48 **Asthma Disease Management Program.** Colorado Region

This program included registry development, guideline dissemination, classes, and management by nurses of pediatric and adult asthma patients. Planned measures of the impact of the program are utilization, patient and physician satisfaction, appropriateness of medications and cost-effectiveness. The preliminary data suggest improved quality, satisfaction and utilization outcomes. Noteworthy among the results is reduced overuse of beta-agonist medication. Similar programs are rapidly becoming standard of care.

57 **Emergency Contraception Research and Demonstration Project.** Southern California Region

This project, a collaboration between Southern California Kaiser Permanente and others, evaluated the acceptability and feasibility of emergency contraception (EC, or “morning-after pills”). Aspects described include packaging and availability problems, education and training of staff, and ensuring adequate patient understanding. All objectives were met with high patient satisfaction and probable cost savings.

66 **The Breast Health and Cancer Detection Program.** Georgia Region

With a target population of all women in the Kaiser Permanente Georgia Region 50 years of age or older; this program includes attempts to improve member access, member and practitioner awareness, and practitioner adherence. The screening rates in the targeted group rose from 74% in 1996 to 84% in 1999 (p < 0.0001). Telephone calls and mailings to women overdue for mammography screening seemed to be especially effective. Reduced breast cancer morbidity and mortality are among the probable long-term expected results.

78 **Improvement of Cardiac Outcomes in Kaiser Permanente of Ohio.** Ohio Region

This project involved the use of reminder notices to practitioners caring for patients with coronary disease (CAD) as a means of improving care. The specific targets were four interventions proven beneficial for CAD; these were regular aspirin use, smoking cessation, cholesterol lowering, and use of beta-blocker drugs. Substantial increase in compliance was demonstrated as well as concomitant decrease in hospitalizations for CAD.

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Healing Physicians: Physicians Healing

Tom Janisse, Editor-in-Chief

In Western medicine, as a discipline and profession, physicians practice science, not healing. Attention to the “art” of medicine has waxed and waned over time in an attempt to characterize the other part of what physicians practice with patients—that interpersonal dimension, that feeling state, the caring for a patient who is ill with a disease. This artful practice can be viewed within the realm of a healing practice.

The word “healing” has recently surfaced within the practice of medicine. Though still peripheral, healing is heard in healthcare conversation, and is visible in articles and in books related to medicine. Actual healing practice is more common in alternative medicine, and appears foremost in the ancient practice of shamanism—a spiritual practice. The shaman—better recognized in the Western world as the “medicine man” or the “spirit doctor”—aids the transformation of a person from illness to health, often in a ceremonial setting. Using ritualistic practices, the shaman invokes the spirits (within humans, and from the non-ordinary, spiritual plane) to diagnose the causative factor, then heals the person, restoring balance or “wholeness.” Based on the original derivation of the word, to heal is to make whole.

In his book, “The Spirit of Healing,” David Cumes, a Stanford-trained surgeon, raised in South Africa, introduces to Western medicine the Kalahari desert shaman’s practice of healing medicine. He cites four factors involved in shamanic healing, that are similarly present in today’s doctor-patient encounter:

1. The healer
2. The patient’s inner healer,
3. The place, and
4. The universal field.

Stanley Krippner, psychologist and paranormal expert, author of many books including “Spiritual Dimensions of Healing: From Tribal Shamanism to Contemporary Health Care,” offers a confirmatory perspective, based upon his experience with alternative practices. He describes four basic reasons why treatments in any therapeutic setting work:

1. The practitioner’s personal qualities,
2. The person’s expectations,
3. The treatment, and
4. A shared world view.

Viewing these two sets of four components side-by-side broadens our understanding of the interactive nature of these aspects on effective healing.

Physicians may have lost a sense of the importance they play as a person in their interactions with their patients. A purely intellectual exchange with only a physical outcome is often ineffectual in treating a patient’s condition, which has both a physical component and a personal component (psychological, emotional, social, spiritual). Knowledge of the shaman’s practice can assist redirecting a physician’s practice toward a more balanced approach. This does not require physicians to learn completely new skills, or practice unfamiliar ceremonial rituals in their office. Rather, the physician’s personal self (the healer) can connect in “the human moment” with the patient’s personal self (the inner healer) in an office or hospital environment (the place) when both have a common understanding, or better, a common belief system (the universal field).

Before we further discuss the components of this shaman-native or doctor-patient relationship, it is important to explore the difference between curing and healing.

Curing vs Healing: Disease vs Illness

Different than curing—ridding the patient of disease symptoms and the body of the physical cause—healing not only alleviates physical symptoms, but, more importantly, resolves a person’s illness—those psychological, emotional, social and spiritual aspects that cause distress. In addition, healing practices prepare a person to prevent the illness and disease from returning, and attempt, in a larger life context, to heal the family and even the community.

Illness has a very personal description and meaning. Psychologist and Native American storyteller, Terry Tafoya, cites an example: “Tomorrow in your office you see a Shoshonee Native American for worsening diabetes. If you ask, ‘Why did you become sick?’ He may say, ‘I am sick because your people took my sacred mountain, built over our ceremonial burial ground, or clear-cut my forest.’ Any of these acts could spiritually wound this Shoshonee native who believes he is part of nature, and his nature has been violated.” This illness may worsen his diabetic physical condition.

Cultural practice can be the dominant determinant of an ethnic patient’s behavior. Overlooking this context, diagnosis is a futile exercise. The following story paints a vivid image. A middle-aged Haitian immigrant woman was brought into one of our Kaiser Permanente mental health offices by a
concerned neighbor. Her husband had recently passed away after a long illness. She spoke English, but not very well. Her summary statement was, "I don’t want to do anything; I don’t want to see anyone." She would not go out of the house; she wouldn’t talk to her friends; she wouldn’t have anyone into her house; and she wore only black. Based on her behavior, the therapist believed she was suffering from complicated and severe depression. The therapist treated her for several months, finding any breakthrough difficult. He suggested that she go out, see friends, have someone over for dinner. She refused any suggestions. Finally, he resorted to an exploration of her cultural belief system that might be interfering with her recovery. He asked if she would be better going back to Haiti. She said no. The breakthrough came when he asked her how other Haitian women would handle the death of their husband. She replied that a year must pass first. That only after one year of mourning—wearing black and staying inside—could she again participate in community activities. This was a normal Haitian ritual of year-long mourning. At year-end she would put on a red dress and dancing shoes and go out with friends to celebrate. Her depressive-appearing behavior was a self-imposed sociocultural belief and grieving process. She was "ill" without disease. In fact, her emotional state was one of mourning, not illness.

Stanford physician, Alan Barbour, and author of the book, "Caring For Patients," describes in the following diagram the elements of the doctor's responsibility for the disease (the medical model) and those of the doctor's responsibility for the ill person.5

Curing a disease is a reductionist approach, fragmenting the organ from the whole person. It is an expression of the biomedical model of the body as a machine with a broken part. People are more than the sum of their parts.

1. Healer

The words “healer” and “healing” sound strange and unfamiliar to physicians since they were rarely spoken or referenced in medical school. The only reference I can recall is to "wound healing." We were trained to restore organ function, but not in the context of restoring balance, personal or family, emotional or spiritual.

Internist-author of the book “Healing Words,” Larry Dossey also wrote, as editor of the journal “Alternative Therapies,” an article called, “Whatever Happened to Healers?” He commented on physician training: “Medical school, instead of nurturing and developing the natural healing talents of gifted young students who have sought to help people, seem adept at extinguishing them.

The first two years seem to desensitize students with the endless lectures and information and data and memorization and the sparse contact with patients.” A medical student, in a letter written to him, exclaimed that medical school “…crushed the human person into the spiritless formula of science."6 How can we expect compassionate physicians to emerge from such a dispassionate training program?

Addressing a more widespread phenomenon in our modern culture, New Yorker cartoonist, Cheney, draws out an image applicable to medicine. The scene is a hallway in any office building. Several people gather around a man who just dropped a sheaf of papers that lay strewn on the floor at his feet. He presses his left hand against his chest and his right hand braces him against the wall. He says, “Really, I’m fine. It was just a fleeting sense of purpose…I’m sure it will pass.” This fleeting sense of purpose for a doctor is the caring for a person who is ill, rather than our frenetic, headlong rush to cure a patient’s disease or just ameliorate their symptoms with a drug.

To accomplish this, physicians must reconnect with their own personal, emotional, and spiritual self. Dr David Cumes comments on this: “It is ego that leads physicians to believe they know best. It is ego that enjoys the patient who shuts up, follows instructions, and falls into the role of passive victim with the disease. Many physicians become disconnected from their spiritual self because of the rigors of their profession, and are thus incapable of ‘seeing’ the souls of their patients. Some physicians are wounded in the medical training process and so this becomes a deterrent to their ability to heal themselves or their patients. Some of the best Western physicians have shamanic abilities and often put them to good use.
without realizing it. However, Western medicine has difficulty validating these nonobjective methods that are not easily measured. The portal to this alternative healing is the right brain, and, for this, we need to open the heart. We need more heart in our modern system and a little less intellect. 

If we recall the yearning we had to become doctors; the desire we had to help other people; the chance, through our work, to perform a greater good, to achieve a higher purpose, how does that express itself today? Has medical school and modern medical practice dropped the enormous, dense, complex science of medicine onto the physician’s heart, causing shortness of breath and profound fatigue? How can the spirit of the art of medicine energize the practice of medicine to restore the balance necessary for physicians to simultaneously treat the physical disease of diabetes and the personal distress of being an ill diabetic? Curing addresses the former; healing is what addresses both.

Even for the most intellectual scientist among us, if we are considering simple ways to connect with patients that have value for them, then the electronic medical record (accessible at the time of visit), or even the paper chart (if available at the visit), can be used to advantage. Recording several words in a so-called medical record (accessible at the time of visit), or even the paper chart (if available at the visit), can be used to advantage. Recording several words in a social history about personal aspects of a patient or comments about family members, or important life episodes, can remind you about your patient. Recalling a personal moment with your patient can reconnect you at the personal level. This is true even if the patient knows you remember only because you made a note in their record. That you thought enough to note something personal, and then mention it later, demonstrates you care about them as a person, or at least that you are attempting to relate on a personal level. This is one way to act like a physician healer.

What are the qualities that a shaman (or physician healer) possesses? Rolling Thunder, a nationally known Native American shaman, describes a difference in our peoples: “Primitive people have natural human capacity, ability and powers which exceed modern humans. Moderns experience less of our human potential—in sight, sound, touch and smell—than ever before. We do so many unnatural things now, we don’t know what is natural anymore.” Our emphasis on the external and material world results in a reduced sensitivity to the internal and spiritual. Dr Cumes says: “The shaman embraces mystique rather than methodology, the compassionate and the empathic rather than the objective and impersonal, the intuitive rather than the rational. The marriage of science and shamanism creates equilibrium and fulfills the requirement of balancing the opposites for more complete healing.”

In a more mundane sense, shamanic healing attributes would fall generally into the areas of awareness, beliefs, personal qualities, practice—what we say and do. Dr Dossey notes: “Because there may be no such thing as a perfect fit between the beliefs of a physician and a patient, two of the most valuable qualities a physician can cultivate are those of flexibility and tolerance. These capacities make it possible for a physician to honor a patient’s point of view, even though it may not be his or her own; and they permit the physician to consider a variety of approaches to a particular problem.”

Peter Silberfarb, psychiatrist and director of the American Board of Family Practice, says, “You’ll never find out what worries patients unless you listen, and listening doesn’t take a lot of time, for a good doctor. You don’t have to spend a lot of time, but you have to spend time being totally focused on the person. Many patients are not looking for anything but reassurance that they’ll be okay in our hands.”

These and other personal qualities of composure and confidence, appropriate emotion and body language, all build toward an endpoint of developing a sense of trust. Ultimately, it is to get beyond the purely intellectual and cognitive. It is to be a person with another person.

2. Patient

The patient is the focus of healing. Both the physician and the patient are focused on improving the patient’s medical condition and on enhancing the patient’s well being. Even as physicians must move past the scientist and search their inner personal self, so patients need to be in touch with their emotions, psyche, social context, and spirituality because ultimately people heal themselves. A patient who only admits his physical symptoms and seeks relief with a pill or procedure will not effectively treat his illness. Components of the patient’s inner self include: their expectations, beliefs about the doctor, the treatment, the potential for improvement, the ability to interact with the doctor in a human moment, and their intention to get better. “The belief that therapy can do something to cure a problem is so powerful that this faith has to be taken into account when evaluating the ‘actual effect’ of different treatments.”
In addition, the support and intentions of family and friends assist the patient's efforts to heal. One of the strengths a person has is a family they are connected to and that supports them. In some families it is the grandparents who are the decision-makers and who must be consulted. When their opinion is consistent with the patient's wishes, synergy occurs.

Belief and Hope

Much has been said about the placebo response, usually to malign it, discount it, or fancifully invoke its effects out of frustration for lack of medical alternatives. Researchers are annoyed with placebo effects which, if present, must be accounted for or compensated for in the experimental group. Despite various opinions most people associate the placebo response with belief. If belief is powerful then the response can be dramatic. Shaman know the power of belief and use it to great advantage for the person they are healing.

"If healers disturb the belief system of the patient by the imposition of their own belief, they will compromise the magical ability of the system to work. Faith or belief in the healer is critical, and there must be a consistency between the patient's notion of healing and the doctor's approach. A Westerner may be satisfied with a written prescription and explanation as to how the medication is going to work; a San (Kalahari desert) native would trust a hands-on approach combined with some sweat from a San dancer in a post-trance state. Similarly, if physicians dispense treatments they do not believe in, this weakens the placebo effect by contracting the field of possibilities, and works against a desired outcome by both doctor and patient."

How can this approach be applied in a Western medical office? "Some doctors exude a sense of unruffled calm, certainty, trust, composure, and confidence, that augments the placebo effect." 1

To offer a perspective on this from paranormal research, psychologists Braud and Schlitz demonstrated in a study that one person (an influencer) could create a reproducible physiologic change (calming or activation) in another distant person (the subject) through intention and visualizing images. "Certain psychological conditions in the influencer appear to play a role in the success of the intentions and imagery: confidence, belief, positive expectation, motivation, level of spontaneity, mood, and rapport." 12

3. Place

"Bedside manner," the metaphor for a physician's comforting personal presence, if not compassion, lacks visual potency in the now more common outpatient setting in the doctor's office in a large medical office. If we examine for a moment the "exam room," what pleasing aesthetics are present there to comfort, or to lend a sense of "place," important as context for a meaningful interaction between doctor and patient? Are we expecting too much from the physician in conversation or in empathy to overcome the sterility of the setting? Barren, white rooms with cold surfaces and jarring metal sounds served well to communicate that no gems lived here. But it's also difficult to find heart here. How can we expect a doctor to have an artful encounter?

Of course, healing occurs in many other places. Shamans perform their ceremonies in the wilds of nature, in communal gathering places, or in a native's residence. Place is as much about a comfortable environment of any kind. What is a strain to imagine, however, is how an exam room can achieve a sense of place. Nonetheless, many wonderful encounters occur here between patient and doctor. It is actually a tribute to the ability of two people to overcome physical structure in reaching a state of mutual benefit.

What physicians could at least attend to is the environment of their offices and exam rooms. Look at them with a new awareness and with an eye for comforting and engaging pictures and mementos, with diversity that appeals to many, and with some attention to the furniture. What is the patient's chair like? What is the room setup that allows you and the patient to interact most comfortably?

4. The Field

The fourth component of healing is the field, which can be described variously as a spiritual plane, collective unconscious, a common consciousness, or more easily understandable as: a common culture, common experiences, similar belief systems, a shared feeling state, or a shaman-native or physician-patient relationship. Ultimately, the desired state (field) is an interpersonal relationship of trust and understanding.

What complicates this, however, is the unidimensional perspective people possess in Western culture. Tafoya notes, "When we are trained to see something
in a certain way we are also trained to ignore the alternate. For example, look at the image in Figure 1. We are trained to see the black ink on the page—the wave—but we don’t see the white space—the spiral—or the black wave and white spiral together as a whole image.” For many physicians to reach the field of a common consciousness with their patients requires both an alternate and a holistic perspective.

**Interdependent Factors**

All four of the healing factors are interdependent, with one or more of greater importance depending on the physical condition or illness, or personal relationship. The shaman or physician has great power to heal, or even to make things worse. Tafoya says, “If you try to have someone sing a song that doesn’t belong to them or that doesn’t fit them then we may do them a disservice, and they may not respond.” Finding the right song has benefits for both. Joan Halifax, psychologist author of “Shamanism Voices: A Survey of Visionary Narratives,” notes that, “The power of song to heal the singer as well as the listener is a persistent and remarkable feature of shamanistic songs.”

Chanting produces a field effect and can facilitate development of a calming state of mind by triggering alpha brain rhythm, and even a trance state. Some form of chanting is ubiquitous among Shamanic healing ceremonies to support the four healing factors by adding to the field effect and enhancing interconnectedness.

**Summary**

Physicians can improve the doctor-patient encounter by attending to personal qualities that enhance relationship and trust, and by recognizing their value as a healer in patients’ eyes. If physicians can clearly understand their patients’ expectations, and align with those, they can then import the power of the belief response to magnify the effect of their shared treatment plan. Within this dialogue, behaviors with caring intention may influence patients’ healing response more than had ever been thought possible. By whatever method, creating a sense of place for this interaction adds another potent component; and finally, the field of common understanding of belief systems can create further positive benefit for patients in this patient-physician encounter.

**A Moment in Time and Place**

From the modern perspective of the corporate business of medicine the bottom line dictates how the doctor-patient relationship plays out. This disturbs many physicians. Edward Hallowell, psychiatrist and author of “Connect,” comments on this: “The public still wants to have a doctor. It doesn’t want to have a brand. It wants to have something more than a corporate image. It wants to turn to a person in the human moment.” Achieving this human moment can be enhanced through a highly personal interaction between two people. If that personal interaction can be further enhanced as an ancient healing interaction, then we can hopefully “… arrive where we started, and know the place for the first time.”

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“Cats’ Hill Criterium”

by J. Richard Gaskill, MD
Evaluating Hypertension Control in a Managed Care Setting

BACKGROUND: We conducted a retrospective cohort study on a random sample of adult patients with hypertension in a large health maintenance organization to assess the feasibility of documenting blood pressure (BP) control and to compare different measures for defining BP control.

