



FREE PUBLIC LECTURE

Selenium in Cancer Prevention and Human Health



Dr. Gerhard N. Schrauzer
Department of Chemistry and Biochemistry

Wednesday
March 16, 2005, 7:00 P.M.
Garren Auditorium
Basic Science Building
University of California, San Diego

NEXT MONTH

The Answer to Shingles Prevention

Dr. Michael N. Oxman
Department of Medicine

Wednesday
April 20, 2005, 7:00 P.M.
Garren Auditorium
Basic Science Building
University of California, San Diego

No reservations required

Free parking will be provided for SIRA contributing members. Please call (858) 534-6299 TWO WEEKS BEFORE THE LECTURE to receive your free parking permit. All other lecture attendees must buy a permit at the parking kiosk on Gilman Drive or park at the metered sites.

Healthwise is available online at sira.ucsd.edu.

SIRA Director Dilip V. Jeste Selected for Prestigious Psychiatry Award

Dilip V. Jeste, M.D., Estelle and Edgar Levi Chair in Aging and professor of psychiatry and neurosciences at the University of California, San Diego (UCSD) School of Medicine, has been selected as a co-recipient of the American Psychiatric Association's 2005 Research Award, the association's oldest and most prestigious research award presented in recognition of notable and distinguished career contributions.



A medical specialist and internationally known researcher in geriatric psychiatry, Jeste is chief of the UCSD Division of Geriatric Psychiatry, director of the UCSD Sam and Rose Stein Institute for Research on Aging (SIRA), and a geriatric psychiatrist with the VA San Diego Healthcare System. He will receive a \$2,500 award and honorary plaque at the APA Annual Meeting on May 23 in Atlanta, Georgia. Dr. Jeste is well-deserving of this award.

He is the principal investigator of numerous research and training grants, and director of the Advanced Center for Interventions and Services Research at UCSD, focusing on psychosis in late-life and funded by the National Institute of Mental Health (NIMH). He is also principal investigator for the Center for Community-based Research in Older People with Psychoses, a \$7.5 million program funded by the National Institutes of Mental Health (NIMH). The program is a unique collaboration between UCSD and the San Diego County Health and Human Services Agency's Adult and Older Adult Mental Health Services (AMHS) to develop effective new therapies for middle-aged and elderly people with schizophrenia and other chronic psychotic disorders.

The author of six books and more than 400 articles in peer-reviewed journals and books, Jeste is editor of the *American Journal of Geriatric Psychiatry*. He is the past president of the American Association for Geriatric Psychiatry (AAGP) and the West Coast College of Biological Psychiatry (WCCBP), and the founding president of the International College of Geriatric Psychoneuropharmacology. Jeste has been listed in "The Best Doctors in America" and has received numerous awards. SIRA is most proud to have Dr. Jeste as the new director. We congratulate him on this award.

UCSD TV	PUBLIC LECTURE SERIES UCSD-TV SCHEDULE	Lectures air on Cox Communications San Diego, channel 66; Cox North County, channel 69; Time Warner Cable, channel 18; Del Mar TV 66, or UHF (without cable), channel 35.	Human Origins, Aging, Cancer, and Degenerative Diseases: The Pathophysiology of Mitochondrial Diseases	3/10	8:00 P.M.
			Dr. Douglas C. Wallace, <i>UC Irvine</i>	3/11	10:00 P.M.
			3/13	5:00 P.M.	
			3/15	6:00 P.M.	
			What You Should Know about Chronic Lung Disease	3/24	8:00 P.M.
			Dr. Andrew L. Ries	3/25	11:00 P.M.
			3/27	5:00 P.M.	
			3/29	7:00 P.M.	

Community Board of Advisors: Update

While the members of SIRA's Community Board of Advisors (CBOA) receive little notoriety, these distinguished members of the community play a vital role in SIRA's functioning and future development. Serving a minimum of three years, these devoted community members give of their time, energy, talent, and financial support to contribute so importantly to the overall well-being of our organization. They advise on programming, promote SIRA to the community, support the overall public relations endeavors, give input on the needs of their respective communities, volunteer for events, and are deeply involved in fundraising efforts.

