A Focus on Preventive Care

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Mission: The Permanente Journal is written and published by the clinicians of the Permanente Medical Groups and KFHP to promote the delivery of superior health care through the principles and benefits of Permanente Medicine.

On the cover: “Sailboat” by Clifford Schumacker, PA-C, is about the contentment he would feel if he had sailed to this sandy inlet, beached the boat, and explored the rocky coast. Andrew Wyeth and the Santa Fe/Taos-region artists influence Mr. Schumacker who appreciates Wyeth’s ability to use landscape to create abstract work but prefers to use more vibrant, even unnatural colors of the Southwest artists, also being influenced by Vincent Van Gogh.

Mr. Schumacker is a physician assistant formerly at Group Health Olympic Medical Center in Urgent Care. He has no formal art training but has been interested in art for years. He primarily works in watercolor, enhancing the work with wet pastel and gouache.

More of Mr. Schumacker’s art can be found on pages 22 and 54.

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One possible method of future treatment for diabetes is explored in this article, which also contextualizes the political and research arenas.

15 Vision Screening for Alzheimer's Disease: Prevention from an Ophthalmologist’s Perspective (There is More to Vision than Meets the Eye).
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Welcome, Nurses, to *The Permanente Journal*

**Editorial Comments**

Nurses have always worked with doctors to care for patients. Now, more involved than ever in multidisciplinary team care, nurses want to understand exactly how doctors are practicing medicine: the evidence they base their decisions on, the guidelines they use, application of the electronic medical record, and their approach to shared decision making. Doctors and clinicians want to know the results of nursing research, nursing recommendations about care processes, and nursing perceptions and service practices. In the broadest context, all disciplines benefit from learning about each other's research, processes, and practices.

With this first issue of 2004, we welcome 7000 nurses to advise, participate in, publish in, and receive the journal.

**Multidisciplinary Care**

The mission of *The Permanente Journal* (TPJ) is to improve the quality of health care to our members through the principles and benefits of Permanente Medicine. One of the strategic focuses of TPJ is the multidisciplinary delivery of health care. KP-affiliated clinicians—nurse practitioners, physician assistants, nurse midwives, CRNAs, and medical social workers—are included in our distribution.

Because of their importance and contribution to the health care team, we now include KP nurses—inpatient and outpatient RNs, home health and advice nurses—in the development of content and the distribution of TPJ.

**George Halvorson Vision**

During a recent interview with George Halvorson, Chairman and CEO of Kaiser Foundation Health Plan and Hospitals, the discussion touched on the importance of multidisciplinary teams and the importance of best practices. Mr Halvorson indicated that he felt it was important that clinical teams as well as affiliated clinicians receive TPJ:

“Team care truly does work. In order to get there, we need to have a systematic approach to team implementation. Teams don’t just happen, or most of them don’t. We need to help create them …”

**Assessment**

KP nurses and pharmacists, in a recent assessment, indicated that receiving TPJ would be relevant and of value to them and would support their clinical collaboration with physicians.

Recent KP National Market Research confirmed that improving KP’s reputation must involve an inside-out approach (experience, word of mouth). Including nurses and pharmacists in the distribution of TPJ connects them directly and collaboratively to the delivery of health care to members and enhances internal reputation of quality and service.

In developing this program of expanding the distribution of TPJ to nurses and pharmacists, we worked with Bernard Tyson, Senior Vice President, Communications and External Relations, and several KP nurse and pharmacist leaders, including: Marilyn Chow, Vice President, Patient Care Services, Program Office; Al Carver, Director of Pharmacy Strategy and Operations in California; Jennifer Houten, Director of Ambulatory Nursing in Northwest; and Mike Kinard, Regional Pharmacy Manager in Northwest. They were instrumental in advising about the assessment and were enthusiastically supportive of including nurses and pharmacists in the distribution of TPJ.

**Expansion Plan**

With the direct support of Marilyn Chow and Bernard Tyson, we will distribute TPJ to 7000 nurses—the most clinically active—across the program. After one year, we will assess the value to nurses, physicians, clinicians, and pharmacists, with the possibility of increasing the distribution. We are also piloting distribution to pharmacists in the Northwest.

**Thank You**

The Advisory Board and Editorial Team of *The Permanente Journal* would like to recognize the strategic vision of George Halvorson and Bernard Tyson, their dedication to the development of multidisciplinary clinical teams, and the deep commitment to support this venture. The KP program will take another step forward as the national health care solution—through multidisciplinary clinical teams bringing the highest quality and service to our patients and members.

**Reference**

Looking Back, and Forward

I am pleased and honored to be Guest Editor of this special issue of The Permanente Journal. In my 36th year of association with Kaiser Permanente (KP), no one is more surprised than I that I have spent the majority of that time in Preventive Medicine, far from Infectious Diseases, where I started. While physicians readily give lip service to Preventive Medicine, it is often considered a dull, somewhat ineffectual field dealing with immunization schedules, cautionary statements, and a handful of unchanging public health problems. These certainly do not attract physicians like the drama of acute care medicine and surgery. Further, the most basic causes of many public health problems are truly complex, difficult to understand, and often inadequately studied when they involve behavioral issues—as they frequently do.

New Ideas

Fortunately, the general lack of attention to Preventive Medicine provides an opportunity to develop and test new ideas in this field, especially in a large organization like KP. This issue of The Permanente Journal deals with just such new ideas. If we are serious about preventing disease, we ought to think carefully about why people become ill. What is illness? How does illness relate to disease? These are not easy questions, and our teachers and mentors didn’t prepare us for them in medical school and residency. In candid moments, many of us admit to being unprepared for much of what walks into the office during our first several years of practice.

A Pathway Through this Issue

“A General Theory of Love”

A logical pathway through this special issue on Preventive Medicine starts with the book review of A General Theory of Love (page 113). It is the lack of love, and our various responses to this lack, that produces much illness and a significant portion of the common chronic diseases. In the Fall issue, the book review of Growing Up Fast illustrated the effects of lack of love in the context of teenage pregnancy and its biomedical, psychological, and social complications.1 In this issue, Gregorio Saccone, MD’s review of Dry (page 112) gives us insight into the underpinnings of alcoholism—useful knowledge if one is serious about understanding its prevention. Crossing the BLVD (page 108) looks into the lives of immigrants—physicians and patients—What do we know of vastly different cultures, torture, exotic diseases? The popularity of Dr Chopra’s books (page 110) illustrates the widespread desire of patients for a humanistic understanding of themselves.

Relation of ACE to Job Performance

We touched on the theme of the emotional underpinnings of illness and disease in a prior issue with an overview article about the Adverse Childhood Experiences (ACE) Study.2 The ACE Study showed in a 17,000-patient KP cohort of middle-aged adults the relation of eight categories of adverse childhood experience to some of the most common public health problems in the country: depression and suicidality; obesity and its consequences of Type 2 diabetes and hyperlipidemia; smoking and COPD; alcoholism; intravenous drug use and its association with chronic hepatitis; etc. The current issue’s article from the CDC by Robert F Anda, MD, MS, and Vladimir I Fleisher, MD, PhD; et al (page 30) on the relation of adverse childhood experiences to job performance and occupational health extends this work and is a good illustration of the complexity of some of the problems faced in Primary Care and Occupational Medicine, especially when the origins of preventable problems are hidden by time, shame, secrecy, and social taboo.

Infant Feeding as Primary Prevention

In our collaboration with the CDC, the question arose repeatedly of where and when to intervene for preventing either adverse experiences in childhood or their later consequences. While treating middle-aged adults is necessary and important for learning, it is clear on a population basis that primary prevention is our only realistic option. However, primary prevention, aside from immunization, is notably difficult; in many instances, one would have to begin during infancy, if not pregnancy. Charles W Slaughter, MPH, RD, (page 23) does that in his unusual article on infant feeding. “Hungry for Love” looks at primary prevention through different eyes.
few things are less acceptable than telling someone to stop doing something when one doesn’t understand why they are doing it ...

DVD Adolescent Screening

From Hawaii, pediatrician David M N Paperny, MD, describes a approach to preventive screening in that difficult population: adolescents (page 74). If you are in Hawaii, visit him and see first-hand what his program looks like. He has put to use, on interactive DVD, ideas for engaging teens meaningfully that the rest of us would never have imagined. He has a “best practice” that has been overlooked. Mary Shannon’s Soul of the Healer article (page 72) is about what happens when common problems like childhood sexual abuse are not sought out for recognition. This theme is further expanded by Dr Ritterman’s sensitive appraisal of the psychosocial determinants of health (page 58).

Transplantation as Preventive Medicine

Traditional biomedicine clearly has a role in Preventive Medicine; after all, that is where Preventive Medicine started. The article by Gillian M Beattie, BSc and Alberto Hayek, MD, on the stem cell cure of Type 1 diabetes (page 11) is exemplary; additional complications of diabetes are totally prevented by this remarkable approach. Surprisingly, some existing complications like diabetic neuropathy are actually reversible with transplantation. Their article comes from one of the few stem cell laboratories in the country. They show that solving what appears to be a pure biomedical problem is not only biologically difficult but is politically difficult as well.

Hemochromatosis Update

“Hemochromatosis Update” (page 39) summarizes what we have learned in the KP San Diego Department of Preventive Medicine by taking a purely biomedical approach to this highly prevalent mutation but less common disease. The article contains an interesting twist showing the need for what George Engel termed a biopsychosocial approach, even with a hard-core genetic disease. We found significant numbers of depressed, obese, diabetic patients with “arthritis” from fibromyalgia showing up desperately hoping they had hemochromatosis so they finally could be understood and treated! Why had they not been recognized and treated? Why were they fat? Why depressed? Why were they in a state of chronic muscle tension? Why had we failed them?

Vision Testing for Dementia Diagnosis

Peter N Rosen, MD’s interesting article (page 15) about using simple although unconventional forms of vision testing for the very early diagnosis of dementia offers new opportunities for secondary prevention, particularly when it comes at the time pharmacotherapy is beginning to show some promise in treating dementia. Yet to be discovered are the emotional threats resulting from such early diagnosis and how we will deal with them.

Role of Preventive Medicine

Eric Blau, MD, FACP, internist and now head of Preventive Medicine in KP San Diego, closes the trail with his ideas (page 63) about the role Preventive Medicine should have in KP and how it might be laid out organizationally. You may remember him from his fine photojournalistic article, “In the Shadow of Obesity,” an unconventional foray into Preventive Medicine. It turns out that the arts can have a meaningful role in medical practice because they help circumvent the resistance we all have to discussing personally threatening subjects.

The Importance of Asking “Why?”

Looking back, Preventive Medicine has been an unexpectedly interesting and even sometimes exciting discipline. As an unintended but long-term participant in the field, I must share several observations. First is the importance of a biopsychosocial approach; few things are less acceptable than telling someone to stop doing something when one doesn’t understand why they are doing it; at some level, all behaviors are functional. Without such understanding, one risks mouthing banalities like the platitude for resolving the use of street drugs: “Just say No.” The real question in Preventive Medicine and public health is Why is this individual an addict? Why is that one obese? Why did this patient pursue a lifestyle that led to suicide, coronary artery disease, or COPD? In the ACE Study, one of the most important observations was that many intractable public health problems are also personal solutions to problems well hidden, once again, by time, secrecy, shame, and social taboo.

Biopsychosocial Screening Approach

Those familiar with the Adverse Childhood Experiences (ACE) Study will have an understanding of the need to screen routinely for adverse childhood experiences in all patients; to have an awareness of the relevance of adverse childhood experiences to intractable conditions and “problem patients”; and to have a sense of appropriate approaches to treatment that need to be devised for each case. Analysis of a 125,000-patient cohort where such comprehensive biopsychosocial screening routinely was used showed a 35% reduction
in doctor office visits (DOVs) during the following year (HNC Corporation. Health Appraisal Study Final Report, unpublished data, 1996). By contrast, in 1977, a purely biomedical approach in the same Department of Preventive Medicine produced an 11% net reduction in DOVs. The implications for medical practice of this comprehensive, preventive, biopsychosocial approach are profound; it provides a new and improved platform of information upon which to base primary care medicine.

**Kaiser Permanente Institutes of Preventive Medicine**

Looking forward, Preventive Medicine offers the real possibility of being the future of Kaiser Permanente. Imagine a nationwide system of KP Institutes of Preventive Medicine providing a uniform, nationwide mechanism of member entry into the KP Program—routinely providing, at member entry, an in-depth base of standardized medical information for patient care, medical research, and administrative planning and open to the public to provide a powerful marketing tool.

**A Doctor Whom a Patient Trusts**

And yet, these are only techniques. Sir James Spence, an English pediatrician, understood this years ago, when he wrote, “The real work of a doctor is not an affair of health centres, or public clinics, or operating theatres, or laboratories, or hospital beds. These techniques have their place in medicine. The essential unit of medical practice is the occasion when, in the intimacy of the consulting room or sick room, a person who is ill, or believes himself to be ill, seeks the advice of a doctor whom he trusts. This is the consultation, and all else in the practice of medicine derives from it."

The unconventional view of Preventive Medicine as population-based, comprehensive biopsychosocial screening of all individuals, coupled with matching risk abatement programs, has been tested and developed in KP; this screening has been done affordably and with measured benefit. If this vision of Preventive Medicine were routinely used as the entry point for all ongoing medical care, the resulting new platform of starting information would enable Primary Care practitioners to fulfill Sir James Spence’s proposition.

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*Personal communication, in 1977, with Joel Kovner, DrPH, about an analysis by the Department of Medical Economics of 700 patients going through Health Appraisal, measuring the effect of that experience on Doctor Office Visits in the year subsequent compared with the year before.*

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**References**

4. Spence, James. The need for understanding the individual as a part of the training and functions of doctors and nurses. [Speech delivered at a conference on mental health held in March 1949]. In: The purpose and practice of medicine: selections from the writings of Sir James Spence. London: Oxford University Press; 1960, p 273-4.
letters to the editor

From Our Readers …

The Permanente Journal,

I’m disappointed that an officially sponsored case vignette is so at odds with the values of Permanente medicine (Blue Sky Care Delivery 2015, Part 1. The Permanente Journal 2003 Fall; 7(4):47-50). First of all, the medical care is questionable. The computer recommends a home strep test and, when it’s positive, offers antibiotics vs a watch-and-wait option. The most important consequence of strep throat, rheumatic fever, isn’t mentioned. Second, the care isn’t cost-effective. Why do a test, unless the result will influence treatment? Incidentally, I hope having to buy a computer doesn’t become a financial barrier to care.

Finally, Dad is presented as a whining oaf. If Mom were presented as a “typical woman driver,” you’d get letters about sexism. Well, this is sexist too, and cultural sensitivity shouldn’t exclude men. I know this wasn’t meant to be taken too seriously, and I’ll try to keep an open mind about the Blue Sky—but not so open my brain falls out!

Scott McKenzie, MD
Internal Medicine
Panorama City

—Reply
The focus for our clinicians and other visionaries at the Phase 1 meeting was the manner and the modality of the care provided to Tommy and his parents and not the actual “clinical guideline” per se. That being said, if you read on to the second bullet on the same page, you will see that Tommy’s “pediatrician’s ‘Web site’ and the Pediatric Department’s protocols guided the care provided to Tommy.” We would all assume that KP protocols in 2015 will be guided by the same care, cost-effectiveness principles and attention that our KP clinicians provide today with the added dimension of providing as much information to patients to assure their engagement in the decision-making process. In the interest of time and message brevity, our visionaries only included elements relevant to the broader Care Delivery Vision, with the assumption that the reader/audience would understand its illustrative nature. Thanks for your interest in the Blue Sky Vision.

Terhilda Garrido, Senior Director
Clinical Systems Planning and Consulting
terhilda.garrido@kp.org

The Permanente Journal,

I recently came across an article by Eric Blau, MD (In the Shadow of Obesity. The Permanente Journal 2000 Summer; 4(3):47-55) while doing a Google search on Pararescue. The note by JP (400 lbs) broke my heart, especially as I am completing training in the VA as a psychiatrist and understand the heart and soul of JPs, having been blessed with their friendship. Please express to him that his brothers are available to support him through www.pjassn.org. Also, I understand that there might be some consideration of divided loyalties, but many VAs have a particular interest in traumatized soldiers—I know my VA would take him in with open arms. If you can find JP, you can give him my e-mail if it would be any help. He’s already earned any services we can provide for him.

Regina Bahten, DO
University of Nevada, Reno
VA Sierra Nevada Health Care System

Greetings,

I enjoyed reading about the National Weight Control Registry, (The Permanente Journal 2003 Summer; 7(3):34-7) but I noticed an error. When you spoke of keeping off 30 pounds for one year, it was referred to as 6.6 kg. Thirty pounds equates to 13.6 kg, not 6.6 kg.

Regards,
Gale Carey, PhD
University of New Hampshire, Durham, NH

—Reply
We are pleased that you enjoyed reading this article and

Let us hear from you.

We encourage you to write, either to respond to an article published in the Journal or to address a clinical issue of importance to you. You may submit letters by mail, fax, or e-mail.

Send your comments to:
The Permanente Journal / Letters to the Editor
500 NE Multnomah St, Suite 100, Portland, Oregon, 97232
Fax: 503-813-2348 • E-mail: permanente.journal@kp.org

Be sure to include your full address, phone and fax numbers, and e-mail address. Submission of a letter constitutes permission for The Permanente Journal to publish it in various editions and forms. Letters may be edited for style and length.
Dr Jacobson,

I appreciated your attempt to interpret the Women’s Health Initiative (WHI) for some of the non-gynecologists who don’t have time to keep up on all the current bantering about the WHI results (A Perspective on the Women’s Health Initiative Findings. The Permanente Journal 2003 Fall; 7(4):62-4). However, unfortunately, I think you fell into the trap that so many have—including the WHI investigators. And that is extrapolation. Your comment of “Asymptomatic perimenopausal women balancing the potential benefit and risk of hormone therapy (HT) might weigh “a 41% increased risk of stroke after one year of using E+P” or “1.29 times more likely to have a stroke” differently than “a 97.1% chance (risk) of not having a stroke after ten years of using E+P,” etc. Please be reminded that the WHI specifically excluded peri- and symptomatic menopausal women from their study. I’m not sure you can confidently extrapolate the data from elderly 60+-year-old women on a 0.625 mg dose of CEE to a 50-year-old woman. The Nurses’ Study showed that stroke risk is dose-dependent: 1.3 RR with the 0.625 mg dose and 0.7 RR with the 0.3 mg dose. So for the WHI to only give the 0.625 mg dose and to get the same RR as the Nurses’ Study RR confirms at least that part of the study in older women. But most of my patients who wish to stay on HT have decreased their dose by the time they’re 55, specifically to decrease the risk of stroke.

I think we have to be very careful how much we extrapolate from the WHI. As Marcia Stephancic said at our regional teleconference: “This was not a menopause study, but a study of prevention in the elderly.” So let’s not apply it to the example you gave.

Katherine Brubaker, MD, Gynecology
Milpitas Medical Offices, TPMG

Reference
The DASH diet and blood pressure


High blood pressure (also called hypertension) is one of the most important and common risk factors for atherosclerotic cardiovascular disease (CVD) and other chronic diseases. National guidelines recommend that all individuals with blood pressure readings of 120/80 mm Hg or higher adopt healthy lifestyle habits, including the Dietary Approaches to Stop Hypertension (DASH) diet, to manage their blood pressure. The DASH diet, which is high in fruits, vegetables, and low-fat dairy products and reduced in fat, has been shown in large, randomized, controlled trials to reduce blood pressure significantly. The DASH diet also has been shown to reduce blood cholesterol and homocysteine levels and to enhance the benefits of antihypertensive drug therapy. The DASH diet should be promoted, along with maintaining healthy weight, reducing sodium intake, increasing regular physical activity, and limiting alcohol intake, for lowering blood pressure and reducing the risk of CVD.

Risk factors for asthma hospitalizations in a managed care organization: development of a clinical prediction rule


OBJECTIVE: To use a computerized administrative database to develop and validate a clinical prediction rule for the occurrence of asthma hospitalizations.

STUDY DESIGN: Retrospective cohort.

METHODS: Subjects included asthmatic patients ages 3 to 64 who were continuously enrolled in the Southern California Kaiser Permanente managed care organization in both 1998 and 1999. Data were based on linkage of a hospital discharge database, diagnosis and procedures database, membership database, and prescription database. The outcome was any 1999 hospitalization with a primary diagnosis of asthma. The outcome was evaluated and modeled separately for children (ages 3-17) and adults (ages 18-64).

RESULTS: Univariate analyses showed that hospitalized children were younger than nonhospitalized children. Adults and children hospitalized in 1999 had lower mean household incomes, were more likely to have required an emergency department visit or hospitalization in 1998, used more beta-agonists and oral corticosteroids in 1998, and had more 1998 prescriptions than nonhospitalized patients. In multivariable analysis, independent predictors of 1999 hospitalization in children included age and 1998 hospitalizations, beta-agonist dispensings, total anti-inflammatory dispensings, and number of prescribers. Among adults, 1998 hospitalizations and oral steroid dispensings as well as income were independent predictors of hospitalization in 1999. The prediction rules developed in this study identified the 11% to 13% of adults or children with an approximately six-fold higher likelihood for being hospitalized in the following year.

CONCLUSION: These models can be used to identify high-risk asthmatic patients in whom targeted intervention might reduce asthma morbidity and cost of care.

From the Northwest:
The primary prevention of heart disease in women through health behavior change promotion in primary care


PURPOSE: To summarize recent evidence-based recommendations for physical activity promotion, dietary improvement, and tobacco cessation from the US Preventive Services Task Force (USPSTF) and the Task Force on Community Preventive Services (CTF), and examine their applicability to the primary prevention of cardiovascular disease (CVD) in women through primary care interventions.

METHODS: For the behaviors cited, USPSTF and CTF recommendations and their associated systematic evidence reviews (SERs) were retrieved. Individual articles from the USPSTF healthy diet and physical activity SERs that met our inclusion criteria were systematically examined to determine the applicability of this research to women. We supplemented findings from these sources with comprehensive federal research summaries and SERs from focused searches of systematic review databases relevant to primary CVD prevention in women through healthy behavior change.

MAIN FINDINGS: The USPSTF strongly recommends primary care interventions for tobacco cessation. Strong CTF recommendations for multicomponent systems supports for clinicians, telephone support for quitters, and reduced patient costs for effective cessation therapies guide complementary approaches to assist clinicians. The USPSTF recommends intensive behavioral dietary counseling by specialists for high-risk CVD patients, but found insufficient evidence to recommend for routine healthy diet or physical activity promotion in primary care. The evidence base for these recommendations generally applies to women. Better reporting of gender and...
Abstracts of Articles Authored or Coauthored by Permanente Clinicians

... mitigate the importance of annual and biennial retinopathy screening exams and make sure that members with pathology are treated and closely followed. Second, we should initiate antihyperglycemic treatments at <7.0% HbA1c, rather than at the ADA-recommended 8.0%. This will reduce risk of post-treatment “accelerated diabetic retinopathy,” and the long-term glycemic burden of our members. Long-term burden is growing thanks to aggressive CVD prevention, providing more years for development of blindness and renal failure. Third, we should consider rapid, office-based HbA1c assays, or have members come in for tests before their visits. Rapid testing reduces mean HbA1c, and glycemic control may deteriorate quickly as treatments fail. It is hard to respond quickly when the HbA1c result arrives after the patient is out the door. –JB

From Northern California:

Improvement of gastroesophageal reflux symptoms after radiofrequency energy: a randomized, sham-controlled trial


BACKGROUND AND AIMS: Gastroesophageal reflux disease is a prevalent disorder that often requires long-term medical therapy or surgery. The United States Food and Drug Administration recently cleared new endoluminal gastroesophageal reflux disease treatments; however, no controlled trials exist.

METHODS: We randomly assigned 64 gastroesophageal reflux disease patients to radiofrequency energy delivery to the gastroesophageal junction (35 patients) or to a sham procedure (29 patients). Principal outcomes were reflux symptoms and quality of life. Secondary outcomes were medication use and esophageal acid exposure. After six months, interested sham patients crossed over to active treatment.

RESULTS: At six months, active treatment significantly and substantially improved patients’ heartburn symptoms and quality of life. More active vs sham patients were free of daily heartburn symptoms (n = 19 [61%] vs n = 7 [33%; p = 0.05], and more had a >50% improvement in their gastroesophageal reflux disease quality of life score (n = 19 [61%] vs n = 6 [30%; p = 0.03). Symptom improvements persisted at 12 months after treatment. At six months, there were no differences in daily medication use after a medication withdrawal protocol (n = 17 [55%] vs n = 14 [61%; p = 0.67] or in esophageal acid exposure times. There were no perforations or deaths.

CONCLUSIONS: Radiofrequency energy delivery significantly improved gastroesophageal reflux disease symptoms and quality of life compared with a sham procedure, but it did not decrease esophageal acid exposure or medication use at six months. This procedure represents a new option for selected symptomatic gastroesophageal reflux disease patients who are intolerant of, or desire an alternative to, traditional medical therapies.


From the Northwest:

Diabetic retinopathy: contemporary prevalence in a well-controlled population


OBJECTIVE: To measure the extent to which modern intensified risk factor control has lessened the duration-specific prevalence of diabetic retinopathy and, therefore, has decreased the risk of blindness in Americans with type 2 diabetes.

RESEARCH AND DESIGN METHODS: Intensiﬁ ed control of blood glucose and blood pressure has prevented diabetic retinopathy in randomized controlled trials. There is as yet no conﬁ rmation that subsequent treatment intensification in the community has had the same result. We identiﬁ ed all 6993 members of a health maintenance organization, Kaiser Permanente Northwest (KPNW), who, in 1997-1998, had dilated retinal examinations and veriﬁ able data of diagnosis of type 2 diabetes. We plotted prevalence by time since diagnosis for background diabetic retinopathy (BDR) and proliferative diabetic retinopathy (PDR) and compared these results to identically derived 1980-1982 results from the Wisconsin Epidemiologic Study of Diabetic Retinopathy (WESDR). We estimated multivariate predictive models.

RESULTS: Mean (+ SD) HbA1c in KPNW was 7.84 ± 1.26% versus 10.37% (standardized) in the WESDR. KPNW blood pressure averaged 138.6 ± 13, 8/79.5 ± 7.4 mmHg compared with 147.0/79.0 in the WESDR. BDR was much less prevalent in KPNW, but PDR prevalence appeared unchanged. BDR preceded diagnosis in 20.8% of the WESDR subjects but only 2.0% of KPNW subjects. However, in both populations, the first cases of PDR appeared similarly, soon after diagnosis.

CONCLUSIONS: Earlier diagnosis and more aggressive control of blood glucose and blood pressure decreased the duration-adjusted prevalence of background, but not of sight-threatening proliferative retinopathy. More population-based research is needed to replicate and explain this unexpected finding. Detecting and treating PDR should not be neglected on the assumption that risk-factor control has minimized its prevalence.


CLINICAL IMPLICATION: First, even in well-controlled diabetics we should re-emphasize the importance of annual and biennial retinopathy screening exams and make sure that members with pathology are treated and closely followed. Second, we should initiate antihyperglycemic treatments at <7.0% HbA1c, rather than at the ADA-recommended 8.0%. This will reduce risk of post-treatment “accelerated diabetic retinopathy,” and the long-term glycemic burden of our members. Long-term burden is growing thanks to aggressive CVD prevention, providing more years for development of blindness and renal failure. Third, we should consider rapid, office-based HbA1c assays, or have members come in for tests before their visits. Rapid testing reduces mean HbA1c, and glycemic control may deteriorate quickly as treatments fail. It is hard to respond quickly when the HbA1c result arrives after the patient is out the door. –JB
From Northern California:
The early repolarization normal variant electrocardiogram: correlates and consequences

PURPOSE: We compared the characteristics and outcomes of patients with “early repolarization” electrocardiograms (EGCs) with those who had normal ECGs.

METHODS: In 1983 to 1985, we collected photocopies of 2234 selected ECGs from 73,088 patients undergoing health examinations. Excluding 153 ECGs with missing data or that were judged to be abnormal, the remaining ECGs were reinterpreted in 2000 by cardiologists as showing early repolarization (n = 670), or being borderline (n = 350) or normal (n = 1081). Characteristics and outcomes of persons with early repolarization ECGs were compared with those who had normal ECGs using analysis of variance, logistic regression, or proportional hazards models. Information on exercise was available in 325 patients.

RESULTS: Patients with early repolarization were more likely to be male (81% [n = 583] vs 53% [n = 360], p < .001) and to be under age 40 years old (60% [n = 441] vs 37% [n = 403], p < .001) and to be black (48% [n = 384] vs 36% [n = 280], p < .001), and more athletically active (mean ± SD: 10.4 ± 1.3 hours per week of activity vs 6.4 ± 1.2 hours per week of activity) than those with normal ECGs. Patients with early repolarization were not more likely to be hospitalized (hazard ratio [HR] = 1.0; 95% confidence interval [CI]: 0.9 to 1.2) or to die (HR = 0.8; 95% CI: 0.6 to 1.2) during follow-up than those with normal ECGs. Outpatient diagnoses were not more common in those with early repolarization; arrhythmias were actually less common (p < .01).

CONCLUSION: Although especially prevalent in young, athletic, black men, early repolarization is not rare in other patients. The long-term prognosis of early repolarization is benign.

From Northern California:
Meconium-stained amniotic fluid is associated with puerperal infections

OBJECTIVE: The purpose of this study was to determine whether meconium-stained amniotic fluid is associated with puerperal infection and whether the quality of the meconium is further associated with this risk.

STUDY DESIGN: We designed a retrospective cohort study of all deliveries beyond 37 weeks gestational age from 1992 to 2002 at a single community hospital. Data were collected on rates of chorioamnionitis, endomyometritis, quality of amniotic fluid, and length of labor and analyzed with bivariate and multivariate analyses.

RESULTS: We found that, among the 43,200 women who were delivered at term, 18.9% of the women had meconium staining (8.8% thin, 5.5% moderate, 4.6% thick). Compared with deliveries with clear amniotic fluid, those with meconium-stained amniotic fluid had higher rates of chorioamnionitis (2.3% vs 4.1%, p < .001) and endomyometritis (1.0% vs 1.7%, p < .001). Further, the severity of meconium staining was associated with increased rates of infection.

CONCLUSION: We found that the presence and severity of meconium-stained amniotic fluid is associated with puerperal infection even when being controlled for confounders.

Clinical Implication: Teen smokers value smoking cessation support that respects their choices about when and how to quit and acknowledges the challenges they face during cessation. Providing confidential, nonjudgmental support and offering cessation strategies and resources that have worked for others are important ways to support teens as they consider and undertake cessation. Many teens liked the idea of using interactive computer-based programs and multi-session telephone-based cessation approaches because of their convenience and confidentiality. Referring teens to such programs provides them with continued support beyond the office visit. –NV ✶

From the Northwest:
The problem is getting us to stop. What teens say about smoking cessation

BACKGROUND: Low participation and high dropout in many teen cessation programs may be due to lack of fit between teens’ needs and the way programs are delivered. Qualitative studies, designed to identify and understand preferences of intervention participants and barriers to participation, offer opportunities to customize programs and improve their reach and effectiveness.

METHODS: Two sets of focus groups with high school students were held in the Portland, OR, metropolitan area to elicit reactions to two smoking cessation programs and discuss motivations for and experiences with quitting. Thirty-three students (15 girls, 18 boys) participated in the first set of four focus groups; 40 students (21 girls, 19 boys) in the five focus groups for the second.

RESULTS: Participants preferred programs that respect the challenges that teens face in quitting, and acknowledge their choice in making the decision to quit. Teens wanted nonjudgmental and confidential support from cessation counselors, and preferred counselors who are ex-smokers, give useful quit tips, and can provide support for quit attempts. Private, computer-based programs and personalized telephone services were options for delivering cessation information and support.

CONCLUSION: Teen smokers can supply valuable information to improve youth cessation programs to fit teen lifestyles, respect the challenges teens face, and acknowledge their choice in making the decision to quit.

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Human Embryonic Stem Cells and Type I Diabetes: How Far to the Clinic?

By Gillian M Beattie, BSc
Alberto Hayek, MD

Introduction
Diabetes affects an estimated 16 million people in the United States1 and more than 150 million people worldwide—and the prevalence of this disease is expected to double in the next 25 years.2 Diabetes is the sixth leading cause of death in the United States,1 the leading cause of blindness and amputation in developed countries, and the leading cause of renal failure and kidney transplantation worldwide.3 Compared with the non-diabetic population, people with diabetes are from two to four times more likely to have heart disease and are from two to four times more likely to have a stroke.1 The total direct and indirect economic cost of diabetes in the United States in 2002 was estimated to be more than $132 billion.1 Current therapeutics consist of insulin for patients with type 1 diabetes; for patients with type 2 diabetes, medications are used to stimulate insulin production (sulfonylurea and meglitinide agents), to enhance insulin sensitivity (biguanide/metformin and glitazone), to decrease glucose absorption (glucosidase inhibitors), or to prevent overproduction of glucose by the liver (metformin).

Current Therapy versus Future Cure for Diabetes: What Do We Need?
The β cells contained within the islets of the pancreas are the only cells that exhibit appropriate glucose-responsive insulin secretion. Transplantation of the pancreas, of islets, or of β cells can establish exogenous insulin independence; these three tissue sources are thus far the only known potential cures for diabetes. At the end of October 2002, full pancreatic organ transplantation had been performed with a very high success rate (84% one-year survival of the transplant) in more than 18,000 patients.2 However, because of the toxic effects of the lifelong immunosuppression drugs needed to prevent tissue rejection, pancreatic transplantation is an accepted therapy largely for patients who have end-stage renal disease and need kidney transplantation (ie, patients who will already be receiving immunosuppressive therapy). A shortage of organs available for transplantation (only about 5000 pancreases are available annually)3 has further restricted the number of patients who receive pancreatic transplants. The effects of successful whole-organ pancreatic transplantation in patients with advanced type I diabetes have been dramatic, not only halting the progressive complications of the disease but actually reversing some conditions previously thought irreversible, eg, diabetic neuropathy. Because the islets constitute only 1% of an otherwise healthy pancreas—whose primary function is production of digestive enzymes—replacement of only the nonfunctioning islets is a more ideal therapeutic strategy than whole-organ transplantation. Until recently, islet transplantation had been plagued by poor success rates: Of the 355 adult islet allograft transplants performed from 1990 through 1999, only 11% resulted in insulin independence for more than one year.4 These low success rates are now believed to result from two commonly used immunosuppressive medications: cyclosporin and steroid agents (which are known to be deleterious to β cells).

The results of two recent clinical studies5,6 dramatically increased the feasibility of islet transplantation as a valid treatment for type I diabetes. By using a new combination of antirejection medications (tacrolimus, sirolimus, and daclizumab) that does not include steroids, islets were transplanted into 12 diabetic patients, all of whom continued to have insulin production and 80% of whom achieved insulin independence at follow-up one year after transplantation. These results revolutionized the field of islet transplantation. However, to obtain the number of islets needed for insulin independence, each transplant requires two or three donor pancreases. Although problems with immunosuppression and graft survival have...
been alleviated, donor organs for transplantation remain scarce.

Other possible solutions to the problem of donor organ shortage include use of growth factors and extracellular matrix components to expand adult β cells; use of putative endocrine precursors (e.g., ductal cells) from adult pancreases; and use of fetal pancreatic progenitor cells. All of these possible solutions, however, have limited growth potential. By contrast, genetically modified β cells containing transduced oncogenes can be expanded indefinitely; however, in addition to the abnormal karyotype that results from use of these genetically modified cells, problems with their stability and functionality remain a problem. An ideal cell replacement for insulin-deficient states would be available in unlimited supply, have a normal karyotype (number and type of component chromosomes), and show normal functionality of the mature β cell.

Embryonic stem cells fulfill the first two criteria—and possibly the third—if they can be induced to differentiate efficiently into mature β cells and release insulin appropriately in response to glucose.

