by that earlier era of fearful machines. I went in hoping to discover what Kathryn would have wanted for herself with respect to her dependence on medical technology. I would place at the Scotts' disposal concepts and regulations that could help them wriggle free of the technology that threatened to ensnarl them. Informed consent and living wills would permit formal, organized expression of individual freedoms and integrity and protect Kathryn from overly aggressive medical treatment.

During our meeting I raised ethical questions to the group. Were we inappropriately extending Kathryn's suffering and robbing her of dignity through a forced dependency on technology? Patricia responded politely but emphasized that these issues were not high on her list of concerns. She knew her mother wanted care, she said, and she could provide that care by managing the catheter bags, enteral nutrition, and humidified oxygen. She just needed better cooperation from her mother's doctors.

This ethics consultation solved little; it merely illuminated more sharply the existing conflicts. The case



manager continued to push for early discharge, the staff continued to lobby for placement in long-term care, and Patricia continued to insist that she knew best what her mother would want.

But I found something in my own perspective shifting fundamentally. I realized that Patricia felt overwhelmed not by technology or daunting medical authority, which she managed quite well, but by the web of different doctors, state agency officials, social workers, claims adjudicators, and case managers. All she really needed was a doctor, one charged with making this conglomerate focus on the task of healing.

Soon after our ethics meeting, I noticed that we were approaching the first anniversary of the nearly fatal asthma attack that had put Kathryn in her vegetative state. So I called Patricia to talk about her mother. After that call, I took small steps to keep better track of Kathryn in the system, checking in with Patricia

rather than waiting for her to penetrate the phone tree and the shared paging coverage. I wanted to see how Patricia managed to take care of someone in a persistent vegetative state at home, so I arranged to substitute a home visit in place of their difficult journey to the clinic.

Patricia welcomed me into her home, where I saw she had devoted a portion of the tiny room that served as living room, dining room, and teenager's bedroom to her mother's hospital bed. Through the small galley kitchen I could also glimpse a staging area equipped with pumps, a gurney, and oxygen equipment.

I had arrived just as there was work to be done, so I lent a hand. Patricia and I set to the tasks, rolling Kathryn up on to her sides so we could sponge her off, smoothing out the linens, realigning all the connections, and patting down the covers. Our ministrations took but a few moments, but they seemed to contain all



W

e should remain alert to the ways that complex medical technologies can distract from the humane qualities of healing. But our problems increasingly lie elsewhere.

the ageless routines of caregiving for people who have lived and died in the shelter of their homes, with doctors there to attend, witness, and certify.

As we finished and stepped back from the gurney, the world resumed its customary pace. But the responsibilities associated with being Kathryn's doctor had taken on a weightier and less hurried feel. My participation in the routine tasks of caretaking seemed to have changed Patricia as well. Perhaps she had begun to realize that her mother would indeed die.

Patricia gradually decided against the imposition of frequent hospital admissions. We continued to treat her mother attentively within the possibilities of home care. I encouraged Patricia to talk to an excellent hospice nurse, and she eventually enrolled her mother in home hospice.

Several months later, at three o'clock in the morning, the hospice nurse paged me; Kathryn had died. I exchanged a few words with the nurse and talked briefly with Patricia as well. Ordinarily I would have struggled to regain sleep after being paged in the small hours of the morning. But that night I slipped easily into slumber. When I spoke to Patricia again later, she had begun making plans of her own, resuming the life that her mother's final illness had put on hold.

With a Human Face

I wonder whether we are all like Patricia these days. We should remain alert to the ways that complex medical technologies can distract from the humane qualities of healing. But our problems increasingly lie elsewhere. In some ways, we might trace our dilemma to a common set of developments. The advance of medical technology has altered both what doctors can do and what we are asked to do.

One of the lessons from the history of medicine is that new technologies lead to new and growing demands. As medicine continues to achieve more in a technical sense, doctors are asked to do more. What are doctors for? Well, a lot these days and always more. And the ethics developed in the days of the fearful machines provide only weak solutions to the challenges of these growing demands.

The infusion pump in Patricia's living room had looked little different from the toaster on the kitchen counter, and Patricia likely managed both with equal aplomb. Who had suffered at the mercy of high-tech medicine? Kathryn had been in a persistent vegetative

state; what could we have known of her suffering? Would she have wanted to have been free of machines, or would she have wanted to have given her determined and capable daughter more time to care for her and to part from her gradually? How could the tracheostomy her daughter suctioned or the gastrostomy tube her daughter connected up each night have disturbed her?

Kathryn had not been dependent on machines. She had endured a gentler dependency, spending her waning days under the care of her strong, eldest child who had loved her so powerfully.

Helping Hands

The reorganization of medical services into market structures and political economies has left physicians with less time for the humane aspects of medicine. Yet the shift of complex medical technology out of hospitals can put machines securely into the hands of patients and their families. With technology increasingly run by the people we know, the age and the ethics of fearful machines may be passing. And, if we are fortunate, perhaps our bureaucracies can be amenable to a similar taming.

One hundred years ago medicine was a disjointed cottage industry, under the proprietorship of individual physicians. But now corporations and governments are calling physicians to account. Medicine has simply become too costly to escape diligent, bureaucratic oversight, and those of us in medicine increasingly find ourselves asked to justify the valuable services we deliver.

What remains to be discovered is how to give individual patients and families a stronger voice in the bureaucracy. Would it help if the control of bureaucratic decisions and regulatory agencies moved closer to the people who are directly responsible for care? Perhaps it's time for case managers and medical directors to make house calls. ■

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*The names and minor details of the patient and her daughter have been changed to protect confidentiality. A more detailed discussion of the Scotts' predicament can be found in Crenner's essay in *Clio in the Clinic: History in Medical Practice*, edited by Jacalyn Duffin (Oxford University Press, 2005).*

T

HE VILLAGE OF GOLPHU BANJANG was little more than a place to stop and eat on the trail to the Langtang Valley in northcentral Nepal. I had just arrived as the new village health worker, and I wanted to make a good impression. I was still unpacking my gear when a Nepalese man sporting a brightly colored scarf walked into the clinic. Years of exposure to the sun at an elevation of 12,000 feet had turned his face leathery. He smiled, revealing a mouth full of rotted teeth, and then complained that his knee hurt.

Drawing on my training as an emergency medical technician, I examined his knee. I then explained in my rudimentary Nepali that I couldn't find anything wrong. He seemed delighted with my assessment, and he invited me to dinner. I soon learned that he was the village shaman, and he had come to check me out.

The shaman's—or ritual healer's—approach to illness and healing provides a stark contrast to the practice of science-based medicine and thus offers a valuable lens through which to view the medical profession. Inspired by undergraduate classes in medical anthropology, which were filled with stories about sudden deaths induced by aboriginal bone-pointing rituals and remarkable cures, I set off



PHOTOS FOR THIS ARTICLE: TIMOTHY FERRIS

What can traditional healers teach Western physicians?

by TIMOTHY FERRIS



MARCHING TO THE SOUND:
A village shaman leads a
small troupe of musicians
during a festival in Golphu
Banjang, Nepal.

RITUAL

Healing

I had arrived in Nepal with the bookish notion that people would choose Western medicine for an obviously organic illness.

to observe the work of these healers in the hills of Nepal and the rice fields of Bali. At the time, I was trying to decide whether I wanted to become a doctor, and I was curious. Could traditional healers actually cure people in ways unknown to Western medicine? How did their patients view the care they received? How could watching them help me decide whether to become a physician? And what could an aspiring doctor learn? I wanted to see for myself.

I had arrived in Nepal with the bookish notion that people would choose traditional medicine for psychosocial problems and Western medicine for an obviously organic illness. Having few patients to attend to in the Nepalese clinic, I spent my days wandering the stepped fields of dahl with my interpreter. I interviewed everyone we encountered. After inquiring about their health, I would ask which kind of doctor they would consult first for which kind of health problem. The responses I received convinced me that the role of traditional healers was both simpler and more complex than my original theory had posited.

As the Spirit Moves

One evening the shaman invited me to a ceremony at the home of a woman dying of breast cancer. A bonfire illuminated the exterior of the one-room hut. The interior was lit as well, by several lanterns and a blazing kitchen fire. People crowded the dirt-floored, smoke-filled home; the patient lay on a bed in one corner.

The shaman was sitting and talking in a low voice to the patient and her family, intermittently tapping on his drum. Without any announcement, the drumming became more regular and insistent. His hushed voice gained volume; the ceremony had begun. In what I came to recognize as a classic performance of Himalayan spirit possession,

he described an imaginary stroll through the countryside that the assembled friends and family members knew so well. He beat his drum harder and faster, circling the room and shouting. He was, I learned, calling his guardian spirit. He ran in and out of the hut and, after seeing his spirit in the distance, ran to catch it.

The spirit, speaking through the shaman, described an old conflict between the dying woman and her father. The spirit told us how he had found the patient's father walking along a trail and had convinced him to return the "spleen" he had taken from his daughter. With a burst of drumming, the shaman rubbed the patient's abdomen, shaking her slightly so as to return the spleen to the dying woman.

In that crowded room, I saw a range of reactions to the performance. The children up front looked spellbound, while some of the young adults in the

rear snickered. Most of those assembled, however, watched quietly with a pensive gaze. As the gathering dispersed, the patient's family seemed genuinely grateful for the evening's events, lingering in conversations by the bonfire coals under the brilliant starlight and repeatedly thanking everyone for coming.

Part of the difficulty many Westerners have with understanding ritual healing stems from the word we use to describe it. The English word "heal" comes from the ancient Germanic word *hailjan*. *Hailjan* means cicatrix, the closing of a wound, as well as "to make whole" and "to repair." Cultures all over the world, including our own, use the same word to describe both cicatrix and the resolution of a problem.

That people throughout history would make an analogy between the physiologic closing of a cut and the resolution of any one of hundreds of human maladies should not be surprising. But



THE HUNT FOR RED SNAPPERS: Robert Yancey '82, the author's mentor while in Golphu Banjang, examines a sputum sample for tuberculosis bacilli.