We are pleased to announce and welcome Gloria C. L. Ma, Ph.D., and Daniel C. Masters, Esquire, as new members of SIRA's Community Board of Advisors.

Dr. Ma received her doctoral degree in molecular biology from UCSD, and is founder and present CEO of Xxsys Technologies, Inc., a biotech firm that develops innovative technologies in San Diego. She has been the recipient of numerous awards including the Total Excellence in Management Award from the *San Diego Business Journal*, and the Most Innovative New Products Award from UCSD CONNECT. Deeply committed to civic activities, she has served on boards too numerous to mention here, such as San Diego Regional Technology Alliance, International Affairs Board, City of San Diego, and La Jolla Playhouse.

Daniel C. Masters, Esquire, is an attorney and received his A.B. degree at Harvard and his law degree, cum laude from the Jefferson School of Law. He is a self-employed lawyer and consultant focusing on corporate securities law and corporate bankruptcy and reorganization. His community service includes

being the director of the Harvard Club of San Diego, director of the Compact for Success, and past director of the Education Foundation of the Sweetwater Union High School District.

We are also pleased to announce that Donald F. Billings, CFA, has accepted the office of president of the Community Board of Advisors (CBOA). He received his bachelor's degree in economics from Berkeley and a master's degree in economics from the Universite Catholique de Louvain in Belgium. An independent financial consultant, he has served as an advisor to the federal reserve, a consultant to Moody's Investor Service, and a financial advisor to SCX, Inc., developers of a state-of-the-art high-speed ferry service. Mr. Billings has been a member of the CBOA since September 2002, and has previously served as vice president. A member of Chancellor's Associates here at UCSD, Mr. Billings continues to provide expertise in SIRA's financial aspects.

We also wish to thank Dr. Gregory Stein for his wise leadership of the CBOA for these past two years. Dr. Stein, grandson of Sam and Rose Stein, who provided a most generous endowment to SIRA, has continued in the legacy of his grandparents through his deep commitment to SIRA and its growth and development. He is presently serving on the CBOA as treasurer.

RECENT DONORS TO THE SIRA

We would like to express our deep appreciation for all those listed, as well as the anonymous donors, who chose to support the research, education, and training at the Sam and Rose Stein Institute for Research on Aging.

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Self-Actualization in Later Life: A Research Inquiry

Human Values in Aging Newsletter, Jan. 1, 2005

Each of us has a characteristic way of behaving—a unique personal style of being. This pattern can be observed through the entire life cycle, in young children as well as older adults and those with disabilities. I am interested in joining with others for collaborative research on how older people are affected when, for a variety of reasons, they are unable to act on their instincts or to be

true to themselves. The results may be useful for planning, decision-making, understanding stress, enhancing communication and promoting self-esteem among older people. Those interested can contact me at: Nancy M. Hall, OUTCOMES UNLIMITED, 2654 Merry Oaks Trail, Winston-Salem, NC 27103. Email NanCappy@msn.com; telephone (336) 765-2215.

THE ILLUSION OF FAME*Human Values in Aging**Newsletter*, Jan. 1, 2005

"Fame is not a successful defense against feelings of inadequacy. It only appears to be. This is where the greatest distortion lies in our idealization of the famous. We imagine that our heroes have transcended the adversities of the human condition and have healed their childhood traumas by achievement of the extraordinary. We want to believe that they have arrived at a secure place of self-approval; that achieving recognition—success—can set us all free from gnawing feelings of self-doubt.

We want to believe that if we ourselves could just secure enough recognition and approval from the outside world, if we could feel sufficiently admired, we would be healed and our self-esteem secured. Like the celebrities we admire so much, we would be rescued from the relentless need for validation."

—From *"Fame: The Power and Cost of a Fantasy"* by Sue Erikson Bloland, daughter of Erik Erikson. *Atlantic Monthly*, November, 1999.