METHODS: Three criteria for BP control were assessed: systolic BP less than 140 mm Hg; diastolic BP less than 90 mm Hg; and combined BP control, with systolic BP less than 140 mm Hg and diastolic BP less than 90 mm Hg. Four methods of assessing hypertension control by the above criteria were examined: proportion of patients with BP under control at 75% and 50% or more of their office visits; the mean of all pressures during the study period; and the BP from the last visit during the study period.

RESULTS: The proportion of patients meeting each criterion for control was similar whether we used the mean BP for all visits, the last recorded BP, or control at 50% or more of their office visits; the mean of all pressures during the study period; and the BP from the last visit during the study period.

CONCLUSIONS: In this health maintenance organization population, results with the use of the simplest approach, the last BP measurement recorded, were similar to results with the mean BP. Our findings indicate that evaluation of BP control in a large health maintenance organization will find substantial room for improvement, and clinicians should be encouraged to be more aggressive in their management of hypertension, especially with regard to the systolic BP, which until recent years has been underemphasized.

Diabetes Management in a Health Maintenance Organization. Efficacy of Care Management Using Cluster Visits

OBJECTIVE: To evaluate the effectiveness of a cluster visit model led by a diabetes nurse educator for delivering outpatient care management to adult patients with poorly controlled diabetes.

Lack of Correlation of Symptoms with Specialist-Assessed Long-Term Asthma Severity

STUDY OBJECTIVES: To validate three indicators of asthma severity as defined in the National Asthma Education Program (NAEP) guidelines (ie, frequency of symptoms, degree of airflow obstruction, and frequency of use of oral glucocorticoids), alone and in combination, against severity as assessed by pulmonary specialists provided with 24-month medical chart data.

DESIGN: Cross-sectional comparison of questionnaire and clinical-based markers of asthma severity with physician-assessed severity based on chart review. The pulmonologists did not have access to the results of the baseline evaluations when making their severity assessments.

SETTING AND PARTICIPANTS: Study participants were 193 asthmatic members (age range, 6 to 55 years) of a...
large health maintenance organization who underwent a baseline evaluation as part of a separate longitudinal study. This evaluation consisted of spirometry, skin prick testing, and a survey that included questions on symptoms and medication use. The participants in the ancillary study were selected, based on their baseline evaluation, to reflect a broad range of asthma severity.

**RESULTS**: Based on the chart review, 86 of the study subjects (45%) had mild disease, 90 (45%) had moderate disease, and 17 (9%) had severe disease. This physician-assessed severity correlated highly ($p \leq 0.013$) with NAEP-based indices of severity based on oral glucocorticoid use (never, infrequently for attacks, frequently for attacks, and daily use) and on spirometry ($FEV_1 > 80\%$ predicted, $60$ to $80\%$ predicted, and $<60\%$ predicted). It did not, however, correlate with current asthma symptoms ($\leq$ once/week, 2 to 6 times/week, daily) ($p = 0.87$). A composite severity score based on spirometry and the glucocorticoid use data still provided an overall agreement of 63%, with a weighted kappa of 0.40.

**CONCLUSIONS**: While current symptoms are the most important concern of patients with asthma, they reflect the current level of asthma control more than underlying disease severity. Investigators must therefore use caution when comparing groups of patients for whom severity categorization is based largely on symptomatology. This observation, that symptoms alone do not reflect disease severity, becomes even more important as health-care delivery moves closer to protocols/practice guidelines and “best treatment” programs that rely heavily on symptoms to guide subsequent treatment decisions.

Effect of a Pediatric Self-Care Book on Utilization of Services in a Group Model HMO


The purpose of this study was to determine the effect of a pediatric self-care book (SCB) with nurse telephone support on use of health services. The study was performed in a pediatric department of Kaiser Permanente in a suburb of Denver, Colorado. Well patients seen at age 2 weeks to 2.5 months (infant group) or 14 to 19 months (toddler group) were enrolled. Intervention families received a copy of the book, Your Child’s Health, and were oriented on its use. Rates of sick visits, advice nurse calls, pharmacy prescriptions, emergency department visits, and hospital admissions were assessed. Visit and call rates were calculated, and mean rates of the SCB group and the control group were then compared. Of 1104 enrollees, 527 received the SCB; the other 577 served as controls. The SCB group had $14.0\%$ fewer total visits (excluding well-baby visits) than controls did ($p = 0.018$). For infants and toddlers who were not first-borns, the intervention was associated with a statistically significant decrease in sick visits ($23\%$), advice nurse phone calls ($24\%$), and pharmacy prescriptions ($26\%$); no statistically significant differences in study outcomes were seen among first-born study subjects. Promotion of self-care in a group model health maintenance organization can decrease use of services by families of young children.

Exploring Indicators of Telephone Nursing Quality


To explore whether documentation, use of clinical guidelines, and nurse competency are the best indicators of quality telephone nursing, this study examined the relationship between these commonly cited indicators and the characteristics of a telephone nursing call. This study, done at a large health maintenance organization (HMO), found: accompanying symptoms played a major role in telephone nursing assessment; call length was related to documentation process and to number of visits to a health care facility after a call; nurses’ interpersonal skills and ability to determine urgency of a call are related to the documentation process but not to outcomes of the call; time of a call is related to disposition; and disposition is related to number of visits after a call.

HMO Physicians’ Use of Referrals


Clinical uncertainty is a source of variation in medical decision-making as well as a source of work-related stress. Increasing enrollment in organized health care systems has intensified interest in understanding referral utilization as well as issues such as physician dissatisfaction and burnout. We examined whether primary care physicians’ affective
reactions to uncertainty and their job characteristics were associated with use of referrals and burnout. Data came from mail surveys of primary care physicians practicing in two large group model health maintenance organizations (HMOs) in the USA. Consistent with past research, we found that younger physicians had higher referral rates than older physicians, and that general internists had higher rates than either family practitioners or pediatricians. Greater stress from uncertainty increased referrals and referrals were negatively correlated with heavier work demands (patient visits per hour). Greater stress from uncertainty, perceived workload (too high) and a sense of loss of control over the practice environment were associated with higher levels of burnout.

Cost of Care for Patients in Cancer Clinical Trials


BACKGROUND: Information on the costs of medical care for patients enrolled in clinical trials is needed by policymakers evaluating ways to facilitate clinical research in a managed care environment. We examined the direct costs of medical care for patients enrolled in cancer clinical trials at a large health maintenance organization (HMO).

METHODS: Costs for 135 patients who entered 22 cancer clinical trials (including 12 breast cancer trials) at Kaiser Permanente in Northern California, from 1994 through 1996, were compared with costs for 135 matched control subjects who were not enrolled in such trials. Cancer registry data and medical charts were used in matching the control subjects to the trial enrollees with respect to cancer site, stage, date of diagnosis, age, sex, and trial eligibility. The direct costs of medical care were compared between trial enrollees and the control subjects for a one-year period, with data on costs and utilization of services obtained from Kaiser Permanente databases and medical charts.

RESULTS: Mean one-year costs for the enrollees in trials were 10% higher than those for the control subjects ($17,003 per enrollee compared with $15,516 per control subject; two-sided p = .011). The primary component of this difference was a $1,376 difference in chemotherapy costs ($4,815 per trial enrollee versus $3,439 per control subject; two-sided p < .001). Costs for the 11 enrollees in trials that had a bone marrow transplant (BMT) arm were approximately double the costs for their matched control subjects (borderline significance: two-sided p = .054). The $15,041 mean cost for the enrollees in trials without BMT was similar to the $15,186 mean cost for their matched control subjects.

CONCLUSIONS: Participation in cancer clinical trials at a large HMO did not result in substantial increases in the direct costs of medical care.

Spousal Concordance for Cancer Incidence: a Cohort Study


BACKGROUND: Because married couples share at least their home environment, spousal aggregation of cancer might provide clues to unsuspected etiologic factors. The authors sought to measure the concordance of cancer occurrence in married couples and explore factors that might explain greater-than-expected concordance.

METHODS: The authors identified 25,670 cancer-free married couples in Northern California who were followed for up to 31 years for the development of cancer. In Cox proportional hazards analysis, the development of cancer in a spouse was treated as a time-dependent, independent variable, and spouse-with/spouse-without risk ratios were determined, controlling for age and gender. For selected concordant espoused pairs, additional explanatory information was sought in their medical records.

RESULTS: There was no excess concordance for all cancers combined; the spouse-with/spouse-without risk ratio was 0.97 (95% confidence interval, 0.90-1.05). Statistically significant husband-wife associations were found only for cancer of the tongue and stomach and for non-Hodgkin lymphoma. Except for cancer of the penis/endometrium and testis/vulva, based on one couple with each combination, gender specific cancers did not aggregate within married couples. Established and suspected risk factors, not necessarily related to the marriage, were found for some individuals who had concordance with their spouses.

CONCLUSIONS: Little spousal concordance for cancer occurrence was found. The study of spousal aggregation does not appear useful in identifying unsuspected
environmental causes of cancer in heterogeneous populations in urban areas of affluent Western countries. A cohort study would have to be much larger than this one to detect weak spousal concordance reliably.


Changing Paternity and the Risk of Preeclampsia/Eclampsia in the Subsequent Pregnancy


To determine whether changing paternity affects the risk of preeclampsia or eclampsia in the subsequent pregnancy and whether the effect depends on a woman's history of preeclampsia/eclampsia with her previous partner, a cohort study was conducted based on 141,147 women with two consecutive births during 1989-1991, identified through linking of annual California birth certificate data. Among women without preeclampsia/eclampsia in the first birth, changing partners resulted in a 30% increase in the risk of preeclampsia/eclampsia in the subsequent pregnancy compared with those who did not change partners (95% confidence interval: 1.1, 1.6). On the other hand, among women with preeclampsia/eclampsia in the first birth, changing partners resulted in a 30% reduction in the risk of preeclampsia/eclampsia in the subsequent pregnancy (95% confidence interval: 0.4, 1.2). The difference of the effect of changing paternity on the risk of preeclampsia/eclampsia between women with and those without a history of this condition was significant (p < 0.05 for the interaction term). The above estimates were adjusted for potential confounders. These findings suggest that the effect of changing paternity depends on the history of preeclampsia/eclampsia with the previous partner and support the hypothesis that paternal human leukocyte antigen sharing may play a role in the etiology of preeclampsia/eclampsia.

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Second-Trimester Serum Chorionic Gonadotropin Concentrations and Complications and Outcome of Pregnancy


BACKGROUND: Maternal serum chorionic gonadotropin is measured to screen for fetal chromosomal abnormalities. Whether the results can also be used to predict the risk of complications or an adverse outcome of pregnancy is not known.

METHODS: We reviewed the medical records of 28,743 girls and women in whom chorionic gonadotropin was measured during the second trimester of pregnancy (between July 1, 1995, and January 31, 1997), seeking information about the complications and outcome of their pregnancies. We excluded girls and women who had preexisting risk factors for complications or an adverse outcome of pregnancy.

RESULTS: Higher serum chorionic gonadotropin concentrations were associated with higher rates of stillbirth (odds ratio for every increase in chorionic gonadotropin of one multiple of the median, 1.4; 95 percent confidence interval, 1.1 to 1.9). There was no relation between higher serum chorionic gonadotropin concentrations and the risk of gestational diabetes, premature rupture of membranes or intrauterine growth retardation or small size for gestational age (odds ratio, 1.1; 95 percent confidence interval, 0.9 to 1.2). Higher serum chorionic gonadotropin concentrations were associated with a risk of placental abnormalities (odds ratio, 1.5; 95 percent confidence interval, 1.3 to 1.7), pregnancy-induced hypertension (odds ratio, 1.4; 95 percent confidence interval, 1.3 to 1.5), and preterm delivery without pregnancy-induced hypertension (odds ratio, 1.1; 95 percent confidence interval, 1.0 to 1.2). Inclusion in certain racial or ethnic categories (black, Filipino or Pacific Islander, unknown race or ethnic group, and "other") which included those of Middle Eastern descent and Native Americans was a better predictor of the risk of an adverse outcome than serum chorionic gonadotropin values.

CONCLUSIONS: Measurements of serum chorionic gonadotropin are of little clinical value for predicting the risk of complications and the outcome of pregnancy.

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Effect of Age on Reasons for Initiation and Discontinuation of Hormone Replacement Therapy


OBJECTIVE: The purpose of this study was to examine age-related differences in reasons that postmenopausal women began and stopped hormone replacement therapy (HRT).

DESIGN: Two identical telephone surveys were conducted of women members of Kaiser Foundation Health Plan who had begun HRT within the previous three years. The first, in 1997, was of 604 older women aged 65 years or older; the second, in 1998,
was of 866 younger women aged 50-55 years. Prescription records for both groups provided the means for determining continuation of therapy.

**RESULTS:** Among older women, 35% reported prevention or treatment of osteoporosis as the primary reason for starting HRT. Younger women were less likely (14%) to report this (p < 0.001). Relief of vasomotor menopausal symptoms was the most frequently reported reason that younger women gave for starting HRT; it was the primary reason in 34%. In contrast, only 7% of older women reported relief of vasomotor symptoms as the primary reason for starting HRT (p < 0.001). Older women were more likely than younger women to discontinue HRT; after 12 months, the probabilities of discontinuation were 62% and 48% (relative risk = 1.4; 95% confidence interval = 1.2-1.6). Treatment-related side effects were most often the reason given for stopping HRT; 87% of older women and 64% of younger women who stopped reported that a treatment side effect was their primary reason (p < 0.001). Among treatment side effects, vaginal bleeding was the most frequently reported reason for stopping HRT; it was the primary reason for stopping in 52% of older women and 29% of younger women (p < 0.001).

**CONCLUSIONS:** Older women differ from younger women in their reasons for starting and stopping HRT. Whereas osteoporosis is the predominant reason that older women begin HRT, relief of vasomotor symptoms is the major reason that younger women begin. Early discontinuation of HRT is common and is greater among older women. Intolerance of treatment, particularly vaginal bleeding, is the predominant reason for stopping HRT.

**Psychosocial Treatments for Adolescent Depression**


Major Depressive Disorders affect between 2% and 5% of adolescents at any one point in time. Depression in adolescence is associated with serious psychosocial deficits and has negative effects on functioning during young adulthood. Starting with the pioneering work of Lenore Butler and her colleagues, many psychosocial interventions have been developed and studied, with generally positive results. On the basis of a meta-analysis of the existing cognitive-behavioral therapy (CBT) studies, we estimate an overall effect size of 1.27 and that 63% of patients show clinically significant improvement at the end of treatment. It seems reasonable to conclude that CBT has been demonstrated to be an effective treatment for depressed adolescents. In this article we describe these interventions, most of which are meant to address the problems shown by depressed adolescents. The purpose of our article is to bring this literature to the attention of clinicians in a manner which quickly and clearly summarizes the key features of the interventions to make it easy for clinicians to take advantage of this wealth of information and to avail themselves of the existing resources. We conclude by suggesting future directions and several additional areas of application for adolescent depression treatments.


**Cigarette Smoking, Alcohol Consumption, and Risk of ARDS: a 15-Year Cohort Study in a Managed Care Setting**


**STUDY OBJECTIVE:** To examine the association of cigarette smoking and alcohol consumption with hospital presentation of ARDS in a well-defined, multiethnic population.

**DESIGN:** Retrospective cohort study.

**SETTING:** Health maintenance organization in Northern California.

**PARTICIPANTS:** A total of 121,012 health plan subscribers (54.2% women), aged 25 to 89 years.

**OUTCOME MEASURE:** Hospital presentation of ARDS (validated by medical chart review) from baseline in 1979 to 1985 through the end of 1993 (median, 9.9 years).

**RESULTS:** There were 56 cases of ARDS (33 in men, 23 in women). The case fatality rate was 39% in both genders. ARDS was independently related to increasing age (rate ratio of ten years, 1.38; 95% confidence interval [CI], 1.12 to 1.71), to current smoking of < 20 cigarettes/d (rate ratio vs never cigarette smokers, 2.85; 95% CI, 1.23 to 6.60), and to current cigarette smoking of ≥ 20 cigarettes/d (rate ratio vs never smokers, 4.59; 95% CI, 2.13 to 9.88). No association was observed between alcohol consumption and ARDS.

**CONCLUSIONS:** The results of this study suggest a relationship (with evidence of dose-response effect) between cigarette smoking and ARDS. Assuming a causal relationship, approximately 50% of ARDS cases were attributable to cigarette smoking.
Warfarin Use among Ambulatory Patients with Nonvalvular Atrial Fibrillation: the Anticoagulation and Risk Factors in Atrial Fibrillation (ATRIA) Study


BACKGROUND: Warfarin dramatically reduces the risk for ischemic stroke in nonvalvular atrial fibrillation, but its use among ambulatory patients with atrial fibrillation has not been widely studied.

OBJECTIVE: To assess the rates and predictors of warfarin use in ambulatory patients with nonvalvular atrial fibrillation.

DESIGN: Cross-sectional study.

SETTING: Large health maintenance organization.


MEASUREMENTS: Data from automated pharmacy, laboratory, and clinical-administrative databases were used to determine the prevalence and determinants of warfarin use in the three months before or after the identified diagnosis of atrial fibrillation.

RESULTS: Of 11,082 patients with nonvalvular atrial fibrillation and no known contraindications, 55% received warfarin. Warfarin use was substantially lower in patients who were younger than 55 years of age (44.3%) and those who were 85 years of age or older (35.4%). Only 59.3% of patients with one or more risk factors for stroke and no contraindications were receiving warfarin. Among a subset of “ideal” candidates to receive warfarin (persons 65 to 74 years of age who had no contraindications and had previous stroke, hypertension, or both), 62.1% had evidence of warfarin use. Among our entire cohort, the strongest predictors of receiving warfarin were previous stroke (adjusted odds ratio, 2.55 [95% CI, 2.23 to 2.92]), heart failure (odds ratio, 1.63 [CI, 1.51 to 1.77]), previous intracranial hemorrhage (odds ratio, 0.33 [CI, 0.21 to 0.52]), age 85 years or older (odds ratio, 0.35 [CI, 0.31 to 0.40]), and previous gastrointestinal hemorrhage (odds ratio, 0.47 [CI, 0.40 to 0.57]).

CONCLUSIONS: In a large, contemporary cohort of ambulatory patients with atrial fibrillation who received care within a health maintenance organization, warfarin use was considerably higher than in other reported studies. Although the reasons why physicians did not prescribe warfarin could not be elucidated, many apparently eligible patients with atrial fibrillation and at least one additional risk factor for stroke, especially hypertension, did not receive anticoagulation. Interventions are needed to increase the use of warfarin for stroke prevention among appropriate candidates.