A HILL OF BEANS:
The view south from
Golphu Banjang
toward Kathmandu
shows stepped fields
of dahl, or lentils.



we shouldn't allow our language to mislead us. The use of "heal" to describe what occurred tempts us to focus on physiologic effects, yet the ceremony showed that healing also addresses several non-physiologic problems.

What happened that starry Nepalese night? The evening was partly theater—a storytelling marked by sound and lighting effects. Like any good performance it removed the audience from their routine and provided them with a shared experience. The evening was partly a religious ceremony, with an officiant articulating a specific local understanding of the mysteries of human life and suffering. The vocabulary describing the Nepalese world order had been passed down through many generations, but also had slowly been modified to account for the changing circumstances. The evening was partly a social services intervention,

giving family members a respite from their deathbed vigil, and partly therapy for a woman who was suffering through the final days of her life. These sociocultural aspects of the ceremony were a much bigger part of the night than any particular focus on the specific illness of the dying woman.

Nonetheless, the budding clinician in me could not escape the question: What, if any, help did the event provide the patient? Of course we could point to neurohumoral mechanisms by which the events that evening may have been therapeutic. Some pathways—such as the consolation of being surrounded by friends and loved ones and the comfort that a distraction from pain provides—are not a stretch.

Other, less well-characterized effects include the possibility that the inclusion of an unresolved conflict between the

patient and her father helped relieve a deep-seated source of anxiety. And maybe the subsequent neurohumoral effects did alter the course of her illness. I would not be surprised if that ceremony even increased the number of days she remained alive. Nothing miraculous or magic, just a small change in the course of a devastating disease.

Importantly, none of these effects seemed to depend on a belief in the reality of the events. The Nepalese walking home that night expressed a range of opinions about the literalness of the healing. Each had a different interpretation of the performance, and few I spoke with seemed to take the evening's events at face value.

During those months in Golphu Banjang, I realized that the people who attended my clinic and those who instead sought out the shaman could

FLOWER POWER:
Balinese healer Ketut
Liyer concludes a
healing ritual by
sprinkling holy water
with a lotus blossom.



not be easily categorized. My hypothesis was not panning out. People are not ideologues when it comes to pain and suffering; they tend to accept help wherever it might lie. “Belief” did not play a big role in the health-care-seeking behavior of the Nepalese I met.

Nor did the shaman see our roles as conflicting. Crowds sometimes formed around me as I set up the microscope on a bench outside the clinic to take advantage of the sunlight. Those gathered seemed to enjoy the performance—which

usually consisted of my staining sputum and then hunching over the microscope to look for bright red tuberculosis bacilli—but I can’t imagine it was as satisfying as an evening with the shaman. Yet no one doubted the power of the medications I distributed whenever I saw the red snappers. While I could not perform the meaningful stories or ceremonies of the shaman, he could not provide a pill that returned a tubercular child from lethargy and wasting to energy and activity. We each had something to offer.

From Nepal to Bali

Traditional healing on Bali is more structured than in Nepal. The elaborate religious festivals of this Indonesian island have generated a rich culture of traditional healing. In contrast to the shamans of Nepal, the healers of Bali, called *balian*s, take an approach that more resembles that of Western doctors. *Balian*s apprentice for several years, study from texts written in an ancient Javanese script, and issue pre-

The shaman and the balian remind us that the work of caring does not end when the prescription is written.

scriptions for amulets. Like Western physicians, they often see their patients one at a time, and they even have their own version of a Hippocratic oath. In contrast, though, the interventions they offer resemble Balinese religious rituals: offerings to ancestral spirits, chanting in secret languages, and blessings with sanctified water splattered over the head and shoulder with a lotus blossom.

I spent three months with Ketut Liyer, a balian living in a small village south of the town of Ubud. Ketut had worked with several anthropologists and, fortunately for me, spoke English fairly well. In between patients we discussed his training and work. A balian's income was undependable so, like many Balinese, Ketut painted pictures that incorporated classical Balinese images. Ketut's two occupations intersected: He used drawings as a source of magic for his patients.

The balian can be viewed as part of the evolution of healers. The increased reliance on textual learning, the organized entry into a field, and a greater focus on individuals with specific problems are similar to the constructs of Western medicine. The balian's set of interventions, however, are drawn from religion, not science.

Before I left Bali, Ketut insisted that I become one of his patients. He had noticed that I had a significant problem: I was 24 years old yet unmarried. Ketut thought he understood the dilemma. The Balinese consider clear skin to be an important physical characteristic, and he suspected my freckles were hindering my efforts to secure a wife.

To address my predicament, Ketut copied a drawing from one of his texts, and together we followed the prescribed steps to infuse the drawing with power. We knelt facing the volcano and chanted, and he blessed me with water by tapping my head and shoulder with a wet lotus blossom. When we finished, he told me he was confident I would soon find a wife if I

stayed in Bali. But he wasn't sure how powerful his magic would be back in the United States.

Healers by Any Name

Some have called traditional healers social parasites, alleging that they profit from the misery of their fellow humans. Others tout the miraculous benefits of traditional medicine. Each characterization is wrong-headed and unfortunate. I suspect some traditional healers are out to cheat people, but this doesn't explain the institution as a whole. Instead of conspiracies, in Nepal and Bali I witnessed a true caring for the suffering of people and a genuine apprehension about the essential perplexities of life and death. The Nepalese shaman wasn't pretending to be possessed by a spirit, and Ketut wasn't empowering magical paintings with an eye toward profits. I didn't witness any miracles in the mountains of Nepal or the rice fields of Bali—unless you consider our daily struggle with illness, suffering, and death to be a miracle.

What can a Western physician schooled in pathophysiology and molecular biology learn from a shaman? While the actions of physicians may contain a bit of theater (do we really need to listen to the lungs of a patient who has no respiratory complaint?), I have never considered bringing a drum into my exam room. And while much of what I say to my patients may be unintelligible to them, it would be a stretch to call my diagnostic explanations incantations.

The traditional healer is a solo practitioner with the sole responsibility of attending to the many needs of sick individuals and the communities in which they live. As Western-trained physicians living in developed societies, we are continuously adopting new technologies to meet the physiologic needs of our patients. The complexity of these ever-evolving technologies requires our full attention if we are going to bring their

power to the aid of our patients without hurting them. How, then, do we tackle all our patients' other needs?

The shaman and the balian remind us that the work of caring does not end when the prescription is written. To me, as a primary care doctor, this work means joining with nurses and other allied health workers, specialists, social workers, and members of the clergy to fulfill my patients' other needs, the needs I am not so skilled at answering. I don't need a drum, but I need to know someone who has one. The capacity to identify and mollify the various aspects of suffering is what distinguishes a physician from a technician.

Wordsworth pointed out that "science is . . . a prop to our infirmity." It seems to me he was partly right. We should not undervalue the importance of the technical components of curative therapy. Watching those tubercular Nepalese children grow stronger because of their daily pills convinced me that medicine was the right path for me.

Yet we should not be trapped into thinking that the physician's realm is limited to the technical. Healing is both the closing of a wound *and* the resolution of more global problems. As a technician I could close a wound, but as a doctor I must take greater responsibility. Western doctors are healers only to the extent that they address both aspects of healing. ■

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IN GOOD

As stresses on the health care system grow, physicians are finding they don't have to face them alone.

Company





I REMEMBER IT AS A TYPICALLY BUSY DAY, FILLED with the conventional tasks associated with operating a major teaching hospital. Then, with one conversation, the day became remarkable.

Robert Master, a physician at Boston University, approached me with a proposition for a different model of care. Would I be interested in hearing about it?

I was. So Master began describing a care model that tapped the talents of a range of health care providers for home-to-hospital delivery of primary care to patients who often lacked access to such care: the elderly, disabled, chronically ill, homebound, institutionalized, and poor.

That day in 1977 was a little more than one decade into my tenure as chief executive officer of what was then Beth Israel Hospital. Since I had started at the hospital, I had been working with administrators and top department chairs to strengthen the institution's vision of equal care for all. As part of this reshaping, we had phased out the ward system

by MITCHELL T. RABKIN

PHOTO: ANGELA WYANT/STONE/GETTY IMAGES

One result of this evolving landscape has been the greater participation of non-physician clinicians in the delivery of health care.

and had instituted the nation's first patients' bill of rights. So when Master finished outlining his plan of quality care for all, my response was immediate: "You guys are welcome here. This idea makes a lot of sense."

That decision 30 years ago helped catalyze the Urban Medical Group, a non-profit private medical practice that continues to deliver effective primary care to patients across the economic spectrum. The organization could be considered a prototype for what is now known as the medical home model. This model integrates care along the institutional continuum, places the focus on the primary care physician and the treatment of the whole patient, and uses an approach that teams physicians with non-physician clinicians. It also is a model that just might be part of an evolution that will determine how physicians reinvent their practices for the twenty-first century.

Face in a Crowd

Some numbers can help give size and shape to this evolution. At the start of the twentieth century, one in three health care workers was a physician. By the 1980s, that ratio had fallen to one in sixteen, where it has remained through at least 2004.

This trend has been associated with several interacting variables. One has been the emergence of managed care, which enabled aspects of primary care to be shifted from physicians as a means of tempering costs and improving efficiency. But other changes—particularly the drift in the burden of illness from acute to chronic conditions and the aging of the population—have contributed as much, perhaps more, to this trend. These changes have also triggered health and social problems that physicians have been largely unprepared, or perhaps somewhat disinclined, to address. Physician involvement in primary care has been further tempered as many pursued more specialized practices.

One result of this evolving landscape has been the greater participation of non-physician clinicians—a group that includes nurses, nurse practitioners, physician assistants, midwives, social workers, physical therapists, medical assistants, and psychologists, among others—in the delivery of health care. A 2003 analysis of data gathered at multiple institutions between 1987 and 1997, for example, showed that the proportion of patients who saw non-physician clinicians rose from 30.6 percent to 36.1 percent. This demand, the analysts found, spurred a doubling in the number of graduates from non-physician clinician programs during that decade. It also coincided with new state laws that expanded the scope of practice for these professionals.