**What is a Stem Cell?**

A mammalian stem cell is a primitive cell that is totipotent: If properly stimulated, this cell can develop into any cell type in the body. The stem cell is unique in its capacity for both self-renewal and differentiation; cell division of a stem cell need not produce two replicate cells but instead may produce, for example, one stem cell and a highly differentiated cell. Stem cells may be further classified as adult (present in many adult mammalian tissues) or embryonic-stage (derived from early embryos in the blastocyst stage). Blastocysts are stored by in vitro fertilization clinics. In this article, unless otherwise specified, we refer to embryonic-stage (ES) stem cells when we speak of stem cells.

Some controversy has been raised regarding plasticity of adult stem cells, but ES cells have the intrinsic ability to become mesoderm, ectoderm, or endoderm, thus giving rise to every differentiated cell in the body. ES stem cells express the enzyme telomerase that enables the chromosomes to maintain telomere length after cell division. Because they have high telomerase activity (as do tumor cells), stem cells maintain their proliferative potential and theoretically have unlimited expansion in culture; unlike tumor cells, however, stem cells retain a normal karyotype.

**How Can Renewable Stem Cells Be Maintained in Culture?**

A key characteristic of embryonic-stage stem cells is their fundamental ability either to remain pluripotent or to differentiate; the mechanism of this determination in human stem cells is largely unknown. By contrast, mouse stem cells have been studied for 20 years, and the general evolutionary conservation of biochemical pathways has led to the assumption that methods developed for murine systems may be applicable to human systems as well. Unfortunately, however, this assumption is not accurate. In culture of mouse stem cells, renewal of stem cells is regulated by leukocyte inhibitory factor (LIF). Removal of LIF causes mouse stem cells to differentiate spontaneously. Although this pathway in mouse stem cells has been well described as the accepted “stem cell renewal” pathway, the pathway in human stem cells now appears to be different. Moreover, neither murine nor human LIF maintains human stem cells in the pluripotent state; a still-unidentified controlling factor is involved.

Use of fibroblast feeder layers is necessary in human stem cell development, but possible transfer of harmful mouse viruses to any human transplant recipient precludes clinical use of existing human cells in these patients. In Singapore, however, new human stem cell lines have recently been derived without exposure to mouse cells. This development escapes the problem of transmission of mouse viruses and therefore is an important step toward clinical application. Unfortunately, at this time, the only human stem cells that investigators in the US are permitted to use predate the Singapore technique, so all stem cell lines used in this country are compromised for clinical use because of the potential mouse viral load. Thus, in summary, the requirements for self-renewal of human stem cells are unknown, but unknown factors secreted by fibroblast feeder layers are certainly crucial for maintaining pluripotency and self-renewal. Elucidating the molecular mechanisms involved will be necessary for maintenance of self-renewal and to control differentiation into particular cell lineages.

Culture of human stem cells at this stage is both time-consuming and difficult: Human stem cells grow as clusters or as colonies and do not survive well as single cells. Human stem cells have a doubling time of 30 to 40 hours and thus grow slowly. These cells are fastidious about culture conditions and will either die or differentiate if not kept in a highly specific environment in vitro. Major improvement of culture methods will be difficult to accomplish but will be necessary for development of stem cell clinical applica-
Human Embryonic Stem Cells and Type 1 Diabetes: How Far to the Clinic?

How Can We Influence Stem Cells to Differentiate Into Pancreatic Islet β Cells?

Even under the best circumstances of tissue culture, differentiation into various cell types occurs spontaneously (the default pathway is development into neurons). Only 1% to 3% of spontaneously differentiated human stem cells produce insulin; and unlike mature islet β cells, these stem cells have not been shown to secrete the hormone in response to glucose. Working with mouse stem cells, Lumelsky and colleagues were able to increase mouse stem cells, Lumelsky and colleagues shown to secrete the hormone in these stem cells have not been associated human stem cells produce insulin; and unlike mature islet β cells, these stem cells have not been shown to secrete the hormone in response to glucose. Working with mouse stem cells, Lumelsky and colleagues showed that hepatocyte growth factor and nerve growth factor are the only growth factors that induce endodermal differentiation. Because pancreatic tissue arises from the endoderm, treatment with these two growth factors could initiate the first step toward differentiation into β cells.

After development into endodermal lineage has been induced, targeted antibiotic protection and gene traps may be used to further select endocrine precursors on the basis of promoter activity. This result can be achieved by infecting endodermal cells with viruses containing β cell gene-specific promoters that drive an antibiotic resistance gene (eg, the gene for antibiotic resistance to neomycin). The only cells surviving culture in the presence of the antibiotic would be cells expressing the β cell gene of interest, and this result would thus yield a pure population of β cell precursors.

These genes could be one of several transcription factors present during early stages of β cell differentiation. Another possible method for obtaining a more homogeneous population would be to use antibiotic selection to force expression of relevant β cell transcription factors in endodermal cells.

Extensive genomic and proteomic analysis on these transduced lines will be necessary for ensuring that their genetic integrity has not been compromised. After cells containing genes specific for β cells have been selected, further differentiation could be initiated either with growth factors, with matrices known to induce β cell maturation (eg, exendin-4/glp-1, FGF4, nicotinamide, HGF/SF, or activin A/betacellulin), or with both.

Mouse stem cells and rat fetal pancreatic cells share the ability to become fully mature β cells in vitro, releasing insulin appropriately in response to presence of glucose. However, previous experience has shown that although β cell markers or insulin production can be induced in vitro in human fetal pancreatic precursors, these cells are glucose insensitive; a special in vivo environment is necessary to achieve glucose-responsive insulin release. The same in vivo signals may be needed for full maturation of β cells derived from human stem cells. Clinical application may require some time after transplantation before the cells become responsive to glucose.

Conclusions

For human stem cell-based therapy to become a reality for patients with diabetes, several important steps must be accomplished:

- Legislation in the United States must be changed to allow generation of new human stem cell...
lines that have not been compromised by co-culture with mouse cells and that offer distinct cell phenotypes to facilitate graft acceptance.

- The molecular mechanisms of cellular self-renewal must be understood more deeply so that we can efficiently maintain human stem cell lines in their pluripotent state. In addition, present culture methods must be improved to generate sufficient cells for clinical use. After stem cells enter the differentiation pathway, their time clock starts and they begin to lose telomerase activity and the capacity to replicate indefinitely. We must therefore learn how to maintain the stem cells in their pluripotent state for clinical use and to induce the differentiation process when needed for transplantation.

- Efficient, safe protocols must be designed for inducing β cell differentiation so that these clinically differentiated cells can normalize blood glucose levels the same way spontaneously differentiated β cells normalize blood glucose levels.

When these questions are resolved, large-scale prevention and reversal of the consequences and complications of type I diabetes mellitus should be made possible through islet cell transplantation. Despite the great political and scientific effort needed to achieve prevention and reversal of type I diabetes mellitus, pilot studies have shown the feasibility of reaching these goals. ♦

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References
Vision Screening for Alzheimer’s Disease: Prevention from an Ophthalmologist’s Perspective
(There is More to Vision than Meets the Eye)

By Peter N Rosen, MD

Abstract

Recent evidence suggests that memory impairment and vision impairment are closely linked in Alzheimer’s disease and that special testing for vision impairment can improve early detection and treatment of dementia. Visual images, attention, memory, awareness, and salience are tightly bound together in the cerebral cortex; under normal circumstances, these functions perform seamlessly to produce a visual reality of the external world. Alzheimer’s disease—now considered a chronic illness—unravels the fabric of reality woven together over a lifetime of experience: The disease produces disconnected threads of visual perception, memory, and cognition. The earliest neuroanatomic manifestations of this process begin in the limbic system and medial temporal lobe of the brain, areas critical for detailed visual perception and memory management. Thus, by using vision tests to detect impaired image formation and memory, vision care specialists can play a valuable role in secondary and tertiary prevention, as well as in early treatment of eye disease and dementia. In addition to reducing health care utilization, prevention can be expected to improve functioning and health-related quality of life.

“... deficits in short-term memory lead to impaired vision ...

Introduction

Interest in early treatment and prevention of Alzheimer’s disease (AD) has been fueled by the increased prevalence of AD in our aging population: AD currently affects approximately 10% of the population aged 65 years and older (four million people) and almost 50% of the people aged 85 and older. For persons with AD who receive at-home care, the mean cost of care provided by outside caregivers is about $12,500 per year, and the mean cost of care is $42,000 for persons with AD who live in nursing homes. Overall, approximately $100 billion per year is spent in the United States for care of persons with AD.7

The most profound feature of AD is memory impairment, particularly in the early stages of AD.5,5 Vision is also impaired in early AD,6-10 although this feature is not widely recognized by most clinicians. Indeed, because cognitive and vision impairments are not widely recognized as closely linked, vision testing and cognitive testing are not conducted at the same visit or by the same provider. This article presents new concepts of how visual perception occurs in the brain; explains the connection between vision impairment and memory impairment; discusses the importance of testing for visual risk factors in pre-symptomatic and early phases of AD; and suggests how such testing may help with secondary and tertiary prevention in AD.

Links Between Impaired Vision and Impaired Memory in Alzheimer’s Disease

Vision, memory, attention, and language are tightly bound together in the first years of life and support the ability to learn, communicate, and plan for the future.11,12 Dementia in the last decades of life robs us of these essential human qualities and causes their associated processes to unravel. Memory impairment as shown by neurocognitive test results is associated with vision impairment in patients with early AD.8,10,13 Evidence accumulated during the past decade supports the conclusion that deficits in short-term memory lead to impaired vision and thus result in failure to encode into...
recent memory new experiences of events and objects. This evidence also supports the conclusion that the disconnect between visual perception and memory produces faulty cognition—inability to correctly interpret what is seen—and eventually causes difficulty with everyday tasks, including recognizing familiar faces and navigating familiar neighborhoods.

Indeed, memory plays a more central and interactive role in visual awareness than previously thought. “Working memory,” a form of short-term memory, mediates visual awareness by providing a real-time repository for current images received by the visual cortices and memories of similar objects, people, or places retrieved from long-term memory. Visual synthesis is a widely distributed brain function in which a “division of labor” is used to simultaneously perform different tasks (Figure 1). More than 30 specialized areas throughout the association cortices perceive form, motion, contrast, color, depth, shape, spatial location, and other visual attributes. A virtual image is created that unifies and binds together different elements of vision from disparate areas of the brain into what has been called the “blackboard of the mind.” Some neuroscientists view working memory as the blackboard which holds visual percepts (mental image) and other sensory inputs in conscious awareness, where these visual percepts remain available for evaluating novel situations, detecting and evaluating change, and navigating the external world. “Working memory” gives the brain the time to compare old and new images to determine the new images’ salience. Combining what we see and knowing what we see is a process of cognitive integration largely dependent on memory. Visual consciousness results from seamless merger of synthesizing coherent visual images and understanding their meaning or salience.

That vision and memory are inextricably linked is therefore not surprising. When memory is impaired, vision is suboptimal. Poor visual perception caused by eye disease (eg, cataracts or macular degeneration) contributes to impair-

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**Figure 1. Illustration shows the “blackboard of the mind” concept as it relates to patients with Alzheimer’s disease**

- **Visual Object**: Magnocellular and parvocellular pathways
- **Attention**: Visual filter
- **Retinal Photoreceptors**: Fast track
- **Limbic System**: Emotions, memory management
- **Neocortex**: Where & what visual pathways
- **Thalamus Pulvinar**: Heightened sensitivity to visual change
- **Working Memory**: New visual images, salience, old visual perceptions
- **Long-term Memory**: Retrieval of archived memory, action, planning, reflection, new memories
Vision Screening for Alzheimer’s Disease: Prevention from an Ophthalmologist’s Perspective

ment in vision by distorting newly formed visual images held in working memory.\(^{1,11,12,14-16}\) In the brain, visual synthesis is distorted by a failure of working memory to bind visual elements into a coherent image. A combination of poor image formation and failure to retrieve archived memories of the same or similar images results in poor vision. Diminished appreciation of salience or the ability to interpret visual percepts (mental images) results in failure to form sufficiently detailed new visual images and consequently memories of current objects and events.\(^{1,11,12,14-16}\)

**Developmental Processes of Alzheimer’s Disease: Paths to Early Detection and Treatment**

Interest in early detection of AD has been stimulated by two factors: 1) modest treatment success recently achieved by use of medication and 2) improved understanding of the pathogenesis of AD. However, until the recent introduction of new types of medication, systematic screening for early AD was not recommended. Alzheimer’s disease is now considered a chronic illness that begins decades before its earliest clinical manifestation.\(^ {20-22}\) In this regard, the process underlying AD is similar to that of atherosclerotic heart disease, a condition in which chronic imbalance exists between cholesterol production and cholesterol clearance. In patients with AD, a gradual-onset, chronic imbalance in production (versus clearance) of amyloid beta-protein leads to a slow rise in the steady-state levels of this protein in extracellular brain tissue;\(^ {2,22}\) this result causes a complex biochemical and inflammatory cascade that leads to synaptic failure, loss of synaptic plasticity, and eventual neuronal degeneration manifested behaviorally as loss of memory and descent into dementia.\(^ {22}\)

The earliest pathologic changes in patients with AD occur in the entorhinal and perirhinal cortex, hippocampus, and medial temporal (MT) lobe of the brain.\(^ {1,11,12,14-16}\) These areas are considered to be “convergence zones” needed to process and consolidate newly formed visual images into long-term memory. Impairment of the limbic system prevents meaningful consciousness by impeding the brain’s ability to determine what is currently salient and to lay down new memories for determining future salience.\(^ {20}\)

The behavioral evolution of AD begins with a slow transition from normal, age-appropriate cognitive functioning to mild cognitive impairment (MCI) characterized by memory deficits that exceed age-related loss.\(^ {3,5,23,24}\) MCI and early AD often remain undetected, because memory impairment may be interpreted by family, friends, and clinicians as age-related. Aggressive efforts at early detection are usually not undertaken, because effective medication for treating AD has only recently become available. As treatment aimed at the earliest genetic and biochemical phases of AD is developed, screening for preclinical AD will become more imperative.\(^ {20,22}\) Despite technologic advances such as genetic testing, imaging studies, and biochemical markers, diagnosis of AD depends largely on clinical assessment and on neurocognitive testing.\(^ {25-28}\) Most cognitive tests have reasonably high sensitivity and specificity and seek to detect memory impairment, particularly short-term “working memory.”\(^ {26,26}\)

Clinical examination and neuropsychologic testing can distinguish patients with MCI (pure memory deficit) from patients with probable or early AD,\(^ {26,29}\) but detecting the transition from normal aging to MCI, has proven more difficult (Figure 2)\(^ {4}\) because current tests lack sufficient sensitivity and specificity. For this reason, much effort has been directed toward discovering biomarkers to identify risk of preclinical (asymptomatic) AD.\(^ {26}\) Genetic testing, methods of structural and functional imaging (MRI, PET, and SPECT scanning), and measurement of Aβ42 and Tau peptide levels in the cerebrospinal fluid all have shown promise but do not add incremental value to clinical examination results and neuropsychologic profiles.\(^ {30,31,32}\) Testing certain aspects of vision is a new area of early risk detection in AD that might be easily used by a wide variety of clinicians.

**Figure 2. Transitions: Normal Aging, Mild Cognitive Impairment, Alzheimer’s Disease**

[Diagram showing transitions from Normal to Mild Cognitive Impairment to Alzheimer’s Disease with Transition Zones]

Testing certain aspects of vision is a new area of early risk detection in AD that might be easily used by a wide variety of clinicians.

**Selecting Appropriate Vision Tests for Early Detection of Alzheimer’s Disease**

Many vision tests for early detection of AD are inexpensive and can be done quickly and reliably by a wide variety of clinicians other than vision care specialists.\(^ {32,33}\) Therefore, a major benefit of reliable and sensitive vision tests will be to substantially increase the number of clinicians able to screen patients for mild...
cognitive impairment and early AD. Further, these tests may prove to be more sensitive for initial screening, for evaluating disease progression, and for assessing treatment outcomes. Vision tests that are easily understood by patients and families and that are used by insurers, administrators, and regulators will expedite care and may lower costs.

The Benton Visual Retention Test can be used to predict statistically significant risk for AD as long as 15 years before onset. Whether other vision tests can produce similarly dramatic results is unknown. Vision tests (which detect impairment of vision and memory) are likely both to improve efforts at early detection and to be useful in secondary and tertiary prevention. Vision testing for early detection of AD is likely to be a fruitful area of future research.

However, vision tests done routinely by vision specialists (eg, tests of visual acuity and visual field) are generally not sensitive or specific in patients with early-stage AD. Visual acuity is a limited measure of true visual performance and is a poor predictor of complex, vision-dependent tasks that are likely to be impaired in patients with early-stage AD. For more than a decade, however, visual impairment in patients with AD has been known to include several well-defined deficits: contrast sensitivity; selective and divided visual attention; visual processing speed; and feature recognition of complex objects, particularly faces. More recently, use of the Benton Visual Retention Test has shown that poor visual memory might represent early expression of AD. Poor performance on this test has been associated with increased risk of AD as long as 15 years before diagnosis.

Vision specialists have not used these tests, because the direct link between vision impairment and AD was not well understood and because more sensitive, potentially valuable tests for AD—tests of contrast sensitivity, visual attention, and facial feature recognition—were not yet available for use in clinical settings. These barriers to effective early detection of AD are being eroded because laser surgery for correcting refractive errors has renewed interest in these tests and because easily administered, computer-based methods are affordable and are widely available.

Contrast Sensitivity Testing

Contrast sensitivity is the ability to detect different shades of gray. More specifically, contrast sensitivity is the difference in the amount of reflected light between an object and its background. Small differences in contrast result in high sensitivity. Because it allows us to differentiate objects when illumination is low, contrast sensitivity is a critical component of vision. Use of contrast-sensitivity testing has recently gained the interest of vision specialists as a sensitive measure of vision quality after refractive surgery. In a number of medical conditions, including cataracts, macular degeneration, and AD, contrast sensitivity may be substantially impaired even when visual acuity remains relatively good. This deficiency could result in substantial visual impairment under conditions of poor illumination, such as driving at night or in fog.

Contrast is most sensitive for distinguishing large objects and complex surface features (eg, people and faces). In this range of vision, patients with AD have selectively diminished contrast sensitivity, whereas normal aging results in diminished contrast mostly at higher visual acuities. The Pelli-Robson test is commonly used to measure contrast sensitivity in clinical care and research settings (Figure 3).

Visual Attention Testing

Visual attention is divided into three subsets: speed of processing visual information, divided attention, and selected attention. The speed of processing visual information is defined as the amount of time needed for detecting, localizing, and identifying objects in space. Divided attention is defined as the ability to pay attention to two things at once (eg, driving while keeping an eye

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**Figure 3. Photograph shows Pelli-Robson contrast sensitivity chart**

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**Figure 4. Photograph shows tests used for evaluating useful field of vision and divided attention**

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on the road and being aware of people and road signs). Selective attention is defined as the ability to “select” one type of information while ignoring another type of information; for example, being able to assign priority to the most important features of the road while ignoring less consequential features is important for safety because it reduces the likelihood of error and injury. Visual attention declines with normal aging but is more profoundly impaired in patients with AD. Visual attention can be measured using a computer program, the Useful Field of View (UFOV) (Figure 4).

**Facial Feature Recognition Testing**

Recognition of facial features is a complex, poorly understood phenomenon involving vision and cognition. Patients with AD more easily recognize faces with smaller features and high contrast than faces with larger features and low contrast. In addition, patients with AD have selective impairment for recognition of familiar faces, and this impairment supports the theory that “intelligent” vision requires a combination of visual detection and cognition (memory and learning). Computer-generated facial expressions (Figure 5) having progressively diminishing degrees of contrast are therefore used to detect impairment of facial recognition. The test is scored by correctly identifying the correct facial expression at low levels of contrast.

**Preventive Role of Vision Care Specialists: An Opportunity Whose Time Has Come**

Mounting evidence suggests that vision impairment caused by eye disease in patients with AD is correlated with the severity and frequency of AD symptoms in these patients. Whether patients with MCI or early AD can derive cognitive benefit from early cataract extraction or from more aggressive treatment of glaucoma or macular degeneration is not known with certainty, but recent evidence from the neuroscience literature suggests that this approach may be beneficial. If such benefit is shown, vision specialists would develop greater interest in early detection of AD. If vision impairment caused by intraocular conditions is treated early in patients with MCI or early AD, the sensory loss related to cataracts, glaucoma, macular degeneration, and diabetic retinopathy might be reduced. Improvement in vision quality may lead to enhanced attention and recognition of new objects and thus may improve visual salience and enable consolidation of new memories. Although early treatment of eye disease is unlikely to alter the underlying pathology of AD, such treatment may delay the onset and severity of symptoms in AD. No prospective clinical trials are available to show this benefit, but animal studies suggest that this approach may be beneficial. Currently, medical treatment has a modest impact on the course and symptoms of AD but is more effective when started early than when introduced later in the disease. The possibility of early treatment (made possible by early detection) has stimulated an aggressive search for more effective therapeutic approaches, and future research in this area is needed.

**Vision Tests for Driver Safety: Independence and Mobility in Patients with Alzheimer’s Disease**

Department of Motor Vehicles (DMV) personnel traditionally have relied both on vision testing and on road testing, but DMV personnel and health care professionals are focusing increasingly on the continuing need for more useful screening tests to evaluate driver safety. Testing high-contrast visual acuity is necessary but is insufficient for evaluating impaired driving ability, particularly in elderly persons. Vision care specialists typically rely on high-contrast visual acuity tests, visual field examination, and physical examination of the eye to detect medical conditions (eg, cataracts, macular degeneration) that impair vision, but these specialists do not routinely test for attention deficit, loss of contrast sensitivity, or cognitive decline.

Combined measurement of visual and cognitive performance during driving simulation is becoming a valuable method of assessing early impairment of driving ability. Driving simulation has high intuitive validity because many aspects of visual and cognitive performance are widely recognized as a requirement for safe driving and are understood...
by patients, clinicians, and regulatory agencies. Moreover, visual and cognitive performance during simulated driving under varying road and weather conditions is closer to “real-world” activities than are clinical tests of either visual acuity or contrast sensitivity. Impaired visual and cognitive performance is also predictive of injurious and non-injurious car crashes in patients with cataracts.13,30-42

However, driving simulation tests typically are expensive, lack portability, and are often time-consuming to administer. Further, no published validation studies exist for these tests; and no correlation is available between these tests and known US Department of Transportation Safety Standards, crashes, or clinical measures. For these reasons, driving simulation tests have not been widely deployed in academic, clinical, or DMV settings.43 New microcomputer-based driving simulation software has been developed recently to overcome many of these barriers (Figure 6). The purpose of this type of platform is to permit automated, minimally supervised measurement of visual performance during driving simulation in clinical settings and in other relatively uncontrolled environments.

**Conclusions**

Alzheimer’s disease is a big, growing, and costly problem. As more effective medication becomes available for treating this disease, better tests for early detection will be needed. Recent evidence suggests that memory impairment and many attributes of vision are closely linked in patients with AD. Impaired contrast sensitivity, visual attention, and face recognition are known to be present in patients with AD, and testing for these types of impairment may be as sensitive as the traditional neurocognitive tests currently used for clinical diagnosis. Computer-based administration of these vision tests allows them to be done quickly and easily. Performance tests (eg, driving simulation that incorporates vision and cognitive measures) may also contribute to evaluating early AD. Vision specialists examine many elderly patients and can play a vital role by providing secondary and tertiary prevention measures, including early treatment of eye diseases, provision of informed advice regarding driver safety, and early referral to primary care practitioners, neurologists, or psychiatrists.

**References**


This piece was inspired by an early spring drive from Eugene, OR, to Portland, OR. The sky was threateningly dark, with the sun peeking through to brighten the colors of the valley. More of Mr Schumacker's art can be found on the cover and page 54.
Hungry for Love: The Feeding Relationship in the Psychological Development of Young Children

By Charles W Slaughter, MPH, RD
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Abstract
At a time of increasing concern about childhood obesity, health care practitioners can exert pressure on parents and other caregivers to view meals and snacks primarily as opportunities to control children’s caloric intake and thus prevent or control childhood obesity. Yet feeding is about much more than the amount and kinds of food offered: Feeding can have a powerful influence not only on the physical health of children but also on their social and emotional health. The feeding interactions used by parents can support or hinder their children’s healthy development and can affect parental satisfaction with parenting. By incorporating basic knowledge of child development into the feeding interactions used by parents, health care practitioners can have an even greater impact on the health of children and parents.

What happens during the first months and years of life matters a lot, not because this period of development provides an indelible blueprint for adult well-being, but because it sets either a sturdy or fragile stage for what follows.

—Shonkoff and Phillips

Introduction
Our knowledge of children’s needs has grown tremendously in recent years. One has only to read the 2000 National Academy of Science report, From Neurons to Neighborhoods, to understand the importance of early childhood development, including early brain development. The past decade has seen a large increase in research and communication about brain development, particularly in early childhood. This research tells us that the interactions between parents and their infants or children are very important for human development. The parent-child relationship can provide lifelong gifts, such as healthy brain development; a sense of resilience; a sense of being loved and cared for; empathy for others; a desire for and joy about exploring, reading, and other learning; and a sense of being important to others.

Equally true is the assertion that a poor parent-child relationship can represent lost opportunity to build genuine love and as such can be destructive through no fault of the infant or child. Neglectful or harmful parenting can wound or damage a child; limit brain development; create unhealthy beliefs about what love is; create a sense of worthlessness; and decrease exploring, reading, and other learning.

Attachment research has contributed greatly to our knowledge and understanding of the importance and impact of early parenting. Mary Ainsworth’s attachment research in 12-month-old infants opened the door to assessing how mothers relate and respond to their young children and how the resulting mother-child relationship can be characterized as being securely attached, avoidantly attached, or ambivalently attached. Further research in the field of attachment has shown that children with a secure attachment explore more, are easier to manage, are more resilient, have better social skills, have better relationships with peers, and have more empathy than do children in the other two groups. In other words, the quality of relationships a child has later in life reflect the warmth, responsiveness, and consistency of care experienced by the child in his or her early relationships.

Each interaction between a physician, nurse practitioner, nurse, dietitian, or other health care practitioner and a parent is an opportunity to learn about the parent’s relationship with his or her child …
challenges, frustrations, and triumphs of parenting.

Often, a most powerful interaction occurs when the parent is influenced by the health care practitioner to better understand, accept, and provide developmentally appropriate care to the child and thus positively affect the child’s development, health, and life. An excellent pathway in which to observe and influence this process is seen in the parent-child feeding relationship, a universally important early relationship. Feeding is a major area where parents and their young children have frequent daily interactions that either support or hinder the child’s healthy development. These interactions can affect parents’ perceptions of their competence at parenting as well as their feelings of closeness to their children and sense of acting in their best interests. Thus, the feeding relationship reflects the parent-child relationship—and feeding struggles often indicate struggle in that relationship.5

At a time when childhood obesity is attracting legitimate nationwide concern, anyone can easily miss the greater point and focus on feeding strictly as a way to prevent or control obesity. A parent can thus believe that preventing or reversing the child’s obesity is more important than the child. The parent might then feel justified in preventing or controlling the obesity through actions that may be counterproductive and damaging to the child’s social, emotional, and physical health while failing to develop the emotional basis for healthy eating habits (eg, stopping when satiety is reached). However, taking no action might be equally damaging. A more helpful approach to the problem of childhood obesity is to address the feeding relationship.

Developmental Aspects of Feeding

Feeding is an interactive process that depends on the abilities and characteristics of both parent and child.6 A positive feeding relationship is essential for a child’s proper nutrition and growth.7 In addition, interactions related to feeding have a powerful impact on how children feel about themselves and the world.7

The following example speaks to the emotional well-being of both the child and the parents; these can be addressed by focusing on the parent-child feeding relationship.

Mavis Bomengen, RN, a public health nurse in Lakeview, Oregon, was working with a mother to help her two-year-old son, who was enrolled in the nationwide Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). As part of the WIC visit, Mavis explored the child’s mealtime environment and learned that the mother was forcing her child to “clean his plate” at each meal.

The tension and battles that resulted made mealtimes unpleasant for both the child and his mother. Mavis described for the mother the primary feeding relationship concept: division of responsibility. The mother was willing to try to incorporate this concept by letting the child—and not either parent—assume responsibility for how much he ate. However, the mother warned that the response of the child’s father would probably be a different story. After three calls to the father, he agreed to meet Mavis in the clinic to discuss the situation.

Mavis asked him about his own experience of mealtime when he was a child. The answer was not surprising: He had been forced to clean his plate. “If it was good enough for me,” he stated, “it’s good enough for my son.” And how had he felt about mealtimes under those circumstances? Mavis asked. Mealtimes were unpleasant, the father admitted. Then, faced with the realization that his son was probably having similar feelings, the father agreed to let his son decide how much to eat at each meal (personal communication, Fall 1995).

In the feeding situation just described, parenting was clearly improved. Equally important but perhaps not as apparent is the observation that this improvement helps the two-year-old child during a developmental stage—separation and individuation—in which he is working to succeed at specific and necessary developmental tasks.

Feeding provides an opportunity for parents to support healthy development. By using Satter’s division of responsibility and other healthy behavior related to the feeding relationship, a parent helps his or her baby to feel safe, secure, loved, and respected. These types of feeding behavior also help children to develop an internal sense of being capable, to experience and learn healthy boundaries, and to learn important life skills.

As with other aspects of parenting, the area of feeding is likely to present difficulty for parents.8,9 The struggle is usually expressed as frustration or concern about their child’s eating behavior. Feeding interactions are influenced by the child’s developmental stage and by the particular tasks required at each stage, and a parent may lack knowledge about normal childhood eating behavior or strategies available for developing specific, healthy feeding behavior. Driven by this lack of awareness, parents can have unrealistic expectations that introduce struggle into the feeding relationship. A child’s emotional state and a parent’s eating experiences as a child also can contribute to this struggle.

Infants, toddlers, and young children go through dis-

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... the area of feeding is likely to present difficulty for parents. The struggle is usually expressed as frustration or concern about their child’s eating behavior.
Feeding During Pregnancy

During gestation, a baby experiences a warm, moist environment that is for the most part secure, safe, and soothing. The physical boundaries are the tightest the child will ever enjoy, even as they change to exactly accommodate the unborn baby’s growth. Little communication by the baby is needed to have his needs met for food, warmth, oxygen, and sleep.

During the second half of pregnancy, a new need and ability arise. Babies begin to interact with their mother and with others. New evidence shows that they can hear and respond to singing, talking, reading, and noise; that they are aware of the touch of someone’s hand; and that they can move in response to that touch. Researchers in brain development tell us that this healthy interaction helps to strengthen connections between neurons.1,2

All in all, although the womb is an ideal and wonderful place to live, babies must develop into loving, capable people. To do so, they must be allowed to grow physically, emotionally, socially, and spiritually.

Feeding During Homeostasis

Homeostasis is the stage from birth to about three months of age. A parent’s warm, responsive, consistent care at this stage helps the baby to contain the sometimes intense, frightening, and conflicting feelings that arise naturally from being out of the womb. Feeling safe and secure means being fed when hungry; being treated with respect by having feeding stopped when the baby gives cues of being full; sleeping when tired; being held, touched, and engaged when needing soothing interaction; and being given needed care. Dr. Mary Ainsworth, a leading developmental researcher on the importance of the parent-child relationship, has said “… one of the reasons why feeding is interesting in the first three months of life is that the baby spends more of its time in interaction with its mother in the feeding situation than in any other kind of situation.”

Dr. Thomas Lewis and colleagues have written that this early interaction between parent and baby results in formation and storage of implicit memories.3 Some implicit memories formed by babies are based on their experiences in the mother’s womb. Lewis et al.4 state that these early implicit memories are powerful and become the basis for the child’s definition of a loving relationship. These beliefs continue to guide each person’s choices about love—even during the adult years. For example, the implicit memories formed by a young baby who is consistently fed with warmth soon after giving hunger cues are different from the implicit memories formed by a baby whose hunger cues are consistently ignored or who experiences unpleasant interaction during feeding.

Ainsworth observed that secure attachment resulted when a child was hugged when he wanted to be hugged and put down when he wanted to be put down. When he was hungry, his mother knew it and fed him; when he began to tire, his mother felt it and eased his transition into sleep by tucking him into his bassinet. Wherever a mother sensed her baby’s inarticulate desires and acted on them, not only was their mutual enjoyment greatest, but the outcome was, years later, a secure child.5,6

One gift health care practitioners can give parents is the awareness that the parent’s care is powerful for the infant, who already has a genuine, deep connection with the caregiving parent. One example of this power is shown by a scene in the video ‘The First Years Last Forever’: In this video, Dr. T Berry Brazelton and a mother talk to a newborn simultaneously with approximately the same tone and loudness.7 The baby turns to the mother, clearly preferring her voice to Dr. Brazelton’s because the mother’s voice, after all, is the voice the baby knows; she had been hearing it for months. Learning that the newborn recognizes and prefers the caregiving parent’s voice can be a powerful experience for that parent.
Feeding During the Attachment Stage

The theme of the next developmental stage—which occurs between two and six months of age—is falling in love: The parent and the baby fall in love with each other. This period is special and rewarding for both. By paying attention to cues given by the baby during feeding, the parent provides the responsive care that the baby finds so soothing. As in the homeostasis stage, the infant needs the experience of having someone be “crazy about” him or her and spending plenty of time showing it.

By about three months of age, a baby begins to smile at the parent, make noises at the parent, and watch the parent. The baby is experimenting—“trying out” both himself and his parents to learn whether they find him interesting.\(^4\) Major, long-lasting, life-affecting learning is taking place at this stage as the interaction and response of the parent creates in the baby an early internal belief about whether or not he or she is lovable.

Feeding offers a prime opportunity for parents to provide interaction that helps the baby learn that he or she is indeed lovable. In addition to nutritious food, parents can feed their love, care, and attention to the baby warmly, responsively, consistently. This kind of care helps to build an internal sense of being safe and loved—of having a “secure base.”\(^4\)

Feeding During the Separation and Individuation Stage

This stage, at which an infant separates and individuates from his or her parent, extends from six months to 36 months of age and has three major themes: exploration, learning to be competent, and becoming one’s unique self. By this point, the relationship with his or her parents should have given the infant a strong, internal sense of trust. Toddlers who have this secure attachment explore their surroundings much more than those who have been raised in an institution that is comparatively sterile emotionally.\(^5\) Exploring is a crucial element for learning—and learning is a skill essential for having a full and satisfying life.

A parallel effect exists for health care practitioners working with parents to explore their infants’ feeding behavior. We must build in these parents a sense of safety, security, and trust with us so that they will be more willing to take the risks involved in exploring their own feeding-related parental struggles and behavior.\(^1\)

Issues of uniqueness and struggle continue to arise for parents: Each baby—and each caregiver—is unique. As babies mature, they reveal their unique food-related likes and dislikes and communicate them to the parents. How parents respond to this uniqueness—whether they accept or reject it—will affect their baby’s sense of whether being one’s own, unique self is acceptable.

During this stage, a child’s task is to work on developing an internal sense of self, autonomy, and competence and to begin moving away from the closeness she has known; at the same time, the child still needs and depends on important relationships with his or her parents and other important caregivers. During this stage, the child seeks answers to some basic questions:

- Can I successfully explore the world and become more independent and competent while retaining my sense of connection to the important people who love me?
- Will the important people close to me let me learn to use my anger; allow and trust me to retain ownership of my feelings and behavior; and let me use the powerful word \textit{No}?\(^8\)
- What kind of relationship will I have with my mother or father when I say \textit{No}?\(^8\)
- What kind of relationship will I have with my mother or father when they say \textit{No}?\(^8\)

Henry Cloud and John Townsend point out that three basic tools—anger, ownership, and \textit{No}—help 18- to 36-month-old children to achieve the developmental tasks of this age.\(^9\) Cloud and Townsend state that a child learns from his or her anger that something must be addressed, and this skill is needed throughout life. Ownership gives a child an opportunity to take care of something (eg, a possession or an aspect of her life) that is necessary before she can genuinely start to share with others. Using \textit{No} helps a child learn how to use power and how to maintain a healthy connection with another person while using or receiving \textit{No}.