Good News for Folks with Strokes**The Positive Aging Newsletter, November–December, 2004**www.healthandage.com

Having a stroke is one of the pitfalls of a happy old age. While usually not deadly, especially with fast action on the part of rescuers, a stroke may leave a person with a handicapped limb. Often doctors tell patients that there is nothing to be done about this as the brain has been permanently injured. There is hope, today, however, that recovery can occur. This new optimism comes from research by Dr. Edward Taub, who has developed a therapy for coaxing the brain to reorganize and allow recovery. The approach is called CI, which stands for "constraint-induced" movement therapy. The simple idea behind the therapy is that forcing a stroke victim to perform daily tasks with the hampered limb, while avoiding the use of the stronger one, will reprogram the brain such that a new "command center" is formed that will take up the task that the stroke had disturbed.

Studies by Dr. Taub and his colleagues indicate that through CI therapy stroke patients can increase their spontaneous use of an injured limb by approximately 50%; physical therapy by itself is likely to be ineffective. Patients are not normally constrained physically from using their

healthy arm; however, they engage in constraining agreements, for example, they sign a contract with the therapist that they will concentrate on using their injured arm for everyday tasks. They keep a diary to chart their activities, and to help keep them "honest."

In brain mapping studies CI therapy patients have a much larger region of the motor cortex on the injured side of the brain activated when they use their injured limb than a non-stroke victim would. This indicates that the behavior induced by the instructions has had an effect on the brain, a reverse of the notion of the one-way influence of the brain on behavior. The research of Dr. Taub is also remarkable in that it undermines the old and powerful view that the adult brain is hardwired, and cannot repair or reorganize itself following injury.

CI therapy may not be only for the old. Dr. Taub is hopeful that this approach may be tailored for use with those of all ages with cerebral palsy and other neurological disorders. From: Training the brain to fix itself by Bridget Murray Law. *Monitor on Psychology*, October, 2004, 36–37. Dr. Taub's Web site is www.psy.uab.edu/taub.htm.

Developing Healthy Eating Strategies Based on Nutrition**HEALTHWORD, December 2004**

The fall 2004 issue of *Generations*, the quarterly journal of the American Society on Aging, is devoted to translating the science of nutrition into the art of healthy eating. The guest editors for the issue are Nancy Wellman, a professor on dietetics and nutrition at Florida International University in Miami, and Mary Ann Johnson, a professor of foods and nutrition and a member of the gerontology faculty at the University of Georgia in Athens.

Wellman and Johnson, nationally recognized researchers who also have the human touch, meld the perspectives of healthcare and social service for a much-needed holistic look at how healthy eating can postpone, prevent, or be used to manage chronic disease—as well as enhance function and independence and improve the quality of life for older people.

The editors have assembled a wide-ranging series of articles on eating and

appetite, tooth and mouth problems, cultural aspects of food choices, hunger and aging, weight issues, nutritional supplements, and the influence of nutritional health on physical function.

You can read the full table of contents at www.generationsjournal.org. To order a copy of the issue, email customerservice@asaging.org or call (800) 537-9728. The cost is \$12 per copy, with special discounts for ASA members and bulk orders.

Selenium and Cancer

Interview with Dr. Gerard N. Schrauzer, UCSD Department of Chemistry and Biochemistry

Editor: Dr. Schrauzer, please tell us a little about yourself and how you came to study selenium.

Dr. Schrauzer: I am an inorganic chemist by training and studied at the University of Munich, from where I obtained my doctoral degree in 1956. I stayed on, and while there, developed my interest in the roles of trace elements in biological systems. I remained in this fertile field after I joined the Department of Chemistry at UCSD in 1966, and extended it to the study of the role of trace elements in cancer development. Measuring the rates of electron transfer in biomimetic models of cellular respiration, I found that some such reactions are catalyzed by minute traces of selenium.

Editor: Please explain what a catalyzed reaction is to our readers.