Built to Scale

Among the non-physician roles that have burgeoned is nursing. The profession has embraced diversification, expanding from the long-familiar licensed, practical nurse and registered nurse to include those who pursue additional education to master any of a range of specialty disciplines. Advanced-practice nurses—such as nurse practitioners, clinical nurse specialists, and nurse midwives—are often considered primary health care practitioners and work in collaboration with physicians. In some areas of the nation, specially trained nurse practitioners have taken on new responsibilities previously restricted to physicians, such as writing prescriptions.

One offshoot of this expansion of nurses' responsibilities has been the "big box" store clinic. The "MinuteClinic" of the CVS pharmacy chain and similar kiosks within Wal-Marts, Targets, and other large, national, discount retailers are most often staffed with nurse practitioners who deal with the more routine health complaints of visiting patients. The clinics, which offer low costs and a limited menu of services—

vaccinations, screening tests, and treatments for simple conditions—are growing in popularity. A 2005 poll that was recently reported in the *New England Journal of Medicine* showed that while only 7 percent of those surveyed had already used such a clinic, 41 percent said they would likely use one in the future. These in-store centers are unlike the pharmacies domiciled in supermarkets, which function no differently from the corner drugstore. Instead, they resemble some European pharmacies in which a person may present a complaint to the pharmacist and receive the pharmacist's remedy.

Most advanced-practice nurses work with private physicians or are affiliated with hospitals. A 2007 survey by the American Academy of Nurse Practitioners of members and non-members found the largest practice setting was private physician practices (32 percent) and the largest specialties were family and adult medicine (51 and 20 percent, respectively), with pediatrics and women's health following closely.

A 2004 study by the same organization found a notable level of autonomy in the day-to-day operation of these non-physician clinicians: 35 percent have physicians on-site less than 60 percent of the time and, among that group, 20 percent have physicians on-site less than 10 percent of the time.

Model Home

For the medical home model, the skills and autonomy of the nurse practitioner—and those of another key non-physician clinician, the physician assistant—are exceptionally useful in building its team-based approach to care. At its most fundamental, the medical home model is a strongly patient-centric approach, one in which a care plan is crafted for each patient. These plans consider patients' cultural traditions, personal preferences, lifestyles, and family situations in concert with their



PHOTO: MICHAEL BIANCHI/DIGITAL VISION/GETTY IMAGES

specific diagnoses and treatments. Emphasis is placed on involving the patient and the family in clinical decisions and on giving the patient responsibility for important aspects of the plan's monitoring and execution. Vital to the success of the model are the tools and support that the primary care team provides, such as access, education, communication, and coordination. The model also capitalizes on the growing capabilities offered by health information technology, including electronic health records, to help patients manage chronic conditions, schedule same-day medical appointments, and securely use email to communicate with team members about personal medical issues.

Building and maintaining a relationship with the patient is critical to this approach and is the very area in which nurse practitioners and physician assistants often contribute the most. Nurse practitioners take medical histories, field call-in inquiries, teach patients and their families how to manage illnesses or injuries, and provide basic preventive health care both in the clinic and in the home. Nurse practitioners, as well as physician assistants, can make calls to patients in their homes to assess living

conditions and help monitor treatments, rehabilitation, and recovery.

Physician assistants, like nurse practitioners, can help with in-home care and, in the clinic, by taking medical histories and call-in inquiries, examining and treating patients, ordering and interpreting laboratory tests and x-rays, and making diagnoses. This range of responsibilities—and likely the opportunity to work closely with physicians in planning and administering care to patients—has helped make the physician assistant profession one of the fastest growing in health care.

Recent data from a survey by the American Academy of Physician Assistants show that these professionals, a cohort that numbered more than 75,000 in 2007, work in more than 60 specialty fields, with most finding positions in family medicine. Forty-four percent are employed in single- or multi-specialty physician group practices while 13 percent work in single-physician offices; 39 percent report earning a master's degree in the field.

The continued expansion of the responsibilities and use of these professionals has spurred legislatures and other governance groups to codify fur-

ther their roles. In July 2007, for instance, the state of Pennsylvania enacted a law allowing "...certified registered nurse practitioners, clinical nurse specialists, physician assistants, nurse midwives, and independent dental hygienist practitioners to take medical histories, perform physical or mental examinations, and provide acute illness or minor injury care or management of chronic illness in the same manner as physicians and dentists, so long as those activities fall within the specialty certification and scope of practice." Studies of the effectiveness and the economic implications of these expanded roles will be important.

Patient Voice

Ensuring a smooth transition to the hospital may rely on the skills of another non-physician specialist: the office nurse practitioner. This member of the health care team can serve as the link between the medical and human history the patient has accumulated over years of contact with the primary physician and the technocracy of the hospital caregivers. Through daily visits to the hospitalized patient, the office nurse practitioner can help ensure the person-



GRUDGING A NURSE

A few years ago, I happened upon the book *Fram Novice to Expert* (Prentice Hall, 2001) by a professor of nursing at the University of California, San Francisco. It opened my eyes. Its descriptions of today's nursing professionals and its evidence of their clinical and academic accomplishments left me shaking my head in wonder—and despair. How, I thought, could Harvard University, an institution that cultivates critical thinking and research in so many disciplines, neglect nursing?

Like medicine, clinical nursing has become more specialized, and nursing research has become more far-reaching. Funding for peer-reviewed research in nursing, in fact, is highly competitive and has led to advancements in many areas, including palliative care, patient safety, and integrative medicine. The contributions to the discipline even have earned it an NIH address: the National Institute of Nursing Research. Yet at Harvard, applications for nursing scholarship get returned to sender.

A nursing school at Massachusetts General Hospital opened in 1873—and closed in 1981. Similar programs existed at Beth Israel, Brigham

and Women's, Children's, and New England Deaconess hospitals, yet each has closed. Another MGH program, carried out in conjunction with Radcliffe College, allowed nurses to earn both a bachelor's degree and an RN degree. That seed blossomed into the MGH Institute of Health Professions, which offers programs in clinical investigation, medical imaging, physical therapy, and speech-language pathology, as well as a master's degree program in nursing.

Among many of the top medical schools and their related universities, nursing education and scholarship are considered vital components—Columbia, Duke, Johns Hopkins, Pennsylvania, and Yale, for example, all have nursing schools. For many of us at HMS, that list has a notable omission. If clinical and translational research in the academic medical center are important, if patient care is important, and if specialized medicine is important, then the need for greater nursing scholarship and a continuing supply of well-educated and well-trained nurses—Harvard-educated and -trained nurses—cannot be denied.

—Mitchell T. Rabkin '55

You don't need to be board certified to notice that an elderly woman with osteoporosis has too many throw rugs on the floors of her home.

alization of the patient's care while also keeping a careful eye on the patient's progress and providing critical feedback to the primary physician.

A hospital counterpart to the office nurse practitioner is the primary nurse. Primary nursing, implemented hospital-wide for the first time at Beth Israel nearly 30 years ago, developed as a response to deficiencies such as discontinuous care, complex channels of communication, and gaps in shared responsibility. In practice, primary nursing involves the development of nursing care strategies that coordinate physicians' diagnoses and treatment details for patients with direct bedside care. Such plans allow primary nurses to integrate a patient's care for a 24-hour period, to brief the physician responsible for that patient's care, and to help develop a program for the next 24 hours. The method makes for continuity of care and, with strong collegiality between nurse and physician, leads to more shared knowledge, better patient care, and greater satisfaction on the parts of patient, physician, and nurse.

Growing empowerment of nurses in both office and hospital is indeed welcome. A confounding problem, however, relates to payments for diagnostic and therapeutic actions performed by these and other non-physician clinicians. In the typical fee-for-service arrangement, insurers might reimburse only when such actions are carried out by physicians, not when performed by non-physician professionals. This can place the office-based physician in a difficult spot, torn between allocating nursing time to appropriate patient care and restricting nurses to facilitating the processing of patients by the physician to meet volume requirements that can keep a practice in the black.

Group Health

In contrast with primary care colleagues, team care of patients in major hospitals may include a greater variety

of physician and non-physician specialists, each attentive to one aspect of a patient's problem. A team caring for someone with malignant melanoma, for example, might include a dermatologist, a dermatologic surgeon, an oncologic surgeon, a plastic surgeon, an oncologist, and a pathologist as well as a specialty-trained nurse and a social worker, all working to forge the most appropriate care for the patient.

In-hospital coordination of these teams may often be the responsibility of the hospitalist. Modeled on inpatient specialists in Canada and Great Britain, these physicians focus on the general medical care of hospitalized patients and can have roles that range from clinical care and teaching to research and hospital administration.

According to the Society of Hospital Medicine, the nation's hospitalist census has been increasing since the 1990s when the concept first established itself in this country, growing from less than 1,000 to nearly 13,000 by 2004. A 2003-2004 survey by the American Hospital Association found hospitalist programs in 59 percent of teaching hospitals, 63 percent of acute care hospitals with more than 200 beds, and a growing number of rural hospitals that operate with 50 beds or fewer.

A former Beth Israel colleague of mine, Steven Weinberger '73, who, as a senior vice president at the American College of Physicians, keeps an eye on such trends, lists some reasons the hospitalist model has grown in popularity. "It's hard for ambulatory physicians to straddle both the in-patient and the ambulatory environments," he says. "To do so, they must find time for patient rounds, inpatient management, their growing patient populations, and the mounting knowledge base for ambulatory medicine."

The news on hospitalists is not altogether rosy, though. Together with residents and emergency medicine physicians, hospitalists are being affect-

ed by work-hour and shift restrictions that can increase the risk for the fragmentation of care and communication.