❖
Introduction and History

Our commitment to improving the health of our members is a driving force in the Kaiser Permanente (KP) dedication to quality improvement. With our integrated health system and defined population of members, we are in a unique position to continually explore opportunities to refine the care we provide. By focusing on new or improved ways to deploy the right care at the right time, we enhance the health of our members, build upon our existing reputation as a provider of quality health care, and improve service and cost-effectiveness of care for our members and group customers.

During his 17 years as President, CEO, and Chairman of the Boards of Kaiser Foundation Health Plan, Inc, and Kaiser Foundation Hospitals, James A. Vohs continually emphasized the moral and strategic importance of quality and quality improvement. On the event of his retirement as Chairman of the Board, the James A. Vohs Award for Quality was established by the Boards to recognize and honor projects that advance the quality of care, showcase innovative techniques and knowledge that can be transferred throughout the Program, and underscore the value of multidisciplinary teamwork.

The Vohs Award recognizes exceptional KP efforts to address quality-of-care issues and acknowledges multidisciplinary team efforts representing Kaiser Foundation Health Plan, Inc, Kaiser Foundation Hospitals, and the Medical Groups. As before, the criteria for selecting a winner assure that the project measurably improves patient care and has the potential for transfer as a “successful practice,” thereby benefiting many members across the Program. The Vohs Award is designed to encourage projects that demonstrate leadership within KP and the health care industry, and that develop and apply new approaches to improve quality of care.

Annually, each KP Division is invited to nominate one or two projects for consideration for the James A. Vohs Award for Quality. The award is presented for the project that best represents a well-established effort to significantly improve quality through substantial, objectively documented, and institutionalized changes in direct patient care, through either new programs or significant improvements in existing ones.

We present here the 2000 winners of the Vohs award: the first-place winner, “Bright Systems®: A Total Quality Management Project to Improve Children’s Health,” from KPNC of the California Division; the one that received honorable mention, “The Childhood/Adolescent Immunization Program with accompanying Immunization Toolkit,” from the Denver/Boulder Local Market of the KP Colorado Region; and several other outstanding Quality Program Descriptions which were submitted, including “Achieving Positive Outcomes through Collaborative Pharmaceutical Care—the KPNC of the California Division,” “Improvement of Cardiac Outcomes from the KP Ohio Region,” “Asthma Disease Management” from the Denver/Boulder Local Market of the KP Colorado Region, and “The Breast Health and Cancer Detection Program” from the KP Georgia Region.

In addition to presenting the basic elements of each program, we hope to remind the reader of the Vohs Award application process to stimulate similar project development on diverse topics throughout our organization. Multidisciplinary involvement and strong team leadership is critical to the success of these projects. Just as the quality planning process and methods for making programs operational served as the framework for several other successful program rollouts within the Local Markets, all programs described should serve as a model for quality improvement programs throughout Kaiser Permanente nationally.

Incentive is provided to all TPMG/KP professional staff to apply for the James A. Vohs Quality Improvement Award. There is no monetary gift with this award. The winning Division receives an engraved award, and project team members receive awards. The “real” award is recognition for good work. Winners and runners-up are invited to present their projects at a reception hosted by the Boards of Directors, Division Presidents, and other Program Officers. The awardees also receive publicity through the Quality Notes newsletter and through local, state, and national press releases.

The local level process for nomination varies. Each Division has contact liaisons, who can be located through their quality representative. Each Division also has a screening and review process for potential nominees. Nominations are signed off by the Division President and Medical Director. Nominations and applications are due September 1st each year.

A Vohs Award Selection Committee consists of two to three Boards of Directors members, a Vohs family member, Chair Bob Crane, two to three Program Office quality representatives, one Permanente Federation representative, and two non-voting Program Office quality representatives, who serve as staff to the Committee. This Committee announces its selection at the Board of Directors meeting in December. Notification is made to the Division President and Medical Director by phone after that meeting. Team members are contacted by phone within the next day or two. The recognition ceremony takes place at the March Board of Directors’ meeting.

We thus hope that the following entries for this year’s James A. Vohs Award will serve as models to motivate all KP staff to present projects for consideration and motivate us to continually improve the process of providing direct patient care and access to health information for our members. ✩
“Peacock at the Window”
by J. Richard Gaskill, MD
Bright Systems®, the 2000 winner of the James A. Vohs Award for Quality, is a set of computer- and paper-based tools that have changed the way Kaiser Permanente (KP) pediatricians conduct health supervision visits within KP Northern California. The multicomponent system incorporates Speed Charting forms for physicians, health education information for distribution to parents and patients, and “patient encounter tools” explaining a variety of health topics, especially injury prevention and counseling about exposure to environmental tobacco smoke (ETS). Use of Bright Systems® has resulted in more accurate visit documentation, more personalized patient care and greater satisfaction for parents and health care professionals.

It’s a typical scene in the pediatrics department of any medical center: mothers (and a few fathers) wait with their children to see the doctor for an ailment or a health supervision visit. Children sit, play, or run around. Parents page through copies of popular magazines, keeping an eye on the children’s activity. Nurses and front office staff shuttle parents and children with their forms and records into and out of examination rooms.

In the examination room, a medical assistant checks the child’s weight and height. The pediatrician enters the room with a blank sheet of pink paper attached to a clipboard and jots down notes while running through his own list of questions from memory. If he gets involved in talking about the importance of car seat belts, the pediatrician may never get around to asking whether the child wears a bike helmet. If time permits and the pediatrician remembers, he’ll return to a question that concerned the parent and probe for more information. In the meantime, screening tests and immunizations must be given. All too soon, the parent and child are out the door, and the physician’s attention turns to the next patient.

It doesn’t have to be that way. Picture a waiting room where parents arrive knowing that the examination will be tailored to their child’s needs. When they register, parents receive and complete a short health questionnaire that covers standard, age-appropriate risk assessment issues. The medical assistant notes the child’s weight and height on a health information sheet tailored to the child’s age and gives the sheet to the parent. During the visit, the pediatrician uses a printed form that prompts her to address age-specific topics related to child development, safety, and parenting and to conduct an appropriate physical examination. The physician also reviews the completed health questionnaire and discusses any areas of risk that are revealed. The parent, child, and physician all leave the visit reassured that their individual concerns were addressed along with all the fundamentals.

The secret to health supervision visits that resemble that second scenario is Bright Systems®, the 2000 winner of the James A. Vohs Award for Quality. The basic system includes five tools: the Physician Practice Survey, a spreadsheet of health supervision guidelines; Speed Charting, a set of age-specific forms to assist physicians at the patient visit; Healthy Kids—Healthy Futures, age-specific information for parents; Health Questionnaires, an age-specific risk assessment tool; and Safety Questionnaires, a data collection tool. (The Permanente Medical Group registered the name “Bright Systems®” as a trademark and retains ownership of related copyrights.)

Bright Systems® is the brainchild of Scott Gee, MD, the Project Director and Associate Director for Preventive Medicine, Regional Health Education, Kaiser Permanente (KP) Northern California Region, as well as a pediatrician at the KP Pleasanton Medical Offices. Dr Gee wanted to streamline the routine parts of health supervision visits and thereby create more opportunity for meaningful interaction with parents and patients.

“I want to be able to talk with parents about the topics that are most appropriate or are of greatest concern for them and that will reap the greatest benefits for them and their child. Standardizing when certain information is provided and giving doctors an easy way to document the discussion frees them up to engage in more meaningful, individual dialogue with parents and children,” he explains.

The importance of adding efficiency and meaning to health supervision visits becomes clear when you consider that this type of visit represents half of all visits to KP Pediatrics Departments. These visits focus on preventing injuries and disease, guidance for parents, and administering screening tests and immunizations. The value of comprehensive pediatric care has been shown not only to improve children’s health but also to reduce the need for hospital admissions, operations, and illness-related visits. Comprehensive pediatric care also contributes to improved parent satisfaction, increased maternal compliance with health instructions, and improved diet and maternal self-confidence.17
Despite the demonstrated effectiveness of comprehensive health supervision visits, studies show that only a small fraction of the visit time (8.4%) is devoted to counseling and anticipatory guidance for parents. Studies show that injury prevention is discussed only half the time and that few pediatricians routinely obtain family smoking histories. Furthermore, pediatricians often don’t take advantage of these visits as opportunities to discuss behavioral concerns with parents.

Yet injuries are the leading cause of death in children and adolescents and account for 600,000 hospital admissions and 16 million emergency department visits per year. The total cost associated with these injuries exceeds $7.5 million. The issue of exposure to environmental tobacco smoke (ETS) is equally critical. ETS is estimated to contribute to 6200 childhood deaths and $4.6 million in direct medical expenses annually.

Bright Systems® was conceived to remedy many of these deficiencies by incorporating health care delivery tools for practitioners and front office staff; educational information for parents, patients, and health care professionals; and “patient encounter tools” on a variety of health topics, especially injury prevention and ETS counseling. Bright Systems® objectives were to:

- Create an office system that delivers consistent and comprehensive health supervision;
- Improve the quality and consistency of anticipatory guidance given to parents at health supervision visits;
- Improve parent safety behaviors;
- Improve physician satisfaction by reducing unnecessary work.

According to David Sobel, MD, MPH, Director of Patient Education and Health Promotion, Regional Health Education in KP Northern California, Bright Systems® isn’t only a win/win proposition—it’s a win/win/win. “Parents win because they are happier with the quality and thoroughness of their health supervision visits and more confident thanks to the health education handouts. Physicians win because they are able to move through the routine parts of the visit efficiently allowing them to focus on individual needs and questions. And the organization wins because Bright Systems® is a cost-effective, proactive system that supports our focus on prevention and health improvement. Bright Systems® seamlessly integrates health education into ongoing clinical care.”

A Complete Set of Tools

Bright Systems® used Total Quality Management (TQM) methodologies to develop an office system (a series of routines and tools supported by all practice personnel), staff training, and continuous improvement mechanisms to improve health supervision visits. As noted earlier, the basic system includes a Physician Practice Survey, Speed Charting forms, Healthy Kids-Healthy Futures sheets, and Health/Safety Questionnaires.

Physician Practice Survey

Early in Bright Systems® development, the Physician Practice Survey helped determine and track health supervision visits at which physicians delivered specific care (eg, immunizations) or information (eg, about breastfeeding or use of child car seats). The survey was an important tool for assembling an overview of how different physicians, even within a single facility, took individual approaches to health supervision visits. This information was used to design the Bright Systems® Speed Charting forms and health information sheets.

Today, the survey incorporates the KP Northern California Region’s clinical practice guidelines and serves as a convenient visual reminder for medical assistants and front office staff to prepare for and conduct health supervision visits. A quick glance at a spreadsheet reminds staff which immunizations must be given at the four-year visit, for example. In this way, the office staff knows what to be prepared for and what to prepare the parent for.
Speed Charting Forms

These age-specific, structured encounter forms give physicians a streamlined way to document the topics covered at each health supervision visit. A separate form is used at each visit from birth to age 18 years. Forms are divided into sections that include interim and social histories, nutrition, development, physical examination, health assessment, and planning. Each section contains space for written comments, but an equally important feature of the forms is a series of checklists that allow physicians to annotate the medical chart quickly, accurately, and thoroughly. Symbols are used to indicate the parent’s responses to specific questions.

For example, the Development section of the form given at the 18-month visit prompts the physician to ask about and note the baby’s ability to:
- Kick/throw a ball
- Use a spoon or fork
- Climb stairs (with hand held)
- Scribble
- Speak ___ words.

Like all practitioners, pediatricians have an increasing paperwork burden. It is not uncommon for them to complete six or seven pieces of paper per child per visit—not just for internal use but also for programs such as the US Department of Agriculture’s Women, Infants, and Children (WIC) Program, school administrators, and US immigration authorities. “The checkoff boxes are a great timesaver, and since physicians aren’t known for clear handwriting, they improve the accuracy of the documentation as well,” says Deborah L. Gould, MD, Chair, Chiefs of Pediatrics, The Permanente Medical Group.

The sections and topics included in the forms and discussed at visits change as the patient ages. For example, a section about school appears on the form used for children at age six years, when questions about TV and video games also make their appearance. The social history section tracks parental marital status and the presence of smokers in the house. Prompts to ask about whether the child is in daycare or is a latchkey child and about the child’s drug or tobacco use and sexual activity are added to the form as the child develops.

Although the Bright Systems® Speed Charting forms are currently paper-based, they could readily be computerized. As KP Northern California moves closer to implementing an electronic medical record system, Bright Systems® is well positioned to adapt to this change.

Healthy Kids-Healthy Futures Sheets

Parents receive age-specific Healthy Kids-Healthy Futures information sheets when they arrive for each health supervision visit. These sheets contain basic information about feeding or eating habits, safety, healthy habits, and parenting skills. A highlighted section on the front of the sheet lets parents know what may happen at the next visit and alerts them to the possible need for immunizations or the advisability (and correct dosage) of giving acetaminophen drops to a young child.

Since her daughter Eliza was born, in July 1999, new mother Ann Banchoff has received Healthy Kids-Healthy Futures information sheets at every health supervision visit with her pediatrician at the KP San Francisco Medical Center. “It’s reassuring to know that we’re getting information that’s been reviewed and approved by qualified doctors in an organization I trust,” she says. “The sheets are a handy complement to the Healthwise Handbook and other books I’m using.”

Parents are encouraged to share the health information sheets with others who are involved in caring for the child. Dr. Gould observes, “We’re seeing a lot more fathers bringing their children in for health supervision visits these days, which is great. But almost all of them come prepared with a list of questions the mother wants answered. The Healthy Kids-Healthy Futures sheets usually take care of the standard questions, and the physician has more time to address individual concerns. Plus, it’s a reliable way to get important information back to the home, no matter who brings the child in.”

On the back of each sheet, one or more topics are explored in more detail. These topics range from “childproofing” checklists (for use with children aged six to ten months) to temper tantrums and potty training (for toddlers) to violence prevention, puberty, and sexuality (for older children and teens).

The health information sheets also are appropriate for older pediatric patients to use in guiding their own health care choices. “It’s important for Leah to get information about her own body from a reliable source other than her parents. When someone other than her mother tells her that she needs to have plenty of calcium in her diet, it’s welcome reinforcement,” observes Joy Carlson, who brings her 11-year-old daughter to a pediatrician at the KP Oakland Medical Center. “Even though I’m not a big fan of pamphlets, I found the Bright Systems® information very helpful as a reminder, or forecaster, of what will be happening in Leah’s life in the coming months.”
Health and Safety Questionnaires
When parents register at the front desk, the receptionist or other front office staff member gives them a health risk assessment survey to complete while waiting for the doctor. The survey asks many of the routine age-specific questions a pediatrician would normally ask during a health supervision visit. Having these questions already answered by the parent (or by the teenaged patient) frees the physician to explore current issues of concern for the parent and patient in greater depth during the visit.

Irene Takahashi, MD, Chief of Pediatrics at the KP South San Francisco Medical Center notes that the questionnaires are helpful for certifying students to participate in school athletic programs. The answers to questions such as “Have you ever had chest pain or severe difficulty breathing?” and “Have you ever fainted during exercise?” often help physicians probe for underlying physical conditions that may prevent participation and to identify the need for further medical investigation.

Separate safety questionnaires are used before and after Bright Systems® is implemented at a KP facility. As a data collection tool, these questionnaires give parents the opportunity to self-report their efforts to create safe environments for the health and well being of their children. The questionnaires query items such as appropriate use of child car seats; infant’s sleeping position; efforts to “childproof” the home; and the presence and accessibility of firearms in the home. Comparing the before-and-after data measures Bright Systems® effect in reducing safety risks.

A Culturally Sensitive Approach
The Healthy Kids-Healthy Futures information sheets are designed for people with limited literacy skills and incorporate cultural sensitivity. To reach a broad range of families, all information sheets have been translated into Spanish and Chinese. As the Healthy Kids-Healthy Futures Program is disseminated to other parts of the country, where other languages and cultures may be prominent in the Health Plan member population, local needs can be accommodated as well. In all languages, the content of the information sheets reflects a wide range of cultural preferences; for example, the sheets list a number of ethnic foods as examples of healthy eating habits.

As an example of the ongoing evolution of Bright Systems®, Dr Gould cites the current discussion over adding to the forms questions about alternative forms of medicine that parents might use. “Almost every parent gives some kind of health care at home— even if it’s only acetaminophen,” Dr Gould says. “Increasingly, we realize that some home remedies may include herbal therapies that could conflict with the medical advice that we give. Asking about home remedies not only gives us more information, it validates the parent’s own actions in an appropriate way.”

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<td><strong>Kaiser Foundation Health Plan/Hospitals</strong></td>
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<td>Care Management Institute consulted on materials and evaluation tools</td>
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<tr>
<td>Perinatal Services Study Group consulted on Integrated Perinatal Education program</td>
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<tr>
<td>Compliance and Risk Management verified compliance with legal standards</td>
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<td>Temperament Program consulted on parental anticipatory guidelines</td>
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<td>Committee of Health Information Managers and Physicians consulted on NCQA standards</td>
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The program is meeting with success outside the KP organization also. In California, the Public Health Departments in Monterey and San Francisco Counties have adopted Bright Systems®. "What is happening with Bright Systems® is a perfect example of how we can fulfill our mission to improve the health of not just our members, but of the communities we serve," says Dr Sobel.

**A Commitment to “Meaningful Detailing”**

The impetus for creating Bright Systems® came when Dr Gee read the Bright Futures report issued by the Maternal and Child Health Bureau of the US Department of Health and Human Services. That report, Dr Gee remembers, "gave us a vision of children’s health and of what it will take for us to have healthier children. But we needed tactics and practical tools to get there."

On his own initiative, Dr Gee started to develop Bright Systems® in 1991. The next year, matching funding from Regional Health Education in KP Northern California helped Dr Gee expand the team to include a half-time health educator: Jodi Jessen, DPH. Together, Drs Gee and Jessen visited pediatricians at each KP facility to show them the Bright Systems® process and tools. "In each facility we had to prove that Bright Systems® helped physicians and staff to work more efficiently, save time, and produce better health outcomes," recalls Pamela Larson, MPH, Director of Prevention and Self-Care, Regional Health Education in KP Northern California. "We focused on the concept of 'meaningful detailing,' convincing each physician that the information collected and distributed was meaningful to parents, to patients, to physicians, and to the organization."