Dr. Schrauzer: Catalysts are substances that accelerate the rates of chemical reactions. A well-known example is the effect of platinum on the reactions of hydrogen with oxygen. This reaction, which results in the oxidation of hydrogen to water, is infinitely slow at room temperature. But if a trace of finely divided platinum is brought into the reaction vessel, it takes place instantaneously with explosive violence. In mammalian cells, oxidations of biomolecules are commonplace, with enzymes functioning as the catalysts. The activities of many of these enzymes depend on the presence of metal ions in certain vitamins as cofactors.

Editor: How do biological oxidations relate to cancer development?

Dr. Schrauzer: In mammalian cells, the metabolism of oxygen must occur efficiently for the cells to grow and divide normally. If oxygen metabolism is impeded, the cells suffer damage at numerous organizational levels. In the presence of a carcinogenic stimulus, the cells may undergo malignant transformation, that is, are converted into cancer cells. I thus hypothesized that the maintenance of cellular respiration is of critical importance for cancer prevention. I subsequently came across a clinical cancer test that was used in the 1950s at Massachusetts General Hospital and New York Medical College. The test consisted in the measurement of the time it took for a certain amount of added methylene blue—the same organic dye which we had used in our studies—to be reduced by freshly drawn blood plasma. The plasma of cancer patients, in general, showed diminished capacity to reduce the dye, but why this was so was not known. Our studies revealed that cancer patient plasma lacked selenium. As selenium was obviously needed for cellular respiration, I hypothesized that a lack of selenium facilitates cancer development, and, conversely, that selenium was a cancer-protecting agent.

Editor: What are some of the biological roles of selenium?

Dr. Schrauzer: Selenium is a cofactor of several important enzymes. One of the first selenoenzymes to be identified was glutathione peroxidase. It prevents the accumulation of lipid hydroperoxides that give rise to the formation of harmful oxygen radical species.

Selenoenzymes also play a role in the metabolism of the thyroid hormones and in the reduction of thioredoxins. The function of an additional twenty or so selenoenzymes have not been elucidated as yet.

Editor: Selenium was for a long time feared as a poison. What did people think about the element when you conducted your studies?

Dr. Schrauzer: Selenium in the mid-1960s was already known to be a nutritionally essential trace element, but was still officially considered an environmental carcinogen. It was subject to the Delaney Clause and could not be legally added to animal feed, even though nutritional selenium deficiency diseases in farm animals were widespread. To disprove that selenium was an environmental carcinogen, Drs. R. Shamberger and Douglas Frost, showed that cancer mortalities were actually lower in regions of the U.S. with naturally high levels of selenium in the soil. This result, simultaneously with our studies, also suggested that selenium was a cancer-protecting agent.

Editor: How was the 'Selenium-anticancer Hypothesis' received by the scientific community?

Dr. Schrauzer: Initially, by some, with skepticism. To many, the idea that selenium protected against cancer seemed too simple and too good to be true. One notable exception was Dr. Michael Shimkin at UCSD School of Medicine, who recognized the importance of the idea immediately. He introduced me to Dr. Leonell Strong, who just had left the Salk Institute and opened his own laboratory in Sorrento Valley. Strong was famous for his discovery of the strain of C3H/St mice females which develop spontaneous mammary tumors. Using descendants of his famous strain, we were able to show that miniscule levels of selenium added to the drinking water of the mice dramatically lowered the incidence of tumors. During the next twenty years, we conducted numerous life-term studies with these mice that confirmed and extended our initial findings.

Editor: How relevant is the tumor model system you used to human breast cancer?

Dr. Schrauzer: The oncogenic agent in C3H/St mice is the so-called 'Murine Mammary Tumorvirus' (MMTV). Fragments of the same or a similar virus recently have been detected in a high percentage of human breast cancer tissues. There's also supporting epidemiolog-

ical evidence that classifies selenium as a human cancer protecting agent. For example, statistically significant inverse correlations were observed between mortalities of breast and other major forms of cancer and the selenium levels in human blood collected in different countries. Japanese women, for example, have three times higher selenium levels in their blood than American women and a proportionately lower risk of breast cancer. This led to the proposal that raising the selenium intake to approximately twice to three times of what we are getting now could substantially lower cancer risk.