Cloud and Townsend\(^9\) state that being able to use \textit{No} (verbally and nonverbally) is a very important life skill that will be used for the rest of the child’s life. The reactions of parents and other caregivers teach toddlers whether using \textit{No} is okay or will cause them to pay a price for this behavior.

Psychologic Dynamics of Feeding: The Role of Parental Behavior

Feeding gives infants, toddlers, and older children an opportunity to practice using \textit{No} by using a primary feeding relationship concept: division of responsibility. The child is thus allowed to be in charge of how much he or she eats of the food that is offered—and even whether the child eats at all.\(^7\) Feeding also gives a parent the opportunity to practice accepting the \textit{No}.

More important, however, is the parent’s reaction...
when the toddler uses No by not eating a particular food or not eating any of the food. In general, parents react to this situation in one of three ways:

• by accepting and supporting the child’s choice;
• by pressuring or forcing the child to eat the food; or
• by withdrawing from the child emotionally.

If a parent withdraws emotionally because of hurt feelings, the child learns that he or she will pay a price for using No. The child will lose his or her emotional connection to a very important person in her life. This consequence is a big price to pay. Parents who force their children to eat teach them that they will pay a different price: They will be treated with disrespect while experiencing the powerlessness of their No.

These parental responses teach a child that eating the food is more important to the parent than the child’s feelings. The child learns that using No is not safe and that this No is likely to be ignored. This early, perceived lack of support for the child’s use of No can adversely affect his or her use of and trust in this important life skill. In contrast, by allowing their children to refuse to eat certain foods or to refuse to eat when not hungry, parents give their children permission and support for acting in a way that shows love of self.

By accepting their children’s refusal to eat a particular food at a particular time or their lack of a big appetite at a particular meal, parents send the message not only that using No is okay in this family but also that you can use No and still be loved in this family. This method of parenting is powerful because it builds within children a deeper sense of connection with their parents as well as internal beliefs that differ from those of children whose No is ignored or overridden. A child whose parents accept No will later be much more likely to feel comfortable saying No to something that is not good for the child.

Equally important, the division of responsibility provides an opportunity for the child to learn to accept No. When a parent allows the child to eat only at (and not between) snacktime and at meals, the parent is using No with the child. As Cloud and Townsend point out, children must learn to accept No from a parent while maintaining a healthy relationship with that parent. Of course, developing this acceptance and its associated behavior takes repeated practice; it cannot be learned overnight.

Other Challenging Situations Related to Feeding

Children who have been victims of abuse or neglect—or both—often have problems with food. Foster parents and other caregivers of such children can use feeding time to develop with them a relationship that helps them to trust adults while learning that the children’s likes and dislikes are respected. Through an appropriate feeding relationship, abused children aged 18 months to 36 months—and even older—can thus learn that their independence and competence are supported and encouraged by a healthy relationship with a wise, caring adult.

Children with diagnosed disabilities also benefit from a good feeding relationship with a caregiver. Children born with phenylketonuria (PKU) require a diet low in phenylalanine. The caregiver must teach the child what foods he or she can and cannot eat. Within this framework, the child will dislike some foods and thus will have an opportunity to use No. At the same time, the caregiver has the vital opportunity to interact with the child while learning, together with the child, what foods are appropriate for the child to eat. Working with parents of children with other medical conditions that frequently require clinical intervention (eg, cystic fibrosis, Down Syndrome, HIV/AIDS), health care educators can help these parents to recognize their children’s special dietary concerns and thus encourage attachment behavior.

How Health Care Staff Can Help Parents

When collecting and assessing a child’s nutritional status and other health information, health care practitioners—who naturally desire to help the child—often focus more on the child and his or her “nutrition problems” than on the parent’s reaction patterns. But having capable, loving parents is the key to being a healthy child; and therefore staff are more likely to have a positive impact on the child if they have a positive impact on the parent. In a recent national survey, 79% of parents said that they want more information and support in one or more of six areas of childrearing.20

Ellyn Satter has noted how parents need to feel that staff are on the parents’ side, support them as parents, and are competent in their work.7 Thus, a helpful strategy is to remember four key parental desires:

• to have happy, smart kids;
• to be seen as experts on the subject of their own kids;
• to be seen as acting in their kids’ best interests; and
• to make parenting as easy as possible.

Before clinicians can expect improvement in a parent’s feeding behavior, the clinician must do three things: identify the parent’s needs with regard to his or her child’s eating; partner with the parent to share knowl-
clinical contributions

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Feeding assumes this broader role by affecting not only the child’s physical health but also his or her social and emotional health. Each mealtime provides interaction between parent and child, and each interaction is filled with the knowledge that this way of parenting provides an important behavioral model—that of supporting a loved one who is struggling with a problem. These gifts are manifestations of powerful parenting.

Parents who are unable to follow this approach may benefit from exploring the underlying reasons for this inability. Like the father in Mavis Bomengen’s story, some parents may have eating experiences from their own past that affect how they feed today. A primary prevention setting is not the appropriate milieu for in-depth examination of the parent’s feeding struggles, but the parent should be allowed to speak the truth, to let natural and helpful feelings arise, and to connect the parent’s own feeding behavior with his or her own childhood eating history.

An alternative is for the health care practitioner to offer a thought-provoking question, for example, “I wonder if you had any eating experiences earlier in your life that might be contributing to this struggle you’re having? I don’t know if there are or not; I’m just wondering about it.” Letting the parent leave the visit with an unanswered question can be both a respectful and an effective way of acknowledging that the parent may not yet have a sufficient sense of safety and trust to explore a feeding-related issue. The health care practitioner thus leaves the parent with the feeling of having had an overall positive experience despite struggling with a feeding-related problem.

Conclusion

Feeding is the area of a child’s life where nutrition, parenting, and human development meet. Health care practitioners need not only nutrition knowledge but also the knowledge of how parenting and development each contribute to the parent-child feeding relationship. Exclusive focus on the type and quantity of food a child is eating results in failure to notice specific parenting behaviors that affect the child’s eating; and this failure decreases the opportunity to improve the child’s nutritional status.

Much more than nutritious food can—and should—be provided during breastfeeding and at other feedings. Feeding provides an opportunity for parents to be present with their children and to give them love, care, and attention. Researchers in early childhood development and brain development emphasize that this interaction is a powerful gift that affects the health of the child.24 Feeding assumes this broader role by affecting not only the child’s physical health but also his or her social and emotional health. Each mealtime provides interaction between parent and child, and each interaction is filled with the knowledge that this way of parenting provides an important behavioral model—that of supporting a loved one who is struggling with a problem. These gifts are manifestations of powerful parenting.

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Much more than nutritious food can—and should—be provided during breastfeeding and at other feedings. Feeding provides an opportunity for parents to be present with their children and to give them love, care, and attention. Researchers in early childhood development and brain development emphasize that this interaction is a powerful gift that affects the health of the child.24 Feeding assumes this broader role by affecting not only the child’s physical health but also his or her social and emotional health. Each mealtime provides interaction between parent and child, and each interaction is filled
with potential. Helping parents to incorporate healthy feeding behavior into mealtime offers a substantial opportunity for health care practitioners to support the healthy physical, emotional, and social development of many infants and young children.

Anyone who routinely works with parents and children encounters families in which a parent and child struggle with their relationship. Helping the feeding relationship to proceed constructively helps the parent-child relationship to proceed constructively and builds genuine love in—and for—the parent. This love is what produces parents’ genuine desire and effort to help their children thrive. 

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Hunger

I’d like to have my hunger understood
be so literal to be suspicion-free
you can’t see, touch, or hear what’s really missing in me
so I can’t explain it
but believe me
I am hungry.

— “Gapped” by Pamela Sackett, poet and founder of Emotional Literacy Advocates™
Childhood Abuse, Household Dysfunction, and Indicators of Impaired Adult Worker Performance

By Robert F Anda, MD, MS; Vladimir I Fleisher, MD, PhD; Vincent J Felitti, MD, FACP; Valerie J Edwards, PhD; Charles L Whitfield, MD; Shanta R Dube, MPH; David F Williamson, MS, PhD

Abstract

Objective: We examined the relation between eight types of adverse childhood experience (ACE) and three indicators of impaired worker performance (serious job problems, financial problems, and absenteeism).

Methods: We analyzed data collected for the Adverse Childhood Experiences Study from 9633 currently employed adult members of the Kaiser Foundation Health Plan in San Diego.

Results: Strong graded relations were found between the ACE Score (total number of ACE categories experienced) and each measure of impaired worker performance (p < .001). We found strong evidence that the relation between ACE Score and worker performance was mediated by interpersonal relationship problems, emotional distress, somatic symptoms, and substance abuse.

Conclusions: The long-term effects of adverse childhood experiences on the workforce impose major human and economic costs that are preventable. These costs merit attention from the business community in conjunction with specialists in occupational medicine and public health.

The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition.

—Constitution of the World Health Organization

Job performance can be affected by personal factors other than knowledge and skills. Indeed, the complexity and team interaction inherent in many current jobs have increased the importance of personal and interpersonal factors in the workplace. For this reason, modern employee assistance programs offer help for emotional, family, and marital problems as well as for substance abuse and financial stress. Poor interpersonal skills, emotional distress, frequent somatic symptoms, and substance abuse all can reduce worker performance.

In addition to being intrinsically related to individual and public health, these factors affect business profitability and even national productivity. Chronic back pain in the workforce is estimated to cost US businesses as much as $28 billion per year; depression and its work-related outcomes—absenteeism, reduced productivity, and medical expenses—are estimated to cost as much as $44 billion per year; and chemical dependency is estimated to cost $246 billion per year. These massive losses occur despite existence of workplace safety programs and the most expensive system of medical care in the world.

In this article, we analyze the ways in which adverse childhood experiences affect several indicators of job performance during adult life. Specifically, we tested the hypothesis that childhood abuse and household dysfunction exert negative long-term effects on three broad-based indicators of worker performance: serious job problems, serious financial problems, and absenteeism. We then assessed how interpersonal relationship problems, emotional distress, somatic symptoms, and substance abuse may act as mediating variables in the relation between adverse childhood experiences and indicators of occupational performance.

Methods

Study Population

To test our hypothesis, we used data from the Adverse Childhood Experiences (ACE) Study, which was designed to assess the effect of...
adverse childhood experiences on later (adult) health behavior and health outcomes as these types of behavior and outcomes relate to the leading causes of morbidity and mortality in the United States.8-16 The ACE Study is being conducted among adult members of the Kaiser Foundation Health Plan in San Diego, California, which administers standardized biopsychosocial medical evaluation to more than 55,000 adult Health Plan members annually at a specialized clinic, the Health Appraisal Center. Review of medical records showed that 81% of adults who were continuously enrolled in the Health Plan between 1992 and 1995 had visited this clinic. All 13,494 Health Plan members who completed the standardized evaluation at the Health Appraisal Center in August 1995 or in March 1996 were eligible to participate in the ACE Study.7 The ACE Study was approved by the Institutional Review Boards of the Southern California Permanente Medical Group, Emory University, and the National Institutes of Health Office of Protection from Research Risks.

Each Health Plan member who completed the standardized evaluation at the Health Appraisal Center was mailed a study questionnaire. This survey instrument was administered in two rounds (“Waves”). Of the 13,494 adult Health Plan members surveyed in Wave 1, 9508 (70%) responded and were discussed in initial ACE publications.8,13 In Wave 2,9,16 questionnaires were administered to 13,330 adult Health Plan members who completed the standardized evaluation between June 1997 and October 1997; of these 13,330 adults, 8667 (65%) responded. The final ACE Study cohort included 18,175 persons: 9508 questionnaire respondents from Wave 1 and 8667 questionnaire respondents from Wave 2. Thus, the overall response rate was 68% for the 26,824 adult Health Plan members surveyed. We excluded from analysis all 754 respondents who coincidentally underwent standardized evaluation during both survey waves; all 7761 respondents who were unemployed (ie, had neither fulltime nor part-time employment); four respondents who provided incomplete information about their race; and 23 respondents who provided incomplete information about their educational attainment. Thus, the final study cohort included 9633 persons who were employed at the time of the ACE Survey.

Because the ACE Study questionnaire addressed sensitive topics, we compared respondents and nonrespondents to assess possible study bias introduced by nonresponse. For this assessment, we abstracted medical evaluation data for respondents as well as for nonrespondents to the Wave 1 questionnaire. We found no important differences between respondents and nonrespondents, either in type of health risk behavior (eg, smoking, obesity, substance abuse) or disease history (eg, diabetes, hypertension, heart disease, or cancer).17

**Defining Adverse Childhood Experiences**

All questions about adverse childhood experiences pertained to eight phenomena experienced by respondents during their first 18 years of life. These phenomena included emotional (verbal), physical, and sexual abuse; having a mother or stepmother who was battered at home; having parents who were either separated or divorced from each other during the respondent’s childhood or adolescence; living with a problem drinker, a drug user, or a mentally ill person; having a household member who was imprisoned. Questions for emotional (verbal) and physical abuse and for having a battered mother were obtained from the Conflict Tactics Scales.18 Questions about contact sexual abuse were adapted from the work of Wyatt.19

**Emotional Abuse**

Respondents were characterized as emotionally abused if they answered “often” or “very often” to either (or both) of the following questions:
- “How often did a parent, step-parent, or adult living in your home swear at you, insult you, or put you down?”
- “How often did a parent, step-parent, or adult living in your home act in a way that made you afraid that you might be physically hurt?”

**Physical Abuse**

Respondents were characterized as physically abused if they answered “often” or “very often” to the following question:
- “While you were growing up, that is, in your first 18 years of life, how often did a parent, stepparent, or adult living in your home push, grab, slap, or throw something at you?”

An alternative criterion for being defined as physically abused was an answer of “sometimes,” “often,” or “very often” to the following question:
- “While you were growing up, that is, in your first 18 years of life, how often did a parent, stepparent, or adult living in your home hit you so hard that you had marks or were injured?”

**Sexual Abuse**

A respondent was identified as having experienced contact sexual...
abuse if he or she answered “yes” to any part of the following four-part question:

- During your first 18 years of life, did an adult, relative, family friend, or stranger ever:
  1) touch or fondle your body in a sexual way?
  2) have you touch their body in a sexual way?
  3) attempt to have any type of sexual intercourse with you (oral, anal, or vaginal)? or
  4) actually have any type of sexual intercourse with you (oral, anal, or vaginal)?

**Battered Mother**

A respondent was identified as having a battered mother or stepmother if the respondent answered “sometimes,” “often,” or “very often” to one or both parts of the following two-part question:

- While you were growing up in your first 18 years of life, how often did your father (or a stepfather) or mother’s boyfriend do any of these things to your mother (or a stepmother):
  1) push, grab, slap, or throw something at her?
  2) kick, bite, hit her with a fist, or hit her with something hard?

Alternatively, a respondent was identified as having a battered mother or stepmother if the respondent answered in any way other than “never” to one or both parts of the following two-part question:

- While you were growing up in your first 18 years of life, how often did your father (or a stepfather) or mother’s boyfriend do any of these things to your mother (or a stepmother):
  1) repeatedly hit her over at least a few minutes?
  2) threaten her with a knife or gun or use a knife or gun to hurt her?

**Household Substance Abuse**

Respondents were identified as having been exposed to household substance abuse if they responded affirmatively when asked whether they grew up with a problem drinker or alcoholic or with anyone who used street drugs.

**Mental Illness in Household**

Respondents were identified as having been exposed to mental illness if they responded affirmatively to being asked whether anyone in their household had been depressed, mentally ill, or attempted suicide.

**Parental Separation or Divorce**

A respondent was characterized as having parents who were separated or divorced if the respondent answered “yes” to the question, “Were your parents ever separated or divorced?”

**Incarcerated Household Member**

A respondent met this criterion if anyone in the respondent’s household had been imprisoned during the respondent’s childhood.

**ACE Score**

To assess the cumulative effect of adverse childhood experiences, we calculated for each respondent a score ranging from 0 to 8 (the ACE Score), which represented the total number of categories to which the respondent had been exposed.

**Indicators of Impaired Worker Performance**

The three indicators of impaired worker performance were job problems, financial problems, and absenteeism. Respondents were identified as having impaired worker performance if they answered “yes” to any of the following questions:

- Are you currently having serious problems with your job?
- Are you currently having serious problems with your finances?
- Are you currently having serious problems with your job?

Respondents were also asked how many days of work they missed in

---

**Table 1. Questions and criteria used to identify Health Plan members with problems in any of four areas of health and well-being**

<table>
<thead>
<tr>
<th>Problem type</th>
<th>Question</th>
<th>Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital problems</td>
<td>“How many times have you been married?”</td>
<td>≥3 times</td>
</tr>
<tr>
<td>Family problems</td>
<td>“Are you currently having serious problems with your family?”</td>
<td>Yes</td>
</tr>
<tr>
<td>Sexual relationships</td>
<td>“Are you currently satisfied with your sex life?”</td>
<td>No</td>
</tr>
<tr>
<td>Depressed affect</td>
<td>“Are you currently having problems with depression or feeling ‘down in the dumps?’”</td>
<td>Yes</td>
</tr>
<tr>
<td>Panic reaction</td>
<td>“In the past year, have you had special circumstances in which you found yourself panicked?”</td>
<td>Yes</td>
</tr>
<tr>
<td>Anger</td>
<td>“Have you had reason to fear your anger getting out of control?”</td>
<td>Yes</td>
</tr>
<tr>
<td>Back pain</td>
<td>“Have you had frequent back pain?”</td>
<td>Yes</td>
</tr>
<tr>
<td>Headaches</td>
<td>“Have you had frequent headaches?”</td>
<td>Yes</td>
</tr>
<tr>
<td>Joint pain</td>
<td>“Have you had pain or swelling in your joints?”</td>
<td>Yes</td>
</tr>
<tr>
<td>Alcoholism</td>
<td>“Have you ever considered yourself to be an alcoholic?”</td>
<td>Yes</td>
</tr>
<tr>
<td>Current Smoker</td>
<td>“Do you currently smoke cigarettes?”</td>
<td>Yes</td>
</tr>
<tr>
<td>Drug use</td>
<td>“Have you ever used street drugs?”</td>
<td>Yes</td>
</tr>
</tbody>
</table>
the past 30 days because of poor physical health, stress, or feeling depressed. Respondents were characterized as having a problem with absenteeism if they reported having missed two or more days of work during the past 30 days.

**Areas of Health and Well-Being**

We hypothesized that four selected areas of health and well-being may be intermediate variables that relate adverse childhood experiences to worker performance (Figure 1). We used our clinical judgment on an a priori basis to select three representative problems from each of these four areas of health and well-being. We used factor analysis with orthogonal transformation and a minimal factor loading of 0.4 to determine whether our a priori reasoning about the grouping of the problems was statistically robust. This analysis showed that the four areas of health and well-being that emerged as factors for men matched exactly our a priori areas (eigenvalues > 1). Table 1 lists the questions used to define each of the four areas of health and well-being and shows the criteria for a positive response in each area. Respondents who met the criteria for any of the three questions were considered to have a problem in that area of health and well-being.

**Statistical Analysis**

For purposes of analysis, persons for whom incomplete information was available about childhood exposure were considered not to have had that experience. This decision probably biased our results toward the null hypothesis, because persons who might have been exposed to an experience would always be misclassified as unexposed. To assess the effect of this decision, we repeated our analyses after excluding respondents with missing information on any exposure. The results of these analyses were nearly identical to those presented herein.

We used logistic regression to estimate odds ratios (OR) for the association between three items: childhood exposure to adverse experiences, indicators of impaired worker performance, and response to each question about health and well-being. All models included the respondent’s age, sex, race, and educational attainment.

**Assessment of Mediating Effects on Health and Well-Being**

We compared the strength of the relation between adverse childhood experiences and indicators of impaired worker performance by using logistic models with and without controlling for potential mediation (i.e., by problems in the four areas of health and well-being). To do this comparison, we used an ordinal variable to designate total number of problems from the four areas of health and well-being (range 0-12). We used the term “mediation” in the same way as some researchers use the term “intermediate”; we consider these terms to have the same meaning and to be interchangeable.

Our analyses used the following principle:

A confounding variable must not be an intermediate step in the causal path between the exposure and the disease.

This criterion requires information outside the data. The investigator must decide whether the causal mechanism that might follow from exposure to disease would include the potentially confounding factor as an intermediate step. If so, the variable is not a confounder.

Figure 1 presents a proposed causal pathway in which four areas of health and well-being are mediating variables. Our analyses treated these areas as potential mediating (or intermediate) variables, as recommended by Rothman.
Results
Characteristics of Study Population
Mean age of the cohort was 47.9 years (SD +11.7), 51.9% were women, and 68% of the population were white. Forty-six percent were college graduates, 37% had some college, and 4% did not graduate from high school.

Prevalence of Adverse Childhood Experiences
Prevalence of the eight categories of adverse childhood experience is shown in Table 1. Thirty-two percent of respondents reported no exposure to adverse childhood experiences, and 25% of respondents reported exposure to only one category of adverse childhood experience. More than two thirds of respondents were exposed to at least one category of adverse childhood experience; and 43% of respondents reported exposure to two or more categories of adverse childhood experience. Exposure to two categories of adverse childhood experience was reported by 17% of respondents; exposure to three categories, by 11% of respondents; and exposure to four categories, by 15% of respondents.

Childhood Exposure and Indicators of Worker Performance
Job-related problems were reported by 11.5% of the study cohort; financial problems were reported by 15.5%, and absenteeism, by 8.7%. Each of the eight adverse childhood experiences was associated with an increased likelihood of job problems, financial problems, and absenteeism (Table 2).

Adverse Childhood Experiences and Measures of Health and Well-Being
The ACE Score had a strong, graded relation to the four areas of health and well-being (p < 0.0001) (Table 3). Compared with workers who had an ACE Score of 0, workers with an ACE Score of 4 or higher had a 1.8-fold (somatic symptoms) to 3.5-fold (substance abuse) increased risk of problems in the four areas of health and well-being.

We observed a graded relation between ACE score and mean number of positive responses to the component questions (range 0-12) (Table 4). The ACE Score also had a graded relation to each of the three component questions in each of the four areas of health and well-being (p < 0.001) (data not shown).

ACE Score, Indicators of Worker Performance, and Assessment for Mediation
The relation observed between ACE score and each indicator of impaired worker performance was strong and graded (Table 5). Com-

| Table 2. Relation between adverse childhood experiences and indicators of worker performance |
|---------------------------------------------|-----------------|-----------------|-----------------|
| Category of ACE (%) (N) | Job problems | Financial problems | Absenteeism |
|                           |               |                  |               |
|                          | % | OR* (95%CI) | % | OR* (95%CI) | % | OR* (95%CI) |
| Abuse during childhood: |
| Emotional |
| No (87%) | 8413 | 10.3 | 1.0 (referent) | 14.2 | 1.0 (referent) | 7.8 | 1.0 (referent) |
| Yes (13%) | 1220 | 19.6 | 2.1 (1.8-2.4) | 24.3 | 1.8 (1.6-2.1) | 14.9 | 1.9 (1.6-2.3) |
| Physical |
| No (68%) | 6581 | 9.6 | 1.0 (referent) | 13.6 | 1.0 (referent) | 7.3 | 1.0 (referent) |
| Yes (32%) | 3052 | 15.6 | 1.7 (1.5-1.9) | 19.5 | 1.5 (1.3-1.7) | 11.9 | 1.7 (1.5-2.0) |
| Sexual |
| No (78%) | 7480 | 10.6 | 1.0 (referent) | 14.0 | 1.0 (referent) | 8.1 | 1.0 (referent) |
| Yes (22%) | 2153 | 14.4 | 1.4 (1.2-1.6) | 20.6 | 1.5 (1.3-1.7) | 10.9 | 1.3 (1.1-1.5) |
| Substance abuse: |
| No (68%) | 6562 | 14.0 | 1.3 (1.1-1.5) | 19.6 | 1.3 (1.1-1.5) | 11.9 | 1.4 (1.2-1.7) |
| Yes (32%) | 3071 | 14.1 | 1.4 (1.2-1.6) | 13.4 | 1.0 (referent) | 7.7 | 1.0 (referent) |
| Mental illness: |
| No (78%) | 7491 | 10.0 | 1.0 (referent) | 14.2 | 1.0 (referent) | 7.6 | 1.0 (referent) |
| Yes (22%) | 2142 | 16.6 | 1.7 (1.5-2.0) | 20.0 | 1.4 (1.3-1.6) | 12.7 | 1.7 (1.4-2.0) |
| Parental separation or divorce: |
| No (74%) | 7135 | 11.0 | 1.0 (referent) | 14.5 | 1.0 (referent) | 7.8 | 1.0 (referent) |
| Yes (26%) | 2498 | 12.8 | 1.1 (1.0-1.3) | 18.2 | 1.2 (1.0-1.3) | 11.2 | 1.4 (1.2-1.6) |
| Incarcerated household member: |
| No (94%) | 9085 | 11.3 | 1.0 (referent) | 15.1 | 1.0 (referent) | 8.3 | 1.0 (referent) |
| Yes (6%) | 548 | 14.2 | 1.2 (1.0-1.6) | 21.2 | 1.3 (1.1-1.7) | 15.3 | 1.8 (1.4-2.3) |
| Total (100%) | 9663 | 11.5 | 1.0 (referent) | 15.5 | 1.0 (referent) | 8.7 | 1.0 (referent) |

*Odds ratios are adjusted for age at time of survey and for sex, race, and educational attainment.
Table 3. Relation between ACE Score and problems related to health and well-being

<table>
<thead>
<tr>
<th>ACE Score</th>
<th>Relationship problems</th>
<th>Emotional distress</th>
<th>Somatic symptoms</th>
<th>Substance abuse</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% OR (95% CI)</td>
<td>% OR (95% CI)</td>
<td>% OR (95% CI)</td>
<td>% OR (95% CI)</td>
</tr>
<tr>
<td>0</td>
<td>3019</td>
<td>36.6</td>
<td>21.0</td>
<td>44.4</td>
</tr>
<tr>
<td>1</td>
<td>2440</td>
<td>44.0</td>
<td>27.9</td>
<td>48.4</td>
</tr>
<tr>
<td>2</td>
<td>1642</td>
<td>47.8</td>
<td>35.0</td>
<td>53.7</td>
</tr>
<tr>
<td>3</td>
<td>1041</td>
<td>52.3</td>
<td>40.8</td>
<td>58.3</td>
</tr>
<tr>
<td>≥4</td>
<td>1491</td>
<td>57.4</td>
<td>49.0</td>
<td>60.8</td>
</tr>
<tr>
<td>Total</td>
<td>9633</td>
<td>45.3</td>
<td>31.6</td>
<td>51.0</td>
</tr>
</tbody>
</table>

Odds ratios were adjusted for age at time of survey and for sex, race, and educational attainment. Trend for increasing likelihood (OR) of each indicator or worker performance as ACE Score increases was statistically significant (p < 0.0001) for each logistic regression model.

Table 4. Relation between ACE Score and mean number of workforce problems related to health and well-being

<table>
<thead>
<tr>
<th>ACE Score</th>
<th>Mean number of problems related to health and well-being</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% OR (95% CI)</td>
</tr>
<tr>
<td>0</td>
<td>1.72 (.06)</td>
</tr>
<tr>
<td>1</td>
<td>2.07 (.06)</td>
</tr>
<tr>
<td>2</td>
<td>2.44 (.07)</td>
</tr>
<tr>
<td>3</td>
<td>2.73 (.07)</td>
</tr>
<tr>
<td>≥4</td>
<td>3.22 (.07)</td>
</tr>
</tbody>
</table>

Means were adjusted for age, sex, race, and educational attainment. Differences in mean between all groups were statistically significant (p < .0001).

Discussion

The ACE Study showed that adverse childhood experiences bear a strong, graded relation to many adult health problems and to many leading causes of death. Using data from the ACE Study, we showed a strong, graded relation between eight categories of adverse childhood experience and three indicators of worker performance. Moreover, four areas of health and well-being that employers and medical practitioners have difficulty managing (relationship problems, emotional distress, somatic symptoms, substance abuse) appear to be intermediate variables. Because child abuse and household dysfunction are common and have long-term effects that are highly disruptive to workers’ health and well-being, these adverse childhood experiences merit serious attention from the business community, labor leaders, the everyday practitioners of medicine, and government agencies.

Traditionally, maintaining a healthy and productive workforce has centered on job training, technologic improvement in production, and medical care for injury. Instead, however, our data indicate the need to adopt the World Health Organization (WHO) definition of health. To do so would necessitate a paradigm shift, in which the disease-oriented biomedical approach is replaced by a biopsychosocial approach in which child abuse and household dysfunction are understood in terms of their long-term effects on worker health and well-being. In this approach, a person’s life experiences, well-being (emotional, social, and financial), and risk-related behavior would be assessed according to Engel’s concept of biopsychosocial evaluation.

The result of this assessment might be a healthier, more productive workforce that would, in turn, produce greater benefits not only for individual persons but also for families, communities, and the nation.
A major obstacle to implementing this paradigm shift is that medical practitioners,77 corporate managers, and labor leaders are unlikely to fully understand that impaired worker performance may be a long-term effect of childhood abuse and household dysfunction. This lack of understanding may be expected for three reasons: Reports of this long-term cause-and-effect relation5-16 are too new to have been disseminated as widely as necessary; the interval between cause and effect is long, and thus the etiology is easily overlooked; and the adverse childhood experiences that led to worker impairment are well shielded by shame, secrecy, and social taboo. In this context, many workers become involved in an expensive,28 lengthy, and frequently unproductive search for an “organic” or biomedical explanation for worker performance and occupational medicine problems.

The adverse childhood experiences we studied do not occur in isolation from each other. We previously reported that people who report having one category of exposure have an 85% chance of experiencing a second category and have a 70% chance of experiencing a third.9,11 Thus, we view this set of childhood exposures as a constellation of interrelated problems. In this and other published studies,7,8 the ACE Score has proved useful as a summary device for assessing the cumulative negative effects of adverse childhood experiences. Further, the biologic plausibility of using the ACE Score as a cumulative stressor model is supported by recent neuroscientific information.29 Specifically, exposure of children to stressful events such as recurrent abuse or witnessing domestic violence can negatively disrupt early development of the central nervous system and can adversely affect brain functioning later in life.28 These developmental effects might account both for some health problems and for treatment for failures later in life.

Our findings may be limited by the general nature of our indicators of worker performance; however, their lack of specificity probably leads to underestimating the strength of the relation between adverse childhood experiences and worker performance. Had we used more detailed measures of performance, we might have observed an even stronger relation to adverse childhood experiences. Because the sensitive nature of our questions probably led study participants to underreport problems in health and well-being, we probably tended to be conservative in estimating mediating influence of these areas on workers’ job performance. Moreover, the finding that our general indicators of worker performance are strongly associated with four areas of health and well-being known to affect worker performance9,10 supports the external validity of our findings.

Because our study participants were enrolled in a large HMO and were currently employed, we can reasonably expect our findings to apply to a wide population of employers and HMOs. That the prevalence of these exposures in our study is similar to the prevalence in other population-based studies of childhood abuse, household dys-

### Table 5. Relation between ACE Score and indicators of worker performance with and without adjustment for total number of problems related to health and well-being

<table>
<thead>
<tr>
<th>ACE Score</th>
<th>%</th>
<th>Job problems</th>
<th>Model 1b</th>
<th>Model 2b</th>
<th>% Risk reductionc</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>OR (95% CI)</td>
<td>OR (95% CI)</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>8.3</td>
<td></td>
<td>1.0 (referent)</td>
<td>1.0 (referent)</td>
<td>--</td>
</tr>
<tr>
<td>1</td>
<td>9.6</td>
<td></td>
<td>1.2 (1.0-1.4)</td>
<td>1.0 (0.8-1.2)</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>12.0</td>
<td></td>
<td>1.5 (1.2-1.8)</td>
<td>1.1 (0.9-1.3)</td>
<td>80</td>
</tr>
<tr>
<td>3</td>
<td>14.1</td>
<td></td>
<td>1.8 (1.4-2.2)</td>
<td>1.2 (0.9-1.5)</td>
<td>75</td>
</tr>
<tr>
<td>&gt;4</td>
<td>18.5</td>
<td></td>
<td>2.4 (2.0-2.9)</td>
<td>1.3 (1.1-1.6)</td>
<td>79</td>
</tr>
<tr>
<td>Total</td>
<td>11.5</td>
<td></td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACE Score</th>
<th>%</th>
<th>Financial problems</th>
<th>Model 1b</th>
<th>Model 2b</th>
<th>% Risk reductionc</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>OR (95% CI)</td>
<td>OR (95% CI)</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>10.5</td>
<td></td>
<td>1.0 (referent)</td>
<td>1.0 (referent)</td>
<td>--</td>
</tr>
<tr>
<td>1</td>
<td>13.5</td>
<td></td>
<td>1.3 (1.1-1.5)</td>
<td>1.1 (0.9-1.3)</td>
<td>67</td>
</tr>
<tr>
<td>2</td>
<td>18.5</td>
<td></td>
<td>1.8 (1.5-2.2)</td>
<td>1.4 (1.1-1.6)</td>
<td>50</td>
</tr>
<tr>
<td>3</td>
<td>19.7</td>
<td></td>
<td>1.9 (1.6-2.3)</td>
<td>1.3 (1.1-1.6)</td>
<td>67</td>
</tr>
<tr>
<td>&gt;4</td>
<td>22.4</td>
<td></td>
<td>2.2 (1.8-2.6)</td>
<td>1.2 (1.0-1.4)</td>
<td>83</td>
</tr>
<tr>
<td>Total</td>
<td>15.5</td>
<td></td>
<td>--</td>
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<td>--</td>
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</table>

<table>
<thead>
<tr>
<th>ACE Score</th>
<th>%</th>
<th>Absenteeism</th>
<th>Model 1b</th>
<th>Model 2b</th>
<th>% Risk Reductionc</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>OR (95% CI)</td>
<td>OR (95% CI)</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>6.0</td>
<td></td>
<td>1.0 (referent)</td>
<td>1.0 (referent)</td>
<td>--</td>
</tr>
<tr>
<td>1</td>
<td>7.5</td>
<td></td>
<td>1.3 (1.1-1.6)</td>
<td>1.1 (1.1-1.6)</td>
<td>67</td>
</tr>
<tr>
<td>2</td>
<td>8.5</td>
<td></td>
<td>1.4 (1.1-1.8)</td>
<td>1.1 (0.9-1.4)</td>
<td>75</td>
</tr>
<tr>
<td>3</td>
<td>11.1</td>
<td></td>
<td>1.8 (1.4-2.3)</td>
<td>1.4 (1.0-1.7)</td>
<td>57</td>
</tr>
<tr>
<td>&gt;4</td>
<td>14.8</td>
<td></td>
<td>2.4 (2.0-3.0)</td>
<td>1.6 (1.2-1.9)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>8.7</td>
<td></td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

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8 Sample sizes for each ACE Score are the same for each model: 0 = 3019, 1 = 2440, 2 = 1642, 3 = 1041, >4 = 1491; increasing likelihood (OR) of each indicator or worker performance as the ACE Score increases is significant (p < 0.001).
9 Both Model 1 and Model 2 adjust for age, sex, race, and education; Model 2 also includes number of problems in the areas of health and well-being (range: 0-12).
10 Change in relative risk (OR) between Model 1 and Model 2.
function, and alcoholism in the home suggests that our study population reflects the general population.

Our findings suggest that employers and HMOs have both the need and the opportunity to work together against the long-term effects of childhood abuse and household dysfunction. Exposure to such adverse circumstances is likely to lead to massive financial expenditures for health care as well as to economic losses attributable to poor work performance. Adverse childhood experiences are a source of many problems—somatic manifestations of health and social problems—treated by occupational medicine specialists. The traditional search for organic causes of illness and injury among workers is expensive for employers, who must pay higher insurance premiums for their workers. In addition, this traditional process is expensive for health care organizations, because much of such medical care is ineffective or inefficient: diagnostic procedures are used without sufficient understanding of the common psychosocial origins of symptoms, multiple office visits and specialty referrals are used in repeated efforts to resolve the same problem, and drugs are prescribed to little or no effect. Most important, workers suffer when their health problems and health-related social problems remain unresolved. If even a small fraction of the economic and human resources currently spent on these conventional approaches was used to identify and address the root origins of these problems in the workforce, we could reasonably expect to find more effective ways to improve worker health, well-being, and performance.