Work-Life Balance

As we move further into the twenty-first century, it is likely the role of non-physician clinicians will mushroom, fueled both by physician specialization and—something I believe would be desirable—a resurgence of the primary care physician. If I were starting a practice today, I'd set up something along the lines of the medical home model—join with a couple of doctors; bring on some nurse practitioners, nurses, and probably a home visitor or medical assistant; ensure everyone is well educated, trained, and effective as a team; and set about meeting the needs of each patient. The point is to deliver quality medical care. You don't need to be a board-certified specialist to notice that an elderly woman with osteoporosis has too many throw rugs on the floors of her home.

I have watched Urban Medical implement this home-to-hospital model for three decades and have seen it achieve results: fewer and shorter hospitalizations and healthier and more independent patients. Other medical home groups around the country are having similar success, in some cases even improving the bottom line for the practice, potentially good news for the often financially beleaguered primary care physician. But this all remains a work in progress. Ultimately, the capacity for coordinated teamwork among a mix of professionals and the resulting quality and cost of care will define the success of this evolution. ■

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B

ECAUSE SHE IS THE PHYSICIAN ON DUTY FOR THE the emergency departments of the northeastern United States, Rashida Warren, MD, PhD, is sitting in an on-call unit in Boston's Allston district, minutes by water taxi from her home in a nearby 20-story tower. She likes being on call, but her husband is miffed that she has agreed to work on New Year's Eve. Her sweetly pedantic reassurance that they can celebrate the true arrival of the century next year—on December 31, 2100—has not mollified him. She is about to make a professional misjudgment, and she will come to wonder whether their little fight was what led to it.

PHOTO: JASON REED/RYAN MCVAY/PHOTODISC/GETTY IMAGES

She is cocooned in a room banked with computer displays that include antiquated plasma screens and a dilapidated holograph for virtual assessment of problem patients. Although the physical attendance of a doctor in any health care setting has become largely obsolete, decades-old federal legislation has mandated that an insurer-certified physician be "remotely present" to provide real-time monitoring of clinical care.

For the 12 hours she is on call, Rashida is isolated from both her personal life and the world outside the several hundred emergency facilities she oversees. She is subject to

Terminal CARE



The strictures in this futuristic fable lead one doctor to a decision at odds with her time. *by* WILLIAM IRA BENNETT

I n the emergency departments of Rashida's catchment area, the physical presence of a physician is unusual—and rarely reimbursed.

monitoring by the Joint Commission, either electronically or through unscheduled site visits by agents who seek to verify that she is present and alert, in the event that a protocol failure should require her direct intervention.

Unidentified Object

Like nearly all the few thousand fully trained physicians in the United States, Rashida spends most of her time reviewing and refining the computer algorithms that set standards of care and allocate resources. For her, being on call is a pleasant break from data analysis. She enjoys this solitary clinical time. It is an opportunity to carry on a medical tradition, and Rashida especially relishes the rare occasions in which she is called upon to intervene in individualized decisions.

In this she is unlike many of her fellow physicians, who grudgingly take a turn away from their laboratories or economic analysis centers to deliver this vestige of direct clinical care. They resent the intrusions of “wacko JCAHO” and the tedium of waiting for the infrequent occasions when a multimodal alarm indicates that an algorithm governing patient care has moved to the limit of its competence. They are uncomfortable when required to become arbiters of remote medical dilemmas. And they pay as little attention as possible to the tedious wobbling of indicators that reflect how closely each patient's care matches his or her clinical characteristics.

More than many on-call physicians, Rashida devotes a good deal of screen-side time to the readouts of problematic patients. She does not depend solely on the alarms the triage algorithms generate. Nor does she rely on the LED arrays that identify whether patients are emergent, urgent, expectant, or stable—

terms that have long since been replaced by alphanumeric codes.

The pulsing diodes alert her to clinical situations that are approaching one of the boundaries of probability or policy, beyond which the algorithms either do not function or, under prevailing regulations, are not allowed to set the course of clinical care. She will be notified immediately, for example, if a child with one of the congressionally protected cancers enters an emergency department. Clinical management of certain diseases—ones with effective lobbies supporting them—must follow care guidelines outside the standard system of prior authorization.

Virtually everyone who enters any type of medical facility has a Halamka Identity Device implanted subcutaneously. The HID immediately triggers the facility's computers to gather the patient's medical history, legal status, and insurance coverage from national databanks. By law, none of the information can be connected to data external to health care, such as a name or passport number, but Rashida doubts these protections will resist growing political pressure to make the codes available to law enforcement and immigration authorities.

Rashida is so curious about the patients she monitors and so attentive to their data patterns that she recognizes many returning patients; she even invents names for them. (Later she will speculate that had she read fewer novels and spent less time imagining the lives of her patients, she would not have made her mistake.)

Descended as she is from generations of physicians in New England and the Punjab, Rashida Warren feels driven to honor the medical tradition of patient contact—even though the “contact” is virtual. When an alarm does pulse, Rashida takes

pleasure in making a voice connection with hospital technicians. She enjoys the intensity that comes when she must make decisions that are normally governed by the Cochrane Control System. The heart of the CCS is an enormous and complex program for integrating data from clinical trials with cost-benefit information from the Insurance Industry Registry of Risk, or IIRR, a privatized database designed to provide a measure of distributive equity in health care while maintaining a profit margin for the consortium of insurers that replaced Medicare.

Over time, the CCS has evolved into a program that allows for the cost-contained delivery of evidence-based health care. Highly specialized and exquisitely skilled medical technicians are trained in courses derived from the now obsolete medical curriculum of the previous century. Guided by the CCS, they perform all the bedside and hands-on ministrations that were once carried out by physicians. In the emergency departments of Rashida's catchment area, the physical presence of a physician is unusual—and rarely reimbursed.

Human Error

As Rashida scans the monitors around her, one profile gives her pause. This male has been highlighted for a while because he is frequently admitted to the same emergency department. Tonight he carries two high-risk, high-cost icons, one to indicate that his probability of leaving the emergency department alive has dropped to around 15 percent, the other that he has reached the upper ratio of expenditure to prognosis, the E/P ratio, a formula developed by the IIRR. Rashida notices that on the Glasgow/Appelbaum/Bursztajn assessment of Cognition, Capacity, and Judgment this patient is deemed to be fully aware and able to assess his own



medical choices—within the authorization boundaries.

Rashida knows the person behind the avatar, Koji Hemings. When in medical school together they had made a brief, tender, and sad attempt at a love affair. The first clue to his identity is his date of birth, two years to the day before hers. The second is his particular combination of diagnoses—bipolar disorder, HIV, and sickle-cell anemia. The third is the hospital providing his care; classmates have told her that Koji receives treatment there. It also happens to be the hospital where she did her residency in statistical modeling of fluctuations in the regional need for emergency services.

After a century and a half of research, Koji's diseases remain incurable, and the damage they inflict is at varying rates progressive. Now, following some years

of stability, he is rapidly losing ground on two fronts. Chemotherapy has reduced, but not eliminated, the repeated infections and sickling crises that have corroded his body, and his once agile mind has been sabotaged by a mood disorder he has been too proud to acknowledge. Recently, however, a prescribing psychologist has managed to engage Koji in therapy and place him on a mood-stabilization protocol. Rashida knows all this only through common friends. She also knows that Koji has married, and she is curious about the man who would commit himself to someone so ill.

She pauses to consider Koji's E/P ratio. She knows that a technician, a social worker, and an ethicist will soon be presenting the situation to Koji and his husband. Using the Aetna QOL model as a basis, they will outline the limitations of

further treatment and the probable trajectory for his declining quality of life. The technician will present the numbers. The ethicist will use coded—but chillingly familiar—language to impart the idea that the expense of any care to extend Koji's life would divert resources from others with better prognoses. No one will miss the point. The social worker will linger afterward to help the couple deal with their inevitably delayed reaction to this austere conversation.

Nothing on the screen calls for Rashida's intervention. Everything that is happening or that is scheduled to happen is falling well within the limits of the protocol. The data and the models are not strained. The icons denote an acute case but not a problematic one.

Rashida's obligation here is to do nothing. She knows if she intervenes and the Board of Registration in Medicine learns of her action, she will risk discipline and possibly her license. Indeed, the only intervention available to her requires deception. She knows the E/P model well, and she knows the code intimately, as part of her postdoctoral fellowship was devoted to debugging it. She also knows how to hack into the hospital's computer system. It would not be difficult for her to shift Koji's E/P ratio and abort the conversation scheduled for the next hour or so.

She realizes what she is considering has no support from her training or the current canon of medical ethics. She will be personalizing the care of someone who has received full algorithmic consideration. As she opens a new screen and begins to enter a series of security codes, tears fill her eyes. ■

William Ira Bennett '68, a psychiatrist with a private practice in Cambridge, Massachusetts, is editor-in-chief of the Harvard Medical Alumni Bulletin.



HMS alumni are making their mark as leaders of the



the DEAN counter

It may not be easy being dean, but the nine HMS alumni who currently serve as such at medical schools across the United States do see the position as a privilege, a joy, and a challenge.

At a time when medical education is being revamped to meet the needs of twenty-first century health care—and medical schools are under pressure to educate new physicians to fill rapidly thinning ranks—the School's alumni are accepting a degree of leadership well out of proportion to their number. HMS graduates about 1 percent of the country's 16,000 medical students each year, yet approximately 7 percent of the nation's medical schools are led by Harvard-trained physicians. And, according to a recent roster from the Association of American Medical Colleges, HMS women are more than holding their own among that number: four of sixteen female deans are alumnae of the School.

Several possible explanations likely exist for why so many HMS alumni find their way into these leadership positions. But one, posited by Carmen Puliafito '77, a member of this group, may simply be that this sort of responsibility is part of the culture—and the philosophy—of Harvard Medical School.

"HMS is a place that values leadership in academic medicine," he says, "and, directly or indirectly, the School encourages that in its graduates."