Editor: And what was the reaction of the National Cancer Institute to these developments?

Dr. Schrauzer: From 1983 to 1996, the NCI founded a large, placebo-controlled selenium supplementation trial involving 1,312 elderly subjects, all formerly treated for nonmelanoma skin cancers. At the end of the study, the subjects receiving the selenium supplement had substantially lower incidences of cancers of prostate, lung and colon, and rectum, and exhibited a 56 percent lower overall cancer mortality than the subjects given the placebo. Presently in progress is SELECT, the largest cancer prevention study ever to be conducted. More than 13,000 participants will be enrolled in this multi-center study in which UCSD also participates.

Editor: Dr. Langer directs the SELECT study at UCSD. In arms of this study, subjects will be receiving selenium as well as vitamin E to see if prostate cancer can be prevented in this manner.

Dr. Schrauzer: Yes. In my forthcoming lecture I will discuss this study along with other aspects of selenium in general. Selenium is going to revolutionize or has already revolutionized the way we view chronic diseases, aging, longevity and all kinds of diseases because it's such an essential element and we need so little of it.

Editor: How does one get selenium naturally?

Dr. Schrauzer: The chief natural sources of selenium are grains, meats, and seafoods. One should get enough selenium by consuming a well-balanced diet. Unfortunately, selenium contents of foods vary regionally and losses of selenium occur on food processing.

Editor: So, the best thing to do may be to take it as a supplement. What is the suggested daily dose?

Dr. Schrauzer: The optimal total intake for an adult of 70 kg weight is in the order of 250–300 micrograms day. It is similar to the amount of selenium obtained nutritionally by adults in Japan and some other Asian countries with record low prostate cancer rates.

Editor: I'm looking forward to hearing you speak at our public lecture.

Laura L. Dugan, M.D., Joins UCSD as Hillblom Chair in Geriatrics

Geriatrics specialist Laura L. Dugan, M.D., joined the UCSD School of Medicine faculty February 1, 2005, as the first physician-scientist to hold the Hillblom Chair in Geriatrics. She will hold joint appointments in UCSD's Departments of Medicine and Neurosciences.

In addition to promoting healthy aging in a special diagnostic and treatment clinic for older patients, Dugan will continue her research into the molecular mechanics of aging. She is attempting to define the role of free radical oxidative injury in stroke or trauma, as well as in chronic neurodegenerative diseases such as Alzheimer's and Amyotrophic Lateral Sclerosis (ALS). A second area of research focuses on development and characterization of a class of potent anti-oxidant compounds known as buckyballs, as potential therapy for age-related diseases.

"We are very fortunate to have Dr. Dugan join us to lead our geriatrics program," said Kenneth Kaushansky, M.D., chair of UCSD Department of Medicine. "Her understanding of the aging process on the molecular and cellular levels will lend themselves to the translation of important new insights from

the laboratory into patient care. In addition, she will bring the problems she sees in patients back to the lab for investigations into causes and potential therapies to enhance aging."

Dugan joins UCSD from Washington University in St. Louis, Missouri, where she was an associate professor of neurology, medicine/geriatrics, anatomy, and neurobiology. Her educational background includes a bachelor's degree in life sciences from the Massachusetts Institute of Technology, a medical degree from Ohio State University School of Medicine, and residency training at Children's Hospital of San Francisco, a UCSF affiliate. She completed a fellowship in geriatric medicine at Stanford University, where she also conducted research on aging.

Among the journals in which she has extensively published are the *Journal of Neurosciences*, *Nature Medicine*, *Journal of Biological Chemistry*, and *Cellular and Molecular Biology*. She has presented her work widely and is the recipient of several awards including the Hartford Award for Research in Geriatric Medicine, a Paul Beeson Physician-Scholars Award.