Acknowledgments

We gratefully acknowledge technical assistance provided by Naomi (Howard) Jensen, BA, Study Coordinator. The Adverse Childhood Experiences (ACE) Study was funded by cooperative agreement #TS-44-10/11 by the Centers for Disease Control and Prevention with the Association of Teachers of Preventive Medicine and currently by a grant from the Kaiser Permanente Garfield Memorial Fund.

References


Practice tips

2. Specifically consider adverse childhood event if: work problems, financial problems, or absenteeism.
3. Assess problems using the questions in Table 1.

16. Dube SR, Anda RF, Felitti VJ, Chapman DP, Williamson DF, Giles...
WH. Childhood abuse, household dysfunction, and the risk of attempted suicide throughout the life span: findings from the Adverse Childhood Experiences Study. JAMA 2001 Dec;286(24):3089-96.


The Relatioinship of Adverse Childhood Experiences to Job Performance and Occupational Health
Hemochromatosis Update

By Vincent J Felitti, MD

Introduction

If a person must have a genetic disease, hemochromatosis is the one to have. Although its mutation is the most common potentially fatal mutation in North America, hemochromatosis can be diagnosed early, treated simply and effectively, and can even be prevented. Hemochromatosis has also recently been selected by the National Institutes of Health as a model for helping physicians learn about treating genetic disease.

As an update to a 1999 clinical article on hemochromatosis that appeared in The Permanente Journal,1 the present article presents information from a recent study of 41,038 Kaiser Permanente (KP) members in San Diego, each of whom had comprehensive biopsychosocial evaluation, genetic analysis for the HFE (hemochromatosis) gene, and measurement of iron load; this testing allowed genotype to be matched against iron load and physical findings. For the first time, a large control group was included to determine the extent to which the symptoms compatible with iron overload were actually caused by—not merely coincident with—iron overload. The purpose of the present article is to help physicians integrate this new clinical information into daily practice throughout the Kaiser Permanente Medical Care Program.

Clarifying the Nomenclature

The nomenclature for hemochromatosis presents a serious problem that has implications for all genetic disease. For example, the term hemochromatosis is currently applied to several different conditions (some of which are nongenetic):

• mutation of the HFE gene regardless of activity or penetrance of the mutation;
• states of iron overload ranging from trivial to severe regardless of genotype;
• clinical cases of iron overload disease regardless of genotype; and
• iron overload disease caused specifically by the HFE mutation.

A moment’s reflection indicates the potential for confusion for patients as well as for physicians. This article cannot resolve permanently the confusion caused by such careless use of nomenclature; instead, to describe the logical progression of iron overload, I use the following nomenclature:

• homozygous mutation of the HFE gene;
• increased iron absorption (iron loading);
• iron overload states;
• clinical iron overload disease, or hemochromatosis (regardless of genotype); and
• hereditary hemochromatosis.

This nomenclature may be somewhat awkward, but precisely distinguishing these different states is the only way to prevent confusion about this increasingly recognized disorder and to promote better understanding of it. Moreover, the main principle established here is applicable to all other genetic diseases: Presence of a genetic mutation must not be equated with existence of a genetic disease. The term hemochromatosis should be reserved for the disease state (organ damage), not for mutations or preclinical states.

Pathophysiology of Hemochromatosis

Although iron is essential for life, substantially excessive levels of iron are toxic. The essence of iron overload disease (ie, hemochromatosis and genetic hemochromatosis) is the iron load, not the mutation.

In normal circumstances, iron absorption is constant despite variation in dietary iron levels because the HFE gene on chromosome six limits intestinal iron absorption to about 1.5 mg/day. When mutations damage certain portions of the HFE gene, increased iron absorption may (but does not necessarily) occur. If increased iron absorption does occur, the total body iron load may, given enough time, build to toxic levels because no existing biologic mechanism facilitates excretion of excess iron. Given enough time, slowly incremental additions to iron load can—like compound interest—produce major effects that depend on the rate of iron accumulation. This time factor is important to remember because it has major clinical implications.

The wide range of organ damage that potentially ensues from clinically significant iron overload is

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termed clinical hemochromatosis or iron overload disease. Although hemochromatosis is often remembered as “bronze diabetes with cirrhosis,” the range of clinical presentations is vastly greater, as previously described in a 1999 article in The Permanente Journal. Just as congestive heart failure is not the same as hypertensive cardiomegaly, hemochromatosis is not the mutation and not subclinical iron overload; it is iron overload disease. The genetic (and most common) form of hemochromatosis is thus properly termed hereditary hemochromatosis, whereas nongenetic forms of iron overload disease are properly termed hemochromatosis.

The HFE gene can be damaged by several mutations (polymorphisms) occurring at different loci within the gene. One of these mutations is recognized as the “major” mutation because it is the one most commonly found in patients with severe clinical iron overload. The major mutation of the HFE gene is described either as occurring at the 845-nucleotide locus or as the C282Y mutation, depending on the notation system used. Patients are also commonly tested for presence of the 187-nucleotide or H63D mutation, which is much less likely to be associated with clinically significant iron overload. Other relevant mutations may exist undiscovered within the HFE gene, and other genes that affect iron absorption may exist undiscovered. The single heterozygous state (carrier) of either of these mutations has been a blood donor, and verges on iron overload disease, but how often are these conditions actually caused by it? In which patients are these conditions part of the population background prevalence; in which patients are they attributable to the homozygous HFE mutation? We were surprised to discover that our study was the first to address this problem in a large sample. The present article describes our study findings and discusses their relevance to daily clinical practice.

**Study Design**

The study population consisted of 41,000 consecutive, consenting adults undergoing comprehensive medical evaluation in the Health Appraisal Center at the KP San Diego Department of Preventive Medicine. We tested each of these 41,000 study subjects for serum iron saturation, serum ferritin level, and known HFE mutations. All participants had detailed biomedical, psychologic, and social evaluation. We recorded all signs and symptoms potentially attributable to iron overload.

Prevalence of the homozygous major mutation—approximately five cases per thousand study subjects—was confirmed within the HFE gene, but we also found that this mutation was activated in only about half the mutated subjects. For example, two of my patients are elderly sisters who live across the street from each other and apparently lead identical lives. Both sisters are homozygous for the C282Y mutation of the HFE gene and thus have the two copies of the major mutation necessary for hemochromatosis to manifest. However, whereas one sister has clinically significant iron overload that has required lifetime phlebotomy, the other sister has never had phlebotomy, has never been a blood donor, and verges on having iron deficiency. We do not
yet understand why the major mutation of the HFE gene shows this difference in activity.

In the half of C282Y homozygotes who absorb iron excessively, the amount of iron absorbed is highly variable (in addition to being age-dependent, as noted earlier in this article). This fact raises two basic questions that have broad implications for our evolving understanding of all genetic disease:

- Does the clinical manifestation of hemochromatosis depend on presence of the mutation? Or on iron overload?
- If clinical manifestation of hemochromatosis depends on iron overload, what level of iron overload induces this clinical condition?

We resolved these questions by matching iron load against:

- presence of the homozygous major mutation,
- fasting serum iron saturation level,
- serum ferritin level, and
- signs and symptoms compatible with, but not specific for, iron overload disease.

Total body iron load was measured inferentially by serum ferritin level and directly by quantitative phlebotomy. Neither serum iron level nor serum iron saturation was used to measure total body iron load because these—in contrast to serum ferritin level and quantitative phlebotomy—are not valid measures of total body iron load. Serum iron saturation is a measure of iron in transit and of how much that iron saturates its carrier serum proteins, known collectively as transferrin.

**Results and Discussion**

In this study—possibly the largest genetic analysis study ever carried out in a well-evaluated population—we found that clinical iron overload disease—hemochromatosis—is totally a function of iron overload and not a function of the genetic mutation. In addition, we found that unexpectedly high body iron loads are required for organ damage. From analysis of 152 study subjects who were homozygous for the major mutation, we concluded that organ damage begins when serum ferritin level reaches about 1000 ng/mL (1000 mg/L). Given that 81% of all adult Health Plan members pass through the Department of Preventive Medicine at least once in any four-year period, we believe that selection bias did not affect our conclusions.

However, answering the simple question, “What does a physician do with a patient who has a serum ferritin level of 650 ng/mL (650 mg/L)?” is complicated by three factors, the first of which is age. A young patient with ferritin level of 650 ng/mL (650 mg/L) will probably have a significantly higher ferritin level later in life, given sufficient time. The second complicating factor is that hyperferritinemia can be caused by disorders other than iron overload (eg, alcoholism, chronic hepatitis, malignancy). The third complicating factor is the difficulty of balancing low risk of clinically evident hemochromatosis developing in a patient with a given ferritin level (650 ng/mL, in our example) against the even lower risk presented to this patient by phlebotomy. This article explains why clinicians within the Kaiser Permanente Medical Care Program can answer this third question differently than do clinicians elsewhere.

We addressed these questions carefully for our 41,000 comprehensively evaluated patients and subsequently found that many (but not all) of the symptoms previously attributed either to the mutation or to iron overload had a more mundane explanation: They were part of the normal prevalence found in the age- and sex-matched control group. Indeed, homozygous penetrance of the major HFE mutation (manifested as clinically significant iron overload) was lower than we expected and was even lower in terms of clinically evident hemochromatosis. The mutation per se was irrelevant if it did not produce clinically significant levels of iron overload. For example, many diabetic patients who are homozygous for the major HFE mutation are diabetic because of obesity and not because of iron overload: In these patients, the mutation is coincidental, not causal.

Patients in our study were distributed along the following spectrum (Figure 1):

- homozygous mutation without activation of the gene (these patients had normal serum iron saturation and normal serum ferritin levels);
- homozygous mutation with increased serum iron saturation but without meaningful iron overload (these patients had normal or minimally elevated serum ferritin level);
- homozygous mutation with increased serum iron saturation and potentially dangerous iron overload;
- homozygous mutation with iron overload and subclinical tissue damage;
- homozygous mutation with iron overload and overt organ damage.

**Diagnostic Screening**

At present, knowledgeable physicians disagree about whether to screen populations for hemochromatosis.
KP San Diego became the first institutional setting in the world to follow this practice and has screened more than 350,000 adult Health Plan members in the past eight years. (Ideally, children would be screened instead of adults.) An argument for population screening for hemochromatosis is that symptoms do not provide a practical basis for diagnosing hemochromatosis: Symptoms occur late in persons with iron overload; potential symptoms are numerous, nonspecific, and often result from causes other than hemochromatosis. Using our approach, the benefit of screening has distinctly outweighed the cost; however, such might not be the case elsewhere if screening were done as a stand-alone test or if genetic analysis were used for screening.

In considering genetic disease, clinicians must remember the basic concept that genotype does not equate with phenotype. In particular, our goal as clinicians working with adult patients is to determine whether they have clinically significant iron overload, not the genetic mutation. Therefore, all Health Plan members seen at the KP San Diego Department of Preventive Medicine are tested once in their lifetime for serum iron saturation. If the fasting iron saturation of the specimen is >50%, the test is repeated and the serum ferritin level is measured. This repeat procedure should be done on an early-morning fasting specimen because of diurnal variation: Higher iron saturations sometimes occur in the morning.

**Treatment**

Patients who have both persistently elevated iron saturation and hyperferritinemia are entered into the hemochromatosis registry and are seen for consultation by a physician who has experience treating patients with hemochromatosis. Most of these patients then go to the Donor Center weekly for phlebotomy, during which 500 mL of whole blood is removed until the plasma ferritin level is reduced to approximately 20 ng/mL (20 mg/L). This process is termed *quantitative phlebotomy* because its frequency of application allows blood to be removed faster than iron can be reabsorbed and thus allows accurate calculation of total body iron stores. If more than 12 to 16 phlebotomy procedures are needed to attain this endpoint, the patient is identified as iron-laden and enters the Maintenance Program, a lifetime program in which most patients have 500 mL of whole blood removed by phlebotomy every two months (for men) or every three months (for women). To avoid inducing more than minor anemia, a lower limit is set for the prephlebotomy hematocrit level. Liver biopsy is never performed; it is unnecessary, is not dependable for early diagnosis, has some risk, is costly, and frightens some patients away from completing prescribed diagnostic studies. Genetic analysis is done for many of our suspect cases, because this analysis sometimes clarifies confusing situations and identifies index cases that trigger family screening.

In some circles, much is made of dietary limitations on ingested iron; under normal conditions, however, variations in dietary iron play a minor role that is easily corrected by adjusting the phlebotomy protocol. Nonetheless, some patients choose to strictly limit their dietary intake of iron, perhaps to gain a sense of participatory control of the situation—and this choice is certainly not harmful. Raw shellfish should be avoided because of its occasional contamination with *Vibrio*, an organism that flourishes in high-iron

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**Figure 1:** Illustration shows spectrum of conditions distributed among 41,038 KP members in San Diego who had genetic analysis for the HFE (hemochromatosis) gene and measurement of iron load. (TS= transfusion saturation.)
Hemochromatosis Update

environments and damaged livers. Alcohol should be avoided or consumed sparingly because of its potential for additive hepatotoxicity; patients should be immunized against hepatitis A and B to prevent this additional possible source of liver damage. Iron supplements should be avoided.

The commonly used term, “iron-rich blood” is misleading because blood from a person affected with hemochromatosis has no more iron than has blood from unaffected persons; blood happens to be the only removable iron-rich tissue that can be readily regenerated. The process of regeneration draws iron from potentially damaging tissue stores in organs elsewhere in the body. This process is why phlebotomy is effective treatment for hemochromatosis.

Hyperferritinemic patients with normal fasting iron saturation are evaluated for causes of hyperferritinemia other than iron overload—most commonly, unrecognized alcoholism or chronic hepatitis. And because iron overload, alcoholism, and chronic hepatitis are relatively common conditions, they coexist in some patients. Quantitative phlebotomy readily identifies the portion of hyperferritinemia attributable to iron overload.

The therapeutic benefit of normalizing iron levels in iron-laden patients is obvious: Hemochromatosis can be prevented in these patients when they are identified and treated presymptomatically. Moreover, the transfusable blood generated by treatment creates a valuable byproduct. In 2001, 40% of the blood transfused at KP San Diego was obtained from the hemochromatosis phlebotomy program. If purchased from the Red Cross, this blood would have a market value in excess of $300,000. In addition, we have coincidentally identified a number of cases of previously unrecognized chronic hepatitis and alcoholic liver damage.

To make this areawide screening successful, we have had to solve several problems: physician unfamiliarity with iron overload, lack of time for patient education, and the difficulty and complexity of tracking treatment for a large population. The problem of physician unfamiliarity with iron overload was initially solved by centralized screening and follow-up, and this article takes a further step toward decentralizing treatment and follow-up of iron-laden patients. The next problem was that providing patients with adequate information about this (or any) genetic disease is time-consuming and unreliable when done during a traditional office visit (however lengthy), whether to a physician or to a genetics counselor. We resolved this problem by developing a videotape with accompanying booklet that we mail to patients before they arrive for their consultation. We solved the third problem by creating a computerized hemochromatosis registry that allows us to efficiently follow treatment progress over time and to maximize follow-up. This solution was enhanced by coordination with the KP San Diego Blood Donor Center, created earlier by Michael Bonin, MD, Chief of Pathology. This important resource has been invaluable for simplifying the process of phlebotomy and has substantially added to our blood supply available for transfusion. By contrast, phlebotomy in the community is needlessly time-consuming, remarkably expensive, and often difficult to arrange.

Physicians whose practice includes treatment of hemochromatosis ultimately are likely to attract some patients with somatization disorders who desperately hope they have hemochromatosis so that their medical condition can finally be diagnosed and treated effectively. Chronic fatigue, arthralgia, and depression can be caused by iron overload; however, in most patients with iron overload, these symptoms are not caused by the iron overload. Understandably, nonetheless, many patients who have heard of hemochromatosis attribute their symptoms to this condition. This problem is further aggravated when persons with an inactive HFE mutation or minimal hyperferritinemia are incorrectly told that they have hemochromatosis. Attempting to correct this misinformation is a major task that easily triggers patient mistrust and anger. This problem reflects our general ineffectiveness at dealing with these psychosomatic symptoms; the solution lies in the difficult feat of learning to effectively treat somatization disorders.

At KP San Diego, we tell homozygotes who have no active iron loading process that they are normal; we do not explain the technical details behind our conclusion because they are needlessly confusing to patients. In contrast, anyone who is significantly iron-laden for any reason enters the phlebotomy program. When an index case is identified—whether by iron overload or by homozygosity—we give the index patient multiple copies of a Letter for Relatives that urges primary relatives to be screened. Only about one third of these relatives follow this advice.

Summary

From our experience screening more than 350,000 adult Health Plan members for iron overload, I firmly believe in the value of once-
per-lifetime screening for everyone. Improperly done, the test is unaffordable; but properly done, the test costs about the same as a complete blood count (CBC). Because people are damaged by the iron overload and not by the genetic mutation, screening is done by chemical test, not by genetic analysis. Moreover, as we described in Lancet, half of the homozygotes never begin any iron loading. Of the half that do begin iron loading, most do so to an inconsequential extent. Problematic levels of iron overload develop in only a small percentage of the homozygotes. Organ damage starts when plasma ferritin levels reach approximately 1000 ng/mL (1000 mg/L). A 70-year-old person with plasma ferritin level of 350 ng/mL (350 mg/L) will never be adversely affected by iron overload, but the same plasma ferritin level in a 20-year-old person can have unpredictable consequences.

This problem of whom to treat for iron overload is similar to that seen with hypertensive patients: Not every hypertensive patient eventually has a stroke, congestive heart failure, or renal failure; we safely treat the many to help the few. One difference between the two conditions, however, is that antihypertensive medications are often expensive and sometimes have side effects, whereas phlebotomy is overwhelmingly well tolerated. If we are uncertain about whom to treat, we should err on the side of safety and, by conducting quantitative phlebotomy to determine actual iron load, then decide any maintenance strategy on the basis of that iron load.

References

Don’t Give Up

Hope begins in the dark, the stubborn hope that if you just show up and try to do the right thing, the dawn will come. You wait and watch and work: You don’t give up.

— Anne Lamott, b 1954, author
Kaiser Permanente National Hand Hygiene Program

Abstract

Objective: Hand hygiene has historically been identified as an important intervention for preventing infection acquired in health care settings. Recently, the advent of waterless, alcohol-based skin degermer and elimination of artificial nails have been recognized as other important interventions for preventing infection. Supplied with this information, the National Infection Control Peer Group convened a KP Hand Hygiene Work Group, which, in August 2001, launched a National Hand Hygiene Program initiative titled “Infection Control: It’s In Our Hands” to increase compliance with hand hygiene throughout the Kaiser Permanente (KP) organization.

Design: The infection control initiative was designed to include employee and physician education as well as to implement standard hand hygiene products (e.g., alcohol degermers), eliminate use of artificial nails, and monitor outcomes.

Results: From 2001 through September 2003, the National KP Hand Hygiene Work Group coordinated implementation of the Hand Hygiene initiative throughout the KP organization. To date, outcome monitoring has shown a 26% increase in compliance with hand hygiene as well as a decrease in the number of bloodstream infections and methicillin-resistant Staphylococcus aureus (MRSA) infections. As of May 2003, use of artificial nails had been reduced by 97% nationwide.

Conclusions: Endorsement of this Hand Hygiene Program initiative by KP leadership has led to implementation of the initiative at all medical centers throughout the KP organization. Outcome indicators to date suggest that the initiative has been successful; final outcome monitoring will be completed in December 2003.

Introduction

In the nineteenth century, stringent hand hygiene by health care personnel was found to reduce transmission of disease. Recent reports published in lay and professional publications have documented that inadequate hand washing and artificial nails are causally associated with transmission of infection resulting in serious illness and death. In contrast, improved compliance with “hand hygiene” (handwashing or degerming in addition to regular use of lotion) and elimination of artificial nails have been reported as key measures for reducing transmission of hospital-acquired infection in hospital and ambulatory care settings. Surprising national statistics show that only 50% of direct providers of health care comply with current hand hygiene standards. Similarly, during the year 2000, internal national Kaiser Permanente (KP) observational studies (2317 observations) showed an overall 53% compliance with hand hygiene standards (S Barnes, unpublished data, 2001). In response to this finding, the KP National Infection Control Peer Group identified hand hygiene as a top priority and began developing a nationwide program to improve clinical practice and patient outcomes. When approached with the proposal for this program, KP’s top leaders readily acknowledged the importance of this focus on hand hygiene and endorsed the proposed program.

Consequently, during 2001, KP launched the Infection Control-sponsored National Hand Hygiene Program initiative, “Infection Control: It’s In Our Hands.” The proposed purpose of this initiative was to ensure organizationwide improvement in hand hygiene by introducing new products, providing education for employees and physicians, and eliminating use of artificial nails. The initiative was designed to introduce two handcare products that were not used consistently before introducing the initiative: waterless alcohol-based skin degermers and lotion. The initiative was also designed to include staff and physician education about the new products as well as the dangers inherent in
wearing artificial nails during direct patient care. Another key program component was development of a standard organizational hand hygiene policy, which included elimination of artificial nails among direct providers of patient care. The initiative has given to KP’s leaders, employees, and physicians the opportunity to participate in promoting an organizational commitment to hand hygiene, a basic-but-essential patient care competency.

National KP Hand Hygiene Program Initiative

On August 3, 2001, in a nationally broadcast internal KP videoconference, a multidisciplinary National Work Group (Table 1) launched the KP Hand Hygiene Program initiative, “Infection Control: It’s in Our Hands” and concurrently distributed a Hand Hygiene Program Implementation Manual to each KP facility. The Work Group consisted mostly of Infection Control Coordinators and Managers; additional members represented Union Labor Partners/CNA (although not a formal labor-management partnership initiative), KP infectious disease physicians, and representatives from Human Resources/Labor Management. The videoconference and manuals were developed and provided for facility-level Hand Hygiene Implementation Teams. (At the request of the Hand Hygiene Work Group, each medical center was asked by the KP leadership to convene these teams.) A recommendation extended to the Implementation Teams was that they should include physician-champions. The manuals included all tools that local teams would need for implementing the standardized Hand Hygiene policy and new hand hygiene products: recommended program implementation guidelines and checklist; evidence-based literature; educational flyers and posters; product information and product utilization guidelines; and sample internal communications. For easy access, the manual was also posted on the Infection Control Web site under “General Topics” at http://kpnet.kp.org/california/nursing/quality/infection/aboutic/index.html.

The Hand Hygiene Program initiative had six main objectives:

- Implementation of standard hand care products, including waterless alcohol-based skin degemers and lotion, in each KP medical center on the basis of specific product utilization guidelines suggesting where, when, and how each product should be used;
- Staff and physician education about use of waterless alcohol-based skin degemers in all patient care areas as an important adjunct to soap and water;
- Staff and physician education regarding use of hand lotion in all patient care areas. Use of lotion has been well documented to improve the quality of and compliance with hand hygiene and to consequently decrease transmission of infection.
- A standardized policy on hand hygiene and elimination of artificial and long natural nails in direct patient care settings.
- Determination of the outcomes of the program to be based on improvement in the following indicators: observational hand hygiene studies, rates of bloodstream infection in adult medical-surgical patients in the intensive care unit (ICU) as well as rates of multdrug-resistant infection and rates of using alcohol degemers;
- Continuation of compliance to be accomplished by ensuring that hand hygiene is incorporated into resident orientation programs, new physician

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<th>Table 1. Kaiser Permanente National Hand Hygiene Work Group</th>
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<tr>
<td>Enid K Eck, RN, MPH</td>
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<td>Dana T Barron, RN, BSN, CIC</td>
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<td>Linda L Becker, RN, BSN, MPH</td>
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<td>Maria T Canola, RN, BSN, PHN</td>
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<td>Natalie Richards, RN, UNAC</td>
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<td>Wil Clayton, Local 250</td>
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<td>Michael Unimuke, Field Rep/Organizer, BS, Local 250</td>
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<td>Dawn M Harris</td>
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<td>Laura H Marshall, BS, Journalism</td>
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<td>Catherine A Steadman</td>
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education, orientation education for new employees, and annual competency programs.

Local implementation teams were encouraged to do their own hand hygiene demonstrations and hand culturing as part of the educational process.

**Cornerstone of the Hand Hygiene Program**

The cornerstone of the National Hand Hygiene Program in terms of its potential impact on patient outcomes (infection prevention) is the introduction of waterless alcohol-based skin degermers as an adjunct to soap and water. Because these products are more convenient to use at the point of patient care delivery, they have been found helpful for improving compliance with hand hygiene, in addition to being more effective than soap and water in eliminating bacteria and fungus from the surface of hands. In recent years, introduction of this new product to improve hand hygiene compliance has been further supported by information (in both the lay and professional press) about infection transmission associated with inadequate hand hygiene. In all, alcohol-based degermers cannot replace soap and water, however, because alcohol is not a good cleanser, only a good degermer. For visibly soiled hands, use of soap and water remains standard practice.

**Recommendations Against Use of Artificial Nails**

A published non-KP study comparing natural vs artificial nail surfaces in subjects who had completed routine hand hygiene stated that alcohol-based waterless skin degermers were clinically significantly more effective for removing bacteria and fungus from the surface of hands. In this study, volunteer health care workers with natural and artificial nails performed hand hygiene either with alcohol-based degermers or with soap and water. Yeast as well as bacteria (including *Staphylococcus aureus* and *Enterococcus*) were cultured from nails before hand hygiene measures were taken. After using the alcohol-based waterless product, the number of positive bacterial and fungal cultures decreased from 40% to 10% for natural nails and from 80% to 60% for artificial nails. After using antimicrobial soap and water, the number of positive bacterial and fungal cultures decreased from 40% to 10% for natural nails and from 80% to 60% for artificial nails. Because these products are more convenient to use at the point of patient care delivery, they have been found helpful for improving compliance with hand hygiene, in addition to being more effective than soap and water in eliminating bacteria and fungus from the surface of hands. In recent years, introduction of this new product to improve hand hygiene compliance has been further supported by information (in both the lay and professional press) about infection transmission associated with inadequate hand hygiene.

Fungus and bacteria bind more strongly to these resins than to the surface of natural nails. Not surprising, therefore, are reports that the use of artificial nails has been epidemiologically implicated in several outbreaks of infection caused by gram-negative bacilli and yeast. In addition to implementation manuals, the National Work Group also developed a Manager’s Tool Kit for Artificial Nails Elimination to assist KP medical centers in eliminating use of artificial nails. In addition to presenting evidence-based information, the Manager’s Tool Kit provided guidance for managers from the KP Human Resources Department, guidelines for removing artificial nails, and postremoval care. This document was also placed on the Infection Control Web site for easy access.

To optimize this component of the Hand Hygiene Program, the KP leadership decided to make elimination of artificial nails a condition of employment for all direct-care providers in California as well as in the KP regions outside California. In general, this requirement has been met with rationality and acceptance by employees and physicians. In a few instances, KP management and human resources staff have devoted substantial time and attention to addressing reluctance to accept the no-artificial-nails requirement. In these instances, the reluctance of the employees in question was apparently associated with a desire for personal expression and choice.

Further education was provided to KP medical centers via the Infection Control Web site for easy access. Numerous studies have documented that the subungual area harbors high concentrations of bacteria. Compared with health care workers with natural nails, health care workers who wear artificial nails are more likely to harbor gram-negative bacteria on their fingertips, both before and after hand hygiene measures are taken. This difference results from the composition of acrylic resins with which artificial nails are made: Fungus and bacteria bind more strongly to these resins than to the surface of natural nails. Not surprising, therefore, are reports that the use of artificial nails has been epidemiologically implicated in several outbreaks of infection caused by gram-negative bacilli and yeast. In recent years, introduction of this new product to improve hand hygiene compliance has been further supported by information (in both the lay and professional press) about infection transmission associated with inadequate hand hygiene.

**Other Sources of Support**

Other sources of support for the Hand Hygiene Program include published recommendations from the Association of Operating Room Nurses (AORN), the American Academy of Pediatrics with the College of Obstetricians and Gynecologists, and the Centers for Disease Control and Prevention (CDC). These recommendations are summarized as follows:

- Association of Operating Room Nurses, *Standards, Recommended Practices and Guidelines* (1997): “Fingernails must be kept short, clean and healthy ... Artificial nails should not be worn.”
• American Academy of Pediatrics and the American College of Obstetricians and Gynecologists (2002): “Fingernails should be trimmed short, and no false fingernails or nail polish should be permitted.”

• Centers for Disease Control and Prevention, Guideline for Hand Hygiene in Health Care Settings: “Do not wear artificial fingernails or extenders when having direct contact with patients at high risk (eg, those in intensive-care units or operating rooms).”

• Health care Infection Control Practices Advisory Committee and Hand-Hygiene Task Force, et al, Guideline for Hand Hygiene in health care settings: “Do not wear artificial fingernails or extenders when having direct contact with patients at high risk (eg, those in intensive-care units or operating rooms).”

Outcome Measures
Outcomes for this National Program were monitored using the following measures: semiannual national observational studies of hand hygiene; quarterly national rates of ICU bloodstream infection (BSI); quarterly rates of MRSA infection at Northern California KP facilities; and quarterly rates of using alcohol-based degermer at KP facilities throughout California.

Results
Encouraged by the Hand Hygiene Program, a KP medical center in Southern California took random hand cultures from employees and physicians at the medical center. Sterile, dry, cotton-tipped applicators were used to inoculate petri dishes with swabs taken from the palm of the hand as well as from subungual and interdigital areas 1) before completing hand hygiene, 2) after using soap and water on unwashed hands, and 3) after using an alcohol-based waterless skin degermer on unwashed hands. This demonstration of hand hygiene techniques was met with employee enthusiasm and resulted in increased compliance with hand hygiene, especially using the waterless alcohol degermer. Figure 1 shows culture results for each of three hand hygiene scenarios 48 hours after incubation. The number of bacterial colonies decreased approximately 20% when soap and water were used and decreased more than 90% when the alcohol-based waterless degermer was used (Figure 1).

Table 2 presents preprogram (2000) observational data on hand hygiene from studies conducted at seven KP facilities in the California and Northwest Regions. Table 2 also includes postprogram and interprogram data from studies conducted in 2003 at five KP facilities in the Northern California Region, at three KP facilities in the Southern California Region, and at one KP facility in the Northwest Region.

All outcome indicators showed improvement in hand hygiene: As of the first quarter of 2003, the rate of bloodstream infection rate in the intensive care unit (ICU) decreased from 3.9 infections to 2.5 infections per 1000 line days (number of days ICU patients had a central IV catheter inserted) (Figure 2). This result compared favorably with the CDC benchmark of 3.8 bloodstream infections per 1000 central line days and represents a total of 18 infections and an estimated associated cost of $144,000 ($8,000 per infection). The mean total number of central line days per quarter was between 20,000 and 30,000 days. Also during the first quarter of 2003, the rate of nosocomial multiple resistant organisms (MRO) decreased from 3.4 infections per 1000 inpatient admissions to 1.4 infections per 1000 inpatient admissions. Observational studies of hand hygiene

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a measured in 2000.

b measured in May 2003.
indicate that the rate of compliance with hand hygiene practices increased from 53% before the program started (2000) to 79% during the first quarter of 2003. This study will be repeated during the fourth quarter of 2003. Use of artificial nails—monitored during approximately 400 of the reported observations—was absent in 97% of the postimplementation observations; preprogram data were not available for this measure.

Also providing evidence of success of the Hand Hygiene Program is the utilization rate of alcohol-based waterless degermers: This rate has increased in California from zero to 90% compliance since inception of the program. In May 2003, 19 of 21 KP facilities in California reported use of alcohol-based waterless skin degermers within established benchmark rates.

**Discussion**

The success achieved through the National Hand Hygiene project has resulted largely from the multidisciplinary nature of the effort and is a testament to the Work Group’s project design as well as to the involvement and advocacy of the Infection Control Peer Group (supported by Infectious Disease Chiefs at each facility). Participation by our union and labor partners also provided valuable insight and dimension to the project. Interregional collaboration enabled us to leverage our resources and to share successful practices.

In general, objectives of the National Hand Hygiene program—including education, product implementation, and elimination of artificial nails—have been embraced positively by employees and physicians. Among the most challenging aspects of implementing the program were the process of eliminating staff use of artificial nails and the Hand Hygiene Program’s need to compete with a multitude of growing demands for the time and resources of infection control staff.

Overall, the cost of the Hand Hygiene Program has involved human resources (mostly infection control staff) as needed for providing education to employees and physicians as well as for coordinating installation of handcare product dispensers and accomplishing the outcome monitoring. Consultation with KP personnel from the materials and finance departments has indicated that this initiative is unlikely to be associated with any appreciable increase in product cost, because only the mix of products was changed. Whereas soap and paper towels have always been used, the current initiative will require use of less soap and fewer paper towels as more alcohol-based waterless skin degermer is used. The decreased use of soap and paper towels is also expected to offset the increase in lotion use.

The processes of providing evidence-based education and tools, measuring outcomes, and sharing feedback combined successful elements of behavior change theory in the effort to improve hand hygiene practices, including elimination of artificial nails. Thus, results of swabbing studies comparing handwashing regimens (ie, soap and water versus waterless hand degermer) can help to persuade employees and physicians that the alcohol-based waterless degermer is not only more convenient but is also a more effective method of removing bacteria and fungus from hands that are not visibly soiled.
but is also a more effective method of removing bacteria and fungi from hands that are not visibly soiled.

The National Work Group is still available for consultation on an as-needed basis. Questions may be directed to your local KP infection control professional or Sue Barnes, RN, Senior Consultant and Work Group Facilitator, at (510) 987–4086 (tie line 427) or e-mail to sue.barnes@kp.org. You can also visit the National Kaiser Permanente Infection Control Web site: http://nursingpathways.kp.org/quality/infection/generaltopics/hand_hygiene.html.

KP Divisions in which work was done: NCAl, SCAl, NW, HA, CA, OH, MAS, CO.

References
What To Do for the Patient with Minimally Elevated Creatinine Level?

**Introduction**

Clinicians must often decide what to do for an asymptomatic patient who has minimally elevated serum creatinine level. Serum creatinine concentration is used clinically as a convenient index of kidney function, but it is important to remember that even a minimal elevation in creatinine can reflect significantly decreased rate of glomerular filtration. In fact, up to 40% of patients with normal serum creatinine level may have some reduction in glomerular filtration rate. Calculation of the glomerular filtration rate is very important to more accurately measure and assess kidney function. We present a typical clinical situation and suggest a possible course of evaluation and treatment.

**Case Example**

You are evaluating a 55-year-old white woman who has a 14-year history of diabetes mellitus and a 20-year history of hypertension and who previously received treatment for diabetic retinopathy. The patient’s blood pressure measured in the office is 142/88 mm Hg, weight is 156 lb (70.2 kg), most recent blood glycosylated hemoglobin (HbA1C) measurement was 8.2% of total hemoglobin, and most recent low-density lipoprotein (LDL) cholesterol level was 145 mg/dL (3.75 mmol/L). The patient’s current regimen for blood pressure control includes hydrochlorothiazide, 25 mg per day; atenolol, 25 mg per day and clonidine, 0.1 mg twice a day; and for blood glucose control she uses glipizide at 5 mg per day. The patient has no known history of heart disease or congestive heart failure. Result of a serum creatinine test obtained just before this visit is 1.3 mg/dL (114.92 mol/L), which is the same result as that obtained three months earlier. The reference ranges for serum creatinine are 0.7 to 1.3 mg/dL (61.9-114.9 mol/L) in men and 0.6 to 1.1 mg/dL (53.0-97.2 mol/L) in women.

**Assessing Renal Function**

Because the serum creatinine value is elevated slightly, results of her previous serum creatinine tests should be reviewed, and the test should be repeated if this is the first elevated value noted. The next step is to stage the patient’s renal disease according to recent Kidney Disease Outcomes Quality Initiative (K/DOQI) guidelines. Calculation of the glomerular filtration rate is very important to more accurately measure and assess kidney function. We present a typical clinical situation and suggest a possible course of evaluation and treatment.

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absolute serum filtration rate, calculated level, should be used to evaluate kidney function.