Before any KP facility could implement Bright Systems®, pediatricians had to agree on a common approach to health supervision visits. "Practicing Permanente Medicine means much more than practicing as a group of individuals. One of the challenges of working on a program like Bright Systems® is that it requires the physicians in a department to come together and agree on what the charting and patient education forms should contain. A helpful byproduct is that physicians across the Program learned how better collaboration and consensus building can improve medical practice," says Dr Sobel, identifying a key learning from the implementation.

The KP South San Francisco Medical Center is a good example of a facility where pediatricians struggled with the idea of using a preprinted, KP regional form to document health supervision visits. The pediatricians were concerned also about the logistics of parents completing questionnaires and receiving handouts. "We had some initial resistance," Dr Takahashi recalls. "It was only after Bright Systems® personnel explained that our views would be heard and acknowledged and that we could customize the forms to meet our needs, that we decided to join in."

Among the changes that the KP South San Francisco pediatricians sought and achieved was inclusion of a screening protocol for autism at the 18-month visit. (Standard speed-charting forms have now been implemented across the KP Northern California Region.)

The KP South San Francisco facility took a phased approach to implementing Bright Systems®, using it first only for children younger than ten years of age. "We had some reservations about the usefulness and validity of the questionnaires and forms for teens," says Dr Takahashi. Among those concerns were privacy issues and having teens and parents complete separate health questionnaires. After a few physicians started using the teen materials, their value soon became apparent.

"I obtain much more valuable information from my adolescent patients now that I’m using Bright Systems®. Teenagers are clearly more willing to truthfully answer sensitive questions on a questionnaire than [when they are] being asked face-to-face. Once I have their written answers, I can focus my conversations on what matters most to each individual patient,” says Dr Takahashi. "That makes the entire visit much more meaningful to the patient and to me."

Getting the front office staff actively engaged in the process was equally important to the success of Bright Systems®. "We were extremely fortunate to have the enthusiastic support of staff members who readily saw the positive effects Bright Systems® had in their offices. We couldn’t have done it without them," says Ms Larson.

Developing and implementing Bright Systems® called for the talents of a multidisciplinary team selected from Kaiser Foundation Health Plan/Hospit...
A Measurable Success

Given the high medical costs—not to mention the incalculable costs in family suffering—caused by childhood injuries, even small improvements can reap major rewards. Bright Systems® has documented major improvements in physician counseling and self-reported parental safety behavior related to key safety issues (Tables 3 and 4). Improvement in nine of the 12 injury prevention topics presented by Bright Systems® exceeds the federal Healthy People 2000 goal of 50%.3 Physicians and staff also reported improved documentation, time savings, and improved counseling as a result of using Bright Systems®. These results were acquired using three surveys: 1) a pediatric survey collected self-reported parental behaviors and parents' recollections of anticipatory guidance received. The survey was distributed at six sites during 4- to 6-month visits (p < .05) and during 18- to 24-month visits (p < .001); 2) a safety questionnaire collected self-reported parental behaviors. The survey was distributed at most sites before and after implementation of Bright Systems®, during the 4-month visit, during the 9- to 11-month visit, and during the 15- to 18-month visit (p < .05); 3) a survey of physicians and other health care practitioners collected data on satisfaction as reported by a random sample of 81 KP Northern California pediatricians after Regionwide implementation. The response rate for this survey was 55% (p < .05).

Linda Rieder, MPH, Pediatric Program Manager at Regional Health Education in KP Northern California, notes that "our improvements in ETS and injury prevention counseling weren't achieved at the expense of answering parents' questions or screening for developmental milestones; this is proof that Bright Systems® delivers comprehensive health supervision." Ms. Banchoff's experience supports that observation. "I was surprised to read on the handout that crib bumpers can be dangerous. I was able to ask the doctor why during our visit and got a good explanation. And I removed the crib bumpers when I got home," she recounts.

In 1997, Bright Systems® was disseminated throughout the KP Northern California Region. In addition, the KP Southern California and Mid-Atlantic Regions use the Healthy Kids-Healthy Futures materials.

A Bright and Healthy Future Ahead

Another key to Bright Systems® success is its adaptability. Using the principles of Continuous Quality Improvement (CQI), the tools can be updated to reflect changing standards, needs, and requirements. In

<table>
<thead>
<tr>
<th>Survey and behavior surveyed</th>
<th>Percentage increase</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pediatric Survey (given at 4- to 6-month visit):</strong></td>
<td></td>
</tr>
<tr>
<td>Parent received anticipatory guidance on ETS exposure</td>
<td>28</td>
</tr>
<tr>
<td>Parent ensures correct sleeping position of infant</td>
<td>25</td>
</tr>
<tr>
<td>Temperature of household hot water moderated</td>
<td>24</td>
</tr>
<tr>
<td>Risk of scald burns reduced</td>
<td>23</td>
</tr>
<tr>
<td>Risk of falls reduced</td>
<td>17</td>
</tr>
<tr>
<td><strong>Pediatric Survey (given at 18- to 24-month visit):</strong></td>
<td></td>
</tr>
<tr>
<td>Exposure to ETS</td>
<td>26</td>
</tr>
<tr>
<td>Use of syrup of ipecac</td>
<td>11</td>
</tr>
<tr>
<td>Use of child car seat</td>
<td>19</td>
</tr>
<tr>
<td>Supervision around water</td>
<td>23</td>
</tr>
<tr>
<td>Locks on upper-level windows</td>
<td>26</td>
</tr>
<tr>
<td>Risk of choking reduced</td>
<td>17</td>
</tr>
<tr>
<td><strong>Safety Questionnaire (given at 4-month visit):</strong></td>
<td></td>
</tr>
<tr>
<td>Crib safety</td>
<td>5</td>
</tr>
<tr>
<td>Avoiding waterbeds</td>
<td>6</td>
</tr>
<tr>
<td>Preventing falls</td>
<td>5</td>
</tr>
<tr>
<td>Avoiding crib toys</td>
<td>9</td>
</tr>
<tr>
<td>Using safe toys</td>
<td>4</td>
</tr>
<tr>
<td><strong>Safety Questionnaire (given at 9- to 11-month visit):</strong></td>
<td></td>
</tr>
<tr>
<td>Temperature of hot water moderated</td>
<td>10</td>
</tr>
<tr>
<td><strong>Safety Questionnaire (given at 15- to 18-month visit):</strong></td>
<td></td>
</tr>
<tr>
<td>Preventing poisoning</td>
<td>5</td>
</tr>
<tr>
<td>Preventing falls</td>
<td>8</td>
</tr>
<tr>
<td>Avoiding foods that promote choking</td>
<td>9</td>
</tr>
<tr>
<td>Knowing the Heimlich maneuver</td>
<td>13</td>
</tr>
</tbody>
</table>

*ETS = environmental tobacco smoke
the changes made throughout the development phase, several modifications have been made since full implementation of Bright Systems®. Suggestions for these improvements have come from physicians and parents and in response to regulations. For example, early in 1999, when KP Northern California added rotavirus immunization to the six-month health supervision visit, the Speed Charting forms were updated to include this preventive measure; and when the decision to vaccinate was rescinded later that year, the item was removed from the forms.

More recently, when California education authorities decided to require hepatitis B vaccine for all students entering the seventh grade, the immunization was added to the speed-charting form used at the visit for 12- to 14-year-old patients. In addition, the feasibility of group visits for teens—a possibility suggested by physicians at KP South San Francisco—is being investigated.

“We learned a tremendous amount about the process of change in a large organization through Bright Systems®,” says Dr. Sobel. “It all started with one dedicated physician, was supported regionally in a systematic way, and incorporated the principles of CQI. It is a model for other programs.”

Indeed, Bright Systems® has been extended to incorporate the Healthy Beginnings perinatal program now being used in KP Northern California. Healthy Beginnings expands standard patient education information by incorporating classes for expectant parents. The applicability of speed charting forms at perinatal visits is being studied. And KP Northern California’s Regional Health Education Department is exploring how Bright Systems® might work in the adult care setting.

According to Ms. Rieder, a key to the adaptability of Bright Systems® to other settings is its simplicity. “None of the Bright Systems® tools is terribly complicated. We purposefully kept the materials simple and inexpensive to produce. That way, we can adapt and update them easily and cost-effectively.” Bright Systems® is a great example of a low-tech solution that has a high impact.

Looking back at what Bright Systems® has accomplished and how much more it promises, Dr. Gee is convinced that “change doesn’t have to mean more work. It can—and should—mean a better, simpler way to practice, better relationships between practitioners and their patients, and better health.”

References
The pilot project for Bright Systems®: A Total Quality Management Project to Improve Children's Health was initiated in Pleasanton in 1991 and 1992 and implemented Regionwide in Kaiser Permanente Northern California (KPNC) in 1997. Table 1 shows the Project Team and Contact Person.

**Background**

Primary pediatric care and comprehensive health supervision have demonstrated improvements in reducing hospitalizations, operations, illness visits and missed appointments. Comprehensive health supervision visits also demonstrate improved parent satisfaction, increased maternal compliance, improved diet, and maternal self-confidence.1-4

Fifty percent of all visits to a pediatric department are considered preventive visits, or health supervision visits. A health supervision visit focuses on primary as well as secondary prevention through risk assessment, anticipatory guidance (provider counseling), screening tests, and immunizations. Routine health supervision visits are an important way to keep children healthy.5-7

Office systems have been studied as a way to improve the delivery of preventive services and have demonstrated effectiveness at improving cancer screening and physician counseling.8-14 Office systems have been defined as a series of routines supported by the shared responsibilities of all practice personnel as well as by various tools.9 Tools that have been studied include flowsheets, chart stickers, structured encounter forms, patient information, and questionnaires.15-27 Total Quality Management (TQM) has also been suggested as a way to improve the delivery of preventive services.29,30

Injury prevention and environmental tobacco smoke counseling have been identified as high priorities for health supervision.31-34 Injuries are the leading cause of death in children and adolescents beyond the first year of life and in 1986, more than 22,000 US children aged 0 to 19 years died of injuries. Injuries are estimated to be responsible for 600,000 hospitalizations and 16 million emergency department visits each year. The annual medical cost of childhood injuries is estimated to be over $7.5 billion.35-37 The effectiveness of physician injury prevention counseling has been demonstrated in several studies.33,34,38 In addition to injuries, smoking and exposure to environmental tobacco smoke (ETS) pose serious threats to children's health. Approximately 43% of children two months to 11 years of age live in homes with at least one smoker. Exposure to environmental tobacco smoke is associated with sudden infant death syndrome (SIDS), bronchiolitis, acute otitis media, middle ear effusions, asthma, altered lipid profiles, and cancer. Environmental tobacco smoke contributes to an estimated 6200 childhood deaths and $4.6 billion in direct medical expenses every year.31,32,39 The effectiveness of brief physician counseling reinforced by written patient information on changing health behaviors has been demonstrated in several studies.40-42

Despite the demonstrated effectiveness of comprehensive health supervision, studies have shown that the amount of time spent during the health supervision visit to deliver anticipatory guidance is often limited to 8.4% of the total visit time.43 Other studies have demonstrated that injury prevention counseling is covered less than 50% of the time.44,45 Few pediatricians routinely take parent smoking histories.47 Behavioral concerns from parents are also often not covered.44,45

**Table 1. Team contributing to Bright Systems®: A Total Quality Management Project to Improve Children's Health**

<table>
<thead>
<tr>
<th>Team member names/titles:</th>
<th>Scott M. Gee, MD, Project Director, Associate Director for Preventive Medicine, Regional Health Education; Pamela Larson, MPH, Project Manager, Director of Prevention &amp; Self-Care; Regional Health Education; Linda Rieder, MPH, Pediatric Program Manager, Regional Health Education; Valerie Sheehan, MPH, Pediatric Program Coordinator, Regional Health Education; Kimmie Lee, RD, MPH, Publications Coordinator, Regional Health Education; Rachelle Mirkin, MPH, Interregional Consultant, Care Management Institute.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact person:</td>
<td>Scott M. Gee, MD, Regional Health Education, 1950 Franklin Street, 13th Floor, Oakland, CA 94612 (e-mail: <a href="mailto:scott.gee@kp.org">scott.gee@kp.org</a>).</td>
</tr>
</tbody>
</table>
**Process**

Bright Systems\textsuperscript{®} began as a TQM Project at the Department of Pediatrics at Pleasanton in 1991. Surveys of doctors, nurses, and administrators from both TPMG and KFH were used to develop the customer needs spreadsheets (Figure 1) along with surveys of Health Plan members. Customer needs were transferred to the Bright Systems\textsuperscript{®} products and processes through a series of Juran quality planning spreadsheets. Construction of the office system began with the Physician Practice Survey and was followed by Speed Charting, Healthy Kids—Healthy Futures, and Safety Questionnaires projects. The Safety Questionnaires are used to collect age-specific parent safety behavior data. The questionnaires are distributed in the waiting room and collected anonymously. The data from these questionnaires are used for the continuous quality improvement and quality control activities of Bright Systems\textsuperscript{®}. The completed office system was implemented and evaluated at Pleasanton in 1992.

The success of the program spread rapidly, and four clinics implemented the program in 1993. Regional Health Education (RHE) Matching Grant funds were obtained in 1994 to support the dissemination of the program. The dissemination of Bright Systems\textsuperscript{®} followed the process described by Rogers in "Diffusion of Innovations."\textsuperscript{48-50} The early adopters would not use the program without adaptation and made significant improvements in the office system tools as part of the adaptation process. It became clear that adaptation would have to occur to achieve widespread dissemination. RHE staff provided on-site facilitation to overcome local barriers to implementation and support for local adaptation. Later it was decided to use the entire PRECEDE model of change (Figure 2)\textsuperscript{51-52} and utilize predisposing, enabling, and reinforcing strategies at each new site. Customer contracts were used to set limits on the degree of local adaptation. The Safety Questionnaire preimplementation data were used to focus the injury prevention counseling (Speed Charting) and written parent information (Healthy Kids—Healthy Futures) on the specific safety issues identified by the service population. Physician consensus was also used to adapt the office system to each clinic. The adaptation of the office system through the combined use of parent safety behavior data and physician consensus had four significant outcomes:

1. It improved acceptance of the office system by physicians and nonphysician staff, which facilitated dissemination.
2. Physicians learned more about health supervision and quality improvement by participating in the adaptation of the office system.
3. The system had a greater effect at improving parent safety behaviors.
4. The office system tools were continuously improved, and new tools were developed.

The adaptability of Bright Systems\textsuperscript{®} clearly separated this office system from other "out-of-the-box" office systems such as "Put Prevention into Practice," which has had difficulty gaining acceptance.\textsuperscript{13,14} Adaptation of the office system was followed by implementation and postimplementation Safety Questionnaire data collection and analysis. On-site surveys and chart reviews were also performed at all facilities to determine the actual use of the system. Postimplementation Safety Questionnaire data were presented to each facility with suggestions for continued improvement.

With the improvements of the office system from the "early adopters" and refinement of the implementation process, dissemination entered the "middle adopters" phase of diffusion.\textsuperscript{47} This phase was characterized by rapid dissemination. In order to meet the increased customer demands, additional funding was acquired from the Successful Practices Implementation Program in 1996. The Health Questionnaires (for health risk assessment) were added to the basic office system in 1996 as part of the "Guidelines for Prevention and Health Promotion" implementation strategy.

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**The PRECEDE Change Model**

- **Predisposing Strategies**
  - Staff Education & Marketing - on-site presentation
  - Physicians Participating in Change - consensus, adaptation of tools
  - Local Opinion Leader
  - Audit & Feedback - Safety Questionnaires

- **Enabling Strategies**
  - Facilitation - implementation support
  - Staff Training
  - Physician/Staff Reminders - Speed Charting
  - Patient Education - Healthy Kids—Healthy Futures

- **Reinforcing Strategies**
  - Academic Detailing
  - Audit & Feedback - continuous quality improvement

Figure 2.
"late adopters" phase was characterized by a slower pace of dissemination. Outreach (academic detailing) was used to encourage participation. The last six sites participated in a large parent survey (Pediatric Survey), which provided the data on improved physician counseling. Complete KP Northern California dissemination was achieved in 1997.

**Objectives**

- Design an office system that delivers consistent and comprehensive health supervision;
- Improve the quality and consistency of the anticipatory guidance given at health supervision visits;
- Improve parent safety behaviors;
- Improve physician satisfaction by reducing unnecessary work;
- Demonstrate the effectiveness and cost-effectiveness of the program;
- Disseminate the program to all facilities in Northern California.

**Methodology**

**Scope**

Bright Systems® targets all children from birth to 19 years as well as their families. In Northern California, this program addresses the preventive health needs of nearly half of all members. Although this application focuses on pediatrics, products and processes of the program have been expanded to include perinatal and adult health care delivery (Figure 3). The perinatal program, Healthy Beginnings—Integrated Perinatal Education (Figure 4) was developed as a TPMG and KFH collaboration and is currently being disseminated. In a 1998 collaboration with Children Now, KP identified routine health supervision visits as a potential strategy to improve early childhood development. Bright Systems® is now maintained, managed, and improved by KPNC Regional Health Education staff. The Chiefs of Pediatrics and Adolescent Medicine provide oversight for the pediatric program. The adult program is currently being evaluated.

The development and diffusion of Bright Systems® involved a multidisciplinary team (Table 1) spanning a range of departments and committees throughout TPMG, KFHP/H, and the California State Government, including:

**Kaiser Foundation Health Plan/Hospitals**

- Program Offices (Care Management Institute): Provided consultation on development of the materials and evaluation tools.
- Perinatal Services Study Group: Provided consultation on development of the Integrated Perinatal Education Program.
- Compliance and Risk Management: Verified that all materials met legal standards and regulatory requirements.
- Temperament Program: Provided consultation on parental anticipatory guidance tool.
The Permanente Medical Group

- Facility Pediatrics Departments: Doctors, nurses, behavioral health specialists, medical assistants, receptionists, and health educators provided consultation on development of the materials and their integration into care.
- Chiefs of Pediatrics: Granted approval and endorsement of materials and system.
- Adolescent Specialists: Granted approval and endorsement of materials and system.
- Documentation Management Committee: Provided consultation on medical records standards for Kaiser Permanente.
- Committee of Health Information Managers and Physicians: Provided consultation on medical records standards for NCQA.

California State Government

- Department of Health Services: Provided consulting on parental anticipatory guidance and health risk assessment tools for MediCal.
- Child Health and Disability Prevention (CHDP) Program: Provided consulting on parental anticipatory guidance and health risk assessment tools.