PHOTOS: DIGITAL VISION PHOTOGRAPHY/VEER (LEFT), STEPHEN WESTER (ABOVE RIGHT)

the nation's medical schools. by ANN MARIE MENTING

Carmen Puliafito

Dean: Keck School of Medicine of the University of Southern California

Appointment: November 2007

Medical Specialty: Ophthalmology



THE COAST-TO-COAST ADDRESS swap will undoubtedly bring challenges, expected and not so expected. But the fundamental challenge facing Carmen Puliafito '77 is one he is familiar—and comfortable—with: energizing and expanding a medical enterprise. Puliafito has moved from Miami's Bascom Palmer Eye Institute to take the top spot at the Keck School of Medicine of the University of Southern California. To Puliafito, enhancing the stature of the Keck School is key to USC's future and, perhaps, even to the future of medicine.

"All the ingredients are well positioned at Keck: solid philanthropic support, a great research infrastructure, and lots of research space," Puliafito says. "My contribution, as I see it, is to bring a sense of leadership and direction. That involves promoting and identifying new leaders in medicine both at the school and outside the school."

Puliafito also believes that contribution includes making sure that the education of the school's students combines the rigor and substance of traditional

programs with the collegiality and "user friendliness" crucial to building tomorrow's physicians. "The forces driving medical education have changed," he says. "Students have a higher level of expectation about what the educational experience should be like."

"Today there is an emphasis on teamwork and on creating a stimulating educational environment that lets students know they are valued," he adds, "one in which the students realize the school actually cares about what they think, worries about them, and is available to help them." To this, Puliafito adds a layer of personal duty: "The dean's job—my responsibility—also includes ensuring the students' safety, health, and happiness."

A clinician, scientist, administrator, and inventor—he led the HMS team that developed optical coherence tomography, a technology used by eye doctors worldwide to diagnose retinal problems—Puliafito may also be the first graduate of Pennsylvania's Wharton School to head up a medical school. This combination may, Puliafito believes, determine the shape of deans to come.

"The nature of the medical enterprise is such that you want physicians running it," he says. "To do that, physicians need to understand the world of business."

"We look for students," says Valerie Montgomery Rice, "who want their interests in research and clinical practice to reach from bench to bedside to community."



Nancy Andrews

Dean: Duke University School of Medicine

Appointment: October 2007

Medical Specialty: Pediatric Hematology/Oncology

IT'S ONE THING TO EXPECT CHALLENGES AS ONE MOVES FROM one position as dean for basic sciences and graduate studies at Harvard Medical School to one as dean of the Duke University School of Medicine. But to expect joy is quite another thing.

"One of the joys for me throughout my tenure at HMS was watching students, residents, junior faculty, and even senior faculty, learn and grow and succeed," says Nancy Andrews '87. "I get great pleasure from knowing this will remain true for me as I go forward."

That step forward has made a little history. Andrews has become the first woman to serve as dean of one of the nation's top ten medical schools for research.

Andrews filled many roles at HMS—as a physician at Children's Hospital and Dana-Farber Cancer Institute, as a pediatric oncologist studying red blood cell disorders, as the lead administrator for research in the School's preclinical sciences departments, and as director of the School's MD-PhD Program—and so is well aware of the demands that confront medical students.

"One of the biggest challenges to producing tomorrow's doctors," says Andrews, "is the amount of information that needs to be conveyed in a short time. Doctors today have more pulls on their time because of the demands of a changing health care system. For faculty, such demands take away from their efforts to teach. And how do you turn out people-oriented, compassionate doctors when the teachers have little time to teach or practice that themselves?"



PHOTO: LARRY MAGGIOTT

Valerie Montgomery Rice

Dean: Meharry Medical College School of Medicine

Appointment: March 2006

Medical Specialty: Obstetrics/Gynecology

MY TIME AT HARVARD WAS great," says Valerie Montgomery Rice '87. "The wonderful mentoring during my high-school and undergraduate years solidified when I came to Harvard. My mentors there showed me how to accomplish what I wanted to accomplish and gave me the security I needed to follow through on my decisions. That experience taught me that anyone can be

successful with the right nurturing, the right skills, and the right environment. This lesson is something I definitely put into practice at Meharry."

Since being promoted to dean of the Meharry Medical College School of Medicine, Montgomery Rice has set about strengthening the Nashville institution's commitment to researching health care disparities and to serving the medically underserved. As a physician-scientist who specializes in reproductive endocrinology,

she has enhanced the college's clinical research initiatives and re-established its residency program in obstetrics and gynecology. Under her leadership, the college also has been critically examining what type of student flourishes there.

"One of the things we've made a commitment to at Meharry is to accept students who are diverse—not just racially or ethnically, but also academically diverse," Montgomery Rice says. "We are very successful with students some would consider risky. We consider them diamonds in the rough."

The jewels that Meharry mines tend to give back: Nearly 70 percent of its graduates do some service in underserved communities. "We look for students," Montgomery Rice says, "who want their interests in research and clinical practice to reach from bench to bedside to community."

Michael Rosenblatt

Dean: Tufts University School of Medicine

Appointment: November 2003

Medical Specialty: Endocrinology

IF A DEAN WANTS TO FUEL CONVERSATION with students, one way might be to take a well-tested and heartwarming concept and give it a contemporary twist. With a tip of the hat to Franklin Roosevelt, Michael Rosenblatt '73 has done just that: He holds fireside chats with each class at the Tufts University School of Medicine. The informal conversations allow him to get to know the students and to learn how things are going. The twist? Video fire.

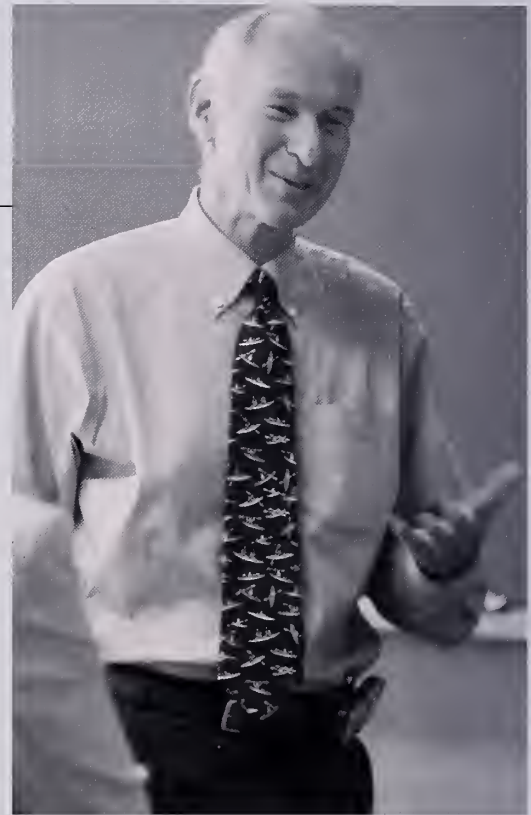
"We don't have an old building with a fireplace," says Rosenblatt, "so we wheel out a video console and play a 45-minute loop of a fireplace complete with a flickering fire. The tape actually begins with crackling sounds and, if you are alert enough to catch it, one log even shifts."

That eye for detail has been useful to Rosenblatt in his career as head of Beth Israel Deaconess Medical Center; leader of the research team that developed the osteoporosis drug Fosamax; a founder of HMS-Beth Israel's Carl J. Shapiro Institute for Education and Research; a leader of

the Harvard-MIT Health Sciences and Technology program; and a sabbatical researcher at the Whitehead Institute for Biomedical Research.

"I went from working with a giant Lego set to just thinking about a little mouse and the research I was doing on it," Rosenblatt says of his career arc. "So when I got a call from Tufts asking whether I'd be interested in being dean and having responsibility for research, education, and a clinical enterprise, I was ready: ready to give back and ready to get involved in medical education."

Rosenblatt's interactions with students include an open-door policy: "I tell everybody that if my door is open, you can stick your head in and tell me what's on your mind." This wide access jibes with what he believes is fundamental to the profession. "'Doctor'



means 'teacher,'" he says, "so teaching is just hard-wired into what we doctors do. We train the members of the next generation and then we pass them the baton."



Deborah German

Dean: University of Central Florida College of Medicine

Appointment: January 2007

Medical Specialties: Internal Medicine and Rheumatology

SEVERAL HAD ENTERTAINED THE idea, some had even applied for the opportunity. Yet many, despite knowing they were finalists, had turned away, saying it couldn't be done. But when Deborah German '76 was asked whether she felt up to the task, all she could say was, "I'm more afraid of not trying to do this than I am of failing." And with that, she got her chance to build a medical school from scratch.

Less than a year into her appointment as dean of the College of Medicine at the University of Central Florida, German is busy hiring faculty and staff, developing

the curriculum, and preparing for the school's accreditation while also keeping an eye on contractors who are layering floors on the school's research building and architects who are designing the academics building.

The school is scheduled to open in 2009 on a 50-acre campus within the Lake Nona section of Orlando, which will also host a science and technology center. The Lake Nona development will be home to a new Veterans Administration hospital, too, and to the East Coast branch of the Burnham Institute for Medical Research, a scientific enterprise based in La Jolla, California.

Paul G. Ramsey

Dean: University of Washington School of Medicine

Appointment: June 1997

Medical Specialties: Internal Medicine and Infectious Diseases

B EING RESPONSIBLE FOR A FIVE-CAMPUS MEDICAL SCHOOL that serves approximately 5,000 students and trainees and supports the work of more than 6,000 clinical and research faculty in an array of hospitals, clinics, and biomedical research programs is no small feat. But it's something else entirely when each of those campuses is located in a different state—and one of those states is geographically separated from the other four by Canada. Yet for more than a decade, Paul G. Ramsey '75 has led the University of Washington School of Medicine, traveling regularly from the Seattle campus to the school's sites in Alaska, Idaho, Montana, and Wyoming.

Many might consider the responsibility daunting. Ramsey, however, considers it a pleasure and a privilege.

"I have wonderful colleagues who are world leaders in education, research, and clinical service," he says. "In 2006 alone the faculty garnered nearly \$800 million in research funding."

Ramsey and his colleagues also have been making curricular strides; their comprehensive analysis of the school's curriculum precipitated a renewed focus on core clinical skills and professionalism.