Table 1. Stages of chronic kidney disease* on the basis of glomerular filtration rate

<table>
<thead>
<tr>
<th>Stage</th>
<th>GFR (mL/min/1.73 m² body surface area)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>≥90</td>
<td>Normal GFR</td>
</tr>
<tr>
<td>2a</td>
<td>60-89</td>
<td>Mild ↓ GFR</td>
</tr>
<tr>
<td>3</td>
<td>30-59</td>
<td>Moderate ↓ GFR</td>
</tr>
<tr>
<td>4</td>
<td>15-29</td>
<td>Severe ↓ GFR</td>
</tr>
<tr>
<td>5</td>
<td>&lt;15 or dialysis</td>
<td>Kidney failure</td>
</tr>
</tbody>
</table>

GFR, glomerular filtration rate.
*Chronic kidney disease is defined as disease that persists ≥3 months.
1Stage 1 and 2 require a marker of kidney disease: proteinuria, hematuria, or an anatomic abnormality.


causative or contributive factors, including chronic medical conditions, prescription or over-the-counter medication, and urinary tract obstruction. The chronic conditions most commonly associated with decreased glomerular filtration rate are hypertension or diabetes. Medication use should be carefully reviewed, particularly use of nonsteroidal anti-inflammatory or other nephrotoxic medications, and less-nephrotoxic agents should be substituted when possible. The patient’s medical and family history, physical examination findings, and symptoms (if any) should be evaluated for evidence suggestive of obstructive nephropathy. The next diagnostic procedure is urinalysis to screen for hematuria and proteinuria. The K/DOQI guidelines accept use of a standard urine dipstick to screen for proteinuria:1 Proteinuria of 1+ or higher requires further quantification and confirmation.

The K/DOQI guidelines recommend using an untimed (“spot”) urine sample to determine the albumin-to-creatinine ratio instead of using the traditional timed (eg, 24-hour) urine collection method.1 Results of urinalysis from a spot sample can be used to accurately estimate daily urinary albumin loss. A first-morning-urine specimen is optimal, but a random urine specimen is also acceptable. If the magnitude of proteinuria is within the nephrotic range (ie, >3 g/d), referral of the patient to the nephrology department should be considered. If the patient has subnephrotic-range proteinuria (ie, <3 g/d), angiotensin converting enzyme (ACE) inhibitors (such as lisinopril) or angiotensin II receptor blockers (such as losartan) should be prescribed unless contraindicated, and the dosage should be adjusted according to the patient’s blood pressure response. Serum potassium and creatinine levels should be checked about 7-10 days after the patient begins taking any of these medications; up to 30% increase in serum creatinine level is often seen within this time period and is not an indication to discontinue medication use. These medications will reduce proteinuria while providing a renal protective effect and are especially important in patients with diabetic nephropathy. If the patient is unable to take these medications, a nondihydropyridine calcium channel blocker such as diltiazem or verapamil should be prescribed. These medications reduce proteinuria but are considered second-line agents.

For this case example, results of urinalysis show proteinuria (1+) without hematuria, white blood cells, or casts. Follow-up urinalysis of a spot sample show an albumin-creatinine ratio consistent with urine protein loss of 1.2 grams per day.

### Slowing Progression of Renal Disease

For patients with decreased kidney function, measures to reduce or retard the progression of renal disease such as control of hypertension, hypercholesterolemia, and hyperglycemia should be emphasized. The target blood pressure for any patient with chronic kidney disease should be ≤130/80 mm Hg,1 for patients with urine protein loss of more than 1 gram per day, the target blood pressure should be ≤125/75 mm Hg.1 The target LDL cholesterol level should be ≤100 mg/dL (2.6 mmol/L),5 and the target HBA1c should be ≤7% of total hemoglobin.5

This patient began taking lisinopril at a dosage of 10 mg per day, and the dosage was adjusted to achieve her target blood pressure. The proteinuria was requantified three months later, and urine protein loss had decreased to 0.3 grams per day. The patient was counseled on the importance of blood glucose control, and the glipizide dosage was adjusted to achieve the target glycosylated hemoglobin value. She eventually began taking lovastatin and made dietary and lifestyle modifications to reach the target LDL cholesterol level.

### Summary

As this case demonstrates, even a slightly elevated serum creatinine level can indicate presence of clinically significant kidney disease. Therefore, calculated glomerular filtration rate, instead of absolute serum creatinine level, should be used to evaluate kidney func-
tion. If nephrotic-range proteinuria is present or if the patient has other indications of renal disease, such as red blood cells or casts in the urine sediment, referral to a nephrologist should be considered. Patients with any degree of chronic kidney disease should have their blood pressure, blood glucose level, and blood cholesterol level managed aggressively to help reduce or prevent the progression of kidney disease as well as to reduce risk of cardiovascular events.

Acknowledgments
Woldemariam Gebreselassie, MD, and Mohammed Idroos, MD, reviewed the manuscript.

References
Spring in New Mexico is a time of stark contrasts and brilliant colors. The sunsets shade the hills in dramatically dissimilar ways and the flowering plants create an extravagant color spree. More of Mr Schumacker's art can be found on the cover and page 22.
Community-Based Group Practice: Is the Grass Greener on This Side of the Fence?

By Neil W. Treister, MD, FACC

It comes as a surprise to my patients and to many of my colleagues in “the private sector” that I am such an ardent supporter of the Southern California Permanente Medical Group (SCPMG) and of the Kaiser Foundation Health Plan—especially since I left SCPMG in 1988 to practice cardiology in the community setting and have not returned—not yet, anyway.

During the past 15 years, I have worked in several communities, at both large and small hospitals, and in solo practice. I also founded a single-specialty group practice that has grown to five cardiologists. While maintaining a private practice, I have consulted with health care organizations, served on hospital boards and committees, worked as medical director of a medical management company, and survived a health care MBA program at a local university.

I have seen great triumphs and huge disappointments in our disjointed, community-based, entrepreneurial, fee-for-service practice of medicine. And having trained as both an internal medicine intern and as a cardiology fellow at the Kaiser Permanente (KP) Los Angeles Medical Center and worked as a staff cardiologist at the “new” KP Woodland Hills facility, I feel well qualified to share with you some perspectives of life “on the other side of the fence.”

I always just assumed that physicians in SCPMG understood what it was like to practice in a community-based solo or small-group practice setting. I was therefore surprised when, during my recent conversation with a prominent SCPMG physician, he expressed genuine astonishment at some of my stories about medical practice in the non-KP setting. He encouraged me to present this perspective for SCPMG physicians. Naturally, these ideas are derived from my own personal observations and represent a limited sample. However, I believe that my experiences are not isolated and reflect some fundamental challenges faced by all clinicians who try to deliver high-quality, patient-focused care in a community setting.

“Groupness” in Group Practice: Fact or Fiction?

My practice has almost always been busy, and I have little recollection of facing the threatening prospect of trying to make ends meet. Therefore, unlike the situation faced by many other physicians, financial uncertainty has not been my greatest concern in private practice. For me, the most difficult challenge in private medical practice is the absence of “groupness.” In the private sector, many physicians are engaged in solo practice and thus are truly on their own. Most medical groups are small, and those that manage to stay together do not function as true groups: instead, they seem more like individual doctors sharing overhead costs. What holds them together (not always for very long) is that group practice can ensure reliable after-hours coverage and the misguided belief that their arrangement affords them economy of scale.

That doctors who are members of a group practice can feel alone and behave as individuals has tremendous implications. These clinicians experience little or no teamwork on a day-to-day basis and have no common professional culture based on shared values and goals. Because they do not think and act as groups, most doctors in private practice do not consistently or productively address issues such as mentoring new physicians, developing clinical guidelines for patient care, subjecting themselves to peer review, and adopting reliable processes for ensuring overall quality. Physicians who work together in “nongroups” often compete instead of collaborate, choosing to distribute income on the basis of individual fees collected and without any thought as to group performance.

The lack of a group culture and regular teamwork in community medical practice underlies what is probably my single most startling experience in private practice: In more than 90% of cases, I am asked to render cardiology consultation not by the ordering physician but by a nurse or ward clerk who has read an order in a patient’s medical chart. The caller usually is unfamiliar with the ordering physician’s concerns and often does not know the patient’s current health status. In some instances, the physician who wrote the order did not discuss the case with me in person even though he

I always just assumed that physicians in SCPMG understood what it was like to practice in a community-based solo or small-group practice setting.
or she was present on the ward—perhaps even sitting beside me! This situation gives the impression that the physician is embarrassed about wanting or needing assistance in the care of his or her patient.

I do not believe that physicians refrain from consulting me in person because I am difficult to talk to or because cardiology does not require physician-to-physician communication; in fact, my medical colleagues in virtually all specialties experience the same phenomenon. Nonetheless, this lack of face-to-face communication can lead to wasted time and resentment. For example, cardiologists making rounds at two, three, or more hospitals are periodically called back to a hospital because a chart order for a consult was not recognized promptly. This type of event has far-reaching implications for the quality, efficiency, and timeliness of patient care as well as for collegiality among physicians.

In most medical groups, time and forums are rarely devoted to meaningful discussion of patient care. Indeed, most medical groups lack the resources (time, money, and staff) to address the need for better education and timelier clinical information. These medical groups do not formally address adoption of new technology or how new medications might be used consistently. Decisions about acquiring a new piece of equipment may be determined by how much revenue the equipment can generate and not by its appropriateness and contribution to quality of care. In short, most physicians in private practice lose opportunities for learning, quality improvement and personal growth. In contrast, during my two years at KP Woodland Hills, each physician was expected to participate in Tuesday-afternoon educational meetings and had access to an information infrastructure created and maintained through adequate investment.

When physicians act alone and not as a group, decisions and outcomes are more personal. In my private practice, for example, I had to create and run a small business and make decisions that had tremendous implications for my employees as well as for me. I had to decide who received a salary increase and when. I had to choose health insurance coverage for my employees and then pay for it out of my own pocket. I was seen as too permissive by some and too strict by others. At times, I could not find an experienced manager whom I could trust to oversee the front and back office functions. When equipment or processes have broken down, I have had to put patient care responsibilities on hold and switch over to solving business problems. I have been unlucky enough to be sued for malpractice and felt very much alone navigating that complicated process with little help from the people around me. To this day, I look wistfully at electronic medical record systems, knowing that investing in such a system in the near future would not be feasible for our practice.

In my experience, hospitals and physicians seem to be in conflict much of the time, and hospital-physician relationships are unclear at best. Hospitals are seen by physicians as their rightful domain—an entitlement—and physicians do not understand the many challenges and compromises that must be made. Physicians also do not understand why they cannot dictate important decisions about capital outlay and daily operations. Hospitals see physicians as selfish and shortsighted. Only a few physicians meaningfully contribute to how hospitals address patient care decisions; instead, most physicians approach these issues by asking, “What can I get to make my practice better?” The result of this situation can be underlying distrust and lack of any meaningful collaboration; rarely does better patient care result. I have repeatedly seen hospitals and physicians together tolerate illegible writing, medication errors, and disruptive physician behavior.

The physician’s time in the community setting is unprotected and can be characterized as “feast or famine.” A cardiologist making rounds at one hospital who has 14 patients yet to see at two other hospitals tends to have mixed feelings about running into an internist friend who might have just admitted a patient with atypical chest pain. Or a cardiologist whose service is quiet might be afraid of what another cardiologist would say at seeing a colleague wandering through the emergency room to see if any cardiac patients are waiting there.

**Benefits of Collaborative Medical Practice**

From a broader perspective, I am deeply troubled by the waste and inefficiency in the private practice setting. Outpatient tests are repeated and other services duplicated because we lose records or don’t share them with other offices. We spend an enormous amount of time and money trying to extract information from other doctors’ offices or from our own offices at different locations. We must bill a wide assortment of payers, each of which requires slightly different information. In addition, hospitals and managed care organizations update credentialing on a regular basis, each with a unique form that must be filled out by hand. In the private sector, specialty groups undergo nurse practi-
Community-Based Group Practice: Is the Grass Greener on This Side of the Fence?

Commentary

Community-Based Group Practice: Is the Grass Greener on This Side of the Fence?

Our private practice model imposes a phenomenally large cost to the country. For some of the for-profit health plans with whom we work, less than 80% of each premium dollar (ironically termed the “medical loss ratio”) is spent on medical care; the rest is allocated to administration, marketing and profits. As a member of the health care community, I find distressing that these unnecessary layers of costs take chunks out of the health care dollars and rarely add the value that they promise. I am well aware that KP spends nearly 95% of each health care dollar on patient care.

Another point is perhaps the most important. Having trained and worked in the KP system, I find the incentives under fee-for-service medicine very disquieting. If you are paid a fee for service, you can immediately—and rightfully—start worrying about whether you are yielding to the temptation to order more tests and create more visits—services that have immediate effects on your income. And another disquieting fact is that the tests and treatments you order often have substantial costs for your patients. I have found myself debating the cost effectiveness of my recommendations from the patient’s perspective—a difficult, slippery slope. In addition, without good practice guidelines or adequate information systems, physicians having to make these decisions are hard-pressed to do so adequately and consistently.

As a result of lack of consistency in medical decision making, some practitioners do far too much, and some others do far too little. I have known cardiologists in private practice who administer treadmill tests annually, echocardiography regularly, and Holter monitoring routinely without evidence supporting the medical value of these tests in many cases. In contrast, when paid on a capitation basis for the same patient, these same physicians realize that such tests aren’t needed “in this particular case.” I found that in the KP system, I did not worry about how much money my decisions were costing the patient or whether I was personally benefiting from the services I performed. At KP, I practiced in a purer and more ethical environment—one that is very difficult to achieve in the usual private practice setting.

Conclusions

The private practice world is very different from the Permanente Medical Group workplace. In my tenure at KP, I experienced a highly consistent group culture that helped me make better decisions on a regular basis. The incentives were conducive to unbiased and patient-oriented choices. I had ready access to help from experienced people who were on the same team. Neither my colleagues nor I had to contend with the distractions inherent in running a business.

I admit, my perspective might have been clouded by 15 years’ separation from KP Woodland Hills and might not reflect the current environment at that (or any other) KP facility. Moreover, I was particularly fortunate to train and work with some very special friends and role models, such as Jack Braunwald, Peter Mahrer, Joe Ruderman, Al Dreskin, Lew Seager, and Jeff Weisz. Perhaps my SCPMG experience was unusual. Nonetheless, if you are a PMG physician longingly peering over the fence and marveling at the green grass at the community hospital, you should understand that what you are seeing might be artificial turf. You may underestimate what you have and how it has molded and conformed to your personal and professional values and goals. The fit in the private sector might not be as good.

I left KP Woodland Hills in 1988 and do not regret my decision; I have learned much from the rich variety of my professional experiences in the “outside” world. However, I now practice cardiology part-time, which is the compromise I make to work in a “system” that is disjointed and inefficient. And—as I say each time someone asks—I am sure that if I ever go back to full-time clinical practice, it will be with SCPMG or in a similar organization that embodies the values and professionalism that are so important to me in my practice.

Reference

The Beloved Community: From Civil Rights Dream to Public Health Imperative

Dr. Martin Luther King popularized the notion of the Beloved Community, a term first coined in the early days of the twentieth century by philosopher-theologian Josiah Royce. Dr. King envisioned the Beloved Community as a society based on justice, equal opportunity, and love of one’s fellow human beings. As explained by The King Center, the memorial institution founded by Coretta Scott King to further the goals of Martin Luther King:

“Dr. King’s Beloved Community is a global vision in which all people can share in the wealth of the earth. In the Beloved Community, poverty, hunger and homelessness will not be tolerated because international standards of human decency will not allow it. Racism and all forms of discrimination, bigotry and prejudice will be replaced by an all-inclusive spirit of sisterhood and brotherhood.”

The Beloved Community and the National Health Care Crisis

In response to a variety of health problems, we have developed highly technological solutions that, only a short time ago, seemed beyond our ability to resolve. Artificial joints are routinely placed in our oldest patients; our fastest-growing group of cardiac catheterization patients are in their 80s; and last year, I referred two 90-year-old patients for aortic valve replacement surgery. (Both patients did well postoperatively, and one even returned to work part-time.) Such technological fixes—often described as “medical miracles”—can, at our discretion, become routine but are extremely expensive. We as a society struggle with justifying this high cost. One possible solution to this quandary is to allow medical care to constitute an ever-increasing percentage of our gross national product. Another option is to improve our efficiency. Both remedies have their place. First and foremost, however, just as cardiac surgery is in many cases prerequisite for restoring healthy function to a human body, the essential and fundamental components of the Beloved Community—justice, equal opportunity, nonviolence, and love of one’s fellows—are prerequisites for building a healthy society.

This article explains how such concepts can help point us in new and exciting directions that greatly inform the ongoing debate about the current crisis in our health care industry.

Salutogenesis, the Study of Wellness

Modern medicine focuses on pathogenesis. Understanding the pathogenic mechanisms leading to...
illness allows us to make monumental advances in preventing and treating disease, but an exclusive focus on pathogenesis may blind us to other, equally important areas of study. Israeli researcher Aaron Antonovsky suggested that we should focus on salutogenesis, the study of wellness and the factors that promote good health. Thus, to better understand wellness, this article discusses some powerful determinants of health—factors that are rarely the focus of either our preventive or our therapeutic efforts.

**Socioeconomic Status and Health Outcome**

A growing body of medical literature shows that most diseases have a gradient of risk that parallels a person’s position in the social hierarchy. The lower the rank, the higher the risk for morbidity and mortality. This association holds for most chronic illnesses, including coronary artery disease, hypertension, diabetes mellitus, and heart failure. The association is weaker (but present nonetheless) for many types of respiratory disease and cancers.

The data from the Multiple Risk Factor Intervention Trial (MRFIT) study on cardiovascular mortality illustrates this gradient-of-risk effect (Figure 1). Some argue that the gradient is a result of differences in access to health care. However, in the United Kingdom, where everyone has access to the National Health Service, the gradient for cardiovascular mortality is not only present but steep (Figure 2). Studies of British civil servants living in the Whitehall section of London showed that most of the excess mortality does not result from the risk factors (smoking, hypertension, diabetes, and cholesterol) usually targeted in our prevention efforts.

Smoking and hypertension are more common among people with the fewest economic resources. The Whitehall investigators proposed that most of the excess mortality is the pathophysiologic consequence of excessive psychosocial stress—stress such as that produced by having relatively low income. Evidence supporting this stress hypothesis can be found both in human and in animal studies. Only a few of these studies are reviewed here.

**Psychosocial Stress; East-West Mortality Differences**

A revealing study attempted to explain the differences of cardiovascular risk in Swedish and Lithuanian men. In 1978, Lithuanian men had similar rates of cardiovascular mortality as Swedish men but by 1994 had rates of cardiovascular death four times higher. This phenomenon was attributed to improved health in the Swedish population as well as generally deteriorated health among the Lithuanian population. Conventional risk factors did not explain the differences in population health between the two countries. Kristenson et al found that the Lithuanian men reported more social isolation, job-related strain, and depression than did the Swedish men, a result suggesting that the increased rate of cardiovascular death among the Lithuanian men was socially determined.

In the study, men from each country first had basal cortisol levels measured and then were subjected to experimental stress consisting of mental arithmetic testing, anger recall, and immersion of one hand in ice water. The cortisol response to stress was measured for each group (Figure 3) and showed that both the low- and high-income Swedish men had a normal stress response: Low basal cortisol levels (before application of experimental stress) rose and fell in response to stress. In contrast, the Lithuanian men showed a highly abnormal stress response: The most prosperous Lithuanians had low basal cortisol levels and a blunted stress response, whereas the low-income Lithuanians had extremely high basal cortisol levels and completely failed to mount a normal stress response. This study, if replicated, could thus show how presumed social stress can have a devastating effect on normal physiologic functioning.

The lack of a normal stress response in these low-income Lithuanian men brings to mind the learned helplessness that occurs in experimental animals repeatedly subjected to uncontrollable, unpredictable stressors. This learned help-
The beloved community: From Civil Rights dream to public health imperative

Lessness response may help us understand depression in humans.

**Psychosocial Stress; Animal Studies**

Stanford University neurobiologist-primatologist Robert Sapolsky, who has been studying wild baboons in Kenya for more than 20 years, showed that basal cortisol levels were higher in male subordinate baboons than in their dominant male counterparts. The subordinate baboons also had lower levels of high-density lipoprotein (HDL) cholesterol and a less-robust cardiovascular response to infusion of epinephrine.\(^{12,13}\)

One researcher experimentally altered the dominance patterns exhibited by captive macaque monkeys, all of whom were fed an atherogenic diet.\(^{14}\) All monkeys with altered status showed increased atherogenic plaque formation. Compared with monkeys who remained subordinate, monkeys who began as subordinate but became dominant by experimental design had a 44% increase in atherogenic plaque formation.\(^{14}\) Compared with monkeys who remained dominant, monkeys who began as dominant but became subordinate had more than six times the amount of atherogenic plaque formation, suggesting that social incongruity may in itself be stressful.\(^{14}\) Shively and coworkers also showed that without any manipulation of dominance status, dominant monkeys had much less atherosclerosis than did subordinate monkeys and that injection of acetylcholine caused abnormal coronary vasoconstriction in subordinate monkeys but not in dominant monkeys.\(^{15}\)

**Social Cohesion and Mortality**

The Whitehall Studies showed that socioeconomic status is a more powerful predictor of health outcome than are the risk factors we currently address.\(^5\) The study of East-West mortality differences\(^{12-15}\) mentioned here suggest that lower social rank and social disruption are not only stressful but are accompanied by neurohormonal pathophysiology. To explore the factors contributing to the health of a community, researchers have begun to study social cohesion, ie, the extent to which members of a community form mutually beneficial social ties.

Examination of the relation between social cohesion and health outcome has shown a close relation between civic trust and the rate of mortality from all causes\(^{16}\) (Figure 4).\(^{17}\) The lower the level of trust between individuals in a given US state, the higher the rate of mortality from all causes.\(^{16}\) A similar relation exists between mortality rates and participation in voluntary organizations. Life expectancy is longest in US states whose populations participate the most in voluntary organizations.

**Income Inequality**

Modern societies may have no better predictor of health outcome than degree of income equality. Once a country has progressed beyond the epidemiologic transition point where chronic disease replaces infectious disease as the leading cause of death, life expectancy correlates more with income equality than with GNP.\(^5\) In Greece, which has a lower GNP than does the United States, life expectancy is longer than in the United States.\(^3\) Life expectancy is highest in Sweden and Japan, the countries with the greatest income equality.\(^5\)

This relation is seen also in US states. States with the greatest income equality have the longest life expectancy as well as the fewest homicides.\(^3,18\) Perhaps income equality is such a powerful health determinant largely because of our long
evolutionary history of living in relatively egalitarian social groupings. We do not appear to be well suited physiologically for great differences in status. The stress of having unequal status appears to be mediated psychologically. The least prosperous group in the Whitehall Study, for example, although having four times higher cardiovascular death risk than in the wealthiest group, were not poor in any real material sense. They all lived in homes and owned cars and television sets.

Recent research on primates has suggested that primates who hunt cooperatively (humans would be included in this category) are "hardwired" for fairness. A recent study in humans shows that our pain center in the anterior cingulate cortex is aroused when we feel socially excluded. Perhaps we become vulnerable to illness when our physiologic "hardwiring" for fairness and inclusion is repeatedly contradicted by our social experience. Fairness and inclusiveness are essential elements of the Beloved Community.

Beloved Community Medicine

I have suggested that salutogenesis is a fruitful area for us to explore. Because the studies cited here suggest that human health is largely determined by social factors, understanding these factors and developing health-promoting strategies seem necessary for addressing today’s health care crisis. How can Kawachi’s insights on trust and civic participation be incorporated into our practice? Should we prescribe community service and performance of good deeds as therapy (“mitzvah therapy”) the way some of us have begun prescribing physical activity? What would be the effect of one million Northern California Kaiser Permanente members doing weekly good deeds in their communities with our encouragement and medical sanction? Can we form respectful partnerships with community groups to help make this a reality?

The data linking income equality and health may be the most difficult of all to acknowledge and assimilate. Can these data stimulate us to consider how our purchasing, hiring, and investing decisions can help build the local economies of the communities we serve? Can we adopt salary policies that will be a national model for how a multilayered corporation can reward all its employees fairly? Given that income inequality often leads to abuses of rank, can we be a model corporation that consistently treats all our staff and Health Plan members with dignity and respect?

Research in population medicine requires us to broaden our perspective from preoccupation with individual patients to awareness of entire populations. Salutogenesis requires us to expand our awareness past community medicine to Beloved Community medicine. Embracing these ideas will lead to creative initiatives for addressing the social determinants of health and thus improving health for everyone while limiting the use of expensive allopathic medication and surgery. If we implement this new approach to medical practice, perhaps we will fulfill Dr King’s vision of the Beloved Community. In Dr King’s own words:

“… the end is reconciliation; the end is redemption; the end is the creation of the Beloved Community. It is this type of spirit and this type of love that can transform opposers into friends. It is this type of understanding good will that will transform the deep gloom of the old age into the exuberant gladness of new age. It is this love which will bring about miracles in the hearts of men.”

Figure 4. State-level correlation of mistrust with age-adjusted mortality rates.

Percentage responding: “Most people would try to take advantage of you if they got the chance.”

Acknowledgments

Nancy E Adler, PhD, University of California at San Francisco; Robert M Sapolsky, PhD, Stanford University School of Medicine; S Leonard Syme, PhD, Professor Emeritus, School of Public Health, University of California, Berkeley; Deborah Rangel, MS, Kaiser Permanente Medical Center, Richmond, California; and Vivien M Feyer, EdM, CAS, all reviewed the manuscript. I am grateful to Dr Sapolsky for acquainting me with the work of Aaron Antonovsky of the “well-being” movement.

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The Final Word

I believe that unarmed truth and unconditional love will have the final word in reality. This is why right, temporarily defeated, is stronger than evil triumphant.

Delivering Preventive Services in the New Millennium

During the last few decades, patients and the medical community have embraced the concepts of preventive care first popularized in the 1950s by Morris F Collen, MD, and his colleagues in The Permanente Medical Group. Government-sponsored organizations in the United States,1 Canada,2 and elsewhere now publish evidence-based standards of preventive care, and research dollars flow to support the science of prevention. And why not? Both the medical community and the public believe it logical to alleviate the burdens of illness through the use of early, preclinical intervention designed to prevent or postpone disease.

In the health care industry marketplace of 2004, customers differentiate the quality of care provided by the Kaiser Permanente (KP) Medical Care Program from that of our competitors largely on the basis of how well we provide preventive services such as mammograms, Pap smears, and vaccinations. The old paradigm of symptom- and illness-driven health care is being challenged by a developing paradigm of preventive care. Doctors no longer just care for sick patients; they now must prevent illness by using an ever-expanding grab bag of preventive interventions.

Proliferation of Preventive Care Strategies

The KP administrative structure and outside organizations all have issued guidelines that primary physicians are frequently challenged to remember all the subtleties of these various tracts. Yarnall and colleagues3 estimated that if a family physician with an average case load were to implement all the currently recommended preventive care strategies for all patients seen, the physician would spend more than seven hours each day providing preventive services! How much time would that leave for acute, symptom-driven care?

Fragmentation of Preventive Services

Throughout the health care industry, various systems of “health care delivery reminders” have been implemented in an attempt to improve overworked physicians’ ability to provide timely preventive services.4 We at KP, both regionally and locally at the facility level, continue to develop many population-based care programs to assist physicians with certain aspects of preventive care, programs that often arise in response to an outside organization’s demand for information about that care. In general, these preventive care programs are added to departments or clinics without additional financial support.

Services in these ad hoc programs are delivered in parallel with delivery of acute care by primary physicians. Because most preventive care programs do not assume the entire responsibility for care in their area and because no clear lines of outcome accountability exist, the primary physician is forced to act as a safety net to ensure that no preventive care activity is missed. Our medical centers have a growing conflict between delivering preventive care and providing symptom-driven care; this conflict will not be resolved by adding more decentralized, autonomous centers as pieces of the preventive care puzzle.

A Modest Proposal: Integrate Preventive Care Services

To maintain our excellence at providing preventive services, we need
to take advantage of new technology in the workplace and to create new structures to improve our delivery of care. We must first clearly identify who will provide and manage preventive care services. Patients and health care providers should be able to easily locate who is providing preventive care. Preventive care should be consolidated under a single organizational structure, and delivery should be integrated and easy for patients to access. Preventive care should be available on demand, perhaps even without an appointment, as described in the following example visit.

For example, a 60-year-old woman who has not seen a physician or had any health care for years and who recently joined the KP Health Plan now arrives at the KPSD Preventive Medicine Center. She completes a history form that is appropriate for her age and sex. Her history is reviewed, and with the help of a computerized medical record system, a list of needed preventive services is immediately compiled. Appropriate examinations such as Pap smear, pelvic examination, mammography, and screening laboratory tests are done. The patient also receives any immunization needed. Sigmoidoscopy is scheduled, and follow-up care arranged by a midlevel provider. If the patient is hypertensive, she is asked to obtain more blood pressure readings and is enrolled in a tracking program for hypertensive patients.

**Organization of Care Delivery**

All follow-up preventive care would be managed by the preventive care centers. Tasks would be done by the appropriate level of health care provider. Many preventive care tasks now done by physicians would instead be done by teams of clerks, registered nurses, health educators, and midlevel providers. The physician's role would be to plan workflow policies and to provide guidance and supervision instead of the traditional one in which teams of people provide support as doctors perform these tasks.

Preventive services would thus be integrated in one setting. Because the tools that ensure successful delivery of preventive services are needed by most preventive programs, organizing these programs under one administrative structure would pool resources and allow economy of scale. A single administrative structure, whether applied regionally or locally at a facility, would improve proficiency in designing and developing these programs. A clear statement of responsibility for both components of preventive services, ie, delivery and follow-up, would eliminate political turf battles over control of programs and their resources. Programs that are currently Balkanized could be combined to more effectively deliver care. For example, one program should administer and be responsible for managing all strategies for patients who need reduction of cardiovascular risk, including delivering care for weight reduction, hypertension management, smoking cessation, and cholesterol reduction. Currently, responsibilities for each of these services often reside in separate departments.

**Management Tools**

We must develop tools for effective and efficient outreach and education. Many tools we already use—such as voicemail, e-mail, and surface mail—must be automated and integrated with the electronic medical record system to free physicians and their support staff from time-consuming clerical work. Automated prompts to patients should require no initiation from staff. For example, reminders to come to the preventive center for preventive services such as Pap smear and mammogram could be timed to arrive by e-mail one month before a patient's birthday each year. Automated prompts could be used to remind delinquent patients to order refills on long-term prescription medication or to have routine laboratory tests done as well as to provide follow-up for preventive care services.

With development of automated reminders must come tools for patient education. Only an educated patient population can be expected to adhere to guidelines of an ever-expanding preventive medicine program. When education and outreach are successfully implemented, a patient's lack of adherence to guidelines becomes an issue of compliance instead of an issue of miscommunication or lack of participation by the health care provider. Because providers are involved with the reminder system only after a patient fails to respond to automated contacts, more physician time can be directed to providing symptom-driven care.

**Funding**

These preventive care centers also need adequate funding—whether regional or local or programwide. A new initiative championed on a regional level in KP is currently given to a department to develop, often with the expectation that funding will come from existing department resources. However, this arrangement places start-up programs in competition with existing programs—a recipe for inadequate funding. Organizing centers under a single, responsible department would provide economy of scale...
and the ability to manage and shift costs among preventive care programs as needs change. In addition, distributing responsibility for programs among different departments sometimes allows outdated, inefficient, or ineffective programs to continue for a variety of political—instead of medical—reasons.

**Conclusion**

During our 50-year history, what has truly distinguished the KP Health Care Program is its visionary commitment to preventive health care. As preventive services grow in response to discoveries in evidence-based medicine and to the demands of patients and large health care purchasers, the resources required to meet these demands will inevitably rise. We must manage these resources wisely. If we take delivery of preventive care seriously, we in KP should create independent departments of preventive medicine that have full responsibility for identifying need, for providing preventive services, and for tracking outcome of services. A 15-minute appointment with a family physician will no longer suffice.

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**References**


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**Effecting The Future**

Knowledge and understanding of the past are essential to effecting sound administration and constructive change in the future.

— Ray Kay, founding Medical Director of the Southern California Medical Group.

*This “Moment in History” quote collected by Steve Gilford, KP Historian*
Dr. Stone is a general pediatrician at Kaiser Permanente Glendale Medical Office. This photograph was taken when a late winter storm came through Yosemite. The natural sepia and dark evergreen are subtle enough to create exactly the effect as Dr. Stone beheld it.
PEACE SIGNS: A Sustainable Violence Prevention Collaboration Between Managed Care and School Health Programs


Introduction
The names of once-obscure American towns—Littleton, Colorado; West Paducah, Kentucky; and Santee, California—remind us of the unprecedented tragedies that can occur if angry kids are not redirected. Our children are disproportionately the targets of violence, which has now become the second leading cause of death for children 10 to 19 years of age.1 The Office of the US Surgeon General and the Centers for Disease Control and Prevention (CDC) have proclaimed violence a major threat to public health.

Localizing the consequences of violence as a public health threat is not difficult. In a 1999 CDC study of at-risk youth, 14% of San Diego County adolescents surveyed stated that they carried a weapon to school; 34.9% reported being involved in a physical altercation; and 4.8% reported that they required medical attention for injuries sustained in an altercation during the previous year.2 Violence in adolescents does not exist in isolation; instead, violence proves to be associated with school failure,3 drug use, criminal behavior,4 and acting out sexually.5 In addition, the Adverse Childhood Experiences (ACE) Study carried out at Kaiser Permanente (KP) has established a link between adverse childhood events and adult health status.5,7 This work adds a developmental trajectory to the literature showing a clear connection between pediatric behavioral problems and frequent physician visits8,9 as well as between these behavioral problems and high utilization of general community resources.10,11 Although various services are directed toward troubled adolescents,
Both plays model positive conflict resolution, are developmentally targeted, and demonstrate how to clarify intentions of others.
tion in the project was authorized by joint Memorandums of Understanding between the San Diego Unified School District and participating health plans.

**Methods**

The coalition evaluated each participating school for presence or absence of key elements identified in violence prevention research (Table 2). In schools where these elements were missing, the coalition program supplied technical assistance, curricula, and incentives. Curricula provided in classrooms were linked with the two interactive theater presentations by using as clarifying messages the same phrases used in the plays. Incentives and promotional material included items such as vests (for children selected by schools to participate in “peace patrols”) and T-shirts emblazoned with the PEACE Signs logo. Technical assistance included helping school staff to initiate peer mediation programs; providing health educators and mental health professionals to attend four “parent nights” to discuss principles of conflict resolution; distribution of resource and referral information for students in need of assistance; and teacher preparation for implementing lessons in conflict resolution. The coalition also prepared newsletter articles released to parents throughout the school year to reinforce and parallel the conflict resolution messages their students were receiving. Division of labor between schools and nonschool coalition members is listed in Table 3.

**Data Collection and Analysis**

A pre-post control group design was used to compare each of the nine intervention schools with the nine case-controlled schools. As the largest health plan in San Diego county—its membership includes 103,000 insured school-aged children—and with tight integration between its providers and the Health Plan, KP was able to track on an aggregate basis the health care utilization patterns of its members within the study schools. In addition, data on daily attendance, school nurse utilization, disciplinary efforts, and scores on a State of California competency test were obtained on an aggregate basis for both the intervention and control schools. Confidentiality of each Health Plan member and student was maintained consistently. The two-sided t test was used to compare control and intervention schools in regard to health care utilization, school attendance, and disciplinary suspensions.

**Results**

Table 4 shows that the program achieved a high acceptance rate among teachers and parents; and a substantial percentage of both continued to use the thematic messages contained in the program. Table 5 shows outcome measures; a statistical test of the difference between pre-post health care utilization comparing the intervention and control groups was significant at intervention but not at the control sites (p = -.01).

**Discussion**

Underscoring the idea that violence is a public health issue, this study found that violence prevention programs can reduce health care utilization. Such utilization by KP Health Plan members in the intervention schools decreased by 19%. School attendance was unaffected by the program, but the cumulative number of days of suspension decreased by 12% in the intervention schools while increasing by 25% in the control schools.