Products

Bright Systems® used TQM methodologies to develop a complete office system, staff training, and continuous improvement in quality of health supervision visits. The basic office system (Figure 5) includes:

- The Physician Practice Survey (health supervision guidelines spreadsheet);
- Speed Charting (age-specific structured encounter forms);
- Healthy Kids-Healthy Futures (age-specific parent information);
- Safety Questionnaires (data collection tool).

Bright Systems® covers a wide variety of health topics and particularly stresses injury prevention and environmental tobacco smoke counseling. The office system was extensively evaluated and demonstrated improvements in physician counseling, parent safety behaviors, and physician satisfaction. Dissemination of the program to KPNC and four other KP Regions used the cutting-edge strategies from Green and Rogers.

Measures

The Bright Systems® comprehensive program includes delivery of preventive services to infants, children, teens, and adults. Alternative care models such as group and cluster visits were also developed. An overview of the products and processes are shown in Figures 1 to 3. These tools are all designed to deliver a consistent prevention message and reinforce self-care. Bright Systems® tools are reviewed, updated, and improved annually as part of the Guidelines for Prevention and Health Promotion revision process and to meet NCQA standards for documentation. The Bright Systems® staff manage all the products and processes and keep the office system consistent with new recommendations from external groups such as the Centers for Disease Control and Prevention (CDC) and the American Academy of Pediatrics (AAP). All the content is evidence-based and has been approved by the relevant Chiefs groups. All materials are designed for limited literacy and cultural sensitivity. Bright Systems® utilized three different survey instruments to evaluate effectiveness.

Pediatric Survey

This instrument collected self-reported parent behaviors and parent recall of anticipatory guidance given at health supervision visits. This survey was applied at six sites in conjunction with the 4- to 6-month visits. Chi-square tests were used for statistical testing. For the 4- to 6-month visit survey, findings were considered statistically significant at p < .05. For the 18- to 24-month visit survey, findings were considered statistically significant at p < .001. When no statistically significant difference between the proportions was found, the abbreviation NS was used.
Safety Questionnaires

These questionnaires collected self-reported parent safety behaviors. This survey was applied at four months, 9 to 11 months, and 15 to 18 months of age, before and after implementation at most sites. Chi-square tests were used, and findings were considered statistically significant at p < .05.

Physician and Practitioner Survey

This survey collected data on provider satisfaction with the office system. This questionnaire was sent to a random sample of 81 pediatricians in KPNC after Regionwide implementation of Bright Systems®. The response rate was 67% (55 of 81 surveys were returned). A t test was used, and findings were considered statistically significant at p < .05.

Results

Improved Quality of Patient Care

Pediatric Survey

Three hundred twenty-one parents of children aged four to six months completed the preimplementation survey, and 202 completed the postimplementation survey. Parent recall of the anticipatory guidance given by the physicians at the four- to six-month health supervision visits are shown in Figure 6. Significant improvements (p < 0.05) in delivery of anticipatory guidance were reported for environmental tobacco smoke (↑28%), correct sleeping position (↑25%), hot water temperature < 120 °F (↑24%), reducing the risk of scald burns (↑23%), and reducing the risk of falls (↑17%).

Seven hundred forty-one parents of children aged 18 to 24 months completed the preimplementation survey, and 575 completed the postimplementation survey. Parent recall of the anticipatory guidance given by the physicians at the 18- to 24-month health supervision visits are shown in Figure 7. Significant improvements (p < 0.001) in the delivery of anticipatory guidance were reported for environmental tobacco smoke (↑26%), syrup of ipecac use (↑11%), car seat use (↑19%), supervision around water (↑23%), window locks on upper-story windows (↑26%), and reducing risk of choking (↑17%).

Safety Questionnaires

Three hundred sixty-seven parents of children aged four months completed the preimplementation survey, and 417 completed the postimplementation survey (Figure 8). Significant improvements (p < 0.05) in parents’ self-reported safety behaviors at the four-month health supervision visit were demonstrated for crib safety (↑55%), avoiding waterbeds (↑6%), preventing falls (↑5%), avoiding crib toys (↑9%), and using safe toys (↑4%).

Three hundred thirty-one parents of children aged 9 to 11 months completed the preimplementation survey, and 440 completed the postimplementation survey (Figure 9). Parents at the 9- to 11-month visit reported improvement (p < 0.05) in turning down the water temperature to less than 120°F (↑10%). This improvement corresponds with the 24% increase in provider counseling for risk reduction noted at the 4- to 6-month visit (Figure 6).
Three hundred seventy parents of children aged 15 to 18 months completed the preimplementation survey, and 513 completed the postimplementation survey (Figure 10). Significant improvements ($p < 0.05$) in parents’ self-reported safety behaviors at the 15- to 18-month visit were demonstrated for preventing poisoning ($\uparrow 5\%$), preventing falls ($\uparrow 8\%$), avoiding choking foods ($\uparrow 9\%$), and knowing the Heimlich maneuver ($\uparrow 13\%$).

**Improved Physician and Practitioner Satisfaction**

**Physician & Practitioner Survey**

Physicians and practitioners reported benefits, including improved documentation, time-saving, and improved counseling (Table 2).

**Table 2. Results of Physician/Practioner Survey**

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would you recommend to other physicians?</td>
<td>88%</td>
</tr>
<tr>
<td>Speed charting</td>
<td>96%</td>
</tr>
<tr>
<td>Healthy Kids—Healthy Futures</td>
<td>97%</td>
</tr>
<tr>
<td>Health questionnaires</td>
<td>97%</td>
</tr>
</tbody>
</table>

**Improved Member Satisfaction**

**Member Satisfaction (part of the Pediatric Survey)**

Seven hundred forty-one parents of children ages 18 to 24 months completed the preimplementation survey, and 575 completed the postimplementation survey. Although not statistically significant, small improvements were demonstrated for questions about satisfaction with the doctor or nurse practitioner (NP) (Table 3).

**Table 3. Parental survey responses showing improved satisfaction**

<table>
<thead>
<tr>
<th>Survey question</th>
<th>Percent of parents answering &quot;Yes&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did the doctor/NP answer all of your questions and</td>
<td>Before</td>
</tr>
<tr>
<td>address your concerns?</td>
<td>94%</td>
</tr>
<tr>
<td>Did the doctor/NP seem concerned about you and your</td>
<td>Before</td>
</tr>
<tr>
<td>child?</td>
<td>85%</td>
</tr>
<tr>
<td>Did the doctor/NP spend enough time with you?</td>
<td>Before</td>
</tr>
<tr>
<td></td>
<td>86%</td>
</tr>
</tbody>
</table>

**Evaluation**

**Relevance to Patient Care**

Bright Systems® increased physician counseling on environmental tobacco smoke by 26% to 28% and injury prevention counseling by 11% to 26%. The improvements in parents’ self-reported safety behaviors of 5% to 13% provide further evidence of the effectiveness of physician counseling at improving safety behaviors. In a recent article, Quinlan et al.,38 reported on the outcomes of a telephone survey of US households used to determine the rate of injury prevention counseling received among US children. The rates of injury prevention counseling reported by parents from the Bright Systems® program were much higher than the national average for having syrup of ippecac in the home (37% higher) and use of a car seat (30% higher). Nine of the 12 injury prevention topics for anticipatory guidance (Figures 6 and 7) exceeded the Healthy People 2000 goal of 50%.7 Improvements in environmental tobacco smoke and injury prevention counseling did not come at the expense of answering all of the parents’ questions or screening for developmental milestones. We believe this achievement constitutes evidence that we succeeded in developing a single office system that delivers comprehensive health supervision while at the same time emphasizes key issues. We estimate that routine physician injury prevention counseling combined with written patient information could save $5.50 in medical costs per health supervision visit for children aged 0 to 4 years. At a cost of $0.09 in materials per health supervision visit, Bright Systems® is a highly cost-effective intervention.

**Innovation and Leadership**

Bright Systems®, the only fully integrated office system entirely designed using TQM methodologies, has demonstrated significant improvements in quality and achieved large-scale dissemination. This program uses office systems, staff training, and continuous quality improvement to form a data-driven health care delivery system for improving health outcomes. Bright Systems® has demonstrated the effectiveness of the systematic application of a multifaceted approach to improving physician performance and satisfaction. As a “grassroots” TQM project driven from bottom to top, Bright Systems® has been a breakthrough in organizational learning for KPNC.
Transferability

Bright Systems® office tools have been successfully disseminated throughout the KPNC, four other KP Regions, and two county health departments. Plans are underway to implement Bright Systems® within the Group Health Cooperative. Dissemination and implementation of the program utilized cutting-edge strategies to improve physician performance and acceptance of change50,56,62 and has greatly contributed to organizational learning. The relative success of the interregional dissemination should be tempered by the inability to implement the entire program (which includes physician consensus building, education/training, and continuous quality improvement) because of lack of resources and staff to facilitate interregional dissemination. Although the office system alone may have important benefits, the process by which the program is implemented and maintained probably provides greater long-term organizational benefit than the office system tools by themselves.

Summary and Conclusions

Bright Systems® has provided the foundation of physician consensus and systematic structure on which the information technology systems of the 21st century will be built. The development and implementation of the Bright Systems® office system has led to improvements in injury prevention and environmental tobacco smoke exposure counseling by physicians at health supervision visits. Improvements in self-reported safety behaviors by parents were also demonstrated. Improvements in injury prevention counseling have been associated with decreased childhood injuries35,56,59 We estimate that Bright Systems® should save $5.50 in direct medical costs per health supervision visit based on improvements in injury prevention counseling.54 At a cost of $0.09 in office materials per health supervision visit, this program is a highly cost-effective intervention. Physician and practitioner satisfaction with the program has also been demonstrated. In conclusion, Bright Systems® as exemplified by its implementation in our environment, sets the national standard for quality health supervision. ❖

References

The Childhood/Adelescente Immunization Program

Introduction
The Childhood and Adolescent Immunization Program was developed for the Kaiser Permanente Colorado (KPDC) Denver/Boulder Local Market in response to our commitment to our prevention program and improving the health status of the children and adolescents. Team Members are listed in Table 1.

Background
In 1996, the combination of new vaccines and new data, which changed the ages at which vaccines are known to be efficacious, made it necessary to revise our immunization schedules. The result of these changes was a decline in our overall immunization rates for two-year-old infants from 1995 through 1996 as measured by the HEDIS (Health-Plan Employer Data and Information Set). Further, effectively communicating and coordinating new schedules and vaccines to our providers and staff proved to be a formidable challenge.

Process
In late 1996, a small group of staff and providers reviewed the records of all delinquent children in our HEDIS subset. In this process, we identified several opportunities for improvement. Among our discoveries, we found that a significant percentage of delinquencies occurred because of missed opportunities and providers following outdated schedules or incorrect “relative” contraindications. Problems with information and communication were identified. These problem areas became the focus of our new initiatives. These discoveries, we found that a significant percentage of delinquents and that a significant percentage of delinquents and our discoveries, we found that a significant percentage of delinquents and that a significant percentage of delinquents.

Objectives
The objective of our project was to improve the immunization rates of our children and to assure that these children were immunized accurately and on schedule. The foundation of our enhanced program was formal adoption of the Centers for Disease Control and Prevention (CDC) Standard for Pediatric Immunization Practices.1 As a result, we initiated an aggressive population-based immunization campaign that included tracking and outreach to every delinquent child aged 14 months, 24 months, and 2.5 years within our KP Region. Our 1998 regional performance goal was to achieve the top quartile for all HEDIS quality measures.

Table 1. Childhood/Adelescente Immunization Program Team Members

| Molly Burchell, MD; Regional Department Chief of Pediatrics |
| Janet Nelson, RN, MS; Business Manager, Primary Care |
| Emily Sharp, RN, MSN; Nursing Supervisor |
| Sharon Castro; Administrative Secretary, Primary Care |
| Primary Care Health Teams |

Contact Person: Molly Burchell, MD, RDC, Pediatrics, Primary Care Administration; 2500 South Havana Street; Aurora, CO 80014; 303/338-3552; 303/338-3565 (fax); Molly.F.Burchell@kp.org

Methodology
Scope
Kaiser Permanente operates 15 medical offices in the Denver/Boulder Local Market, and more than 145 providers within our organization are involved with caring for children. Our Immunization Program within KPDC targets our entire population of children, not just the HEDIS subset. Although most of our work has been with infants and toddlers aged 0 to two years, the focus on achieving higher coverage rates for all children has greatly intensified because of this initiative. Our Departments of Pediatrics, Family Practice, and Prevention jointly developed an implementation plan for this new effort. Molly Burchell, MD, Chief of Pediatrics, led the project and currently champions the Immunization Program. The local health care team champions, who perform all the detailed outreach to members, are critical to improvements. The champions are MAs, LPNs, RNs, or nursing supervisors, in cooperation with physicians, depending on the interests and skills of the team.

Quality Measures
The primary measure of the success of the interventions is improved immunization coverage rates. If our interventions are working, we should see a decrease in variation and improved rates both at individual medical offices and as a program. As a regional quality assurance priority, the Primary Care Quality Council reviews all HEDIS quality measures, including childhood immunization rates. We created a clear channel of communication and accountability by integrating our efforts with our Primary Care Quality Council. Feedback and new ideas are collated to develop improved processes that are adopted, along with our best practices, across our KP Region. Childhood immunization coverage rates are critical HEDIS quality indicators for our KP Regional as well as the national KP Program. This initiative and the striking results coincide with our focus on HEDIS measures as a foundation of our quality program.

Process Implementation
In 1997, we formally adopted the Standards for Pediatric Immunization Practices as recommended by the CDC and used this as a template for our improvement plan. In our review of existing practices, we identified four critical areas as opportunity for improvement. These four areas represented improvement opportunities in six of the CDC standards.1

1. Assess immunization status at every encounter, and follow only true contraindications (CDC Standards 4 and 7). We implemented printing of the immunization record throughout our KP Region from our computerized immunization tracking system for every child at all primary care, urgent care, and trauma visits, including weekend care visits. This strategy further helped us capture missed opportunities, which has been identified nationally as one of the greatest barriers to achieving...
high immunization rates. True contraindications versus relative contraindications were discussed at department meetings and communicated by phone, memonanda, and posters distributed by the Colorado Department of Public Health and Environment in medication rooms throughout our KP Region.

- Standard 4—“Providers utilize all clinical encounters to screen and, when indicated, immunize children.”
- Standard 7—“Providers follow only true contraindications.”

2. Operate a tracking system and audit to assess immunization coverage levels (CDC Standards 12 and 14). In early 1997, we used a computerized tracking system as the formal chart record for child immunizations. We had minimal tracking of delinquent children and no clear goals for capturing under-immunized children. We focused our efforts on tracking 14-month and 20-month-old children. We distributed monthly lists of all delinquent children to provider/nurse teams and created expectations for return of these lists six weeks after distribution. Teams were expected to contact these patients and to persist until the child’s status was brought up to date. If this update was not possible, the reasons were documented. The immunization team reviewed the audits and provided direct feedback to providers and health care teams. This process generated numerous educational opportunities and requests for training on immunization practices. This process also helped our Regional team learn where information was most lacking, thus enabling us to focus our educational efforts in these areas.

- Standard 12—“Providers operate a tracking system.”
- Standard 14—“Providers conduct semianual audits to assess immunization coverage levels and to review immunization records in the patient populations they serve.”

3. Maintain up-to-date, easily retrievable medical protocols in examination rooms and offices at all our Regional locations (CDC Standard 15). The size and configuration of our system posed considerable communication challenges with regard to immunization schedule changes. In the process of trying to implement Standard 15, we developed the Immunization Tool Kit, a user-friendly manual de-

![Figure 1](image-url)

**Figure 1.** KPCO Denver/Boulder Local Market immunization rates for two-year-old children in 1996, 1997, and 1998.
Figure 2. KPCO Denver/Boulder Local Market immunization rates for two-year-old children by KP facility. This figure shows a relative lack of variation in facility immunization rates, whereas in previous years, facility rates varied from 50% to 90%.

Figure 3. KPCO Denver/Boulder Local Market immunization rates for adolescents in 1996, 1997, and 1998.
Figure 4. KP Programwide immunization rates for two-year-old children in 1998.

Figure 5. KP Programwide immunization rates for adolescents in 1998.
The Immunization Tool Kit received rave reviews from staff and providers and continues to be used widely on a daily basis.

Signed to provide current, accurate information and recommendations for immunization of children. The manual also serves as a reference for materials from the Advisory Committee on Immunization Practices (ACIP) and from the CDC and provides other critical information such as Vaccine Information Sheets and Adverse Events Reporting forms (AVERS). Posting the current immunization schedule in each examination room used for children is now a part of our primary care quality assurance measures. Finally, the system provides a process for the replacement of outdated schedules and vaccine information, which allows us to keep current with practices and protocols. The Immunization Tool Kit received rave reviews from staff and providers and continues to be used widely on a daily basis.

- Standard 15 – "Providers maintain up-to-date, easily retrievable medical protocols at all locations where vaccines are administered."
- Standard 18 – "Providers receive ongoing education and training on current immunization recommendations."

Quantitative Analysis

Statistical analysis does not apply to this project.

Results

The result of these initiatives has been not only the reversal of a declining trend but the achievement of our highest rate ever for diphtheria-tetanus-pertussis (DTP), polio, HIB, and hepatitis B vaccinations. In fact, for childhood immunization rates, we surpassed our previous targets and are in the top decile of all KP Regions.

Comment

The Healthy People 2000 national goal is to assure that 90% of our children are fully immunized. Our results support the evidence that when the CDC’s Standards for Immunization Practice are implemented fully, such high coverage rates can be achieved. The objective to improve our immunization rates was achieved by combining tools, skills, and education with accountability to our Primary Care Quality Council.

This immunization program with intensive tracking and outreach, coupled with our Immunization Tool Kit as a vehicle for quality processes and communication, has been shared widely across the country. We have given Immunization Tool Kits and discussed the program with the KP Northwest, Hawaii, Kansas City, and Colorado Springs Regions. The staff emphasizes the user-friendly, hands-on format of the Tool Kit as a manual used daily in the clinical setting. We have also shared materials with many organizations outside KP. This proactive population-based program exemplifies the goals and values throughout KP, and its "health state management" process can be transferred and adopted in many venues as "disease state management" for our population.

The project truly required a multidisciplinary approach because it was critical to have the physician/provider knowledge and expertise as well as diligent, detailed implementation by the nursing staff.

Conclusion

In conclusion, even as vaccine technology continues to expand, we have a system in place to immunize our children efficiently and accurately despite advances and increasing complexity of the technology. Our quality improvement process of measuring, analyzing the data, formulating an improvement plan, implementing, and remeasuring can be generalized to any such problem. Any dedicated team with time, energy, and a clear, specific goal can be successful. The success of the Childhood/Adolescent Immunization Program has been possible only through true ownership and commitment at all levels of the organization and passion for the care of children.