"We established a college system within the school of medicine," says Ramsey, "with each college having a dedicated faculty whose members are responsible for teaching professionalism and clinical skills and for serving as mentors to students across all four years of medical school." The restructuring has been in effect for five years—one full cycle of medical students—and, thus far, is getting solid reviews.



PHOTOS: JODI HUTTON/TUPIS UNIVERSITY PHOTOGRAPHY (OPPOSITE PAGE, TOP); COURTESY OF THE UNIVERSITY OF CENTRAL FLORIDA (OPPOSITE PAGE, BOTTOM); AND CLARE MCCLENNAN/UNIVERSITY OF WASHINGTON (LEFT)

Despite the sparkling newness of the institution, German recognizes the role of tradition—and hopes to establish one herself. "We would call it 'The Good Doctor: A University of Central Florida tradition,'" she says. "I would ask students to imagine that the person they love most is ill and have them describe the qualities they would hope to find in the physician who cared for that person. Then I would make a contract with them and work to help them become that doctor."

German finds it difficult to condense her character in a few words. Yet when she describes how she does what she does, her answer is clear. "I truly enjoy working with wonderful people toward a meaningful goal. For me, part of having fun is doing something that's hard and doing it well. No one wants to do this kind of work unless they have an adventurous, pioneering spirit—and are a little bit of a risk-taker. That combination makes for great fun."

When Deborah German was asked whether she felt up to building a medical school from scratch, all she could say was, "I'm more afraid of not trying to do this than I am of failing."

Eve Higginbotham

Dean: Morehouse School of Medicine

Appointment: April 2004

Medical Specialty: Ophthalmology



THE PLACE LEAVES HER BREATHLESS. And that's saying a lot, since Eve Higginbotham '79 has been part of some rather remarkable organizations.

But the students and the faculty of Atlanta's Morehouse School of Medicine, Higginbotham says, take her breath away.

"This is a people-oriented, humanity-centered organization," she says. "Our faculty are committed to the institution, many have been here more than 20 years, and our students are research-driven, community-focused—and accomplished. Take, for example, the fact that 100 percent of the students in our current third-year class passed step one of the boards. Now, I remember step one of the boards when I was going through medical school, and I can't say that every person in our class passed. Yet at Morehouse, this is the second class we've had do that."

Higginbotham arrived at Morehouse with an aim of preserving the humanism in medicine and has found the school to be fertile ground. The institution's community focus, Higginbotham believes, fosters a spirit of humanism, a tradition

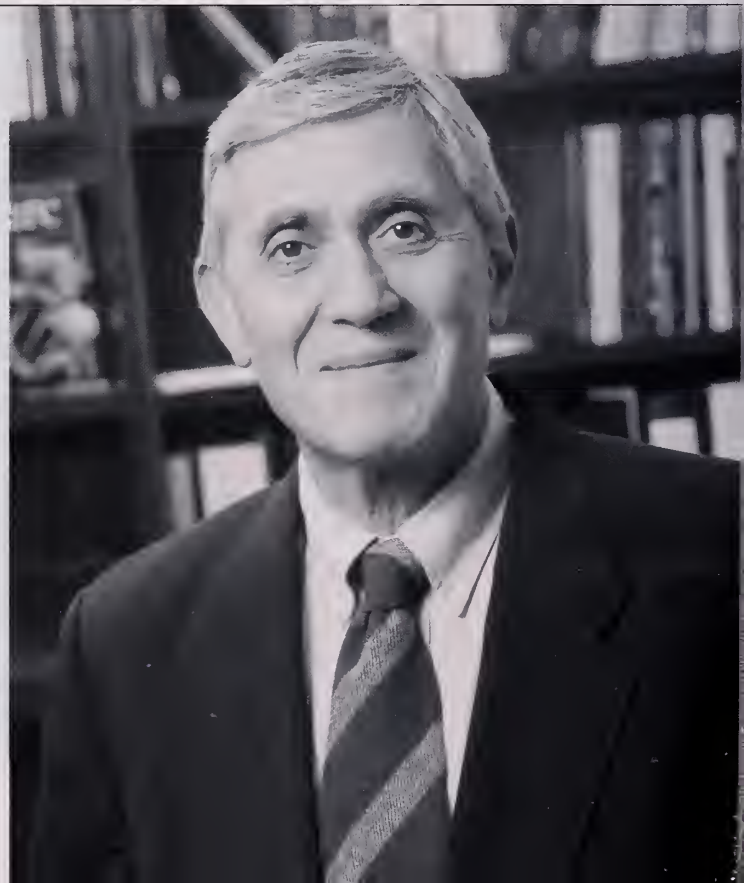
of producing physicians who "keep the patient's interest in mind every step of the way." Also on her to-do list: drive the school's research agenda. The organization's intellectual and cultural assets have eased that task, too.

Morehouse recently garnered a National Center for Research Resources Clinical and Translational Science Award. Presented to a consortium of organizations that includes Morehouse, Emory University, and the Georgia Institute of Technology, the grant gives Morehouse responsibility for the health care disparities, training, and outreach aspects of the award. "We'll be the translators of the basic science discoveries developed with the grant," Higginbotham says.

Her appointment marks another milestone for the institution: She is the first woman to be named dean on a permanent basis. This fact carries an interesting note, for the medical school is an independent entity of the all-male Morehouse College, a historically black institution founded shortly after the Civil War.

"I imagine if you talked to every dean, each would have the same level of enthusiasm about his or her school," says Higginbotham. "But I'm particularly enthusiastic about this school. There are just so many wonderful treasures here."

"When 'Uncle Albert' gave his imprimatur to the school, we also embraced his humanitarism, compassion, and commitment to scientific excellence."



David Stern

Dean: University of Cincinnati College of Medicine

Appointment: August 2005

Medical Specialty: Internal Medicine

AS A YOUNGSTER, DAVID STERN '78 LEARNED TO COAX beautiful music from a rented metal clarinet that had survived a run-in with a school bus. Imagine, then, what the grown-up Stern, the physician, vascular pathobiologist, and musician, might produce from the well-tuned—and decidedly undamaged—University of Cincinnati College of Medicine.

Stern is organizing his school around centers of excellence in such areas as neuroscience, cardiovascular disease, cancer, and metabolic disorders. The selection is not random: These are the major causes of morbidity and mortality in the Cincinnati region as well as in the United States.

"I'm working to make this medical center very much a part of the fabric of Cincinnati," Stern says, "so the community will take ownership of it. We're focusing our resources in key areas that are important to the community we serve."

The centers allow a blending of clinical and research expertise that Stern believes seamlessly embraces the college's educational mission. "I like to think that the way we do research and the way we see patients follows an integrated approach," he says. "We look at a clinical problem the way the patients see it. And the way the students want to see it, as a way to care for the whole patient."

The Cincinnati appointment also seems to be allowing Stern to take care of the whole Stern. After a 30-year hiatus, he is again playing the clarinet: The musician who first played tunes in a marching band in Great Neck, New York, now makes music with friends in his university's music conservatory.

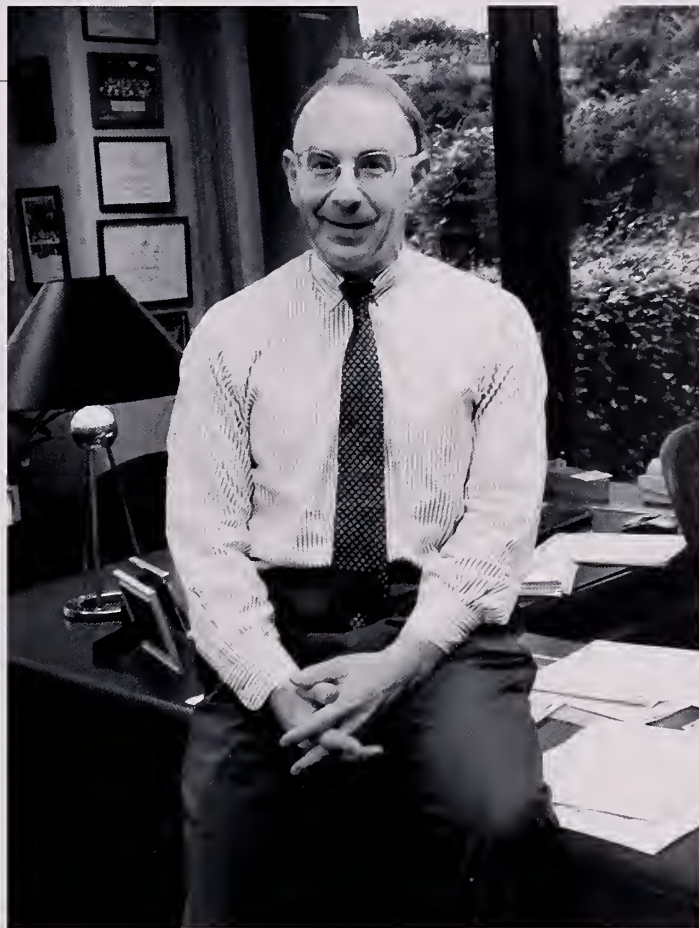


PHOTO: COURTESY OF THE UNIVERSITY OF CINCINNATI

Allen Spiegel

Dean: Albert Einstein College of Medicine of Yeshiva University

Appointment: June 2006

Medical Specialty: Endocrinology

ALLEN SPIEGEL '71 SPENT HIS FIRST four months as dean of the Albert Einstein College of Medicine of Yeshiva University on the 25th floor of a student high rise. It was a living—and learning—situation that proved convenient as he made the transition from Bethesda, Maryland, to The Bronx. It also was an experience that allowed him to sketch a picture of Einstein students, one that time has shown to be accurate.

"This is an academic medical center with a strong social mission," he says,

"and the students gravitate here because of that identity." The school also offers an MD-PhD program, a blend, Spiegel says, of social mission and research that reflects inherited values. "When Uncle Albert, as he's affectionately called around here, gave his imprimatur to the school, we also embraced his humanitarianism and compassion, coupled with a commitment to sustaining the area's scientific excellence."