<table>
<thead>
<tr>
<th><strong>Table 2. Key elements of violence prevention programs</strong></th>
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<tbody>
<tr>
<td>Curriculum teaching the use of clarifying statements in conflicts</td>
</tr>
<tr>
<td>Consistent reinforcement of positive messages</td>
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<tr>
<td>Highlighting role models</td>
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<tr>
<td>Parent involvement</td>
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<tr>
<td>Peer mentoring program</td>
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<tr>
<th><strong>Table 3. Activities performed by coalition and school personnel</strong></th>
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<tbody>
<tr>
<td><strong>KP Health Plan</strong></td>
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<tr>
<td>Program coordination</td>
</tr>
<tr>
<td>Educational theater group</td>
</tr>
<tr>
<td>Member health education</td>
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<tr>
<td>Community involvement</td>
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<tr>
<td>Incentives</td>
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<tr>
<td>Technical assistance</td>
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<th><strong>Table 4: Process evaluation results</strong></th>
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<tbody>
<tr>
<td>90% of teachers rated the program either excellent or good</td>
</tr>
<tr>
<td>96% of parents rated the program either excellent or good</td>
</tr>
<tr>
<td>95% of the students reported that they learned “a lot”</td>
</tr>
<tr>
<td>93% of teachers reported that they were using PEACE Signs “messages” for three months after viewing the theater presentations</td>
</tr>
<tr>
<td>87% of teachers reported seeing the children using PEACE Signs “messages” on the playground three months after viewing the theater presentations</td>
</tr>
</tbody>
</table>
kp in the community

PEACE SIGNS: A Sustainable Violence Prevention Collaboration Between Managed Care and School Health Programs

Table 5: Outcome measures for 632 students at intervention sites and for 508 students at control sites before and after the study

<table>
<thead>
<tr>
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<th>Intervention sites (n = 9)</th>
<th>Control sites (n = 9)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
</tr>
<tr>
<td>Total no. of visits to health plan</td>
<td>1249</td>
<td>1013</td>
</tr>
<tr>
<td>Mean no. of visits per school</td>
<td>138.7</td>
<td>112.5</td>
</tr>
<tr>
<td>Mean no. of visits per member per year</td>
<td>1.9</td>
<td>1.6</td>
</tr>
<tr>
<td>Total no. of days absent</td>
<td>6716</td>
<td>6700</td>
</tr>
<tr>
<td>Mean no. of absences per school</td>
<td>1074</td>
<td>1075</td>
</tr>
<tr>
<td>Total no. of days of suspension</td>
<td>377</td>
<td>334</td>
</tr>
</tbody>
</table>

*Significant at the 0.05 level comparing before and after within-group data.

Extrapolating the change in mean number of health visits per member for the age cohort targeted by this intervention to the 34,000 KP San Diego Health Plan members in this age category would indicate a net savings of approximately 10,200 health visits per year. The incremental cost of the intervention per child was $15.10, whereas reducing the number of health visits saved $22.40 per child. The small sample size precludes any valid societal cost-benefit analysis, but the cumulative effects of the program—decreases in health care utilization and in disciplinary procedures—suggest that the program is fiscally sound and cost-effective. For these reasons—in addition to the power of theater as a teaching tool, demonstrator of social skills, and instrument of acculturation—now is the time to use theater for health promotion.

Acknowledgments

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Diana Petitti, MD, assisted with study design.

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Bringing Peace

If we do, indeed, seek to bring peace to the world, we can do it by first bringing peace to ourselves. A person cannot give that which they do not have.

— Living Synergistically, Thomas D Willhite
Giving Pain a Voice

By Mary Shannon, MSW

Flashback: “A recurring, intensely vivid mental image of a past traumatic experience.”

“Six months after I gave birth to my son I started having flashbacks,” Kate told me in our first psychotherapy session. Her physician had referred her to me, suspecting that her multiple physical problems had psychosocial components.

“I didn’t tell anyone about them, not even my husband,” she continued. “I was afraid if I told anyone they’d think I was crazy, or at the very least on my way to going crazy, so I kept them a secret. At first they happened infrequently, which made them easier to ignore. But as time went on, they nudged their way into my life like unwelcome visitors that refused to leave, poking and prodding and picking away at me until one day I realized ignoring them was no longer an option.”

“The most painful flashback was the one that recurring most often,” she recalled. “I saw myself as a little girl again, helpless, standing like a trapped animal at the foot of mom’s bed. She was laying on her back, telling me to come closer to her—first in the kind of voice people use when they want you to do something, then in a harsh, frustrated voice when I still didn’t move. I shook my head ‘no,’ praying she’d change her mind and leave me alone, but I could tell from the look on her face I’d better do as she said. I slowly made my way around the bed to stand beside her, making sure to stand just far enough away so she couldn’t grab me unless she sat up. She reached out for me, telling me again to come closer, but I didn’t budge. Mom didn’t say anything—she didn’t have to. Her eyes narrowed to a steady glare and said it all. The little girl took a slow, small step toward the bed. I could feel the queasiness in the pit of her stomach, the tickling sensation of tears running down her face as they ran down mine.”

After each flashback, Kate convinced herself that the past was better left in the past, shrugging off those images like you shrug off a chill that comes out of nowhere, determined to move on with her life. “I was married to a respected physician, had a beautiful new baby to care for, and had just received my Masters degree in Social Work. I didn’t have time to deal with memories I’d worked so hard to forget!” she cried. But memories are strange things, especially painful memories. Sometimes they come at you all at once, like blinding strikes of lightening replaying scenes from the past like two-second horror shows in your head. Other times they trickle into your life like a slow poison, eating away at you until the line between the past and the present is so blurred you can’t tell the difference between the two anymore. The hardest part is not knowing which ones are waiting in your psyche to revisit you, since they choose you—you don’t choose them. Each flashback handed Kate a different memory, and each memory triggered another. “It was like going home again a little bit at a time,” she told me, “only I never knew when I was going, or what I was going to find when I got there.”

I encouraged Kate to write about her past, and the following narrative excerpts have been reprinted with her permission.

“It started when I was young, about four or five years old from what I can remember. That’s when the other things started too—the self-hatred, the shame, the self-mutilation. I really believed I was like all the other kids, but even then I knew I’d always be an outsider—different from the rest. Other kids didn’t have secrets like I did. They seemed safe and sure about everything, while I jumped at my own shadow. My secret consumed me, isolated me, tormented me. There was no one to tell. It was the late 1950s, then the 1960s—no one imagined such things, much less talked about them. Besides, I was too ashamed to admit my mother made me touch her. Too afraid I’d be labeled a freak. Who was I that my own mother would do such horrible things to me? What was wrong with me?”

“As I got older, I began to have multiple physical problems, from severe headaches to gastrointestinal problems that finally resulted in exploratory surgery when I was a teenager. Of course nothing was discovered. No one ever asked the question, ‘How are things at home?’ They just did another test, scheduled another surgery. No one realized, not even me, that my body was trying to give my pain a voice, because I couldn’t.”

Mary Shannon, MSW, has used writing as an adjunctive treatment tool with chronic pain patients at KP in Vallejo, CA; cancer patients at the University of California at Davis Cancer Center; and in private practice. Ms Shannon is a published author, and is currently completing her first novel, “The Sunday Wishbone.” E-mail: MaryTShannon@msn.com.
“Even as an adult, there was still no one to tell. My husband only knew bits and pieces because he didn’t want to hear any more than that, and whenever I tried to deepen a friendship by sharing a little of my past, the friendship quickly ended. There were no support groups for a woman like me either, so I kept it buried, pretended I was like everyone else. Lied, in order to be accepted. But I still wasn’t accepted. My world was so different from everyone else’s that there was no connection, no common ground. I couldn’t laugh as others laughed.”

“It wasn’t until years later that I began working with a therapist who encouraged me to write about my past, which proved to be a significant breakthrough for me. I’d already discovered the benefits of art therapy, having done it both personally, as well as professionally with cancer patients. But I was at a point where I needed more than the abstract use of color and form. I needed to put words to the events and feelings that had been haunting me. I needed to give my pain a concrete voice.”

“On a cold January morning I sat down at my computer and started writing. I wrote until I couldn’t stand to put down another word, then I took a break, took a deep breath and wrote some more. Whenever the feelings were too overwhelming I’d take another break. I wrote in fits and starts, wrote in my journal, on the computer, in my mind. Sometimes I wrote for hours on end. It was as if the words had finally found a way out and didn’t want to stop. The more I wrote, the more I was able to understand. The more I wrote, the more I was able to let compassion take seed. The more I wrote, the more I was able to construct a whole self, instead of denying and burying half my life. The more I wrote, the more I was able to give that little girl a voice—and when that happened, I started to laugh as others laugh.”

Writing allowed Kate to take the horror within and make it manageable. “I become a witness to my own experience, integrating it into my life instead of suppressing it,” she stated. Louise DeSalvo says, “Through writing, we change our relationship to trauma, for we gain confidence in ourselves and in our ability to handle life’s difficulties.” At the end of our last session, Kate left me a thank you card. In it, she remarked on the healing benefits of writing: “As I watch my words, phrases and paragraphs come together on the page, I can sometimes feel the weight of silence begin to lift, the burden of isolation start to disintegrate. And all the while, deep in the shadows, the little girl is smiling.”

“Statistically, one in three women have been molested as children.” In a 1997 groundbreaking report of daughters sexually abused by mothers, it’s stated that “sexual abuse by females and mothers is occurring daily but remains very hidden.” Bobbie Rosencrans, MSW, goes on to say “… very little permission in this society is given for women to be so far outside the stereotypes and social rules for women, especially mothers.” At one time this same social rule applied to fathers, but now we have accepted the fact that father-daughter incest is a sadly prevalent occurrence, and because we can finally speak this truth, there is help for both. But until mother-daughter sexual abuse is “out of the closet,” the cycle of shame and isolation will continue to dominate the lives of countless mothers and daughters.

Because of a great deal of hard work, the cycle of abuse has stopped with Kate. Her son is now a happy, healthy teenager who continues to amaze and delight her, and her marriage of 22 years is stronger than ever. In allowing me to share her own un-speakable truth here, our hope is to increase awareness of this hidden, yet prevalent form of abuse, and consequently encourage the development of resources for those who have carried this secret in their lives for too many years. As Kate said during our last meeting, “Perhaps one day I’ll even meet a woman like me—a woman who finally has someplace to go, and someone to tell. That will be the day when I won’t have to be alone with my secret any more, and neither will she.”

Note: Parts of this article have been excerpted from Ms Shannon’s upcoming book, “The Sunday Wishbone.” No part of this article may be reprinted or used in any way without written permission from the author.

References
A New Model for Adolescent Preventive Services

By David M N Paperny, MD, FAAP

Abstract

Context: Preventive screening and counseling of adolescents is time-intensive and is usually done by clinicians who currently provide far fewer preventive services than guidelines suggest.

Objective: Create a clinically effective, cost-efficient, replicable program to screen and counsel adolescents.

Design: The Adolescent Preventive Services (APS) Program was designed to screen youth (aged 13-24 years) for health-compromising behaviors and emotional problems and to provide health education using interactive computer software and youthful health educators.

Main Outcome Measures: Demographics of participants, health problems identified at appointments, length and outcome of sessions were noted in pilot evaluation and in compilation of data for the four-year KP Honolulu experience. In the pilot evaluation, APS Program visits were compared to standard clinician visits for frequency of health problems identified, guidance delivered, level of patient satisfaction, and cost.

Results: Significantly more health problems were identified (p < .05) and more anticipatory guidance on several high-risk behaviors was given during APS Program visits than during clinician visits. After start up (at a cost of about $6700), visits each cost about $35 compared with $75 for a standard clinician visit. More patients (71%-74%) preferred an APS Program visit to a standard clinician visit.

Conclusion: The APS Program provides comprehensive screening and individualized health education for health-compromising behaviors and emotional problems in adolescents and has better outcome for lower per-visit cost than the conventional clinician-based office visits. This program model, which could easily be modified for delivery of adult preventive services, deserves expansion throughout the KP health system.

Introduction

The major health threats to teens and young adults are psychological problems and health-risk behaviors, not biomedical diseases. At Kaiser Permanente (KP), behaviors that begin during adolescence and continue through adulthood lead to a large proportion of health care costs for adolescents as well as for patients with chronic disease and cause many premature deaths. These behaviors are contributory factors in about half of health care costs and in about half of the premature deaths in the United States.

Unfortunately, most one-on-one health risk screening and education by primary care providers is costly, time-intensive, inefficient, and—worst of all—often ineffective. The availability of Adolescent Clinics sometimes resolves these problems, but staff at most pediatric and medical clinics face several barriers to rapport and to active participation in frank discussion about sensitive issues.

Current pediatric standards de-emphasize screening adolescents for uncommon biomedical problems in favor of screening for health-risk behaviors and counseling about healthier choices. The long-term effectiveness of providing comprehensive preventive services to improve adolescent health is not yet known. However, preliminary data from an ongoing study conducted jointly by KP in Northern California and University of California San Francisco (UCSF) suggest that 5% to 7% long-term behavioral improvement is attainable by counseling and health education alone; that is, by the conventional approach of simply providing specific advice without tracking and follow-up components. Similarly designed smoking cessation programs had 5% to 20% efficacy for secondary prevention. Some researchers and clinicians believe that even 5% to 7% success in behavioral change and risk reduction will have profound effects on the lives of adolescents, and we believe that much higher success is attainable.

Available data suggest that clinicians currently provide far fewer preventive services than recent guidelines recommend. Barriers to providing comprehensive preventive health care to adolescents include environmental factors, such as reimbursement issues, professional salaries, and time constraints; clinician factors, such as training, skills, confidence, and attitudes; and patient factors, such as cost, convenience, and perceived need for services. Our current KP health system is well suited to treating biomedical disease, but new paradigms are needed to overcome these barriers to comprehensive preventive services for adolescents and to enhance the preventive and health promotion services received by members of our health maintenance organization. We designed an innovative model to deliver comprehensive preventive services to adolescents, a model that uses youthful nonmedical personnel...
objective of this program was to improve the health and emotional well-being of adolescents.

Our Adolescent Preventive Services (APS) Program heavily uses computer technology. Patients complete confidential, computerized health assessments using a computer that is outfitted with headphones (Figure 1). The patient hears an audio recording of each onscreen question through the headphones; literacy and language barriers are thus resolved. Patients respond to questions using a touchscreen or a keyboard. The interactive and branching software program conducts a directed history on the basis of responses to specific panels of questions, thus interviewing a patient much as a clinician would. The specialized health screening and education software incorporates generally accepted pediatric screening guidelines and was developed and refined over the course of more than a decade at KP Hawaii.21-23

The computerized interview process usually takes about 15 minutes. Some patients may be asked as few as 50 screening questions and others may be asked more than 350 questions if they provide responses that require in-depth exploration (Table 1). The program internally validates certain responses for consistency and reconfirms crucial branch point questions, a strategy that maximizes the specificity of the computerized interview.

After completing the computerized interview process, patients receive individualized, interactive multimedia medical advice and anticipatory guidance on the basis of their responses. Advice and guidance may be delivered in the form of any of 60 videoclips automatically selected to match the patient’s needs, and the person on the recorded presentation is of the same sex and ethnicity as the patient. At times, health education games convey important points in an entertaining and nondidactic manner. For example, “The Baby Game!” addresses parenting desires and needs; and “Romance!” covers sexual behavior and provides information on abstinence, responsible sexual decision making, and contraception.24

Printed material includes a patientspecific behavioral health risk summary with personalized health advice and recommendations; referrals to resources for patient-appropriate services that include local telephone numbers, KP resource numbers, and national toll-free 800 numbers; and referrals to the Kaiser HealthPhone (1-800-33-ASK-ME) for prerecorded messages about relevant health topics. Finally, the computer prints a prioritized problem list for review by a health educator.

University students, who more easily than older adults are able to establish rapport with adolescents, were trained as health educators for the APS Program using a standardized curriculum (Table 2). After completing the computerized assessment and viewing the educational presentations, each adolescent meets with a health educator for a scheduled 20-minute session that reinforces the automated educational process in the Adolescent Preventive Services Program.
messages and addresses problems that require counseling, referral, or both; a Brief Negotiation approach is used. Subsequently, the health educator reviews each patient encounter with a nurse, who then does any indicated further evaluation and counseling, performs indicated physical assessments, and makes referrals for medical or counseling services. To support the primary care providers, health educators later perform the crucial tasks of tracking and managing cases of patients at high risk.

**Pilot APS Program Evaluation**

Our initial feasibility study and cost analysis of the APS Program included a comparative evaluation of health problems identified, guidance delivered, and patient satisfaction. Eleven pilot APS Program sessions had 258 adolescent participants. Informed consent was obtained from each participant, and this study was approved by the Interhospital Research Committee and Institutional Review Board of Kaiser Foundation Hospitals, Honolulu, Hawaii.

**Methods**

APS Program appointments were offered at 11 sites by mobile clinical teams. Sessions were offered at nontraditional sites including secondary schools, university health service facilities, shopping malls, and after-hours or weekend clinics. Appointments were booked 1 to 30 days in advance by calling a KP appointment center; one visit was scheduled for every ten minutes. Privacy was provided during the visit, both when patients interacted with the computer and later when patients met with the health educator and nurse. Adolescents completed an automated health assessment using software on a laptop computer that had headphones and a printer attached. For this pilot project, 12 university students at the graduate level in social work, nursing, or health education were trained using a standardized curriculum (Table 2) to provide health counseling to patients on the basis of the results from the computerized assessment. For each APS Program session, a team of two health educators, one medical assistant, and one specially trained registered nurse traveled to the site. The medical assistant registered patients and measured and recorded biometrics.

As previously described, each patient completed a computerized health risk assessment, viewed individualized multimedia presentations of medical advice and anticipatory guidance, met with the health educator for re-inforcement of advice and brief negotiation, and, if indicated, received further evaluation or counseling from a registered nurse. During the pilot study, patients who needed pelvic examination, vaccination, or laboratory tests were referred to their regular primary care provider or to an appropriate laboratory.

To compare the two approaches—our new approach and conventional adolescent preventive practices—I conducted a retrospective medical record review of preventive visits to 16 pediatricians and family practitioners at KP clinics by 250 adolescents and compared these to records of adolescents of comparable age, sex, ethnicity, and geographic distribution seen in the APS Program. The physicians all used structured forms (ie, checklists) for documentation of preventive services. Medical records were abstracted to determine the health problems identified and the health counseling provided during preventive visits to physicians. APS Program data about health problems identified and health counseling provided were obtained by review of computer-generated problem lists, health educators’ and nurses’ case records, and patients’ exit questionnaires. Standard physician office visits were compared with APS Program visits by effectiveness of identifying health problems and of providing health counseling. The $\chi^2$ test for independence was used to compare frequency at which health problems were identified and counseling about health problems was provided for each group.

**Results of Pilot Evaluation**

A mean of 23 adolescents attended each of the 11 pilot sessions. Of the 264 patients sched-
uled for appointments, only 29 (11%) did not show up, and many open appointments were subsequently filled by accompanying friends or walk-in participants. The 258 participants were aged 12.9 to 24.9 years (mean 17 years); 70% were between 14 and 21 years old; and 56% were female. Only 17% of patients were accompanied by a parent. Each visit lasted a mean of 45 minutes (range 22-82 min), and 90% of visits were completed within one hour.

Participants spent a mean of 21 minutes completing the automated health assessment and viewing interactive multimedia. Discussions with a health educator lasted a mean of 15 minutes (range 3-30 min). Case review between the nurse and the health educator lasted a mean of two minutes. One third (36%) of the participants required further evaluation and counseling by the nurse and these encounters lasted a mean of eight minutes (range 0-28 min); only 15% of participants required a complete physical examination.

Of 258 subjects, 254 (98%) had one or more risk behaviors identified. The mean number of risk behaviors identified was 3.2 (SD = 2.3; range 0-11) per adolescent. We referred 15% of participants for reproductive health services and 18% for personal counseling services.

The educator-nurse teams identified and documented risk behaviors and health problems significantly more often than did physicians practicing in traditional settings during preventive visits (three behaviors per visit versus <1 behavior per visit; p < .05) (Table 3). The preventive screening teams also gave significantly more anticipatory guidance about sexual behavior, drug avoidance, and alcohol avoidance than did physicians.

The total cost per comprehensive computer-assisted preventive visit was $33.74. Initial training included two hours by the project director, 13 hours by a nurse-instructor, and 15 hours for each of the ten health educator trainees. For this project, each of the ten graduate students received $7 per hour and the nurse-instructor received $21 per hour. Thus, the initial training budget was $1778.75. The two laptop computers with printers cost about $2500 each. Salary costs for pilot clinical sessions included the nurse and two educators, excluding the optional medical assistant. Thus, total salary costs were $43.75 per hour including fringe benefits. The total personnel cost for the 11 four-hour sessions was $1925. Start-up costs for training and equipment totaled $6779.

Patient feedback by written questionnaire showed that most adolescents (71%) liked the computer-assisted visits, 3% did not, and 26% were undecided. Most (60%) preferred the alternative sites (schools, University Student Health Center, shopping centers, after-hours or weekend clinics), compared with traditional medical settings (2%), and 38% were undecided. Nearly all adolescents (92%) felt that the amount of time spent with the health educators and the nurse was appropriate. In ad-

### Table 3. Frequency of identifying and providing counseling for specific health issues and of providing selected anticipatory guidance during Adolescent Preventive Services Program visits compared with standard physician-based clinic visits

<table>
<thead>
<tr>
<th>Health issue</th>
<th>APS Program visit (N = 258)</th>
<th>Clinician visit (N = 250)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identified and counseling provided:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affective issues or suicide risk</td>
<td>16</td>
<td>8</td>
<td>0.02</td>
</tr>
<tr>
<td>Not using seat belt</td>
<td>14</td>
<td>4</td>
<td>0.001</td>
</tr>
<tr>
<td>Driving under the influenceb or riding with driver under the influence</td>
<td>15</td>
<td>7</td>
<td>0.01</td>
</tr>
<tr>
<td>Sexual activity or contraception</td>
<td>36</td>
<td>22</td>
<td>0.01</td>
</tr>
<tr>
<td>Use of alcohol</td>
<td>18</td>
<td>10</td>
<td>0.02</td>
</tr>
<tr>
<td>Physical or sexual abuse</td>
<td>6</td>
<td>1</td>
<td>0.01</td>
</tr>
<tr>
<td>Not using helmet</td>
<td>43</td>
<td>25</td>
<td>0.003</td>
</tr>
<tr>
<td>Stress</td>
<td>45</td>
<td>31</td>
<td>0.02</td>
</tr>
<tr>
<td>Assertiveness or communication skills</td>
<td>14</td>
<td>4</td>
<td>0.0005</td>
</tr>
<tr>
<td>Family issues</td>
<td>29</td>
<td>13</td>
<td>0.0004</td>
</tr>
<tr>
<td>Violence exposure</td>
<td>17</td>
<td>7</td>
<td>0.002</td>
</tr>
<tr>
<td>Gun carrying</td>
<td>2</td>
<td>0.4</td>
<td>ns</td>
</tr>
<tr>
<td>Drug use</td>
<td>3</td>
<td>2</td>
<td>ns</td>
</tr>
<tr>
<td>Use of marijuana</td>
<td>3</td>
<td>2</td>
<td>ns</td>
</tr>
<tr>
<td>Use of cigarettes</td>
<td>7</td>
<td>8</td>
<td>ns</td>
</tr>
<tr>
<td>Exercise or physical fitness</td>
<td>52</td>
<td>49</td>
<td>ns</td>
</tr>
<tr>
<td>Diet and nutrition</td>
<td>12</td>
<td>11</td>
<td>ns</td>
</tr>
<tr>
<td>School problems</td>
<td>13</td>
<td>12</td>
<td>ns</td>
</tr>
<tr>
<td>Anticipatory guidance provided:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexual activity, sexually transmitted diseases, or contraception</td>
<td>21</td>
<td>13</td>
<td>0.04</td>
</tr>
<tr>
<td>Alcohol avoidance</td>
<td>14</td>
<td>7</td>
<td>0.02</td>
</tr>
<tr>
<td>Drug avoidance</td>
<td>15</td>
<td>8</td>
<td>0.05</td>
</tr>
<tr>
<td>Use of cigarettes</td>
<td>7</td>
<td>6</td>
<td>ns</td>
</tr>
<tr>
<td>Injury prevention</td>
<td>9</td>
<td>8</td>
<td>ns</td>
</tr>
<tr>
<td>Diet and physical fitness</td>
<td>13</td>
<td>13</td>
<td>ns</td>
</tr>
</tbody>
</table>

*p-value indicates statistical significance of differences between computer-assisted and clinician-based visits. All p-values are two-tailed.*

A New Model for Adolescent Preventive Services

Table 4. Health issues identified for participants in the four-year experience of the Adolescent Preventive Services Program

<table>
<thead>
<tr>
<th>Health issue</th>
<th>Percentage of patients with problem identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affect issues</td>
<td>14</td>
</tr>
<tr>
<td>Suicidal ideation</td>
<td>9</td>
</tr>
<tr>
<td>Family issues</td>
<td>31</td>
</tr>
<tr>
<td>Alcohol abuse</td>
<td>19</td>
</tr>
<tr>
<td>Marijuana abuse</td>
<td>6</td>
</tr>
<tr>
<td>Other drug abuse</td>
<td>2</td>
</tr>
<tr>
<td>Driving under the influence*</td>
<td>5</td>
</tr>
<tr>
<td>Riding with driver under the influence*</td>
<td>9</td>
</tr>
<tr>
<td>Recent sexual activity</td>
<td>26</td>
</tr>
<tr>
<td>Helmet non-use</td>
<td>46</td>
</tr>
<tr>
<td>Seatbelt non-use or unsafe driving</td>
<td>40</td>
</tr>
<tr>
<td>Tobacco use</td>
<td>10</td>
</tr>
<tr>
<td>Exercise need, academic problems, or other</td>
<td>15</td>
</tr>
</tbody>
</table>

*of drugs or alcohol.
*driver was usually the father.
*of these patients, 52% engaged in high-risk sexual activity.

This new concept of computer-based screening for adolescents deserves expansion throughout the KP health system ...
A New Model for Adolescent Preventive Services

By trying to make things easier for their children, parents can make things much harder for them.

— Mardy Grothe, b 1942, psychologist and author

Making Things Easier


Acknowledgments

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Proceedings of the Fifth Annual Permanente Rheumatology Association Symposium, Sonoma, California, April 3-6, 2003

Gerald Levy, MD, MBA and Stanford Shoor, MD

The Permanente Journal/ Winter 2004/ Volume 8 No. 1

Abstract
The new diagnostic tools and treatments developed for rheumatologic disease entities make rheumatology one of the most dynamic areas of medicine. Permanente rheumatologists attend the annual Permanente Rheumatology Association (PRA) meeting as an essential mechanism for exchanging information relevant to practicing this dynamic specialty at Kaiser Permanente (KP). The structure of the PRA meeting encourages high-level scholarship, education, and collaborative work between KP Regions. Alternating between Southern and Northern California, the annual PRA meeting was held this year in Sonoma. Thirty-eight KP physicians from seven KP Regions attended the meeting and were assisted by academic advisors representing Stanford University, the University of Colorado, and The Mayo Clinic. The 2003 meeting focused on polymyalgia rheumatica/giant cell arteritis (PMR/GCA), scleroderma, systemic lupus erythematosus (SLE), and the current, changing role of tumor necrosis factor (TNF) in inflammatory disease.

Introduction: The Fifth Annual Permanente Rheumatology Association Symposium, Sonoma, California, April 3-6, 2003
Gerald Levy, MD MBA and Stanford Shoor, MD

The Annual Permanente Rheumatology Association (PRA) meeting has become indispensable for Permanente physicians who practice the rapidly changing field of rheumatology, which remains one of the most dynamic areas of medicine with its new diagnostic tools and treatments. The structure of the PRA meeting encourages high-level scholarship, education, and collaborative work between KP Regions. Alternating between Southern and Northern California, the annual PRA meeting was held this year in Sonoma. Thirty-eight KP physicians from seven KP Regions attended the meeting and were assisted by academic advisors representing Stanford University, the University of Colorado, and The Mayo Clinic. The 2003 meeting focused on polymyalgia rheumatica/giant cell arteritis (PMR/GCA), scleroderma, systemic lupus erythematosus (SLE), and the current, changing role of tumor necrosis factor (TNF) in inflammatory disease.

The study group of Drs Miller-Blair and Schwartz examined the growing consensus that GCA and PMR are distinct manifestations within one disease spectrum. New information was presented on the pathogenesis, diagnosis, and evidence-based treatment of GCA. The role of temporal artery biopsy as well as appropriate treatment regimens were discussed.

Scleroderma is no longer called progressive systemic sclerosis (PSS) but simply systemic sclerosis (SS). New studies confirm that only a few SS patients have a progressive disease course and that severe disease becomes apparent in most patients within three years after onset. Drs Zelman and Schoen’s study group also presented exciting new data on treatment of pulmonary fibrosis and Raynaud’s phenomenon—two of the most troublesome aspects of SS.

Dr Venkat’s group elucidated the major manifestations of SLE and presented new information on how hormonal levels influence production of proinflammatory cytokines. Improved tools for monitoring disease are now used to assess new forms of therapy, such as use of mycophenolate mofetil for treating SLE.

Gerald Levy, MD, MBA, (left) is an SCPMG Rheumatologist practicing at the Bellflower Medical Center. He chairs the annual Rheumatology for Primary Care Providers symposium and is a member of the steering committee of the Permanente Rheumatology Association. Dr Levy is active in several areas of research involving COX-2 anti-inflammatory agents. E-mail: Gerald.D Levy@kp.org.

Stanford Shoor, MD, (right) is a TPMG Rheumatologist at Santa Clara. He is Chairman of the Northern California Rheumatology Group and Chairman of the Permanente Rheumatology Association. E-mail: Stanford.Shoor@kp.org.
Under the leadership of Drs Dillon and Bulpitt, the rheumatoid arthritis (RA) group focused on the growing understanding of how TNF functions in inflammatory disease. TNF agents are now used in ankylosing spondylitis, psoriatic arthritis, psoriasis, and other conditions. The long-term efficacy and tolerability of TNF agents remain excellent, but caution remains concerning the risk of tuberculosis and other types of infection. The RA study group recommends that KP develop and implement a registry to track management of chronic disease and responses to therapy in patients with RA.

In recognition of the dramatic change taking place in the field of rheumatology, Dr Levy presented a thought-provoking talk challenging the traditional view of that field: The organ-based approach taught in medical school is being replaced by enhanced understanding of the underlying immune modulators. One example of this shift is the growing role of anti-TNF agents in treatment of psoriasis, sepsis, and inflammatory bowel disease. Other cytokines have been shown to play a role in autoimmune eye and ear diseases, asthma, and other conditions. Rheumatologists’ specialized knowledge of immunology will lead to opportunities for cross-specialty collaboration to improve the care of patients not traditionally considered “rheumatology patients.”

Giant Cell Arteritis and Polymyalgia Rheumatica Rheumatica Study Group

Dana Miller-Blair, MD and Nina Schwartz, MD

GCA and PMR are manifestations of one disease entity and are driven by the same antigen. In addition to having the classic symptoms of PMR, patients with this disease may complain of myalgia, peripheral arthritis, distal tenosynovitis, or swelling of the distal extremities with pitting edema. Such manifestations raise the question of whether relapsing seronegative symmetrical synovitis with pitting edema (RS3PE) can coexist with seronegative rheumatoid arthritis. Clinical presentation of GCA includes classic cranial presentation, fever of unknown origin, and large vessel GCA. Clinical features of large vessel GCA include claudication, paresthesia, Raynaud’s phenomenon, and frequently include negative results of temporal artery biopsy. GCA complicated by aortitis can be associated with aneurysm and with possible vascular rupture.

In one proposed model of pathogenesis, an exogenous antigen (perhaps an infectious agent) leads to priming of specific CD4+T cells in the lymph nodes. These cells undergo clonal expansion and migration to sites of antigen deposition in the adventitia of muscular arteries. Interaction between these T cells and specialized macrophages (which also are localized to the adventitia) results in changes both in the media and in the intima. Why GCA develops in some patients and PMR develops in others is unclear, although a critical factor appears to be production of interferon gamma in the arterial wall in GCA but not in PMR. Also poorly understood is the mechanism by which immune events in the adventitia direct the inflammatory, destructive, and ischemic changes which occur in other vessel layers. The tendency for GCA and PMR to develop in older persons also remains unexplained.
The initial diagnosis of GCA is usually made on clinical grounds and confirmed by temporal artery biopsy. However, when the clinical probability of GCA is high and the benefits of therapy outweigh the risks, a clinical diagnosis may suffice. Temporal artery biopsy remains the standard method of diagnosis and is most helpful when the probability of GCA is intermediate. Pathology specimens should be at least 2 cm in length. For patients in which corticosteroid therapy is begun before biopsy, positive results of biopsy decline with continued treatment. Biopsy may still yield positive results for as long as one to two weeks after initiation of corticosteroid therapy. Sensitivity of the biopsy analysis can be as high as 91%. Bilateral biopsy may be an option if the optimal side for biopsy cannot be determined with certainty and negative results of unilateral biopsy would be ignored by the clinician. Laboratory studies can support a diagnosis of GCA. Determination of erythrocyte sedimentation rate (ESR) is the method traditionally used to diagnose and monitor disease activity. A few patients present with a normal ESR; paradoxically, these patients may have a higher risk for ischemic events. The C-reactive protein has a similar sensitivity in patients with PMR and GCA and may be considered an alternative test. Measurement of IL-6 activity may be a more sensitive test than determination of ESR but currently has limited availability. Anticardiolipin (aCL) antibodies may be associated with a higher risk of ischemic events. The C-reactive protein has a similar sensitivity in patients with PMR and GCA and may be considered an alternative test. Measurement of IL-6 activity may be a more sensitive test than determination of ESR but currently has limited availability. Anticardiolipin (aCL) antibodies may be associated with a higher risk of severe vascular complications in GCA. Vascular imaging is rarely used in diagnosis, except where extracranial arteritis of large vessels is suspected. Color duplex ultrasonography may prove helpful in diagnosis of GCA but still has limited clinical applicability. Corticosteroid therapy with initial daily oral doses of 40 to 60 mg is standard treatment for GCA. Little evidence supports intravenous pulse therapy with corticosteroid agents, although this therapy is preferred by some ophthalmologists. No randomized studies support a specific protocol for tapering the corticosteroid dose, and most clinicians recommend treatment duration of 12 to 30 months. Steroid regimens in patients with GCA do not prevent late-onset morbidity related to persistent or recurrent vasculitis. Steroid-related side effects can be clinically significant after prolonged exposure to steroid drugs and have stimulated interest in use of steroid-sparing agents. Conflicting evidence has been reported regarding efficacy of methotrexate in patients with GCA. Neither azathioprine nor cyclosporine A have proved useful as steroid-sparing agents. Treatment using infliximab is an intriguing possibility, but controlled studies must first be done before widespread use of this agent is indicated. Aspirin suppresses interferon gamma in the inflamed arterial wall and therefore may be useful for preventing irreversible cranial ischemic complications.

**Systemic Lupus Erythematosus Study Group**

**Kumar Venkat, MD**

Systemic lupus erythematosus (SLE) is a chronic multisystem disease with unknown neuroendocrine etiology. Genetic, sex, and environmental factors play an important role in the pathogenesis of SLE. Two major characteristics are seen in patients with SLE: 1) They produce pathogenic subsets of autoantibodies, immune complexes, and T cells and 2) they cannot properly regulate production and clearance of autoantibodies, immune complexes, and activated T cells. Abnormal immune responses occur in these patients because of interaction between susceptibility genes and environmental factors. Virtually every regulatory network that influences antibody and immune complex production and metabolism is abnormal both in mice with SLE and in humans with SLE. Hyperactivated B cells and T helper cells are the main factors in patients whose genome makes them susceptible to SLE. The disease originates in the genome and becomes clinically important only when multiple factors interact to sustain production of harmful products of the immune response and thus cause tissue damage.