References

3. Burchell MF, Sharp EA. Kaiser Permanente Medical Care Program, Immunization Tool Kit. Denver, CO: Kaiser Permanente Medical Care Program, Colorado Region; September 1999 [available from the authors].
Achieving Positive Outcomes through Collaborative Pharmaceutical Care: The KPNW Medication Management Program

Background

A major challenge in health care today is to provide high-quality, cost-effective pharmaceutical care in a climate of skyrocketing prices (nationwide, spending for medications increased 84% from 1993 through 1998). To help meet this challenge, Kaiser Permanente Northwest (KPNW) in 1996 developed a quality improvement project known as the Clinical Pharmacy Services Restructure, which in 1998 became the Medication Management Program (MMP)—a centrally managed model for population-based clinical pharmacy services that are integrated into the delivery system. Onsite pharmacy staff and local health care teams collaborate to implement clinical pharmacy services that are integrated into the delivery system. Onsite pharmacy staff and local health care teams collaborate to implement clinical pharmacy services that are integrated into the delivery system.

Table 1. Team members

<table>
<thead>
<tr>
<th>Pharmacy Department:</th>
<th>Background</th>
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</thead>
<tbody>
<tr>
<td>Rob Ashley, RPh, Pharmacist, MMP &amp; Fisher's Landing MOB; Gene Boschee, RPh, Pharmacist, MMP &amp; Beaverton MOB; Anne Bracy, Analyst; Donna Caldwell, MS, RPh, Pharmacist, Drug Information (DI); Jeanette Chardon, Education &amp; Publications Specialist; Karen Carter, RPh, Pharmacy Improvement Program Team; Renee Christiansen, Pharmacy Technician, MMP; Sharon Cunningham, RPh, Pharmacist, Mt. Scott MOB; Marge Diment, RPh, Pharmacist-in-Charge, Vancouver Pharmacy; Diane Ditmer, PharmD, Pharmacist-in-Charge, DI; Jim Dunscomb, RPh, Supervisor, Sunnyside Pharmacy; Mike Eldredge, MS, RPh, Pharmacist, Optimal Renal; Suzanne Gauen, RPh, Pharmacist, Drug Information; Larry Gayton, RPh, Pharmacist, MMP &amp; Vancouver MOB; Cheryl Geisler, RPh, Pharmacist, MMP &amp; Cascade Park MOB; Marie Grant, RPh, Pharmacist, MMP &amp; Longview Kelso MOB; Michelle Hall, RPh, Pharmacist, MMP &amp; Rockwood MOB; Ken Hansel, RPh, MMP &amp; Salmon Creek MOB; Anita Hampton, RPh, Supervisor, North Lancaster Pharmacy; Mike Harding, RPh, Supervisor, Longview Kelso Pharmacy; Dave Heffner, RPh, Supervisory, Skyline Pharmacy; Kent Higginbotham, RPh, Supervisor, Division Pharmacy; Val Johnson, Pharmacy Benefits &amp; KP Online; Tricia Kahut, Communications &amp; Database Specialist; Larry Klika, RPh, Pharmacist, MMP &amp; Rockwood MOB; Dean Klopfenstein, RPh, CDE, Pharmacist-in-Charge, MMP; Mike Kinard, MS, RPh, Regional Pharmacy Manager; Evie Kralman, Pharmacy Secretary; Stacy Landes, Pharmacy Benefits, Pharmacy Alert Services &amp; KP Online; Jackie Larson, RPh, Pharmacy Improvement Program Team; Sally Logan, RPh, Pharmacist, MMP, &amp; EpicCare (CIS) Liaison; Steve Logan, RPh, East Central Service Area Manager; Carolyn Luetgendorf, RPh, Pharmacy Improvement Program Team; Norm Muienberg, RPh, Pharmacist, Drug Information; Lisa Nakashimada, RPh, Pharmacist, MMP &amp; Sunset MOB; Gary Nelson, RPh, Pharmacist, Division MOB; Terry Parsons, RPh, Pharmacist, Skyline MOB; Pat Perry, RPh, Pharmacist, MMP, and East Interstate MOB; Fred Powers, RPh, Acting Supervisor, Sunset Pharmacy; Judy Ramage, Pharmacy Technician, MMP; Chris Ramsey, PharmD, Pharmacist, Longview Kelso MOB; Tanya Ramsey, PharmD, Pharmacist, MMP, &amp; Longview Kelso MOB; Mike Regner, MS, RPh, Pharmacist, Drug Information; Kathryn Rinq, RPh, Pharmacist, MMP, Sunset MOB &amp; KP Online; Kati Rowe, RPh, Pharmacist, MMP &amp; Sunnyside MOB; Cathy Shur, PharmD, Supervisor, Salmon Creek Pharmacy; Cindy Sieck, PharmD, Pharmacist, MMP &amp; Salmon Creek MOB; Sandra Teeny, RPh, Supervisor, Automated Refill Center; Theresa Terry, PharmD, Pharmacist, Rockwood MOB; LouAnn Thorsness, RPh, Pharmacist, MMP, &amp; Pharmacy Alert Services; Don Tsukamaki, RPh, Pharmacist, MMP &amp; Beaverton MOB; Bernie Walker, PharmD, Pharmacist, MMP, Rockwood MOB, &amp; EpicCare (CIS) Liaison; Bob White, RPh, Pharmacist, MMP &amp; Vancouver MOB; Ginny Wilborn, RPh, Westside and Salem Service Area Manager; Lisa Wilson, RPh, Supervisor, Rockwood Pharmacy; Tami Wilson, RPh, Supervisor, Cascade Park Pharmacy; Donna Wolfer, RPh, Pharmacist, MMP &amp; Mt Scott MOB; Gary Woodson, RPh, Pharmacist, DI (retired); Tom Wright, RPh, Supervisor, MMP; Colette Yamaguchi, RPh, Clark &amp; Longview Kelso Service Area Manager</td>
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Contact Person: Nancy Louie Lee, MS, RPh, Clinical Pharmacy Services Manager

Northwest Permanente Medical Group: John Chen, MD, Service Area Director, Central PCSA, Member, Diabetes Steering Committee; Richard Dykstra, MD, Co-Chair, Senior & Disabled Care Committee; Harry Glauber, MD, Endocrinology, Member, Diabetes Steering Committee; Michael Herson, MD, Endocrinology, Member, Diabetes Steering Committee; Robin Lake, MD, Cardiology, Member, Cardiovascular Steering Committee; Jim Norris, MD, Chairman, Regional Formulary & Therapeutics Committee; Paul Wallace, MD, Chairman, Clinical Strategies Integration Group; Rick Wise, MD, Co-Chair, Cardiovascular Steering Committee; Maureen Wright, MD, Former Co-chair, Cardiovascular Steering Committee

KNPW Health Plan Operations: Sue Caulfield, RN, KSMC Director of Patient/Family Education, Member, Diabetes Steering Committee; John Crawford, Regional Health Education; Donna Forberg, RN, Clinic Coordinator, Care Manager Strategy, Manager, Westside PCSA; Bill Hurst, Regional Call Center; Carla Johnson, MS, RN, Westside PCSA Manager, Co-chair, Cardiovascular Steering Committee; Connie Keyes, RN, MSN, Regional Nursing Consultant; Peggy McClure, MS, MBA, Manager, Health Systems & Call Center, Co-chair, Diabetes Steering Committee; Ray Robertson, Director, Shared Services; Kate Scott, Regional Call Center; Kimberly Smith, Formerly: Analyst, Consulting & Analytical Services; Kati Traunweiser, Clinical Implementation Specialist; Jan Weerts, RN, Implementation Specialist, Health Systems; Shirley Welch, PhD, Director of Chemistry, Regional Lab

Center for Health Research: Jonathan Brown, PhD, Co-chair, Diabetes Steering Committee; Lucy Nonnenkamp, MS, Co-chair, Senior & Disabled Care Committee
practice guidelines and best practices to ensure quality of care while minimizing the financial and social costs of drug therapy. The MMP was nominated for the James A. Vohs Award for 2000 as: Achieving Positive Outcomes through Collaborative Pharmaceutical Care—the Kaiser Permanente Northwest (KPNW) Medication Management Program. Table 1 recognizes team members and contact person for the MMP.

Implementing the MMP required not only pharmacy department and delivery system modifications but a considerable culture change—change that KPNW planned for by designing a staged implementation strategy, focusing first on the single quality target and disease state of lipid management. In its first seven months of operation, MMP gains put KPNW in second position of all reporting KP Regions for lipid measurement (77%) and, more important, in the lead position of reporting KP Regions for lipid management (65.6%, 1998 HEDIS) (Figures 1 and 2). MMP also significantly improved drug utilization and reduced drug costs while improving quality.

**Objectives**

The KPNW MMP aspired to meet the following objectives:

- Provide evidence-based care that results in consistent achievement of patient satisfaction and health outcomes;
- Improve consistency and reduce variability in the delivery of clinical pharmacy services;
- Establish effective integration of clinical pharmacy services across the continuum of care;
- Align clinical pharmacy priorities with KP national Programwide health care priorities, KP Interregional President’s Quality Improvement Best Practices, KP Interregional Pharmacy Committee, KPNW Region, and KPNW Pharmacy Department priorities and initiatives;
- Enable and support staff to work with more patients in a cost-effective manner within an integrated system;
- Improve the quality and affordability of health care; and
- Consistently document improvement in health care outcomes.

KPNW hypothesized that standardized, centrally managed, population-based clinical pharmacy services, integrated into local health care teams and the delivery system, would improve quality of care, health outcomes, and reduce cost of drug therapies compared with drug therapies provided under the previous model.

**The Process**

In the early 1990s, HEDIS emerged as the leading comparative quality indicator. The KP Interregional Pharmacy Committee established national quality targets and drug cost initiatives, to which KPNW
committed. When the pressure to document the value of clinical pharmacy services increased, the old model (where individual pharmacists set patient care priorities based on daily requests for service) was not sufficient. KPNW’s historical model of providing clinical pharmacy services was no longer viable. A new model of pharmaceutical care delivery was needed—an integrated, population-based model that would support KPNW’s health outcome goals, HEDIS and other quality goals, achieve drug cost initiatives, and provide data to demonstrate the effectiveness and value of clinical pharmacy services. The process to develop integrated, cost-effective clinical pharmacy services was driven by a shared vision to support physicians and health care teams to improve health care outcomes.

In 1996, the KPNW Regional Pharmacy Department initiated a quality improvement project to: 1) evaluate clinical pharmacy service delivery models inside and outside of KP, 2) evaluate the strengths and weaknesses of the current ‘reactive’ process of providing clinical pharmacy services, and 3) identify quality attributes and service features critical to a new model for the delivery of pharmaceutical care. Although no single best model emerged, the Pharmacy Department, in collaboration with Northwest Permanente physicians, Health Plan, and KPNW clinical committees, used the identified best practices to design the population-based MMP model. The Northwest Permanente physicians involved in the process were instrumental in soliciting support from fellow physicians, without whom MMP would not have been a success. Cardiovascular Steering Committee leaders helped to hone the focus for the initial stage of the implementation plan to an emphasis on high-risk, secondary-prevention patients. Other KPNW clinical committees continue to help focus priorities and shape the MMP program in vital, ongoing ways.

Eight key best practices emerged for the new MMP model:

Table 2. 1998-1999 Pharmacy MMP Cumulative Priorities

<table>
<thead>
<tr>
<th>Initiated</th>
<th>Priorities</th>
<th>Responsibility shared by</th>
</tr>
</thead>
<tbody>
<tr>
<td>2Q98</td>
<td>Quality: Lipid Measurement and Management</td>
<td>Regional Formulary &amp; Therapeutics Committee (RFTC), Cardiovascular Steering Committee (CVSC), Clinical Strategies Integration Group (CSIG), HEDIS</td>
</tr>
<tr>
<td>4Q98</td>
<td>Gastrointestinal Drug Therapy</td>
<td>RFTC, Interregional Pharmacy (IRP)</td>
</tr>
<tr>
<td>4Q98</td>
<td>Lipid Drug Therapy</td>
<td>RFTC, IRP, CVSC</td>
</tr>
<tr>
<td>4Q98</td>
<td>Anticoagulation Conversion</td>
<td>RFTC, IRP</td>
</tr>
<tr>
<td>4Q98</td>
<td>Pilot Glycemic Control</td>
<td>RFTC, Diabetes Mellitus Steering Committee (DMSC)</td>
</tr>
<tr>
<td>4Q98</td>
<td>Pilot Eldercare High-Risk Drug Therapy</td>
<td>Senior &amp; Disabled Care Committee, CSIG</td>
</tr>
<tr>
<td>1Q99</td>
<td>Aspirin Documentation</td>
<td>RFTC, CVSC</td>
</tr>
<tr>
<td>1Q99</td>
<td>Allergy Drug Therapy</td>
<td>RFTC, IRP</td>
</tr>
<tr>
<td>1Q99</td>
<td>Plan Multidisciplinary Model</td>
<td>Westside Leadership</td>
</tr>
<tr>
<td>1Q99</td>
<td>ACE-Inhibitor Drug Therapy</td>
<td>RFTC, IRP, CVSC</td>
</tr>
<tr>
<td>3Q99</td>
<td>Aspirin Initiation</td>
<td>RFTC, CVSC</td>
</tr>
<tr>
<td>3Q99</td>
<td>Quality: Glycemic Control</td>
<td>RFTC, DMSC</td>
</tr>
<tr>
<td>3Q99</td>
<td>Implementation of Multidisciplinary Model</td>
<td>Westside Leadership</td>
</tr>
<tr>
<td>3Q99</td>
<td>Plan for expansion of Multidisciplinary Model</td>
<td>Clark County Leadership</td>
</tr>
<tr>
<td>3Q99</td>
<td>Plan Asthma &amp; Depression Drug Therapy</td>
<td>RFTC, Asthma Steering Committee, Depression Steering Committee</td>
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</table>
MMP work contributes directly to the results of two KPNW-designated highest-priority clinical quality targets: lipid management and diabetic glucose control.

- Integrate clinical pharmacy services into health system priorities;
- Focus clinical pharmacy resources on highest clinical and cost priorities;
- Use a comprehensive, integrated approach to population-based drug therapy management with consistent care, intervention, documentation, and follow-up across disease states;
- Implement collaborative drug therapy management based on evidence-based principles and clinical practice guidelines;
- Maximize the use of pharmacy support personnel;
- Create a centralized office to coordinate daily workload and serve as an educational clearinghouse and training site;
- Use Clinical Information Systems to standardize patient information, health record documentation, and team communication;
- Create worksites within medical offices that are appropriate to level of service and site of care, facilitate health care team integration, and support efficient service.

By yearend 1997, the new model was endorsed by the KPNW Operations Group and supported by pharmacists, medical staff, nurses, pharmacy managers, and other KPNW administrators. MMP began providing care in Spring 1998.

### Methodology

To initiate MMP, Pharmacy Department leadership selected pharmacists and support personnel through an educational interview process. Selected staff were trained and then were required to demonstrate therapeutic and process competency before providing care to patients. Most staff worked part-time for the MMP and part-time on care related to drug dispensing in the medical office pharmacies. This practice maintained cohesiveness and communication with other staff in the Pharmacy Department. Biweekly MMP staff meetings provided a forum to define and discuss priorities, introduce communication tools, receive further clinical practice training, report progress on clinical and cost targets, share new ideas for innovation and improvement, and recognize and celebrate achievements.

Under the old model, a majority of clinical pharmacy resources was allocated to low-risk primary patients. To improve the health outcomes of our patients. To improve the health outcomes of our patients...
population, MMP needed to increase the percentage of high-risk CV members managed. In early 1998, the MMP initiated population-based care with outreach to the highest-risk CV population. High-risk patients were either referred to the MMP by physicians or harvested from one of two sources—a newly defined hospital discharge list or the newly developed disease state "high-risk" list. Standardized processes were developed by MMP personnel to improve patient care efficiency, documentation, and communications. Each patient’s history is assessed, and an individualized care plan is developed according to established clinical practice guidelines. Pharmacists initiate therapy, monitor patients, and help patients to achieve their goal. Once patients reach a goal, they are categorized for maintenance monitoring. In an integrated multidisciplinary model recently added to MMP pharmacy care, nurse care managers work collaboratively to assist patients with paneling, conduct smoking assessments, and suggest educational opportunities.

The MMP launched each priority quality and cost initiative through electronic communications from clinician leadership and in-service presentations with clinicians and location pharmacy staff. Presentations included over 200 clinician and health care team meetings (which reached approximately 500 clinicians, 200 nurses, 90 managers, and 250 other health care team personnel), and 90 pharmacy in-service sessions, which reached 400 pharmacy staff. MMP pharmacists also made more than 1000 one-to-one clinician-pharmacist contacts to provide academic detailing on the top three drug cost initiatives.

Pharmacists, support personnel, and nurse care managers working with the MMP focus on the health of the entire population as they serve the individual. Through the MMP, the KPNW Regional Pharmacy Department broke new ground in partnering with physicians, local health care teams, and patients to find better ways to manage drug therapies and thus improve health outcomes. High-quality people and a positive team environment of continuous quality improvement are credited for improved patient care outcomes and improved workload and cost efficiencies.

**Results**

KPNW evaluation of the MMP included assessment of quality and cost for MMP patients compared with non-MMP patients. Assessment included relevant HEDIS measures, biomathematical modeling of health outcomes, surveys, comparison of clinical improvements, and utilization. All of these evaluations demonstrated a consistently higher quality of care and significant cost savings from the MMP.

**Quality/Member Impact**

To rule out the possibility that the MMP managed a healthier population, evaluation of secondary lipid management included a retrospective, cross-sectional evaluation of MMP and non-MMP patients. The initial population was defined as any current member alive as of 6/30/1999 who was diagnosed at secondary cardiovascular risk as defined by the Cardiovascular Steering Committee, received lipid drug therapy between 6/1/1998 and 8/31/1998, had baseline LDL measured at least 60 days before the date medication was dispensed, and a last LDL measurement taken 10 to 12 months after baseline measurement. Data were systematically extracted from established KPNW systems that monitor disease populations. Baseline LDL level, last LDL, and change in LDL were defined for each patient. Evaluation results showed no statistically significant difference in MMP compared with size of non-MMP patient evaluation groups, age, sex, or baseline LDL (Figure 3).