Noninvasive Method to Evaluate Status of Vascular System

Dr. A. Fronck has developed a noninvasive method to evaluate the status of the vascular system especially in patients with coronary or peripheral artery disease, hypertension, hypercholesterolemia, diabetes. The procedure is completely painless, takes about 40 minutes, and is approved by the UCSD Human Research Protection Program. Also, persons without known disease above the age of 50 years are encouraged to participate. Volunteers are invited to call (858) 534-4270 for additional information.

Controlling Anxiety in Later-life Medical Patients (CALM Study)

Dr. Julie Wetherell and her colleagues are conducting a study to see whether anxiety management training helps older adults. You may be eligible if you are at least 60 years old, have a health care provider, and often feel tense, worried, or anxious.

If you participate, you will either receive:

- 12 sessions of anxiety management training from the CALM study team
- Or treatment as usual from your regular health care provider.

Anxiety management will help you learn relaxation techniques, problem-solving skills, and how to let go of past and present experiences that make you anxious.

Possible benefits include:

- \$80 for four assessments over a 16-month period
- You and your health care provider will receive information about your symptoms, which may lead to better care for you
- You may receive anxiety management training at no cost to you
- You may experience relief of your anxiety symptoms

For more information, please call Georgia Birchler at (858) 552-8585 ext. 2390 or Dr. Wetherell at (858) 552-8585 ext. 2752.

Biomarkers in Aging, MCI, and Alzheimer's Disease

Dr. Galasko at the UCSD Alzheimer's Disease Research Center is conducting a study to measure the levels of a number of different proteins (called biomarkers) in cerebrospinal fluid (CSF) and in blood. The purpose of the study is to find out whether levels of these proteins are altered in people who have normal cognitive ability, mild memory problems, or early Alzheimer's Disease (AD). We aim to study these markers in detail to determine which combination of biomarkers is most helpful to indicate whether people with mild memory problems are at high risk of worsening over time, or progressing to AD. We will also test blood to find which form of a gene called Apolipoprotein E (APOE) an individual may have. Studies suggest that this gene may influence the risk of developing AD.

Recruitment is now underway to enroll subjects in one of the following categories:

- 1) healthy adults without memory problems, between ages 40–90
- 2) individuals with Mild Cognitive Impairment (MCI), between ages 60–90
- 3) individuals with early AD, between ages 60–90

The study will last five years and each year will involve a two-day (non-consecutive) visit.

Brain Imaging Study

Sean Drummond, Ph.D., is conducting a brain imaging (MRI) study to determine how the brain reacts to lack of sleep. Participants must be 60 to 80 years of age and in good health. This study involves an overnight hospital stay at the VA Hospital in La Jolla and several brain imaging sessions. Participants will be given a physical exam, lab and ECG, a thorough sleep study, and are paid for their time and travel. If interested, please call Jen at (858) 642-1259.

During the first visit, participants will undergo brief physical and neurological examinations and will be asked a series of questions that are designed to evaluate memory, thinking capacity, and mood. They will also undergo laboratory (blood and urine) tests. The second visit will consist of further blood work and undergoing a spinal tap. Spinal taps, or lumbar punctures, are routine neurological outpatient tests in which a small amount of fluid is removed from the lower part of the back. The spinal taps are done to measure the biomarker proteins. Subjects will receive up to \$200 compensation per year of the study for undergoing the spinal taps. Subjects are not required to have a spinal tap each year if they choose not to do so. If you are interested in participating, call Helen Vanderswag, RN, at (858) 622-5805.

Are You at Risk for Developing Type 2 Diabetes?

- Are you concerned about developing Type 2 Diabetes due to a family history, high blood sugar, or being overweight?
- Have you ever been told that you are at an increased risk for developing Type 2 Diabetes?

Dr. Mudaliar at the VA Medical Center in La Jolla is currently screening volunteers (Vets and Non-Vets) for the ACTOS NOW study. This study looks at an investigational use of the drug Pioglitazone to determine if the drug can prevent or delay the development of Type 2 Diabetes.

Subjects who qualify will receive:

- study related medical care by board certified physicians
- counseling with a certified diabetes educator
- compensation up to \$600

If interested, please call Alana Clark at (858) 552-8585 ext. 2884.