That most postpubertal patients who present with SLE are female suggests a role for the X chromosome in development of the disease. Present evidence suggests that estrogens or feminizing steroids exacerbate SLE. Disease activity in SLE is influenced by the level of gonadal steroid compounds measured during the menstrual cycle and during pregnancy. By the mechanism of estrogen receptor transcripts, sex hormones regulate the activity of several factors: cytokines released by T helper cells, genes related to autoimmunity, apoptosis in the human thymus, and function of T and B cells. Sex hormones could affect the immune system by modifying T cell receptors, thereby signaling and regulating expression of T cell surface signals, autoantigens, translation or transcription of cytokine genes, or lymphocyte homing. Low estrogen levels along with prolactin acting through T helper cells lead to production of proinflammatory cytokines (IL-2, IFN-γ, and LT) and are also important in the pathogenesis of RA and multiple sclerosis (MS). High levels of estrogen, progesterone, and testosterone acting through T cell receptors.
cells lead to production of antiinflammatory cytokines (IL-4, IL-5, IL-6, IL-10, TGF-beta) and are important in the pathogenesis of SLE.10

Modern studies have led to the hypothesis that a neuroendocrine-immune loop (NEI) is essential for modulation of immune and inflammatory responses and for eventually restoring normal physiologic homeostasis. Defects that involve any components of the NEI loop as a result of genetic, infectious, toxic, or pharmacologic factors could influence susceptibility, contribute to development of chronic inflammatory and autoimmune disease, or alter responses and susceptibility to infection.11

SLE is diagnosed and monitored on the basis of medical history, physical examination results, and serological tests. Adequate monitoring of disease activity is achieved by a combination of these elements. Appropriate initial laboratory tests include routine studies, specific immunologic tests, and a variety of cytokines that can be measured in selected settings. No single test can predict exacerbation in SLE. Disease activity is most usefully and cost-effectively assessed by measuring levels of anti dsDNA antibody and serum complement (C3, C4, CH50). Other tests, such as measurement of IL-2 receptor activity, have less predictive value, are difficult to interpret, and are expensive. Monitoring of renal function is essential for assessing disease activity and response to therapy.12,13 In some patients, immunologic markers may remain abnormal during clinical remission.

SLE is a chronic disease characterized by remission and exacerbation. The cornerstone of treatment is prompt, appropriate therapy, achieved in large part through careful monitoring to detect flares of disease activity. Although rheumatologists have not reached a consensus on the best method of monitoring SLE activity, three recently developed indices—the SLEDAI (Systemic Lupus Erythematosus Disease Activity Index), the BILAG (British Isles Lupus Assessment Group Scale), and the SLAM (Systemic Lupus Activity Measure)—appear useful for monitoring disease activity as well as efficacy of treatment for SLE. Predictors of poor outcome in SLE are serum creatinine level >1.5 mg/dL (114.4 µmol/L), proteinuria in the nephrotic range, arterial hypertension, pulmonary involvement, thrombocytopenia, anemia, and SLEDAI score >20 at presentation. The mortality rate is nearly 50% for patients with SLE who present with acute pneumonitis or acute abdomen. Infection and thrombosis contribute equally to mortality in patients with SLE. Prolonged corticosteroid therapy increases the risk of infection and contributes to a higher incidence of coronary artery disease.14,15

The goal of therapy for SLE is to reduce the extent of organ involvement. Standard forms of therapy for SLE include corticosteroid agents, nonsteroidal antiinflammatory agents (NSAIDs), cyclooxygenase-2 (COX-2) inhibitors, antimalarial agents, and immunosuppressive drugs. Newer and experimental forms of therapy include hormonal therapy, intravenous immune globulin (IVIg), immunosuppressive drugs, plasmapheresis, and stem cell transplantation.16 Types of hormonal therapy include dehydroepiandrosterone (DHEA), androgen, gonadotropin-releasing hormone (GnRH), bromocriptine, selective estrogen receptor modulators (SERMs), and progesterone. Immunotherapeutic agents under study include mycophenolate mofetil, cyclosporine, leflunomide, arsenic acid, cladribine, and fludarabine. Building on the success of using biologic agents in other rheumatic diseases, agents such as Anti CD-40 ligand, LJP 394 (B cell tolerogen that reduces ds-DNA titers), Anti IL-10 antibody, and rituximab (Anti CD-20 monoclonal antibody) are now being used in small trials. Mycophenolate mofetil has shown promise in treatment of lupus nephritis in several small studies; the drug selectively inhibits lymphocyte proliferation (activated lymphocytes) and inhibits mesangial proliferation. In mouse models, mycophenolate mofetil reduces severity and progression of renal damage. When administered as treatment for SLE, mycophenolate mofetil has been shown to improve clinical manifestations and results of serology tests as well as SLEDAI scores. Mycophenolate mofetil may be useful for treating other SLE manifestations as well as a range of other autoimmune diseases, including dermatomyositis, vasculitis, RA, and uveitis.17 Newer modalities are expensive and are currently limited to research protocols.

**Scleroderma Study Group**

**David Zelman, MD and Eric Schoen, MD**

Systemic sclerosis is a multisystem disease with diverse clinical manifestations and outcomes. Probably initiated by microvascular and immune events, systemic sclerosis can ultimately lead to fibrotic and atrophic sequelae in critical organ systems. Therapy for systemic sclerosis is complicated by the heterogeneity of its clinical manifestations and mechanisms, which are based on organ-specific intervention instead of a fundamental approach based on root causes. Identification of patients at highest risk will help clinicians to give highest priority to treating these patients, who are the most likely to benefit from aggressive intervention.
If it develops at all, severe organ involvement is most likely to develop within the first three years after diagnosis.\textsuperscript{18,19} Diffuse skin involvement, anemia, high sedimentation rate, visceral involvement, presence of specific autoantibodies (antitopoisomerase I and antiRNA polymerase) all portend worse prognosis. This early window probably represents a period of increased disease activity in which pharmacologic intervention can limit progression of the fibrotic damage that is the hallmark of systemic sclerosis.\textsuperscript{19} Disease severity scales have been developed by international consensus to facilitate classification of systemic sclerosis and communication about the disease for study purposes.

Clinical trials of systemic sclerosis therapy have been notoriously difficult because sample sizes have been small and because the medications have had limited efficacy. Use of immunosuppressive drugs, immunomodulators, and anticoagulant agents (such as d-penicillamine), minocycline, methotrexate, cyclosporine, gamma interferon, and chlorambucil have all led to equivocal results. Current forms of therapy remain directed at involvement of specific organs.\textsuperscript{21-23} Systemic sclerosis often presents with Raynaud’s phenomenon as well as morbidity which can range in severity from bothersome episodes to critical digital ischemia and gangrene. Factors contributing to perfusion include innate vessel size, alpha-2-adrenoreceptor reactivity, and endothelial factors such as prostacyclin, endothelin-1, and nitric oxide; and platelet-derived factors such as serotonin and thromboxane A2. Each of these factors may provide intriguing targets in treatment of Raynaud’s phenomenon. Treatment of mild cases of Raynaud’s phenomenon includes warming strategies as well as control of anxiety and stress. When medication is required, calcium channel blockers are the preferred choice,\textsuperscript{25} but sympatholytic agents, such as prazosin, may be used for some patients. Controlled medical trials have shown modest benefit for both types of drug. Limited evidence supports the benefit of topical nitroglycerin, direct vasodilators, fluoxetine, antioxidant drugs, and anticoagulant agents.

Severe Raynaud’s phenomenon with digital ischemia and gangrene requires aggressive treatment. Unfortunately, evidence-based studies provide little clinical guidance, leaving clinicians to rely on interventions supported only by small, inadequately controlled studies. Severe Raynaud’s phenomenon with digital ischemia and gangrene requires aggressive treatment. Unfortunately, evidence-based studies provide little clinical guidance, leaving clinicians to rely on interventions supported only by small, inadequately controlled studies. Treatment options include maximization of calcium-channel blockers; anticoagulation with heparin; and use of alprostadil (PGE1), epoprostenol (prostacyclin), and bosentan (antiendothelin). Surgical treatment options include digital artery sympathectomy and revascularization with adventitial stripping.

Interstitial lung disease (ILD) in patients with scleroderma has become the most frequent cause of death now that renal involvement is effectively managed with ACE inhibitors.\textsuperscript{19} Patients with these conditions present with a dry cough, dyspnea, and “velcro” crackles heard during examination of the lungs. Pulmonary function tests show loss of forced vital capacity (FVC) and lung-diffusing capacity for carbon monoxide (DLCO), and high-resolution computed tomography (CT) shows a “ground glass” appearance. Pulmonary inflammation can be corroborated by bronchoalveolar lavage (BAL) testing and lung biopsy. Pulmonary function testing is recommended for monitoring patients; this monitoring should include DLCO testing every six months, especially during the first three years after the diagnosis of ILD is established. Therapy may be appropriate for patients with DLCO less than 70% or who have symptoms that show progressive decline. Little benefit has been shown with methotrexate, d-penicillamine, colchicine, azathioprine, prednisone, flucytosine (5-FC), or gamma interferon. Some studies with cyclophosphamide have shown stabilization of disease status and even improvement.

Pulmonary hypertension is a serious complication of scleroderma for which new therapies have been developed.\textsuperscript{19} Pathophysiologic changes in pulmonary hypertension include varying degrees of vasoconstriction, arterial wall remodeling, and thrombosis in situ. Endothelial injury is probably the critical early event leading to abnormal vascular reactivity related to factors such as local release of vasoconstrictive mediator endothelin and loss of endothelium-derived vasodilators (eg, prostacyclin and nitric oxide). Functional lesions ultimately progress to arteriolar fibrosis. Patients with pulmonary hypertension often have scleroderma of long duration, limited cutaneous disease, and anticentromere antibody. They present with severe dyspnea on exertion and DLCO less than 55% or out of proportion to FVC loss (ratio >1.6). Echocardiography may show PA pressures >30 mmHg, most often higher. Cardiac catheterization may be required for further study and is the reference standard for diagnosis.

Clinical trials\textsuperscript{22} have shown that exercise capacity is affected beneficially by three agents—epoprostenol (a prostacyclin analogue), treprostinil (a prostacyclin analogue), and bosentan (an endothelin receptor antagonist)—whose use is indicated for WHO Class III and IV patients. Bosentan is given orally, whereas the other two drugs are given by continuous intravenous infusion. Other forms of treatment are being...
studied and include inhaled prostacyclin analogues, inhaled NO, and sildenafil.

Ongoing studies of the pathophysiology of endothelial cell injury may provide new targets for disease modification in patients with scleroderma. Endothelin-1, transforming growth factor beta, connective tissue growth factor, and intracellular molecules regulating transcription (Smad proteins) all may be potential sites of intervention useful for preventing the excessive fibrosis associated with scleroderma.24

Although treatment for scleroderma continues to frustrate physicians and patient alike, improved understanding of the pathogenesis, natural history, and prognosis of this disease is leading to better case management. Early diagnosis, identification of patients with poor prognosis, and close monitoring of patients in the first several years is important. Morbidity in scleroderma can be reduced by appropriate use of supportive measures, including use of calcium channel blockers and proton pump inhibitors.

Expanding Role of Tumor Necrosis Factor
Aileen Dillon, MD and Ken Bulpitt, MD

Tumor necrosis factor (TNF) is a prominent proinflammatory cytokine which contributes substantially to producing inflammation in RA and the spondyloarthropathies (SpA), particularly psoriatic arthritis (PsA) and ankylosing spondylitis (AS). Three TNF inhibitors are now commercially available: etanercept (Enbrel®), infliximab (Remicade®), and adalimumab (Humira®). Building on work done in previous years, the group reviewed safety issues and attempted to compare and contrast these agents for use in patients with RA. We also reviewed use of these agents in patients with PsA and AS and discussed the possibility of developing a drug registry, classified by disease, to be used by all KP rheumatologists for patients receiving biologic agents.

Adalimumab is a recombinant monoclonal antibody containing only human peptide sequences; infliximab is a chimeric antibody consisting of 75% human IgG1 at the constant region joined with 25% murine Ig at the antigen-binding regions. Etanercept is a recombinant fusion protein that links soluble TNF receptor (p75) to the Fc portion of human IgG1.

That an association may exist between lymphoma and TNF inhibitors is notable new safety information. That an association may exist between lymphoma and TNF inhibitors is notable new safety information. According to the most recent estimate by the National Cancer Institute, the risk of lymphoma is 1 in 5000 in the general population.25 The risk for all TNF inhibitors is estimated to be between twofold and sevenfold greater. Etanercept is at the lower end of this range, and adalimumab and infliximab are at the higher end. However, because lymphoma risk is higher in patients with RA (especially those with more severe disease) than in the general population, any potential role played by TNF inhibitors is unclear.

The risk of TNF causing reactivation of tuberculosis or similar latent infections (for example, coccidioidomycosis and histoplasmosis) exists and appears higher in patients receiving adalimumab and infliximab. PPD-positive patients therefore must be screened and treated before starting any therapeutic regimen of TNF inhibitors.

Whereas TNF agents are thought relatively safe, congestive heart failure (CHF) may be aggravated by TNF inhibitors; the current experiential recommendation based on Phase II studies is to avoid these agents entirely in patients with Class 3 or Class 4 CHF. Rare reports of liver dysfunction, demyelinating disease, and SLE-like syndromes have been described in the medical literature, and further information may be found at the US Food and Drug Administration (FDA) Web site: www.fda.gov/ohrms/dockets/ac/cder03.html#Arthritis.

Because no direct comparisons exist, only indirect comparison of the three TNF inhibitors in RA is possible. Controlled comparison is unlikely to be undertaken in the near future. Analysis aimed at determining a rational approach to selection and dosing of TNF inhibitors requires comparison of available data on the mechanism of action, kinetics, efficacy, toxicity, and cost of these drugs as well as patient acceptance of them. The mechanism of action is similar for the three agents, but the monoclonal antibodies infliximab and adalimumab have a theoretical advantage. They can bind with TNF on the cell surface. Good efficacy for each of the three TNF inhibitors has been shown in well-controlled clinical trials.26-38 Choice of TNF agent depends on preferences of physicians and their patients.

Similarly, duration of treatment (or drug survival) after completion of blinded clinical trials as reported to the FDA suggests that comparable efficacy and toxicity is achieved by treatment with etanercept (73%),39 adalimumab (70%),38 and infliximab (76%);40,41 when continued for more than two years. Treatment with etanercept continued for more than four years after the study in 52% of patients; treatment with adalimumab continued for this period in 56% of patients; data for infliximab were not available.
Overall safety of the three TNF inhibitors was good, although (as noted earlier in this discussion) postmarketing data suggest that use of infliximab is associated with a higher incidence of mycobacterial and fungal infections as well as serious allergic reactions. The cost of treatment with a TNF inhibitor is probably comparable, although the range of cost for infliximab is large and depends on the dose required. Whether weekly or biweekly dosing with adalimumab is necessary for achieving a similar clinical effect is unknown.

The ultimate place of the most recently approved TNF inhibitor, adalimumab, and the relative strength of the three agents will require additional real-world experience. Prospective collection of data on utilization, clinical response, and toxicity of TNF inhibitors is a highly suitable task for the KP system; and this suitability is a strong argument for developing a KP rheumatic disease registry.

Data from animal and human studies suggest that TNF is pivotal in inflammation of ankylosing spondylitis (AS) and psoriatic arthritis (PsA). Small, placebo-controlled trials of etanercept and infliximab in patients with AS and PsA have shown clinically significant improvement in the drug-treated groups with regard to joint and skin activity. This improvement occurred even in patients with longstanding AS. Therapy with infliximab at a dose of 5 mg/kg—the standard dose for patients with Crohn’s disease—was chosen in both diseases. Initial data for small numbers of patients with undifferentiated spondyloarthritis have shown greater efficacy at this dose compared with the usual dose used in patients with RA (3 mg/kg). Etanercept was given at a dosage of 25 mg twice weekly. Whether either drug will prevent bony ankylosis if given to patients with early AS is unknown. Given the cost and side effects of these drugs, their role in the treatment strategy for these diseases will be determined by results of larger ongoing multicenter trials.

**Chronic Disease Management and Registry**

Aileen Dillon, MD

Chronic illnesses such as diabetes mellitus and RA are characterized by gradually worsening symptoms. Deterioration in functional status and overall health can be minimized by optimal care. Groups in the United States and Europe have shown that an integrated chronic care system in management of diabetes mellitus is more successful with regard to clinical outcomes, cost, quality-of-life measures, and patient and clinician satisfaction than when the previous acute, reactive model is used. The chronic care model includes an evidence-based approach to treatment, targeting all persons with the disease (population-based) and assigning high priority to patient participation (patient-centered). This approach contrasts with the typical system of intermittent short visits with a physician-driven agenda: Such a system focuses on “symptom swatting” and medication management with little emphasis on the patient’s role and with little coordination or emphasis on quality improvement on the part of the health care system.

We believe that the same model should be applied throughout KP to management of a variety of musculoskeletal diseases, starting with RA. This chronic disease affects 0.9% of the population—mainly those aged from 40 to 60 years—and has considerable associated medical and societal costs. Studies have shown that the incremental lifetime costs of RA are dramatically affected by age at disease onset, severity of disability at onset, and the rapidity with which the level of disability changes. These costs are direct (treatment costs, social services, private expenditure), indirect (lost productivity and earnings of patient/caregiver, lost tax revenue), and intangible (reduced quality of life). One study of cost of RA to the employer showed that the annual per capita health care cost for an employee with RA was twice that of control employees and that the cost of disability was three times the cost for controls. Evidence now shows that early recognition and aggressive management of RA is changing the slope of the disability curve in RA and is improving quality-of-life measures.

The time is right for KP to develop an approach to managing the chronic disease of RA. This approach would provide optimal care for our patients and would enable us to assess more realistically the relative strength, toxicity, and cost of drugs. We could also assess impact of disability and overall cost of this chronic disease. The first stage in developing this disease management approach is to create a patient registry and tracking system. Full implementation of a chronic disease registry and approach to disease management will take a number of years; however, we are now in a position to develop a pharmacy registry for tracking patients who are receiving TNF inhibitors—a registry which will prove invaluable for assessing the relative strength, toxicity, and cost of these agents.
Acknowledgments

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References

Wheat Flour from Peascods

What you get out depends on what you put in; and as the grandest mill in the world will not extract wheat flour from peascods, so pages of formulæ will not get a definite result out of loose data.

— Thomas Henry Huxley, 1825-1895, English biologist and writer
Physician as Healer, Leader and Partner: Tackling the Nursing Shortage

Abstract

Context: Physicians have been notably silent on the nursing shortage in spite of articles that have suggested that physician behavior is one of the causes of job dissatisfaction among professional nurses. In addition to the role of healer, the physicians of the Colorado Permanente Medical Group (CPMG) are expected to have the additional responsibilities of being both leaders in health care and strong clinical partners with the nursing staff. CPMG has embarked upon a program to leverage physician leadership to address the nursing shortage through multiple avenues. We expect not only to increase the number of nurses in the future, but also to enhance their careers by being their “Preferred Clinical Partner.”

Objective: To describe a model for engaging physicians in becoming active participants in solving the nursing shortage through leadership and partnering.

Results: The Preferred Clinical Partner Program has been developed to address the nursing shortage in multiple ways. We have significantly increased the number of scholarships available for nursing students as well as funding and developing additional educational programs to meet the needs of nurses entering from various points in their lives and educational journeys. We have also enhanced programs around physicians serving as teachers and mentors in the education and long-term development of health care team members. And finally, we are clarifying leadership and partnership expectations for physicians and developing very specific physician-nurse relationship training programs to try to solidify the long-term sustainability of careers of these important members of our health care team.

Conclusions: Physician groups that take an active role by “opting-in” to nursing shortage issues will benefit by having an engaged, professional, compassionate nurse on their health care team.

Physician Stakes are High

Could there be a group of professionals with any greater stake in solving the nursing shortage than physicians?

- Nurses assure the quality and safety of care delivered to patients through their scope of practice and technical skills, their culture of empathy and advocacy, and their participation in the development and execution of the patient care plan.
- Nurses extend physician influence and leverage physician time through their expertise in patient education and their management of other health care team members.
- Nurses partner with physicians: anticipating difficulties in patient care, offering options, working with family members, and optimizing communication in the care of patients.

Where Have all the Nurses Gone?

Local and National Nursing Trends

Increasing evidence shows that the shortage of nurses has severe implications for affordability, accessibility, and quality of health care. In 2000, the US Department of Health and Human Services (DHHS)1 identified Colorado as one of 30 states with a nursing shortage. The 2000 supply-versus-demand comparisons by DHHS projected a shortage of 11% (3656 RNs) for Colorado by 2007 compared with the national nursing shortage trend at 6%.2 The shortage is expected to grow slowly until 2010, at which time demand will accelerate and exceed supply in 2020 by 31% (16,926 RNs) in Colorado.3 DHHS anticipates a 40% increase in demand for RNs between 2000 and 2020 with growth of this labor pool at a modest 1.7% annually (Figure 1).3 On a national level, there will be more than one quarter of a million unfilled nursing positions by 2010.1

Physicians as Leaders

By John H Cochran, Jr, MD
Patricia K Fahy, MD
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Contributor: Linda Smith, RN, MSN, MSHA
Factors driving demand include population growth, a larger proportion of elderly with more chronic diseases, new approaches to care that leverage RN talent (eg disease management and group visits), and medical advances that heighten the need for RNs. Growth in supply is expected to peak by 2011 and then begin to decline as the number of nurses leaving the profession exceeds the number who enter.

According to the Spring 2003 Colorado Department of Labor Job Vacancy Survey, there were 951 open registered nursing positions in the Denver area. Last year, the State of Colorado higher education system turned away between 500 and 1000 qualified students from nursing programs because of lack of capacity. Colleges that offer nursing programs have had their funding cut and cannot afford to add qualified faculty to accommodate student interest. The even bigger capacity issue and the true bottleneck in the system is in the provision of clinical sites for nursing students. Hospitals that are understaffed already have their nursing workforce precepting large numbers of student nurses. To take on more students compromises patient care and overburdens nurses further.

Nursing Shortage: CPMG’s Wake-Up Call

The Colorado Permanente Medical group (CPMG) is a 700 member, multispecialty physician group that provides care in metropolitan Denver and Boulder to Kaiser Permanente patients. CPMG physicians work with nurses and other health care team members in a variety of settings: primary care clinics, ambulatory surgical centers, partner hospitals, specialty clinics, and a variety of other clinical and administrative venues.

In 2000, CPMG began to experience the effects of an acute and, in some situations, crippling shortage of nurses. Patients were being diverted away from Kaiser Permanente’s (KP) primary partner hospital to other community hospitals. KP patients and members were unable to receive care by CPMG because of a shortage of staffed beds in the hospital and in the emergency department.

Four new hospitals being built on the periphery of Denver pose an additional challenge. These more suburban facilities will be vying for nurses who choose to work in the inpatient setting closer to their homes. There is a significant concern that these new suburban hospitals will be able to market themselves more effectively to the shrinking talent pool of nurses and other health care professionals. This may put KP’s older, urban, partner hospitals at even greater risk of ongoing nursing shortages. Classified advertisements in Denver newspapers show that some urban hospitals have resorted to offering an additional per diem of up to $50 for simply driving to work.

An overall shortage of health care workers, the addition of new hospital beds without commensurate increased staffing visible anywhere on the horizon, and the threat to inner-city hospitals, meant CPMG needed to take action to insure that Permanente Medicine would be available to our patients in the future.

“Physician Tyrant”—a Role in the Nursing Shortage?

A recent VHA study found that disruptive physician behavior and verbal abuse was a strong contributing factor to diminished nurse satisfaction and morale. When asked whether they had ever observed abusive behavior by a physician toward a nurse, 96% of nurses said yes. Nearly 30.7% of nurses, physicians, and hospital executives said they knew of nurses who had left a hospital as a result of being berated, harassed, or abused by a doctor. An all too revealing necessity is the universal adoption of “abuse-free” policies in medical settings. Nurses’ expectations for collaboration, acknowledgement, and respect is a long way off when “abuse-free” policies are considered a real step forward (and they are) in managing the work environment. Although CPMG has a “zero-tolerance” policy for abuse,
some nurses state they don’t have a voice and are not respected in spite of years of experience.

Preferred Clinical Partner Program  
“PCP” Program—the Origins

CPMG’s leadership team and Board of Directors were determined not to simply stand on the sidelines and document the deterioration of health care teams. The need for action became a vision that led to the development of the “Preferred Clinical Partner” (PCP) Program. The PCP Program articulates the breadth and significance of the partnership between physicians and nurses (Table 1). The PCP vision is for physicians to pick up the mantle of leadership and participate in solving the nursing shortage. The strategy of the PCP Program is to be comprehensive and innovative in the drive to stimulate interest, develop capacity, and offer opportunity for nurses and other future health care team members.

Consistent with a dedication to be “physician leaders” on all issues that affect our patients and the health care industry, CPMG developed a response to the nursing shortage. What were CPMG’s motives?

First, to ensure that every place a Permanente physician treats patients and KP patients receive care, there is a health care team fully staffed with excellent professionals. With high-quality, intact teams, we can ensure that our patients get all of the benefits of KP care.

The second, more audacious motive is to help solve this shortage globally by demonstrating that an accountable physician group can play a leadership role in solving one of the most problematic issues in health care today. If we can demonstrate success in our own local area of influence, it may be a model for medical groups, medical staffs, and all physicians to be leaders in trying to address and make a major contribution in solving this critical shortage.

In addition to the financial commitment to building programs, physicians can affect the nursing shortage by enhancing the work-lives of nurses. Physicians have a legally based, nontransferable leadership role within a medical team or department. Physicians can affect the nursing shortage by using their leadership role in their care teams to support nurses, purposefully investing in the relationship, and acknowledging and respecting their nursing colleagues.

Table 1. Preferred Clinical Partner Program
| 1. Funding scholarships |
| 2. Building capacity: funding and development of educational programs |
| 3. Physicians serving as faculty and mentors |
| 4. Clarifying leadership and partnership expectations for physicians |
| 5. Developing physician-nurse relationship training programs |

Preferred Clinical Partner Program “Nuts & Bolts”

To launch the PCP Program, the physicians of CPMG contributed $250,000 to help fund scholarships and build nursing capacity at community colleges and universities.

A project manager for Nursing and Community Relations was hired by the Medical Group to manage the PCP Program.

The PCP Program includes the following components:

Nursing scholarship program: distribution of scholarships; solicitation and fostering of potential recipients at every educational level; engagement of community leaders and hospital leaders to raise money, to support the program, and to facilitate people and systems to identify recipients. The PCP Program seeks to foster interest in health careers in school-age children, and to offer opportunities for health care workers, both inside and outside KP, to attain more advanced degrees.

Create educational capacity: Extensive collaboration with community and hospital leaders. Leaders of the Catholic high school system serving the urban area (CPMG’s partner hospital is an urban Catholic hospital) and college leaders has resulted in extraordinary interest and cooperation in the PCP Program. In addition to scholarships, a core need is more educational capacity at the local colleges as well as within our hospitals for clinical precepting and clinical experience. CPMG’s physicians sponsor these programs and will also provide additional faculty for the training programs.

Changing the nursing work environment: A key component of the PCP Program is driving a cultural change in the work environment for nurses. Dissemination of information about the role physicians play in nursing work life has been accomplished through the Executive Medical Director’s monthly communication to physicians as well as discussion and repetition in more informal sessions. Results of the VHA study on disruptive physician behavior and its effect on nurses was sent to all physicians. The attached introductory comments by the Executive Medical Director included the following statement: “Every day we
should seek opportunities for inclusion, feedback, personal recognition, and ‘Thank yous!’ for the nurses caring for our patients.”

**Current Status and Next Steps**

**The Dollars**

The CPMG Healthcare Education Fund (the “Fund”) has continued to grow through additional donations and grants and has expanded to $950,000. CPMG is collaborating with educational institutions to determine what type of “hands-on,” “front-of-classroom” support our physicians and other professionals might be able to offer. Additionally, we are seeking to expand the involvement of CPMG in mentoring and teaching health care professionals in the hospital and clinic settings.

To date, the Fund has granted money to Metropolitan State College to provide staffing for a newly developed accelerated BSN program and a nursing laboratory. The Fund has also committed financing over the next two years to partner with KP to provide matching funds to support an onsite “MA to LPN” program. These two-year programs, taught by the Community College of Denver, will provide evening and weekend training for 32 KP employees with no out-of-pocket cost to them. CPMG has also agreed to match existing Kaiser Foundation Health Plan nursing scholarships during the next three years, which resulted in ten additional nursing scholarships this year.

**Early Evidence of Success**

When the Director of Nursing at KP proposed a structure to reenergize nurses and focus on the importance of nursing, physician-leaders agreed to partner in every way. Fifteen physicians are actively involved: many as co-chairs of the task forces that were created to address issues such as quality of nursing care, career ladders, and nursing education. Physician-leaders have helped coach nurse-leaders on the development of appropriate peer review processes, collaborative nurse-physician educational projects, quality assurance efforts, and have helped with nursing orientation programs.

The Colorado Region People Pulse Survey is evidence that physicians are making a difference internally. The 2003 survey showed that 84% of nurses say MDs treat them with respect compared with 81% in 2002. Positive nurse response to the question “MDs support me in providing quality service” increased from 78% to 86%. Perhaps the most important question, in an era of severe nursing shortage, is “I would recommend KP as a place to work.” Eighty-nine percent of nurses agreed compared with 73% just a year ago. In the last year, when newly hired nurses were asked for the top 10 reasons they joined KP, one of the top reasons cited was their ability to have long-term collegial, respectful relationships with an outstanding medical group. These data are consistent with national studies showing that positive, collaborative relationships with physicians help to recruit and retain nurses.

**The Mantle of Leadership**

Clearly, the stakes are high for physicians as the increasing reality of a nursing shortage unfolds. Despite the leadership, education, and power represented by physicians, they are rarely mentioned as playing a role in solving the nursing shortage. Given the legal responsibilities and leadership roles of physicians in health care, it is incomprehensible and unacceptable for physicians to be “silent” on this subject. The physicians of CPMG have “opted in.” The PCP Program represents physicians picking up the mantle of leadership and extending a hand of support to our partners in the nursing profession.

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Stories Tell Us What We Need To Know: Perspective for Ethical Dilemmas

Excerpted from Ethics Rounds 2003-04 Winter;13(4).

Narrative in Ethics

We hear stories and tell stories every day we practice medicine, without appreciating that the resolutions we seek in ethical dilemmas often unfold from the stories of our patients, their families, and our colleagues. A story holds so much life; knowledge in context leads to better understanding. Yet, misguided, we search for detail in chemical blood levels, shadows in a radiographic image, rising and falling numbers on a graphic. More distracting are assumptions and perceptions from our single-minded perspective. In Stories Matter, Dr Susan Rubin, ethics consultant, has written: “Each individual develops impressions based on the elements of the case with which they are familiar, and unavoidably there are parts of the story they simply do not know. In this way, each individual can claim to hold only a piece of the story.”

A growing number of physicians and health care professionals write about their subjective experiences with patients and colleagues to enhance self-awareness. Through this reflective process, they gain perspective in clinical encounters that are routinely reduced to medical record facts. Findings in a randomized, controlled trial of medical students writing in a “parallel chart” indicate significantly improved awareness of patients’ perspectives, empathy, and clinical skills in caring for individual patients, including interviewing and forming therapeutic relationships. Physicians confront many dilemmas in their clinical practice: moral, ethical, legal, social, human rights, religious, and economic. At these times, they may question their personal values. By listening closely to patients’ stories, physicians and health care professionals broaden their perspective and organize and integrate complex situations, leading to solutions to dilemmas.

Relevance of Narrative Medicine

In addition to using narrative to enhance the ethics process, physicians and health care professionals who read and write narratives of clinical encounters can improve their diagnostic and communication competence. Findings in a randomized, controlled trial of medical students writing in a “parallel chart” indicate significantly improved awareness of patients’ perspectives, empathy, and clinical skills in caring for individual patients, including interviewing and forming therapeutic relationships. Physicians confront many dilemmas in their clinical practice: moral, ethical, legal, social, human rights, religious, and economic. At these times, they may question their personal values. By listening closely to patients’ stories, physicians and health care professionals broaden their perspective and organize and integrate complex situations, leading to solutions to dilemmas.

Narrative Competency

In the Interpersonal and Communication Skills section of the New Competencies for Internal Medicine, the American Board of Internal Medicine cites the importance of using “effective listening, nonverbal, questioning, and narrative skills to communicate with patients and families.”

Many medical schools, such as University of Virginia Health Science Center, now require narrative courses as part of their Practice of Medicine curriculum. “The patient’s story is the human voice in medicine. It is critically important to the physician’s approach to and care of the patient. What we call the ‘story’ is the narrative created by the patient to describe and interpret what has happened
(is happening) to him or her, this being the reason the patient is now seeing the doctor. In this session, we explore how the physician’s narratives about the patient are derived from the patient’s story, then come to represent the patient and to influence the physician’s diagnosis and plan for treatment.5

At the recent American Society of Bioethics and Humanities annual meeting, two of several accredited presentations relating to the importance of narrative in ethics were: The Patient Tells, the Doctor Reads, the Writer Shares, by Martin Winckler, MD, French internist; and Writing Well, by Abraham Verghese, MD, MFA, an internist who also authored an article, “The Physician as Storyteller,” in the Annals of Internal Medicine. In it he writes: “A sense for the stories unfolding before us will perhaps allow us to be more conscious of bringing people to the epiphanies that their stories require. By being attuned to character, not just through appearance but particularly through dialogue, we will remember the voice of the patient, even though it is the voice of medicine that we record in the chart.” AIM also published an article, “Writing for Our Lives: Physician Narratives and Medical Practice,” by Kate Scannell, MD, TPG internist. In relation to stories she writes: “Writing and speaking about doctoring can save your life. By this I do not mean that they can prolong life, but, rather, that they can prove deeply enlivening.”

**An Integral Model for Ethical Constructions**

In medicine we often speak of wanting objective data or evidence, thereby relegating the subjective realm to ineffectuality or to marginal value at best. Using S.O.A.P. notes, however, belies this devaluation. “S”—the subjective—is the history, the story. It is in this area, our medical elders constantly remind us, that we will find the diagnosis 90% of the time. Further, the Subjective and Objective are interdependent, and, when embedded in a context, lead to the Assessment and Plan of care.

A simple Integral Model, developed by philosopher and psychologist Ken Wilber, integrates the core of the world’s wisdom traditions.9 This model is a concrete way to understand the place and value of the subjective and the objective in ethics. It establishes a foundation to appreciate the narrative—people’s subjective stories—in the resolution of ethical dilemmas. The individual subjective (Table 1, upper left quadrant) includes our interior beliefs, intentions, and perceptions. Likewise it is the realm of our patients’ beliefs, intentions, and perceptions. The individual objective (upper right quadrant) represents our exterior behavior, and in this realm we play out our professional health care roles. If we belong to The Permanente Medical Group or Kaiser Foundation Health Plan, we are a collective (lower right quadrant). If our group holds shared values and culture, then we share a collective interior (lower left quadrant). If, finally, our group shared values resonate with our personal values and beliefs, we have reached a truly integrated state.10

This realm of the interior subjective (left quadrants) is the domain of the social sciences—psychology, sociology, and anthropology—with a rich literature of qualitative evidence to offer the medical sciences and system sciences (right quadrants) of conventional medicine to resolve ethical dilemmas. Because the subjective both informs and drives the objective realm, it is necessary for physicians to probe the individual personal and the collective family. Ultimately, understanding both the subjective and objective realms, and their connection, is necessary for integrated, effective solutions.

**Benefits of Narrative for Doctors in Day-to-Day Practice**

Everyday doctors and health care professionals have potential ethical lapses and issues, so it is not just for major ethical dilemmas that exploring people’s narratives can bring benefit. We may create ethical dilemmas out of ethical situations by not fully understanding the narratives of the people involved. Doctors may obviate this progression with preventive “narrative insight,” by probing more deeply their patients’, families’, and colleagues’ stories. Just as at times we explore several family members’ views in the course of diagnosis and treatment, we also need to explore several subjective facets of each patient’s personal narrative—their needs, beliefs, preferences, values, intentions, and perspectives—to create a shared understanding that can resolve dilemmas: ethical, clinical, social, psychological, cultural, medical-legal, and economic.