Figure 4. Management of LDL (LDL ≤ 130 mg/dL) was a KPNW test measure in 1998, while in 1999, it is a clinical priority. The three lines illustrate corresponding quarterly KPNW improvement in LDL measurement and LDL management (defined as LDL ≤ 130 mg/dL and LDL ≤ 100 mg/dL). For the year 1998, % measured and % management with LDL ≤ 130 mg/dL included patients of all ages. To more closely match the HEDIS measure, in 1999, % management with LDL ≤ 130 mg/dL only includes patients aged 75 years and under.
LDL measurement improved from 61.4% in the first quarter of 1998 to 69.2% in the fourth quarter of 1998. In 1999, the population at CV risk was defined to more closely align with the HEDIS measures. This reclassification resulted in reducing the size of the population to include patients aged 75 years and under. With this new population, LDL measurement was 73.5% in the first quarter of 1999 and increased to 84.2% by the fourth quarter of 1999. LDL management to ≤ 130 mg/dL improved in 1999: from 67.4% in the first quarter of 1999 to 72.1% by the fourth quarter of 1999. In addition, LDL management to ≤ 100 mg/dL improved: from 39.3% in the first quarter of 1999 to 43.7% by the fourth quarter of 1999 (Figure 4).

Regional compliance with clinical practice guidelines improved with a shift of MMP resources focused on high-risk secondary-prevention patients. In 1997 and early 1998, clinical pharmacy resources with work prioritized in response to the daily demand from physicians seeing patients coming into the medical office had focused primarily on low-risk primary-prevention patients. A change to population-based care with the MMP improved the priorities of clinical pharmacy services from 31% high-risk secondary-prevention patients and 69% low-risk primary-prevention patients to 87% secondary-prevention patients and 13% primary-prevention. Implementation of staff-identified improved efficiencies allowed the MMP to systematically triple the number of high-risk patients managed from fewer than 2000 in early 1998 to nearly 6000 by year-end 1999 (Figure 5).

A comparison of Northwest Region high-risk patients managed by MMP compared with non-MMP (those not managed by MMP) evaluated LDL measurement, LDL management, biomathematical estimates of ten-year myocardial infarction rates, and increase in life-years. Of secondary-prevention patients managed by the MMP, 99.1% had LDL measured as of 6/30/99, when the evaluation was conducted. Of secondary-prevention patients managed by the MMP, 91% achieved LDL of < 130 mg/dL compared with 67.6% in those not managed by the MMP. In the same patients, 68% managed by MMP achieved LDL of < 100 mg/dL compared with 45.4% in those not managed by the MMP (Figure 6). Biomathematical modeling of MMP lipid management care compared with the traditional model (non-MMP) estimates a decrease in myocardial infarction (MI) (92 ± 50) and an increase in life-years (90 ± 50) in ten years as a direct result of MMP management (Figure 7). The model also shows that improvement in these health care outcomes becomes evident as early as two years after management by MMP.
responsibilities. The MMP focused on patients prescribed newer oral therapies who had failed to respond. A preliminary evaluation, when number of patients included was still quite small (MMP-managed = 4% and non-MMP-managed = 96% of general diabetes mellitus patients), suggested greater improvement in MMP-managed vs non-MMP-managed patients. Patients who had previously failed to respond to newer agents for glycemic control who were later managed by the MMP showed 18% greater improvement than the non-MMP-managed general diabetes mellitus population. Eighty-four percent of MMP patients achieved goal of HBA1c ≤ 8 mg/dL vs 63% of non-MMP-managed patients (Figure 8). Mean improvement in HBA1c was also higher for MMP patients than for non-MMP patients (decrease of 0.84 mg/dL vs decrease of 0.63 mg/dL).

Results of mailed patient satisfaction surveys returned from 309 (40%) of 774 of members who achieved LDL goal in the first nine months of 1999 indicated that 96% were extremely satisfied or very satisfied with the care provided by MMP. In addition, as current KPNW members, 97% indicated they would definitely or probably recommend the MMP program to family members or friends (Figure 9). Responding members consistently expressed appreciation for KPNW’s caring attitude and proactive outreach.

Results of satisfaction surveys returned from 161 of 202 (79.7%) clinicians surveyed indicated that: 96% agree or strongly agree that MMP pharmacists are an important part of the local health care team; 97% agree or strongly agree that MMP pharmacists play an important role in achieving clinical targets; 100% believe the MMP provides excellent or good quality of care; and 95.7% agree or strongly agree that patients are satisfied with the care provided by MMP (Figure 10). Clinicians appreciated the time savings, consistent processes, and high quality of care that the MMP provides.

Cost Impact

KPNW utilization of omeprazole, a treatment for acid-peptic disorders, is the highest for all KP Regions Programwide. Since the beginning of 1999, the MMP has improved appropriateness and reduced the omeprazole utilization growth rate by 14% in omeprazole patients managed by the MMP. Drug cost

![Figure 8. Glycemic control in MMP failing-to-respond DM population vs KPNW DM total population (non-MMP). The MMP initiated care to improve glycemic control in patients on priority drug therapies in 1998. A six-month sample (6/1/98 – 12/31/98) of all MMP diabetes patients and of non-MMP patients who were on the diabetes registry but not managed by MMP were identified (MMP = 4%, non-MMP = 96%). Baseline \( A_{1c} \) \( (A_{2c} \text{ obtained up to 60 days prior to 6/1/98 was compared to last } A_{1c} \text{ ( } A_{2c} \text{ obtained up to 14 months after baseline). Where the last } A_{1c} \text{ was not available, last } A_{1c} \text{ was considered to have not changed from baseline } A_{1c}. \text{ More MMP patients achieved goal of } A_{1c} \leq 8 \text{ mg/dL than non-MMP patients (59.3% for MMP and 41.3% for non-MMP patients). The mean improvement in } A_{1c} \text{ was higher for MMP patients than non-MMP (decreases 0.84 vs 0.63 in non-MMP).}]

Figure 8. Glycemic control in MMP failing-to-respond DM population vs KPNW DM total population (non-MMP). The MMP initiated care to improve glycemic control in patients on priority drug therapies in 1998. A six-month sample (6/1/98 – 12/31/98) of all MMP diabetes patients and of non-MMP patients who were on the diabetes registry but not managed by MMP were identified (MMP = 4%, non-MMP = 96%). Baseline \( A_{1c} \) \( (A_{2c} \text{ obtained up to 60 days prior to 6/1/98 was compared to last } A_{1c} \text{ ( } A_{2c} \text{ obtained up to 14 months after baseline). Where the last } A_{1c} \text{ was not available, last } A_{1c} \text{ was considered to have not changed from baseline } A_{1c}. \text{ More MMP patients achieved goal of } A_{1c} \leq 8 \text{ mg/dL than non-MMP patients (59.3% for MMP and 41.3% for non-MMP patients). The mean improvement in } A_{1c} \text{ was higher for MMP patients than non-MMP (decreases 0.84 vs 0.63 in non-MMP).}]

Biomathematic Modeling by: Leonard Schlessinger, Manager of Biomathematical Analysis, CMI
Clinical contributions initiatives conducted in collaboration with the Pharmacy Department involving gastrointestinal drug therapies, anticoagulation, lipid drug therapy, ACE-inhibitors and antihistamines resulted in over $1,500,000 in cost savings/avoidance in 1999. The cost of drug therapies to lower cardiovascular morbidity and mortality has increased as a result of the MMP focus to improve clinical quality. This cost investment is balanced with biomathematical modeling that predicts improved health outcomes for MMP patients compared with non-MMP patients. These improvements would become evident within two years and include estimates of a decrease in MI of 92 (± 50) and an increase in life-years of 90 (± 50) in ten years as a direct result of MMP management of lipids to improve clinical quality (Figure 7).

How satisfied are you with MMP?

<table>
<thead>
<tr>
<th>Rating</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>5 = Extremely satisfied</td>
<td>49.2%</td>
</tr>
<tr>
<td>4 = Very satisfied</td>
<td>43.4%</td>
</tr>
<tr>
<td>3 = Somewhat satisfied</td>
<td>6.5%</td>
</tr>
<tr>
<td>2 = Not very satisfied</td>
<td>30.0%</td>
</tr>
<tr>
<td>1 = Not at all satisfied</td>
<td>0.6%</td>
</tr>
<tr>
<td>0 = No response</td>
<td>0.3%</td>
</tr>
</tbody>
</table>

Would you recommend MMP to Family/Friends?

<table>
<thead>
<tr>
<th>Rating</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>4 = Yes, definitely</td>
<td>77.3%</td>
</tr>
<tr>
<td>3 = Yes, probably</td>
<td>19.7%</td>
</tr>
<tr>
<td>2 = Not sure</td>
<td>2.6%</td>
</tr>
<tr>
<td>1 = No</td>
<td>0.3%</td>
</tr>
</tbody>
</table>

![Member Satisfaction Survey results](image)

Figure 9. Member Satisfaction Survey results: Total surveys mailed - 774; total responses - 309; response rate - 40%.

MMP Pharmacists are an important part of our local health care team

<table>
<thead>
<tr>
<th>Rating</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>82.0%</td>
</tr>
<tr>
<td>Agree</td>
<td>14.3%</td>
</tr>
<tr>
<td>Neutral</td>
<td>1.2%</td>
</tr>
<tr>
<td>Disagree</td>
<td>0.6%</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>1.9%</td>
</tr>
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</table>

MMP Pharmacists play an important role in achieving our clinical targets

<table>
<thead>
<tr>
<th>Rating</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
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<td>78.3%</td>
</tr>
<tr>
<td>Agree</td>
<td>18.6%</td>
</tr>
<tr>
<td>Neutral</td>
<td>1.2%</td>
</tr>
<tr>
<td>Disagree</td>
<td>0.0%</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>1.9%</td>
</tr>
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</table>

How would you rate the quality of care your patients receive from MMP Pharmacists?

<table>
<thead>
<tr>
<th>Rating</th>
<th>Percentage</th>
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<tr>
<td>Excellent</td>
<td>84.5%</td>
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<tr>
<td>Good</td>
<td>15.5%</td>
</tr>
<tr>
<td>Average</td>
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</tr>
<tr>
<td>Fair</td>
<td>0.0%</td>
</tr>
<tr>
<td>Poor</td>
<td>0.0%</td>
</tr>
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</table>

My patients are satisfied with the care MMP Pharmacists provide

<table>
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<th>Rating</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
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<td>64.0%</td>
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<tr>
<td>Agree</td>
<td>31.7%</td>
</tr>
<tr>
<td>Neutral</td>
<td>4.3%</td>
</tr>
<tr>
<td>Disagree</td>
<td>0.0%</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

![Clinician Satisfaction Survey results](image)

Figure 10. Clinician Satisfaction Survey results: Total surveys mailed - 202; total responses - 161; response rate - 79.7%.
In today’s health care environment, it is often a challenge to invest scarce resources in improvements which do not have short-term returns. The MMP balanced priorities between improved utilization, which had short-term drug cost reductions, and improvement in clinical quality, which will provide longer-term returns with improved health outcomes.

**Direct Patient Care Impact**

The development of the MMP was a major change in philosophy of practice for pharmacists and pharmacy technicians and brought a major relationship change for pharmacy managers, physicians, and staff. MMP has broken new ground by partnering within the organization to better manage drug therapies to achieve the outcomes intended while making improvements to keep health care affordable for entire patient populations. The new focus required multiple changes in the old care delivery model and changes in the type of health system support needed. This support for change required close collaboration with physicians and leadership throughout the health system.

The MMP model resulted in staff and process changes to apportion resources to the highest-risk population by:

- Bringing pharmacists together as a team, pooling resources to focus on populations and facilitate cross coverage;
- Developing tools to help identify priority populations;
- Establishing designated time during the workweek for MMP staff to provide care;

### Table 3. Pharmacy personnel on KPNW and Programwide clinical leadership committees

<table>
<thead>
<tr>
<th>KPNW Committee</th>
<th>Pharmacy Member</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Formulary &amp; Therapeutics Committee</td>
<td>Donna Caldwell, MS, RPh; Diane Ditmer, PharmD; Nancy Louie Lee, MS, RPh</td>
</tr>
<tr>
<td>Clinical Strategies Integration Group</td>
<td>Suzanne Gauen, RPh; Nancy Louie Lee, MS, RPh; Mike Regner, MS, RPh</td>
</tr>
<tr>
<td>Asthma/COPD Steering Committee</td>
<td>Suzanne Gauen, RPh, Co-Chair</td>
</tr>
<tr>
<td>Cardiovascular Steering Committee</td>
<td>Diane Ditmer, PharmD; Nancy Louie Lee, MS, RPh</td>
</tr>
<tr>
<td>Depression Steering Committee</td>
<td>Norm Muilenburg, RPh</td>
</tr>
<tr>
<td>Diabetes Mellitus Steering Committee</td>
<td>Donna Caldwell, MS, RPh; Dean Klopfenstein, RPh</td>
</tr>
<tr>
<td>Senior and Disabled Care Steering Committee</td>
<td>Nancy Louie Lee, MS, RPh</td>
</tr>
<tr>
<td>Prevention Steering Committee</td>
<td>Donna Caldwell, MS, RPh, Liaison</td>
</tr>
<tr>
<td>Immunization Practices Work Group</td>
<td>Mike Regner, MS, RPh, Co-Chair</td>
</tr>
<tr>
<td>KPNW Pain Board</td>
<td>LouAnn Thorsness, RPh</td>
</tr>
<tr>
<td>Clark, Central &amp; Longview Kelso PCSA Quality Committees</td>
<td>Bob White, RPh; Pat Perry, RPh; Tanya Ramsey, PharmD</td>
</tr>
<tr>
<td>Interregional Pharmacy Managers</td>
<td>Mike Kinard, MS, RPh</td>
</tr>
<tr>
<td>Interregional Clinical Pharmacy Subcommittee</td>
<td>Nancy Louie Lee, MS, RPh</td>
</tr>
<tr>
<td>CMI Diabetes Guideline</td>
<td>Dean Klopfenstein, RPh</td>
</tr>
<tr>
<td>CMI Coronary Artery Disease Guideline</td>
<td>Gary Woodson, RPh</td>
</tr>
<tr>
<td>CMI Depression Guideline</td>
<td>Norm Muilenburg, RPh</td>
</tr>
<tr>
<td>CMI Asthma Guideline and Asthma Workgroup</td>
<td>Suzanne Gauen, RPh</td>
</tr>
<tr>
<td>CMI Eldercare Model of Care Committee</td>
<td>Nancy Louie Lee, RPh</td>
</tr>
</tbody>
</table>
The key to successful implementation of centrally managed clinical pharmacy services is integration across the continuum of care within a health care system...

The key to successful implementation of centrally managed clinical pharmacy services is integration across the continuum of care within a health care system; this includes integration with local health care teams and participation in decisions about the clinical care of the populations. Local integration builds and maintains relationships between pharmacy staff and medical office health care team members. KPNW established MMP worksites in each medical office, where MMP staff provide care as part of the local health care team. MMP staff may work in the central MMP office and rotate shifts for telephone follow-up and member calls. Pharmacy Department and MMP staff take an active role in leadership roles on committees and at department meetings (Table 3) and provide updates and education, participate in development of clinical practice guidelines, and lead health care team discussions on defining clinical targets. This relationship facilitates integration of MMP work priorities with KP national, Regional, and departmental priorities (Table 2) and is essential to alignment of MMP priorities within the KPNW Region and the national KP Program.

In the new model, MMP personnel take an active role in communicating with internal and external customers. Communication tools to define MMP services and changes are centrally developed. MMP pharmacists use the tools at local health care team meetings to facilitate discussion about the clinical targets or drug initiatives. In addition, the MMP uses satisfaction surveys to obtain ongoing feedback regarding MMP services, quality of care, and opportunities for improvement.

Another innovation in the MMP model is designing processes to address varying needs of individual patients as their health care needs evolve. MMP population-based processes and resource allocation are designed to individualize care to meet the continuum of needs of the individual. Resources are increased or decreased depending on patient need. This flexibility supports most efficient use of resources. The individualized care for a patient not at goal is different from the level of care for a patient who has achieved goal and is in maintenance. The care for a patient who may be experiencing an adverse drug event is different than the level of care for a patient who tolerates the same medication without adverse effects. In addition, the most appropriate type of patient interaction is also considered, i.e., reminder letter, personal phone call, group appointment, or other appropriate interaction. Appropriate level of care is routinely considered in deciding on the best-qualified and least-costly process or personnel to employ. The MMP makes ongoing improvements; this work environment requires that all personnel participate and function comfortably in an environment of continuous change and improvement.

Summary and Conclusions

As the MMP enters its 22nd month of existence, quality and cost savings continue to improve. LDL levels less than or equal to 130 mg/dL increased to...
72% at yearend 1999, up from the 66%, which had already placed KPNW in the lead position of HEDIS-reporting KP Regions in 1998. Glycemic control among MMP-managed therapy failure patients is higher than general diabetes mellitus patients not managed by the MMP: 59.3% vs 41.3%. Patient satisfaction survey results show that 96% of MMP patients are extremely or very satisfied with their care. Clinician satisfaction survey results reveal that 96% believe the MMP supports the health care team and helps them to achieve clinical targets, and 100% say that the MMP provides excellent or good quality of care. The MMP has helped KPNW achieve over $1,500,000 in drug cost savings. All of this has been accomplished in less than two years—including tripling the number of patients managed (Figure 5)—without hiring additional staff.

The MMP process is shaping state and national pharmaceutical care delivery models. KPNW has been asked to discuss the MMP at:

- CMI Network Interregional Teleconference;
- American Society of Health System Pharmacists Meeting;
- Interregional Clinical Pharmacy Meeting;
- CMI Interregional Diabetes Models of Care Teleconference;
- Oregon Society of Health System Pharmacists Meeting;
- CMI Interregional Eldercare Teleconference.

Now that the KPNW culture has changed, the MMP will move forward by continuing to extend its scope of care beyond lipid management, glycemic control in selected diabetes mellitus therapies, and aspirin therapy. Focus will expand to improving outcomes and reducing costs of other drug therapies. The infrastructure is in place to continuously improve processes and further expand collaboration with clinicians, staff, and administrators to meet changing clinical and cost priorities. KPNW’s experience shows that the MMP is a transferable model that can assist other integrated health systems in providing high-quality, cost-effective clinical pharmacy services to a large population.