New Care for Dementia Patients Proposed

University of Chicago Medical Center, October 2004

Major overhaul needed in end-of life care for patients with dementia.

Three University of Chicago geriatricians are calling for creative and wide-reaching solutions to the problem of sub-optimal end-of-life care for patients with dementia. An estimated 500,000 people die every year in the United States suffering from Alzheimer's or related diseases and many of them receive inadequate pain control, are subjected to ineffective and invasive therapies such as tube feedings, and do not receive the benefits of hospice care.

"The nature of the illness is the root cause of the problem," said Greg Sachs, M.D., professor of medicine, section chief of geriatrics at the University of Chicago and first author of the study. "Our health care system is oriented toward treatment of acute illness but dementia produces a long, slow, unpredictable decline."

Their study is one of four in the October 2004 issue of the *Journal of General Internal Medicine* that focus on the expanding role of primary care physicians in the care of patients with chronic and ultimately terminal illness—a growing, difficult problem for physicians and for society.

Death used to come quickly, but now it "fades in slowly—over years or even decades," notes Christopher Callahan, M.D., of the Indiana University Center for Aging Research, in an editorial that ties together the four papers. The pace of death, he adds, "has slowed so suddenly that we seem to have lost our ability to recognize it." As a result, "we find ourselves poorly trained, our systems poorly designed, and our patients and communities poorly equipped."

"All the barriers and problems seem to converge," he adds, in end-of-life care for patients with dementia.

The Chicago geriatricians list the barriers to optimal care for such patients and suggest ways to get past them.

The first hurdle is the unwillingness of physicians and families to think of dementia as a terminal illness. Patients with dementia decline slowly, with long periods of stability punctuated by sudden declines and partial recovery. The proximate cause of death is usually a complication of the dementia, such as pneumonia or other infection, often triggered by the decreased mobility that comes with advanced dementia.

A second barrier is the inability of physicians to predict the time of death. Medicare and most insurance plans offer hospice benefits only to patients with a life expectancy of six months or less, but the median survival for patients with dementia is several years and varies enormously. Patient assessment becomes even more difficult as the dementia advances and the patient can no longer describe his or her symptoms or notify caregivers of discomfort.

A third barrier is the poor fit between dementia and health care financial incentives, which reward providers for transferring rapidly declining patients into hospitals—where the process of dying is prolonged. "The only parties who may not be better off from the transfer," note the authors, "are the patient and family."

The solutions involve education, better prognostic tools, and changes in the health care system. Geriatrics, dementia, and palliative and end-of-life care are all under-represented in medical school curricula and deserve more attention as the numbers of elderly continue to increase.

Physicians also need to educate the public, to create a baseline of awareness before families have to face these issues

directly and make difficult decisions about a loved one.

Better prognostic tools for patients with dementia and increased access to hospice care are needed. Improved quality-assessment tools and regulatory guidelines that promote comfort care when appropriate could encourage better care for patients with dementia in nursing homes.

Perhaps most urgent, however, is a nationwide effort to "align the financial incentives in the system with the provision of palliative care." The authors suggest relaxing the criteria for hospice to accommodate earlier referral of patients with dementia. Nursing homes should be financially rewarded for providing good end-of-life care rather than for transferring dying patients to a hospital.

Finally, caregivers need to shift away from the reigning concept of a sudden, and usually quite late, switch from curative to palliative care. Instead, they should develop new models based on a gradually changing blend of curative, restorative and palliative care services as patients decline and goals are adjusted.

With funding from the Robert Wood Johnson Foundation, the authors have developed an innovative program entitled Palliative Excellence in Alzheimer Care Efforts (PEACE) that successfully demonstrated how improved symptom management, greater hospice referral, and facilitating death at home rather than the hospital can be achieved for people with dementia.

The problem "requires fundamental action at the level of health systems, economics and public policy," concludes Callahan.

"We can't reach old age by another man's road."

—Mark Twain



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