Spiegel's ability to manage both aspects of this mission grew from his own career, first as a clinical endocrinol-

ogist and researcher, then as director of the intramural program at the National Institute of Diabetes and Digestive and Kidney Diseases, and finally as that institute's director. This arc also inscribed the evolution of a personal view.

"When I was at HMS, I interviewed for an internship at Massachusetts General Hospital. During that interview, Dan Federman ['53] asked me whether I saw myself becoming a chair of medicine one day. I was brash and insensitive and replied, 'No! Why? That would be a waste of time!' I wanted to be a physician-scientist and had no intention of becoming involved in what I assumed were dry administrative matters. But since then, I have discovered how satisfying it can be to help others flourish as researchers. And I relish the opportunity to engage with medical students." ■

Ann Marie Menting is associate editor of the Harvard Medical Alumni Bulletin.



A CANCER DIAGNOSIS STIRS A PHYSICIAN TO CONSIDER HER

fighting

So this is how I die.

These words ran through my mind as I lay in the emergency department of the Cleveland Clinic on Valentine's Day, 1999. Only a few hours earlier, my husband, Fred, and I had been sitting in bed watching the Oscar De La Hoya fight. At some point I passed out, only to awaken with paramedics standing by our bed. I soon found myself strapped to a narrow gurney in an ambulance with flashing lights, hurtling along dark, deserted streets into midtown Cleveland.

PHOTO: DAVID COOPER/PHOTONICA/GETTY IMAGES

LIVING TIME RATHER THAN HER DYING TIME. by Bernadine Healy

chance

MY BRIEF REVERIE WAS INTERRUPTED WHEN HOMEWORK—A LITERARY PASSAGE I WAS

Patrick Sweeney, the attending neurologist that evening, met us in the emergency department, ready to perform the usual neurological tests for what my husband believed had been a seizure. At the time, Fred, a renowned cardiac surgeon, was director of the Cleveland Clinic, but he was pure husband that night. He listened attentively to Sweeney and acted as the best of spouses would, making sure I was comfortable, squeezing my hand, and calming my nerves with lighthearted jokes: “Hey, was this just your way of getting out of watching the prizefight?”

But we soon learned that my blackout had not been an inconsequential seizure after all. The spell had resulted from a good-sized tumor growing in my brain. I asked Sweeney whether it was malignant. Leaning over the rail and peering into my eyes, he said simply, “Yes.”

All I could think was: So this is how I die. Not in a car accident or a plane crash, not felled by a heart attack in honor of my own medical specialty, but by my own cells, mutating and roaming inside my body—in my head, no less. I felt powerless and immobile. My life’s work with the critically ill brought me no special strength or solace; if anything, I knew too much. This cancer was insidious, already having grown to a near-fatal state in my brain without ever tipping me off. Not one hint.

Looking up into the sad, drawn face of my husband, I knew that all of our medical expertise combined would not help us cope with this numbing news. No matter who we are, from whatever background, we all feel the same chill upon hearing a cancer diagnosis.

Away with Words

My surgery took place several days later. The surgeon, Gene Barnett, speculated that my tumor was a grade III glioma. I pressed for a prognosis. His answer was

sobering. With a full course of treatment—including surgery, radiation, and possibly chemotherapy—I might have one or two good years, maybe more; with surgery alone, it would be less. In either case, the outcome would be improved if he could remove the entire tumor. But the tumor was in an unlucky location: on the left side of my brain.

Like most people, I’m left-brained. If I had to have a brain tumor, having it on my dominant side was not the best news. The situation was even dicier because the mass likely sat near my brain’s speech center. If by some stroke of good fortune my speech center happened to be located on the right side of my brain, or present in both brain hemispheres, the risk that removing the tumor could damage my ability to speak would be eliminated. So, prior to surgery, I would undertake a Wada test to determine something most of us never need to know—exactly where all my chatter was coming from.

The Wada test sorts out the activities of the right and left parts of the brain by selectively anesthetizing one or the other hemisphere. As my left brain fell asleep, I instantly went mute. I was alert, focused, and trying hard to answer the neuroradiologist’s repeated questions. The words lined up in my head, wanting to be released, but instead just piled on top of one another.

I flunked the test. My speech center was located near the tumor, making the operation that much more difficult. One thing was now clear in my mind: However much time I had ahead of me, I did not want to wake up from surgery unable to talk. My husband and I urged Barnett to err on the conservative side of how much he could remove safely. As Fred put it simply: “I want my wife back.”

Barnett gave me the option of being awake during the portion of the neurosurgery in which the tumor was actually being removed. By speaking aloud on the

operating table, I would assure Barnett that his cutting wasn’t affecting my speech zone. I had done a great deal of public speaking in my time, but this recitation would become the most important speech of my life.

Minding My Language

The operation began like all others, as the neuroanesthesiologist let me peacefully doze off while trying to count to ten. This gentle sleep was abruptly broken when he brought me back to full consciousness in the midst of the operation. I felt no pain, mental or physical. Barnett had already numbed my scalp with a local anesthetic and opened a four- to five-inch window into the left side of my skull to expose the tumor.

My brief reverie was interrupted when a neurologist appeared over me holding my homework—a literary passage I was to read again and again during the operation. Like a third grader reading aloud in front of the class, I tried to pronounce each word perfectly, though the words seemed odd. I asked the neurologist if this passage made sense to him, and he laughed. To me, it seemed out of context and very flowery, not at all a passage I would have chosen for this critical moment in my life. But, hey, who was I to be choosy? Just as I was feeling comfortable about my ability to handle this strange experience, Barnett told me he was finishing up and all was well. He had removed about half the tumor.

My tumor turned out to be an oligodendroglioma, known for its unusual genetics. Yet studies at the University of Toronto had suggested that at least one subset of this tumor, when it carried a particular genetic profile, was surprisingly responsive to therapy—including chemo.

The standard treatment for most brain tumors is surgery followed by radiation. In the past, chemotherapy had been

A NEUROLOGIST APPEARED OVER ME HOLDING MY TO READ AGAIN AND AGAIN DURING THE OPERATION.



PHOTO: MEDIMAGESES/PHOTODISC/GETTY IMAGES

considered a bust because of the blood-brain barrier. This barrier, so important to isolating the brain from blood-borne disease, also shields brain malignancies from many chemotherapy drugs that might otherwise destroy them. Historically, chemotherapy for brain tumors had been considered salvage therapy, when all other options had been exhausted. And sometimes, mysteriously, a tumor did respond.

I told my medical team that radiotherapy wasn't for me. Although this treat-

ment typically shrinks brain tumors and can lengthen life, long-term exposure to the radiation puts patients at risk for memory and cognitive difficulties. That was one risk I chose not to take. I wanted to be me for as long as possible—with my children, with my husband, at home, at work. Plus, as a lifelong geek, I could not bear to threaten this brain of mine that had served me so well over the years.

We now had a plan: chemo following the surgery, then patience. And with that plan came a certain relief. I quickly

became a professional patient, guided by a daily schedule of clinic and hospital stops that left little time for much else. During one appointment, I had my head staples removed, on another I had a post-op MRI. Then I twice visited the operating room to have special catheters installed through tiny incisions beneath my collarbones, one set to harvest bone marrow cells and then a port to administer chemo. Blood tests became regular events. My arms began to show the telltale needle marks and bruises of my patienthood.

W

HATEVER OUR STRUGGLES AND TRIUMPHS, SOON THEY BLEED INTO A WASH, JUST

PHOTO: GYRO PHOTOGRAPHY/GETTY IMAGES



A few days later, I received my three-drug cocktail: procarbazine, lomustine, and vincristine. During the first week of treatment, my appetite plummeted, along with my weight. Food tastes changed—everything I put into my mouth tasted metallic—and my skin dried up like a broken twig. About half my hair fell out. Occasionally I donned

my trusty wig, but I never did figure out how to keep it straight. My first blast of chemo toxicity hit hard during the second week of therapy when I started the procarbazine for a two-week daily stint and had my first dose of vincristine. These drugs didn't seem too bad—until later that night. Just past midnight, nausea, dry heaves, and

vomiting hit suddenly, and they recurred like clockwork every 45 minutes, untouched by the standard anti-nausea medicine I'd been taking. Exhausted, I would fall asleep as each wave passed, but unfairly so, as my husband, who had a job to go to in the morning, was awake all night. This happened for several nights in a row as my body reacted, relentlessly and rhythmically trying to reject the toxic stuff seeping into it.

I vowed to take the heavier anti-nausea medicine. After that, queasy was the worst of it—and I have never been so grateful for queasy. How awful chemo must have been before the discovery of these more powerful medicines. The newer but more expensive drugs gave me a semblance of normalcy during a long stretch of toxic treatment.

Genes that Fit

At about this time we received good news: A gene analysis showed my tumor matched the profile of those that had responded to chemotherapy in the Toronto study. It seemed as if a world of time had filled the eight weeks since my diagnosis. I was back at work as dean of the College of Medicine and Public Health at Ohio State University, and life at home had settled into its old routines. I had successfully weathered one bout of bone marrow toxicity.

But after my first cycle of chemotherapy it was time for an MRI scan, which brought me back to cancer's reality. My doctors had warned me not to expect too much improvement after just one month of treatment. This scan, though, was still a kind of reckoning. There I lay, head rigid, arms fixed, eyes staring upward with nothing to see, encased in a sleek white sarcophagus.

I promptly came to life as the noise ceased and I was motored out of the narrow tunnel. My neurologist, Patrick

HOWEVER WE MAY SUFFER THEM, ALL TOO LIKE WATERY INK ON PAPER.”

Sweeney, was standing next to the computer console where the neuroradiologist was studying the scan. Sweeney flashed a big smile and held both thumbs up. I had won a reprieve. The drugs were working sooner than expected.

But early in my second cycle I hit a big speed bump, when I had another, more serious run of bone marrow toxicity. Although I felt well, I popped an antibiotic to ward off infection, monitored my temperature, and gave in a bit more to the nagging fatigue of severe anemia. I was buoyed by an even better MRI after cycle two, which showed that the tumor was on the run.