**Narrative Medicine Workshops**

The Permanente Journal (TPJ) has created a series of narrative medi-
cine educational workshops, called: Writing for Our Lives, to take place in the first quarter of 2004. Two workshop objectives are: 1) Describe how writing narratives or telling stories of clinical encounters improves one’s ability to articulate patient perspectives and demonstrate caring behaviors toward patients; and 2) Learn writing and storytelling tools and their application to improve narrative skill and self-expression.

A writing process can also benefit patients as evidenced in The KPNW Severe Obesity Management Program. Through a collaboration with the nonprofit organization Write Around Portland (WRAP), they provided patients undergoing bariatric surgery a writing process for self-expression while in the program. In addition to offering an opportunity for individuals who were possibly previously voiceless, the patients’ insights and feelings expressed in their writing contained many messages for clinicians. Just as TPJ published writing by patients, it looks to publish writing by clinicians in its Soul of the Healer section.

The first narrative medicine workshop, on February 28, in Oakland, California, is copresented by TPMG Physician Satisfaction/Wellness Committees and the Kaiser Permanente Northern California Ethics Department; the second, on March 31, in Portland, Oregon, is copresented by the NWP Health and Renewal Program (HARP), the NWP Physician Health and Worklife Committee, and the NWP CME and Professional Development Department; and the third, on April 6, in Maui, Hawaii, is presented as a session of the KP National Primary Care Conference. (Check the TPJ Web site—www.kp.org/permanentejournal for program information).

Additional information, including complementary and/or dissenting views on this issue, can be accessed on the Kaiser Permanente Intranet by visiting The Permanente Journal Web site (www.kp.org/permanentejournal); click on this article in the Table of Contents and then click on the link to Ethics Rounds.

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Stories

Sometimes people need a story more than food to stay alive.

— Crow and Weasel, Barry Lopez, b 1945, author
A Better Way to Bank

“When you expect the highest degree of personal service, and you don’t have a million dollars.”

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Kaiser Permanente Wins Top National Disease Management Award

The Disease Management Association of America (DMAA) has awarded Kaiser Permanente (KP) the American Healthways Health Plan Disease Management Leadership Award, the most sought-after award for managed care organizations. This award recognizes a health plan that has demonstrated leadership and innovation in disease management on a level that has significantly helped to shape the industry.

According to Warren Todd, DMAA Executive Director, “The Awards committee unanimously recognized Kaiser Permanente’s Care Management Institute as a program that has raised the standard of excellence across the country through the integration of physician and nonclinical staff collaboration driven by evidence-based guidelines to develop an outcomes-oriented program that continues to improve the lives of patients with heart disease and diabetes.”

The award is given for innovation, leadership, outcomes-based orientation, and impact in the industry.

KP Wins Top Ratings in NCQA Report

Six Kaiser Permanente Regions were awarded top rankings in the 2003 State of Health Care Quality report, released by the National Committee for Quality Assurance (NCQA). An independent, nonprofit organization that measures the quality of the nation’s health care, NCQA accredits health plans and serves as a resource for purchasers, regulators, and consumers.

In the report, KP Colorado ranked among the top ten health plans in the nation in effectiveness of care and was ranked among the top five health plans in the Mountain Region. KP also dominated the Pacific Region’s top five with KP’s Northern California, Southern California, Northwest, and Hawaii Regions in the rankings. KP Georgia was among the top five in the Southern Atlantic Region.

The State of Health Care Quality report is based on an analysis of health plan performance measures from NCQA’s Quality Compass 2003, a database of performance information from several hundred organizations providing health care coverage to more than 71 million Americans. Out of approximately 500 health plans in the country, about 260 let the public know their quality data. All data are independently audited.

HHS Secretary Appoints Care Management Institute Executive Director to Agency for Healthcare Research and Quality National Advisory Council

Health and Human Services Secretary Tommy G Thompson recently named nine new members to the National Advisory Council for the Agency for Healthcare Research and Quality (AHRQ). One of the newly named members is Paul Wallace, MD, Executive Director of the Care Management Institute.

The council is comprised of 21 members from the private sector and 8 ex-officio members from other federal health agencies.

“These nine new members will bring a wide range of experience and provide the right balance to advise AHRQ on its policy direction and research portfolio,” Secretary Thompson said. “Their leadership will continue to help the agency achieve our goal of providing safe, high-quality health care for all Americans.”

The other eight new council members are:

- Andrew Balas, MD, PhD, Dean, School of Public Health, St. Louis University, St Louis, MO.
- Doug Campos-Outcalt, MPA, Medical Director, Maricopa County Department of Public Health, Phoenix, AZ.
- Michael Everett, PhD, Founder and CEO, Avatar International, Inc, Lake Mary, FL.
- Andrew Fishman, MD, Cogent Healthcare, Inc, Los Angeles, CA.
- Arthur Garson, MD, MPH, Dean, School of Medicine, University of Virginia, Charlottesville, VA.
- Jessie Gruman, PhD, President and Executive Director, Center for the Advancement of Health, Washington, DC.
- Terry Jacobson, MD, Director, Office of Health Promotion and Disease Prevention, Grady Health Systems, Atlanta, GA.
- James J Rohack, MD, Senior Staff Cardiologist, Scott and White Clinic, Temple, TX.

Barbara Caruso, BA, is a Communications Consultant for The Permanente Federation. E-mail: barbara.caruso@kp.org.
Mid-Atlantic Permanente Medical Group (MAPMG)

Governor Ehrlich Appoints MAPMG Physicians to State Board of Physicians

Maryland Governor Robert L. Ehrlich, Jr., recently appointed 2 KP physicians to a newly formed 21-member State Board of Physicians. Ruth A Robinson, MD, a family practice physician and Executive Director of the Annapolis Medical Center, and Carol Samuel-Botts, MD, a pediatrician at the Largo Medical Center, were among more than 100 physicians who applied for consideration. The State Board of Physicians tests and licenses physicians to practice medicine in Maryland. The Board also determines the eligibility of physicians to represent themselves as specialists. For certain causes, the Board may revoke the license of any physician.

Governor Ehrlich also appointed a Kaiser Permanente pharmacist to a three-year term as a member of the Maryland Medicaid Pharmacy and Therapeutics Committee for the Department of Health and Mental Hygiene. Donald Yee, Supervisor of Pharmacy Hospitalists at the Reston Medical Center, is also currently serving his second four-year term as Commissioner on the Maryland State Board of Pharmacy.

Southern California Permanente Medical Group (SCPMG)

San Diego Magazine Highlights
San Diego Doctors Selected by Colleagues as “The Best”

This month's edition of San Diego Magazine highlighted San Diego area physicians for being the best at what they do. Thirteen SCPMG physicians were among those selected. The list is based on the national “Best Doctors” survey.

Each year, Best Doctors Inc surveys approximately 30,000 physicians in 40 medical specialties across the country and asks them one very important question: “If you or a loved one needed a doctor in your specialty and you couldn’t treat them yourself, to whom would you refer them?”

Only doctors who have been selected previously for the list are eligible to nominate new physicians. Once nominated, a physician is able to comment (confidentially) on the other doctors listed in their specialty and to make additional nominations. The survey avoids bias through its large voting pool and through regional polling. This year, more than 4000 physicians were polled in the San Diego region.

SCPMG physicians selected by their peers as being “The Best” in San Diego include: Noah Friedman, MD, Allergy; Sandra Christensen, MD, Allergy; Michael Mellon, MD, Allergy; Michael Schatz, MD, Allergy; James Dudl, MD, Endocrinology; Stephen Gordon, MD, Endocrinology; Eric Blau, MD, Preventive Medicine; Charles Hamori, MD, Preventive Medicine; Dale Lieu, MD, Infectious Disease; Jeffrey Stork, MD, Internal Medicine; William Devor, MD, Neurology; Robert Clemons, MD, Pediatrics; and Robert Hye, MD, General Surgery.

Barbara Caruso compiled this material from California Wire, Partner News, and other PMG newsletters and sources. To submit news of physician or PMG awards and recognitions, contact Ms Caruso at barbara.caruso@kp.org.
announcements

Primary Care 2004
April 5-9, 2004
Wailea Marriott, Maui, Hawaii

Conference sessions for 2004 are:
• Practical Primary Care Skills
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• Musculoskeletal Medicine Skills
• Improving Skills with Occupation-Related Medical Problems

For registration or program information: visit www.kpprimarycareconference.org or call 510-625-6374 • Fax: 510-625-3037 E-mail: primary.care.conference@kp.org

The Kaiser Permanente National CME Program designates this educational activity for up to 20 Category 1 credits toward the AMA Physician’s Recognition Award. Each physician should claim only those hours of credit that she actually spent in the educational activity.

the lighter side of medicine

THE HUMERUS ZONE

Cartoon submitted by Don Wissusik, MA, MS. Mr Wissusik is a Clinical Services Manager for the Department of Addiction Medicine at the Tualatin, Beaverton and Sunset Clinics.
Upcoming Symposia

**Sports Medicine**  
Friday-Sunday, March 19-21, 2004  
Northwoods Resort - Big Bear Lake, CA

**Women's Pelvic Floor Disorders**  
Tuesday, March 30, 2004  
Hilton Hotel - Costa Mesa, CA

**Anesthesia Symposium**  
Saturday, April 17, 2004  
Disneyland Hotel - Anaheim, CA

**Head and Neck Surgery**  
Saturday, April 24, 2004  
Hilton Hotel - Pasadena, CA

**Population Care Management**  
Friday, April 30, 2004  
Hilton Hotel - Pasadena, CA

For more information or to receive a brochure, you may contact Physician Education at 626-564-5360.

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**Dr Goldsmith Releases Leadership Book**

Dr Oliver Goldsmith, Medical Director and Chairman of the Board of the Southern California Permanente Medical Group (SCPMG), has just completed work on his new book, *Physician Leadership—My Permanente Experience*.

In *Physician Leadership*, Dr Goldsmith outlines the personal characteristics essential to a successful career in medical group leadership. Drawing on his numerous experiences as a leader and physician, Dr Goldsmith’s book aspires to provide sound advice and direction that will benefit all who seek to improve their management skills.

“As I neared retirement, I felt a strong desire and obligation to educate and inspire future physician leaders as well as strengthen the tradition of first-rate leadership within our organization,” said Dr Goldsmith. “This book is my humble effort to accomplish this goal.”

*Physician Leadership* includes chapters on Communication, Decisiveness, Building Trust, Assessing Physicians, and plenty of anecdotal accounts from Dr Goldsmith’s nearly three decades as a physician and leader within SCPMG.

Copies of *Physician Leadership—My Permanente Experience* may be obtained by contacting Chad Fifer, SCPMG Communications, at 626-405-5356 or chad.l.fifer@kp.org.

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**“Writing For Our Lives”**

*A Narrative Medicine Workshop*

Saturday, February 28, 2004 — Oakland, California  
Wednesday, March 31, 2004 — Portland, Oregon  
(Tcategory 1 CME credit)  
Tuesday, April 6, 2004 — Wailea, Maui

For registration information contact Amy Eakin at 503-813-2623 or amy.r.eakin@kp.org.

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**Let us hear from you.**

We encourage you to write, either to respond to an article published in the *Journal* or to address a clinical issue of importance to you. Submit comments by mail, fax, or e-mail to:  
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Letters to the Editor  
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Fax: 503-813-2348  
E-mail: permanente.journal@kp.org
announcements

There is Another Way

This poster, developed by the Northern California Family Violence Prevention Project (FVPP), can be used in exam rooms, waiting rooms, and restrooms to raise awareness about domestic violence and the health care setting as a resource for members. The FVPP was the winner of the American Association of Health Plans 2003 Gold Hera Award (see TPJ Fall 2003, p 69).

The poster is available free in English and Spanish from the FVPP. To request the poster or for further information about FVPP, please contact: Brigid McCaw, Brigid.McCaw@kp.org, or Violet Barton-Bermudez, 510-987-5198, Violet.Barton-Bermudez@kp.org.
Kenneth J Berniker, MD, is a Board-certified Emergency Physician at the Vallejo Medical Center. He always enjoyed solving crossword and cryptic puzzles and now creates his own. The challenges in creating the puzzles include: completing the grid with usable answers and perhaps a theme, generating interesting clues of suitable difficulty, being error-free in framing questions and answers, and injecting humor. Have fun, and please send him your comments. E-mail: kenneth.berniker@kp.org.
Crossing the BLVD: Strangers, Neighbors, and Aliens in a New America
By Warren Lehrer and Judith Sloan

I was 28 years old, a new arrival in inner-city Brooklyn from rural Illinois. The foreign-born neurology resident asked me where I was from.


“Is it much different from here?” he asked.

“A real culture shock for me. The noise, the traffic, the inner city—it’s going to take some getting used to. And where are you from?”

“Afghanistan.”

“Oh,” I said. “Is that part of Iran?”

Explaining he had been raised in Kabul and graduated from medical school there, his mandatory first year of practice consisted of a journey on foot into the mountains toting a medical bag with a few pills, syringes, and vials. He had to deliver medical care without a laboratory, without an imaging department, and without a pharmacy or any staff.

I was embarrassed by my naïveté regarding other cultures. The Afghan neurologist was my introduction to the diversity of nations, religions, and people who had recently immigrated to New York. And as anyone who has visited New York knows, that city is a unique place where diversity of culture is the rule. However, few people are aware that Queens (the borough which includes JFK and LaGuardia airports) has 58 distinct neighborhoods in which a total of 138 languages are spoken; or that Queens Boulevard only allows 60 seconds to cross its 12 lanes of traffic; or that more than 70 people were killed crossing this street in the past ten years.\(^1\)

One writer called Queens Boulevard “the human bowling alley.” The theme weaving the stories in Crossing the BLVD together is that many immigrants to contemporary New York have lives filled with challenges as daunting as crossing those 12 lanes of traffic.

Warren Lehrer and Judith Sloan chose to live in Queens and thereby learn about the cultures represented nearby. Crossing the BLVD is the product of the two years Lehrer and Sloan spent collecting the stories of new immigrants—79 individuals who arrived in the USA during the ten years from 1992 through 2002. The authors accurately describe their effort as “a search for migration stories, culture, and soul.”

As a collection of interviews, BLVD is worth purchasing and reading; but it is far more. It is a montage composed of colorful photos, world music (on an accompanying compact disk), and astonishing first-person narratives of people who hail from every imaginable point on the globe. Lehrer and Sloan take us down sidestreets into bodegas, family-owned restaurants, places of worship, and homes of the book’s subjects. The photographs accompanying each story show personal treasures, memorabilia, clothing, and art. Each section begins with a map of the subject’s home country superimposed over a map of the Queens neighborhood where the person resides.

Who is interviewed?
The authors interviewed people as varied as the following examples:

- Six women who had joined Falun Gong, the outlawed Chinese religious group;
- Remi, a Nigerian prophetess and healer;
- Lana Dinh, a Vietnamese dancer in a topless bar;
- Camilo and Juan Carlos, Colombians who had to prove their homosexuality to the US immigration authorities to be granted asylum;
- Liviu, the youngest disc jockey in Romania; and many others.

Their stories are spellbinding, and the art is captivating. Although not an “art book,” BLVD is a work of art—a unique contribution to both art and literature. Beyond its literary merit, the book has special interest to those of us in health care, because recent immigrants bring special problems to medical practice: They require us to blend science, sensitivity, and cultural understanding into medical practice. Without this understanding, we frequently stumble on a mixture of potentially unusual biomedical disease and major somatization problems. (How often is a question about torture part of our Review of Systems?)

A book like BLVD can help us meet the needs of this special population by using both creativity and compassion.

For a sampling of what awaits the reader in this amazing volume, visit the Web site: www.crossingtheblvd.org/.

Reference

Eric Schuman, MPAS, PA-C, is a physician assistant from Kaiser Permanente Northwest in the departments of Family Practice and adult and pediatric neurology. He is a member of the Advisory Board of The Permanente Journal and moderates the headache message board at http://members.kp.org. E-mail: eric.schuman@kp.org.
Across the Red Line: Stories from the Surgical Life
by Richard C Karl, MD

W e need not go far to find good surgeons. The professionalism of these surgeons is defined by their thoroughness, competence, directness, and talent, says Dr Karl in this slim book of essays, Across the Red Line. The “red line” named in the title refers to the literal demarcation across which only authorized personnel may pass.

Nonetheless, a few surgeons—fortunately, very few—behave as bullies, and a few are timid. Many practitioners who inhabit the nether regions of the distribution curve can be professionally successful, in part because of intensive training and in part because work in the operating suite is truly a mutually supportive team effort.

One mission of academic surgeons is to train undesirable traits from new surgeons. Surgeons have enough difficult surprises and stresses even when the surgical team includes no technically weak members. Surprises do occur, however, no matter how great the effort to anticipate them; and like the good pilot Dr Karl is, a good surgeon must be able to react quickly and accurately to unforeseen as well as to planned events. These events and considerations, in a nutshell, are what goes on behind the red line.

Dr Karl is an accomplished senior academic general surgeon who practices in Florida. In addition to owning the professional attributes he both admires as a professional and wishes for himself as a consumer (sometimes in vain, as the reader will see), Dr Karl is a good storyteller. No, make that a very good storyteller. In 14 essays, he offers anecdotes familiar to surgeons all over the world as well as more personal stories, not all of which describe a surgeon’s life in the operating suite but all of which are extracted from Dr Karl’s own life.

An interesting ethical quandary discussed in the book was faced by the author, who invited a news columnist to observe surgery conducted in the operating suite. Inviting the columnist was solely the author’s personal decision and was based on his impatience with what he perceived as the public’s remoteness from medicine. As chairman of the surgery department, the author clearly had the authority to make the decision; moreover, a friend in the newspaper business could conceivably shift the tone of an article in Dr Karl’s favor regardless of any underlying medical issues or outcomes. However, the decision to invite the journalist was problematic because Dr Karl may not have sought approval from both the hospital’s public relations department and an academic ethicist. The author states in his book that he really didn’t care about the opinions of these authorities and instead cared only about the legality of the journalist’s attendance in the operating suite and whether the patient and the nurses agreed to it. Thus, although red lines exist for a reason, the author’s decision clearly was made for nonmedical reasons. Of course, public relations departments and ethicists also have their own guidelines, or “red lines.”

Other stories in the book resonate even more powerfully. One such story is that of Sal, a woman whose unhappy fate the reader might view as foreordained. A diagnosis of carcinoma of the bile duct was the last thing on earth that Sal, a heavy drinker and cocaine abuser, needed. Her tragic story and the ongoing efforts of clinicians like Dr Karl to help are witnessed every day in hospitals around the world. Whether surgeons or not, all physicians who hate to abandon hope for a patient’s recovery will recognize as familiar the author’s last introspective examination: Did he try too hard—or for too long—to help the patient?

Perhaps the best essay in the book is one of the last ones, improbably titled “The Norwich Classic Car Rally.” This essay has nothing whatever to do with surgery per se but examines indirectly the cost of medical care. The reader might wish that this story, about a 22-year-old recipient of a heart-lung operation, were juxtaposed to the earlier piece about the journalist who was invited to observe major surgery on a 77-year-old patient. Affordability of high-tech medical care and rationing of available medical resources are issues raised by these essays. Especially in the context of our aging population, the problem of cost—both in dollars and in personnel—presents decision makers with a dilemma: Can we unerringly decide in every case who should benefit from the best medical technology in the world and who should be denied it? That decision is difficult at best, and we all fumble with it.

This book will appeal to laypeople as well as to health care practitioners. The book contains no revelations for the surgeon—nor need it contain any. Across the Red Line provides enjoyable reading about things infrequently discussed, and that’s enough reason to pick it up.

Review by Peter N DeSanctis, MD

Across the Red Line provides enjoyable reading about things infrequently discussed ...

Peter N DeSanctis, MD, is a retired Professor of Surgery at Columbia University in NYC. He is now seriously involved in the aquaculture of mollusks.

Grow Younger, Live Longer: 10 Steps to Reverse Aging
by Deepak Chopra, MD, and David Simon, MD

The seemingly endless array of both conventional and alternative medicine self-help guides available in the popular press bewilders even the most savvy health care professionals. Patients, of course, find this informational landscape even more confusing and frequently bring with them into the examination room questions about what they have read or should read. One bestselling author of medical self-help guides is Deepak Chopra, MD, who for 15 years has written prolifically on behalf of the holistic care movement. Dr Chopra consistently produces work that is both sufficiently scientific for the professional community and adequately clear and readable for the lay community. His recent book, Grow Younger, Live Longer, written with David Simon, MD, represents a valuable addition to this library.

The book offers a pragmatic, step-by-step guide to natural health promotion and disease prevention. At the heart of Dr Chopra’s program lies a premise expressed in the following quote from the book: “The ‘normal’ experience of the body and its aging is a conditioned response—a habit of thinking and behavior. By changing your habits of thinking and behavior, you can change the experience of your body and its aging” (page 8).

Dr Chopra then goes on to detail a ten-step program for reprogramming one’s consciousness and physiology, with the goal of appreciating “aging” as a process that can be not only decelerated, but indeed reversed.

In addition to his endocrinology training, Dr Chopra’s background is in Ayurvedic medicine, the traditional health care system of India. Indeed, Ayurveda translates literally as “knowledge of lifespan” and represents an ancient and sophisticated science of longevity. Dr Chopra devotes an entire chapter to each of ten separate action steps (see sidebar) that collectively span a broad range of Ayurvedic self-care modalities, including meditation, diet, exercise, daily routine, yoga, nutritional supplements, and detoxification. The first page of each chapter details specific, practical implementation points encompassed by the action step. In the body of the chapter, the author elucidates supporting theory and implementation guidelines for each of these ten points. The result is a pragmatic, informative, concise “how-to” manual for integrating holistic medicine into modern life.

For example, in the chapter about enhancing mind-body integration (action step 5), Dr Chopra describes three implementation points: performing breathing techniques, performing yoga, and practicing body awareness. The remainder of the chapter provides practical details for doing these techniques. The author gives specific instructions for doing three different types of conscious breathing exercises: an “energizing” technique for invigoration, a “soothing” technique to help relieve irritation and frustration, and a “relaxing” technique to help relieve anxiety. The section on yoga includes excellent diagrams with clear instructions for learning the 12 “sun salutation” yoga positions.

Dr Chopra is at his best where he weaves his authentic knowledge and appreciation of Ayurvedic wisdom into inspiring and practical advice. For example, he begins the chapter on “Cultivating Flexibility and Creativity” (action step 8) by describing in terms of Ayurvedic theory the threefold fundamental forces...
influencing the mind: the evolutionary, the stagnant, and the tension between these two. Against this backdrop, Dr Chopra emphasizes the importance of maintaining spiritual and mental flexibility by letting go of negative experiences and emotions. According to Dr Chopra, attachment to negativity—and, indeed, attachment to any material outcome—accelerates aging and impedes progress in life and self-development. Stated another way, if you are attached, you cannot move forward. Detachment implies having the flexibility to absorb personal development and change and allow nature’s evolutionary intelligence to guide one’s destiny.

Although the book draws heavily from Dr Chopra’s Ayurvedic roots, it does not serve as an introduction, or guide, to Ayurveda. Many fundamental Ayurvedic principles (most notably, “Tri-Dosha” theory) are not mentioned at all. This approachs not a fault in and of itself, yet we must acknowledge that Dr Chopra’s work grows progressively more eclectic as the years go by. In Grow Younger, Live Longer, the author steers back and forth from Ayurveda to Chinese Medicine, to Western Herbalism, and so on. In addition, Dr Chopra sometimes contradicts Ayurvedic thought altogether. Dr Chopra’s knowledge of Ayurvedic tradition and wisdom is undoubtedly authentic, but his work has been the subject of some controversy: Can readers truly achieve meaningful vision and understanding through the eclectic lens that he offers?

On balance, health care professionals can expect to find in Grow Younger, Live Longer not only a compelling and enjoyable introduction to holistic medicine but, more important, a practical and balanced approach to growing younger and living longer. This is an excellent book to recommend to patients interested in natural health care. Dr Chopra is a skilled writer who remains among the most eloquent spokesmen on behalf of the holistic medicine movement.

The Sacred Garment

The body is a sacred garment. It’s your first and last garment; it is what you enter life in and what you depart life with, and it should be treated with honor.

— Martha Graham, 1894–1991, choreographer
As physicians, we have special knowledge about alcoholism: We see the havoc it wreaks on the human body and its organs. If we care for or have contact with relatives of our alcoholic patients, we even see the devastating effects of alcoholism on families and interpersonal relationships. Each of us has seen alcohol dissolve a person into nothing—much as an ice cube dissolves into a glass of scotch whiskey. Slowly but surely, alcohol surrounds and isolates its subjects until, little by little, they give up more and more of themselves until nothing but alcohol remains.

All too often, we look up from the printed pages of our textbooks past the bridge of our nose and down at our alcoholic patients. We understand the need to educate them about the many reasons they shouldn’t drink, but do we know any of the real reasons they do drink? Should we know? Should we open ourselves to be educated by our alcoholic patients on why they do drink?

Dry is the alarmingly open and shockingly honest autobiography of Augusten Burroughs, an alcoholic man who, through this imaginative re-creation, just might provide the insight we physicians need to understand the complexity surrounding alcoholism. Although I have been fortunate never to have been afflicted myself, I come from a family embattled by alcoholism; and so, as an intimate participant in this war, I can relate to (and perhaps understand) my patients better than can someone who has been blessed not to have had this familial experience.

In the book, Mr Burroughs chronicles his recovery and the importance of dealing with these events and the emotions they birthed. It is no wonder that so few people afflicted with alcoholism are able to leave the life of addiction and why doing so requires nothing less than a herculean effort. If we as physicians caring for these patients take more interest in their past and in the roots of their addiction, might we be better equipped to start these patients on their road to recovery? This possibility is something each of us should consider and is the reason why each of us physicians might have something to learn by reading this book. Dry just might give us the added insight that will increase our empathy and compassion toward the many patients who need it to escape from their dark past back into the light of sobriety.

For those who can tolerate its explicit content, Dry provides worthwhile reading.

References
A General Theory of Love
By Thomas Lewis, MD; Fari Amini, MD and Richard Lannon, MD

“W
hat is love, and why are some people unable to find it? What is loneliness, and why does it hurt?” are the opening words of this important book. These ancient human problems still haunt us, but what do they have to do with medical practice? In this highly readable book, three San Francisco psychiatrists successfully explain new discoveries, insights, and developments in neurobiology during what has been called “The Decade of the Brain,” and by using love as their focal point, they also help us to understand more about love. These three physicians provide welcome counterpoint to Alan Barbour’s observation that efforts to understand the patient as a person are most often relegated to psychiatry, a field which itself seems to have abdicated that goal. The authors show that an understanding of humans and an understanding of neurobiology can be combined successfully: “In this book, we demonstrate that where intellect and emotion clash, the heart often has the greater wisdom. In a pleasing turnabout, science—Reason’s right hand—is proving this so.”

The authors ultimately discuss how we might use this knowledge to improve health and medical practice itself.

The model of a three-level brain is used throughout the book. This triune brain consists of the brainstem, or reptilian brain, which senses and controls internal functions such as heartbeat and avoidance of threat; the mammalian, or limbic, brain that represents the evolutionary advent of emotion in mammals, the ability to sense and respond to external phenomena; and the cortex, or neocortical brain, which consciously represents the identity, the consciousness of a stable self, is discussed in terms of our expanding knowledge of neurobiology. “The stability of an individual mind—what we know as identity—exists only because some neural pathways endure.”

An interesting discussion follows of the profound importance of various forms of unconscious memory and their formation mechanisms. The important roles of very early, stable, somatic, and unconscious memory are at times incorrectly described as causal instead of as intermediary.

Identity, the consciousness of a stable self, is discussed in terms of our expanding knowledge of neurobiology. “The stability of an individual mind—what we know as identity—exists only because some neural pathways endure.”

Important roles of very early, stable, somatic, and unconscious memory are at times incorrectly described as causal instead of as intermediary.

The authors move to the arena of relationships: How do we identify those with whom we fall in love? They discuss the profound importance of our earliest experiences, those experiences that we can’t consciously remember but that are nevertheless imprinted on our unconscious and somatic memories. The lasting importance of the emotional content of our early experiences is clearly illustrated by the devastating results of Harry Harlow’s experiments with maternal deprivation of otherwise well-fed and well-cared-for infant monkeys and by René Spitz’s observations of similar fates for children raised in foundling homes. The authors ask rhetorically, “Why should human contact—gestures and gladness of countenance—rank with food and water as a physiologic need?” One might consider whether a homesick child had good or insecure interpersonal attachments as an infant; the word homesick has interesting implications. Dean Ornish, MD, helpfully wrote about the delayed medical consequences of homesickness in his book, Love and Survival. A General Theory of Love has an interesting discussion about the roles of serotonin, opiates, and oxytocin; however, the important roles these three neurochemicals play in CNS function are at times incorrectly described as causal instead of as intermediary.

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An interesting discussion follows of the profound importance of various forms of unconscious memory and their formation mechanisms. The important roles of very early, stable, somatic, and emotional unconscious memory are made clear. For instance, many are familiar with the term, but few are aware that blindsight is a literal, well-described visual phenomenon in some blind people. A more obvious

caped us, but their subtlety has not. Alfred de Musset is quoted on limbic resonance:

    My heart, still full of her,
    Traveled over her face, and found her there no more…
    I thought to myself that a woman unknown
    Had adopted by chance that voice and those eyes
    And I let the chilly statue pass
    Looking at the skies.

The authors move to the arena of relationships: How do we identify those with whom we fall in love? They discuss the profound importance of our earliest experiences, those experiences that we can’t consciously remember but that are nevertheless imprinted on our unconscious and somatic memories. The lasting importance of the emotional content of our early experiences is clearly illustrated by the devastating results of Harry Harlow’s experiments with maternal deprivation of otherwise well-fed and well-cared-for infant monkeys and by René Spitz’s observations of similar fates for children raised in foundling homes. The authors ask rhetorically, “Why should human contact—gestures and gladness of countenance—rank with food and water as a physiologic need?” One might consider whether a homesick child had good or insecure interpersonal attachments as an infant; the word homesick has interesting implications. Dean Ornish, MD, helpfully wrote about the delayed medical consequences of homesickness in his book, Love and Survival. A General Theory of Love has an interesting discussion about the roles of serotonin, opiates, and oxytocin; however, the important roles these three neurochemicals play in CNS function are at times incorrectly described as causal instead of as intermediary.

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Vincent J Felitti, MD, has been with the Southern California Permanente Medical Group since its opening in San Diego in the late 1960s.
example of the unconscious acquisition of knowledge is a toddler's use of language and a rapidly expanding vocabulary without apparent learning effort.

The big picture is described thus, "everything a person is and everything he knows resides in the tangled thicket of his intertwined neurons. These fateful, tiny bridges number in the quadrillions, but they spring from just two sources: DNA and daily life. The genetic code calls some synapses into being, while experience engenders and modifies others."p148 And then, "... a child gets his first taste of his feelings secondhand. Only through limbic resonance with another can he begin to apprehend his inner world."p156 "Before any glimmerings of event memory appear, he stores an impression of what love feels like."p160 Our unconscious recognition of this feeling often determines whom we select later in life for intimate relationships, be they healing or destructive. This is the mechanism for being 'in love,' an important and wonderfully pleasing state; one that is quite different from loving someone. "As such, adult love depends critically on knowing the other. In love demands only the brief acquaintance necessary to establish an emotional genre .... A child's early experience teaches this skill [of reliably understanding another person] in direct proportion to his parents' ability to know him."p207

This small, important book takes us on a well-guided tour into the deep waters of the origins and mechanisms of love; its imaginative use of scientific advances will please many readers. *A General Theory of Love* is beautifully conceived and written and is about a subject of the greatest personal and professional importance to us as physicians. It is a major book, not to be overlooked. ✤

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**Looking Outward**

Love does not consist of gazing at each other; but in looking outward together in the same direction.

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All PMG physicians and those clinicians eligible to do so may earn up to two hours of Category 1 credit for reading and analyzing the four designated CME articles, by selecting the most appropriate answer to the questions below, and by successfully completing the evaluation form. Please return (fax or mail to the address listed on the back of this form) to The Permanente Journal by May 28, 2004. You must complete all sections to receive credit. (Completed forms will be accepted until May 2005. Acknowledgment will be mailed within two months after receipt of form.)

The Permanente Journal has been approved by the American Academy of Family Physicians as having educational content acceptable for Prescribed credit hours. Term of approval covers issues published within one year from the distribution date of May 2004. This Winter 2004 issue has been reviewed and is acceptable for up to two Prescribed credit hours. Credit may be claimed for one year from the date of this issue.

Section A.

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Article 1. Human Embryonic Stem Cells and Type I Diabetes: How Far to the Clinic?

Which answer is NOT a characteristic of human embryonic stem cells?

a. They are pluripotent  
b. They replicate continuously  
c. They require feeder layers to grow and remain undifferentiated  
d. They have an abnormal karyotype

The embryonic stem cell lines currently available in this country can potentially be used for clinical transplantation:

a. Yes  
b. Only if they have been differentiated into a specific cell type  
c. No, because they have been grown on mouse feeder layers

When total body iron load is uncertain, the most accurate answer comes from:

a. Serum ferritin level  
b. Liver biopsy  
c. Quantitative phlebotomy

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Article 2. Hemochromatosis Update

In evaluating a patient for suspected hemochromatosis, the most generally useful laboratory measurement (of the following) is:

a. Serum iron level  
b. Serum iron saturation  
c. The patient’s genotype  
d. Iron stain on the liver biopsy

When total body iron load is uncertain, the most accurate answer comes from:

a. Serum ferritin level  
b. Liver biopsy  
c. Quantitative phlebotomy

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b. Liver biopsy  
c. Quantitative phlebotomy

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Article 3. A New Model for Adolescent Preventive Services

Which of the following features is not a characteristic of a computer-assisted adolescent program using nurses and paraprofessional educators?

a. It routinely surfaces more high risk behaviors than usual clinician visits  
b. It is preferred by adolescent patients  
c. It costs more than usual clinician visits  
d. It can decrease the utilization of KP facilities and resources

Which of the following is FALSE?

a. Fewer than 5% of computer-generated printed problem lists are inaccurate or inconsistent with an educator’s interview  
b. More than 5% of long-term behavioral improvement is attainable with counseling and health education alone  
c. Fewer than 5% of teens have significant suicidal ideation at prevention visits  
d. Fewer than 5% of adolescents dislike the experience of interacting with the health educator

(Continued on next page)

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Article 4. Proceedings of the Fifth Annual Permanente Rheumatology Association Symposium, Sonoma, California, April 3-6, 2003

Which of the following statements is FALSE?

a. The role of TNF (tumor necrosis factor) inhibitors is clear in patients with rheumatoid arthritis (RA) because the lymphoma risk is lower in patients with RA than in the general population
b. PPD positive patients screened and treated off before starting any TNF inhibitors
c. Congestive heart failure is possibly aggravated by TNF inhibitors
d. TNF plays a pivotal role in the inflammation of ankylosing spondylitis (AS) and psoriatic arthritis (PsA) as well as rheumatoid arthritis (RA)

Which statement about persons with systemic lupus erythematosus (SLE) is TRUE?

a. They are able to regulate production and clearance of autoantibodies, immune complexes, and activated T cells properly
b. Adequate monitoring of disease activity is achieved by sequential serologic tests only
c. Estrogens or feminizing steroids exacerbate SLE
d. There is no disadvantage to prolonged corticosteroid therapy in SLE patients

Section B.
Referring to the CME articles and to the stated objectives, please check the box next to each statement as appropriate.

<table>
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The article covered the stated objectives.
I learned something new that was important.
I plan to use this information as appropriate.
I plan to seek more information on this topic.
I understood what the author was trying to say.

Section C.
What change(s), if any, do you plan to make in your practice as a result of reading these articles?

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Section D. (Please print)

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