My marrow, though, refused to bounce back. Any more exposure to these drugs, and I ran the risk of turning my marrow-filled bones into barren cavities. Here I was with a chemosensitive tumor that was melting away, and I could no longer take the miracle medicine that was doing the trick.

But by sheer luck, a new drug had just gained Food and Drug Administration approval for use in brain tumors that had failed to respond to other treatments. Temodar, or temozolomide, had a special knack for crossing the blood-brain barrier. And, crucially for me, it delivered less bone marrow toxicity than my original drug cocktail. I became one of its earliest users, and for the next year my scans steadily improved. Now this drug is recognized as a breakthrough in brain tumor treatment and is the first drug to be used routinely early in the treatment of glioblastoma multiforme, the most severe and common of the malignant brain tumors. For other, less common gliomas, like my own, it's now standard care.

Great Transformations

News of cancer close to home is always wrapped in sadness and anxiety for both the patient and the family. But like birth

and death, cancer is one of the few life experiences you fundamentally face on your own, for however many loved ones surround you, the cancer journey is essentially a solitary one.

Treasuring the moment is what lifts the spirit. To those threatened by a grave illness, every day of just being takes on a new light. You wonder how you could ever complain again—about a rainy day, a broken piece of china, or someone's unkind words. Although that feeling of equanimity salves the cancer shock, it can also linger in the consciousness and become a subtle yet permanent state of being. I stop myself when I get too caught up in some silly little thing; I remind myself how lucky I am to be here.

I'm often asked how my experience with cancer transformed me, and I always say, "I'm still me." Some believe that with age you become more of who you are, and an illness can do this to you, too. The mask comes off, and your true self is laid bare. Yet we're always reaching beyond our limits. An illness such as cancer can set us up to think about our own capacity to enhance our strengths and make our days meaningful to ourselves and to those we care most about. This process is in essence a spiritual experience.

Faith is central to the lives of many people. For them, reading the Bible or other religious writings, praying, and having others pray for them can be calming. Throughout the ages, people have also looked to the arts—a sublime piece of music, a timeless painting, a classic work of literature—for inspiration, guidance, balm for an ailing spirit. Sometimes you just need a lovely diversion from the blood counts and treatment schedules, to allow you to think deeply and soothingly for a while, and to remember that life goes on.

I recall a serene moment early in my cancer journey. My outlook was uncertain, and my mood reflected it: I had been

feeling vulnerable and weak, both physically and emotionally. On that particular day I had a platelet transfusion. During the process I absorbed myself in a book, *Memoirs of a Geisha*, which had blessedly transported me to another world. I was so sorry to turn the last page of this gorgeously written novel. A surprising euphoria came over me as I read and reread the last two lines of the book: "But now I know that our world is no more permanent than a wave rising on the ocean. Whatever our struggles and triumphs, however we may suffer them, all too soon they bleed into a wash, just like watery ink on paper."

Call it religion, call it spirituality, call it grace. We are all beings in only one point in time. We are all ripples in the ocean. And thinking about that brought me a calm and an equanimity that tapped into the core of my soul. I came to better terms with my misbehaving clump of cells that day, and the effect has been enduring.

If or when my cancer reappears, I will know what to expect. I will not see whatever treatment there is for me as salvage but as round two or round three. And if I get knocked out in that round, I will have tried my best, with the belief that someday my daughters and my sweet husband will look back and say, "You know, we could have cured Mom had she lived today." I hope so. I've already seen the glimmer that such a time is coming—the time when cancer has no riddles, presents few uncertainties, and brings no fear. ■

Bernadine Healy '69, the health editor for U.S. News & World Report, has served as director of the National Institutes of Health and president and chief executive officer of the American Red Cross. This article was adapted from her book Living Time: Faith and Facts to Transform Your Cancer Journey, copyright 2007 by Bernadine Healy. Reprinted by permission of The Bantam Dell Publishing Group, a division of Random House, Inc.



Doc of Rock

CLARK KENT HAD THE PERFECT GUISE FOR HIS ALTER identity—who could have guessed the nerdy reporter battled evil after just a change in costume? Pardis Sabeti '06 is something of a quick-change artist herself, although no cape peeks from beneath her white lab coat. By day, the scientist toils

at the HMS-affiliated Broad Institute, tracking genes involved in the coevolution of humans and their pathogens. By night, that scientist transforms into a musician, intent upon recording tracks for the next album with her alternative-rock band.

Sabeti's records are not made only in studios. At HMS, she became only the third woman to graduate summa cum laude since women were first admitted in 1945, a feat she accomplished while assembling her band.

"Science will always be my main career," she says, "but I pursue music with equal intensity." And with equal passion, for whether tracking the genetic changes that affect human disease or honing her music to impart just the right energy and emotion, Sabeti is always striving to reach the next rung of discovery.

Discovery sometimes comes in small doses. Sabeti views all of what she does as creative exercises in problem solving. "Often in music you don't even know what you're trying to convey when you begin," she says. "At first you're working with all the little pieces, and then the whole song emerges. It's an amazing feeling."

Research also grows through synthesis and assembly, a process Sabeti likens to finding your way in a dark room. "You might stumble over an idea," she says, "but not quite figure out what it is you tripped over. At other times, you immediately know what that idea will look like when the lights go on." Either way, she says, the result is euphoric.

Not Just a Lark

Sabeti's own genes never seemed to be encoded with any particular musical

talent. No one in her family plays an instrument, at least so far as she knows; some distant relatives live in Iran. Sabeti did, too, until age two when her family emigrated to avoid that nation's revolution.

Her father could carry a tune, however, and would always sing in their home. Like him, Sabeti describes herself as "music obsessed," even though she'd never so much as strummed a guitar until her twenties, when she studied biological anthropology as a Rhodes scholar at Oxford. Some friends in her doctoral program kept saying they wanted to start a band. She finally asked why they didn't just begin already. When told they had no rhythm section, Sabeti went out and purchased a bass guitar.

"It turns out I had been training myself all along without knowing it," she says. "I've always thought about songs and cared about music deeply. Rather than just passively listening, I would harmonize and make up my own lyrics. As soon as you care about something, the floodgates open and it becomes easy."

At Oxford, those gates opened wide. She quickly discovered she could sing and had a flair for writing lyrics and composing music. During medical school she took a poetry class to boost her songwriting skills and started to play with some local musicians. Together they formed a band, naming it *Thousand Days*, inspired by the title of the first song they wrote together.

Sabeti finds material for songs from science and from books she's read. One song, "Turkana Boy," was inspired by the discovery of the fossilized skeleton of a boy who lived more than a million and a half

years ago. She wrote another, "Crying to Breathe," after reading *The Diving Bell and the Butterfly*, a memoir written by a man who had become paralyzed by a stroke that affected his brainstem. He dictated the book by blinking his left eye to a colleague who translated the blinks into letters of the alphabet.

"I was incredibly affected by his story," Sabeti said. "I envisioned that in order to scream, he would open wide that one eye. I had to put that into a song."

These days Sabeti has the big screen in her sights. She recently paired up with a record producer to try to place one of her songs in a movie.

The War on Bugs

Although much of Sabeti's recent work has involved the human genome, she hopes to shift her focus to the evolution of infectious diseases, such as the changes that occur along the genome of the parasite that causes malaria.

In her laboratory in Cambridge, in fact, Sabeti has a bead on the genome of the malaria-causing parasite. In addition to learning how the organism behaves biologically, Sabeti is investigating two of its more advantageous survival traits—immune invasion and drug resistance—and, together with colleagues, has identified some genomic regions that may be responsible for the latter.

Sabeti's study of malaria was prompted by her learning of a relatively "recent"—within the past 10,000 years—mutation on the human genome. She uncovered this information by using an algorithm of her own design to infer the first appearance of certain groups of genes. Those genes can, in specific situations, help protect a person from the malaria parasite.

Her work could eventually lead to new medications that would attack the parasite's weaknesses, but Sabeti also hopes it will provide a greater understanding of the pathogen's evolution and, perhaps, guide tactics to prevent malaria.



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Sabeti likens such a holistic approach to warfare. “You look at wiping out the enemy from many angles,” she says. “Not just how to win short term, but also how to stay the course. If you can understand what a pathogen is doing, you can see how it evolves over time in different populations.”

Sabeti hopes to impart her enthusiasm for genetics research to a roomful of undergraduates. She was recently named

an assistant professor of organismic and evolutionary biology in Harvard’s Faculty of Arts and Sciences. She enjoys the problem solving involved in teaching a lecture class. “How do you get people excited about genetics?” she asks. “How do you keep students’ attention?”

Sabeti’s own interest in her human genetics research remains high. A paper in the October 18, 2007, issue of *Nature* reports

her team’s findings about changes along the genomic pathway that drives the development of hair follicles. Their results indicate that the distribution of these follicles may be changing, possibly decreasing, in humans—especially among certain indigenous people of Latin America and among natives of Japan and China. A similar change, Sabeti says, has already been seen along the same pathway in the genomes of some species of fish. “It’s well documented that freshwater fish have fewer scales than their saltwater counterparts,” she says. “There’s been a rapid evolution along this same genetic pathway in humans.”

Sabeti’s laboratory found three human genes linked to changes in the development of hair follicles, a mutation that could result in fewer sweat glands and less body hair. Now she and her team are puzzling over why the mutation is increasing in frequency.

Rock and Roll Forever

Sabeti’s band released its third album last summer. Her musical success, however, doesn’t seem to detract—or distract—from her genetics research. To her, neither feels like work, so she easily finds time for both. And she doesn’t mind the fact that she doesn’t fit the traditional mold of the physician–musician.

“Most doctors stop doing rock,” she says. “After a while, it’s more acceptable to do classical music. Playing classical piano still works with the doctor persona; playing in dive bars doesn’t. Rock just doesn’t fit into what people expect of doctors.”

Sabeti’s two worlds—studying molecular evolution and playing in a band—do indeed seem disparate. But for Sabeti, switching from one world to the other is seamless—and requires neither phone booth nor cape.

After all, who needs a cape when you’ve got a guitar? ■

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