References
2. Lee NL. Implementing Challenges from the ASHP Conference “Pharmacy in Managed Care: Vision for the Future”: Prioritization and Implementation of Challenges; Pharmaceutical Care in Managed Care Pharmacy, Special Session of American Society of Health System Pharmacists Meeting, Las Vegas, NV, December, 1998.

Belief
Perhaps the only limits to the human mind are those we believe in.
Willis Harman, “Global Mind”
Asthma Disease Management Program

Introduction
The Asthma Disease Management Program of the Kaiser Permanente Colorado (KPCO) Denver/Boulder Local Market began development in August 1995. Its pilot project was implemented in February 1997 with full implementation in August 1998. A very large team of participants contributed to the initial and ongoing success of this regionwide initiative. Table 1 identifies the complete list of project supporters and contributors.

Asthma is recognized as a chronic inflammatory disorder of the airways with symptomatic episodes that range from mild and intermittent to severe and persistent. Although the reasons are poorly understood, the prevalence of asthma has increased significantly over the past 20 years in both children and adults. Undertreatment and inappropriate pharmaceutical therapy have been shown to be major contributors to asthma morbidity and mortality. In 1995, the prevalence of asthma within KPCO was estimated to be 4% to 6% (13,600 to 20,400 asthmatic members). Because of our large population of asthmatic patients and the potential for relatively rapid improvement, asthma was one of the diseases chosen for development of a disease management program.

Background
The development of chronic disease management programs began in 1995 with an assessment of the member population which identified that KPCO’s model of care could be improved to meet the needs of chronically ill patients. Our traditional ambulatory care model was designed to manage acute, episodic exacerbations of asthma. The following weaknesses were identified: 1) inconsistent approaches across the region to manage chronically ill patients; 2) inconsistent messages to these patients; and 3) no tools to identify patients receiving inadequate care. Epidemiologic data, market climate, and utilization and cost data describing KPCO’s asthma population established the need for a redesign process. Employer groups such as PepsiCo, Coors Brewing Company, and Time/Warner Cable were asking about our approach to chronic disease management. Likewise, regulatory and consumer reporting agencies such as the National Committee for Quality Assurance (NCQA) and the Health Plan Employers Data Information Set (HEDIS) had established population-based standards for chronic diseases.

Objectives
The primary objectives of the Asthma Disease Management Program are to 1) improve quality outcomes of care, 2) equip patients to better self-manage their chronic illness, 3) reduce costs of care through avoidance of acute episodes and complications, and 4) increase patient and physician satisfaction with continuity of care. The purpose of the initial pilot project evaluation was to compare the impact of the Asthma Disease Management Program model with “care as usual” regarding quality outcomes, utilization patterns with related costs, and patient and physician satisfaction. Subsequent to the pilot program evaluation, additional analyses were performed to determine if improvements attributable to the Asthma Disease Management Program could be sustained over time.

Methodology
Scope
In 1995, analysis of KPCO’s total population of 340,000 members revealed that 34.5% had one or more chronic diseases, an amount that accounted for 60% of primary care physician utilization. By initiation of the pilot project in February 1997, the baseline number of asthmatic patients was 19,784 regionwide. Twenty-two percent of our total asthma population (4708 patients) received their primary care at two of our medical offices, Westminster and Aurora Centrepoint, which were chosen as the pilot intervention sites.

Interventions
The Asthma Disease Management Program is a new model of care that addresses the needs of asthma patients at a population level. The key program ele-
ments described represent the primary changes from “care as usual.” Of particular note is the use of care managers—registered nurses—who are responsible for monitoring the population of asthma patients in a specified geographic area, targeting high-risk patients for intervention, and providing one-to-one and group care. The primary care physician retains accountability for directing and managing the patient’s care.

The primary care physician retains accountability for directing and managing the patient's care. Asthma care managers extend physicians' ability to monitor and educate their patients.

<table>
<thead>
<tr>
<th>Disease Management Core Team Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Jean Barker, MBA, Director, Strategy Development and Implementation—Team Co-Leader</td>
</tr>
<tr>
<td>• David Berman, MD, CMI Physician Implementation Manager/Director, Disease Management—Team Co-Leader</td>
</tr>
<tr>
<td>• Shelley Cooper, MBA, Consultant, Strategy Development and Implementation—Project Manager</td>
</tr>
<tr>
<td>• Donna Beall, PharmD, Primary Care Services</td>
</tr>
<tr>
<td>• Arne Beck, PhD, Director, Research and Development</td>
</tr>
<tr>
<td>• Michael Bodily, MBA, Programmer/Analyst, Information Technology</td>
</tr>
<tr>
<td>• Ned Calonge, MD, MPH, Chief, Preventive Medicine &amp; Research</td>
</tr>
<tr>
<td>• Pamela Cowan, BS, Analyst, Research and Development</td>
</tr>
<tr>
<td>• Elizabeth Gay, MA, Director, Prevention</td>
</tr>
<tr>
<td>• Alvin Goo, RPh, Pharmacy</td>
</tr>
<tr>
<td>• Bill Good, MBA, Manager, Clinical Information Systems</td>
</tr>
<tr>
<td>• Kent Nelson, PharmD, Primary Care Services</td>
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<table>
<thead>
<tr>
<th>Asthma Work Team Members</th>
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</thead>
<tbody>
<tr>
<td>• Peter Cvietusa, MD, Allergy/Pediatrics</td>
</tr>
<tr>
<td>• Alvin Goo, RPh, Pharmacy</td>
</tr>
<tr>
<td>• Mary Jo Jacobs, MD, Emergency Medicine</td>
</tr>
<tr>
<td>• William Marsh, MD, Associate Medical Director for Operations</td>
</tr>
<tr>
<td>• James Mason, MD, Internal Medicine</td>
</tr>
<tr>
<td>• Susan Merrill, MD, Pediatrics</td>
</tr>
<tr>
<td>• Rebecca Mortensen, MD, Pulmonary Medicine</td>
</tr>
<tr>
<td>• Carl Severin, MD, Family Practice</td>
</tr>
<tr>
<td>• Betty Spiecher, RN, MS, Nursing Supervisor, Disease Management</td>
</tr>
<tr>
<td>• John Williams, MD, Regional Department Chief, Allergy</td>
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</tbody>
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<tr>
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</thead>
<tbody>
<tr>
<td>• Michael Alexander, Vice President and Executive Director</td>
</tr>
<tr>
<td>• Connie Slaughter, RN, MS, Director, Quality and Resource Management</td>
</tr>
<tr>
<td>• Linda Smith, RN, MS, MHA, Director, Operations Support</td>
</tr>
<tr>
<td>• Andrew Wiesenthal, MD, Associate Medical Director, Medical Management</td>
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<table>
<thead>
<tr>
<th>Physician Mentors</th>
</tr>
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<tbody>
<tr>
<td>• Peter Cvietusa, MD, Pediatrics/Allergy</td>
</tr>
<tr>
<td>• Robert Harvey, MD, Allergy</td>
</tr>
<tr>
<td>• Ross Westley, MD, MPH, Allergy</td>
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<td>• John Williams, MD, Regional Department Chief, Allergy</td>
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<table>
<thead>
<tr>
<th>Pilot Project Asthma Care Managers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Karen Jahn, RN, BS, Asthma Care Manager</td>
</tr>
<tr>
<td>• Cynthia Lamb, RN, BS, Asthma Care Manager</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Research and Analytical Support</th>
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</thead>
<tbody>
<tr>
<td>• Jennifer Ellis, MBA, Programmer/Analyst, Research and Development</td>
</tr>
<tr>
<td>• David Magid, MD, MPH, Investigator, Clinical Research Unit</td>
</tr>
<tr>
<td>• Avery Wilson, MSPH, CMI Analyst</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Contact persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Emily Sandelin, RN, MS, CMI Implementation Specialist, Quality and Resource Management</td>
</tr>
<tr>
<td>• Debra Pearson Ritzwoller, PhD, Health Care Economist, Disease Management</td>
</tr>
</tbody>
</table>
Asthma care managers extend physicians’ ability to monitor and educate their patients. Key program elements include processes for registry and reporting, “real-time” notification, care manager intervention, and KP Regionwide education.

Registry and Report Process

The Asthma Disease Identification, Registry, and Reporting System is a set of software programs developed by clinicians, programmers, and analysts at KPCO. This system extracts and compiles data from clinical and administrative sources to produce a continuously updated registry of patients with asthma. This system also generates monthly and quarterly reports of patient levels in electronic and printed formats. These reports contain clinically relevant data of interest to physicians and care managers. Patients are risk-stratified by pharmaceutical dispensing and by Emergency Department (ED), observation/clinical decision unit (OBS/CDU), and inpatient utilization.

“Real-Time” Notification Process

Information about hospitalizations and ED encounters for asthma is received and entered into an Access database every day. The appropriate care manager is notified to contact patients shortly after discharge, when they are most likely to make behavior changes to better manage their asthma.

Care Manager Intervention

The care managers identify patients for proactive outreach using a combination of the panel report, real-time feedback from hospitals and EDs, and physician referral. The goal of intervention is to empower patients to learn self-management skills and to make lifestyle changes to decrease asthma morbidity. The care manager follows patients enrolled in the program by in-person and telephone contact during a two- to three-month period. When appropriate, patients are referred to classes for additional asthma education. Upon discharge from active care management, patients resume usual care with their primary care physician but may reenter the program if they again meet high-risk criteria. Population monitoring continues for all patients in the Asthma Registry. Major functions and accountabilities of care managers include:

- Assessment, treatment modification, and patient education based on clinical guidelines;
- Addressing patients’ psychological responses to living with a chronic disease using behavioral change strategies;
- Providing telephone follow-up, troubleshooting, monitoring, and coaching to ensure success of the patient’s self-management plan;
- Coordinating complex care of patients and planning their transition back to primary care as their condition permits;
- Reviewing and interpreting panel reports and communicating with physicians about the status of their asthma patients.

Regionwide Patient and Staff Education

Asthma management classes for patients (and family members) are offered monthly at all facilities. Asthma skills training sessions are offered to the staff to enhance their ability to conduct pulmonary function tests and to provide education on medication and equipment use, peak flow monitoring, environmental controls, and asthma pathophysiology. In addition, guidelines for asthma care, which are based on the National Institutes of Health (NIH) recommended criteria for diagnosis and treatment, were widely disseminated to physicians and mid-level providers across the KPCO region.

Subjects and Setting

In the initial pilot study, conducted from February 1 to July 31, 1997, the Asthma Disease Management Program model was compared with “care as usual.” Three hundred seventy-eight patients from a population of 19,784 members were enrolled in care management during the pilot period. These patients comprised the pilot intervention group. Patients were eligible for enrollment if they received primary care services at one of the two pilot sites and either were identified via registry report as being at high risk or were referred to the program by their primary care physician. High-risk asthma was defined as: 1) overuse of beta2-agonists, 2) high-dose beta2-agonist use with no dispensed inhaled steroid, or 3) a recent asthma-related hospital or ED admission. The pilot project was conducted at two medical offices: Westminster and Aurora Centrepoint. An additional 976 intervention patients were enrolled into the program between August 1997 and January 1999. Patients not in the intervention groups received care as usual. Two asthma care managers (1.6 FTE) were hired to participate in the pilot project. Four care managers and 13 additional offices were added in August 1999.
Study Design

A quasi-experimental pretest-posttest study design was used to examine changes in process of care and clinical outcomes measures for asthma intervention patients. For some outcomes, multiple pre- or postintervention measurements were performed. Changes within a comparison group (composed of Asthma Registry members who had not been seen by the care managers) were also assessed on similar outcome measures. A pretest-posttest design was also used to evaluate changes in patient and physician satisfaction. Although planned for the pilot evaluation, use of a more rigorous randomized case-control design was not feasible because of pilot implementation issues. For example, during the pilot project, a large number (48%) of all intervention patients were referred to asthma care managers by their primary care physicians. Given that provider acceptance of the asthma care managers was an important key to successful implementation of the Asthma Care Management Program, referred patients were accepted into the Program at the expense of a more rigorous study design. Also, a great amount of refinement of the computer programs used for patient identification and risk stratification took place during the pilot period. Statistical methods used in analyses of pilot and postpilot data included parametric and nonparametric within-group tests for significance (eg, chi-square, t, and Wilcoxon signed rank tests) as appropriate.

Patient Intervention Procedure

The asthma care managers contacted patients by telephone and screened them for eligibility. Patients were enrolled if they met entry criteria and were willing to participate. A one-to-one initial visit was scheduled. At the initial visit, the care manager recorded a detailed history, performed pulmonary function tests, and provided education about asthma and its treatment. Small steps toward behavior change were negotiated with the patient according to the patient’s readiness to change, lifestyle, and areas (s)he was willing to address. Patients were given a written home care plan if their asthma was stable. Patients experiencing an asthma flare were appropriately treated and were scheduled for a second visit. Subsequent patient contacts occurred by telephone a mean of three times during a three-month period. All face-to-face and phone contacts were recorded on coding sheets designed for the pilot project.

Measures

The project addressed the following outcomes, utilization, and process of care measures: patient and physician satisfaction, use of ambulatory and hospital-based health care services, overuse of beta2-agonist medication, usage of prescribed anti-inflammatory medication, dispensing of peak flow meters, prevalence of spirometry testing, and the provision of a home care plan.

Satisfaction Data

Pre- and postpilot patient satisfaction surveys were administered to 258 intervention and nonintervention asthma patients. Pre- and postpilot satisfaction surveys were administered to 71 physicians at pilot and nonpilot medical offices. Survey questions used a five-point Likert scale response, where "1" defined the negative pole and "5" defined the positive pole. Patient satisfaction data were collected from a random sample of nonintervention patients and intervention patients via telephone survey. Survey results were analyzed for patients who responded to both the baseline and postpilot surveys. Questions addressed patient satisfaction with education, home care planning, asthma management, and continuity of care. A written survey was administered in December 1999 and again in August 2000 to a random sample of physicians in primary care departments at pilot and nonpilot sites. Questions addressed satisfaction related to provision and monitoring of asthma patient’s care, meeting patient expectations, and availability of resources to manage asthma patients. Within-group and between-group changes in satisfaction were measured using Wilcoxon signed rank tests and Wilcoxon-Mann-Whitney U tests.

In March of 1998 and 1999, the CMI-sponsored administration of a survey to adults who were identified as having asthma. Eighty percent of patients who responded to the 1998 survey also responded to the follow-up 1999 survey, for a total of 1225 patients. Data from a subsample of these respondents were published in the 1998 CMI Asthma Outcomes Report. Three of the 64 survey questions address issues of patient satisfaction. Paired t tests and the Wilcoxon signed rank test were used to assess changes between the two time periods.

Utilization Data

Administrative databases were used to collect pharmacy, outpatient encounter, and hospital (inpatient, ED, and observation/clinical decision unit (OBS/
CDU) data for all patients identified with asthma. To control for seasonality and the effect of secular trends in both clinical and data systems, utilization data were extracted for several time periods before and after the pilot.

Outpatient utilization data were obtained from claims and encounter databases. Using paired t tests, the rate of asthma-related ambulatory care visits to primary care departments was measured for several periods before and after the initial encounter with a care manager for intervention patients enrolled during the pilot and for a similar time period for nonintervention patients. During the postpilot phase, changes in ambulatory care utilization was measured at the population level for patients identified in the registry in both March 1998 and March 1999. Patients were stratified into three age groups: 0-18 years (pediatric members), 19-49 years (adult members), and 50+ years (older adult members). Paired t tests were used to evaluate the change in mean number of visits per patient per year to Primary Care Departments for asthma-related conditions and to the Pulmonology and Allergy Departments.

Changes in hospital-based utilization rates (inpatient, ED, and OBS/CDU) were measured for a pilot-specific cohort of intervention patients and for all asthma patients identified via the registry for several time periods. Paired t tests and repeated measures ANOVA were used to evaluate differences in mean number of inpatient admissions, emergency department visits, and OBS/CDU visits per year for the initial pilot cohort of intervention patients. Paired t tests were used to evaluate the change in mean number of inpatient admissions, emergency department visits, and OBS/CDU visits per patient per year. No statistical tests were performed on the likelihood of a hospital event occurring.

Parametric and nonparametric statistical tests were used to assess changes over time for four aspects of pharmacy dispensing patterns for all asthma patients: 1) number of beta2-agonists dispensed per patient in a six-month period; 2) percentage of patients with beta2-agonist overuse; 3) percentage of patients taking high-dose beta2-agonists with a dispensed inhaled anti-inflammatory; and 4) percentage of asthma patients who had been dispensed a peak flow meter. Many of these measures were stratified by intervention status, by age category, or by both. In order to control for unmeasured seasonal variation, the following four time periods were examined for the pilot evaluation: one-year prepilot, baseline (or pre pilot), end-of-pilot, and six-month postpilot periods. Overuse is defined here as 12 or more metered dose inhalers (MDI), or 180 or more milliliters of nebulizer solution, or 2160 or more milliliters of nebulizer premix solution of a beta2-agonist product dispensed in a six-month period. A patient who is a high-dose beta2-agonist user with an inhaled anti-inflammatory product is one who is dispensed six or more MDIs or the equivalent of a beta2-agonist product in a six-month period and also receives an inhaled anti-inflammatory product (eg, beclomethasone dipropionate, budesonide, fluticasone, cromolyn sodium, etc.).

Process of Care Measures

Dispensing of peak flow meters, administration of spirometry tests, and development and documentation of patient home self-care plans are all considered to be process-of-care measures in this evaluation. In September 1997, registered nurses performed retrospective chart audits on all pilot intervention patients and on a random sample of nonintervention patients to document receipt of spirometry testing and existence of a home care plan. Chi-square and Wilcoxon signed rank tests were used to evaluate within-group and between-group changes in these two measures. Data from the CMI-sponsored Survey of Adults with Asthma was used to describe changes in population-based measures of peak flow meter dispensing and receipt of home self-care instructions. The Wilcoxon signed rank test was used to examine changes in the distribution of responses between March 1998 and March 1999 for a sample of 1222 documented asthma patients who responded in both time periods.

Results

Satisfaction

Seventeen physicians at pilot sites and 54 physicians at nonpilot sites completed baseline and postpilot surveys. At baseline, no statistical difference for any of the ten questions was noted between pilot and nonpilot physicians responding. Using the Wilcoxon signed rank test, significant improvement (p < 0.05) in three of the satisfaction scores was found for the pilot site physicians. For the nonpilot site physicians, one measure improved significantly (p < 0.05), and five measures declined significantly. The magnitude of improvement was greater for the pilot group of physicians and staff for all questions. The magnitude of improvement was greater for the pilot group of providers for all questions. Wilcoxon-Mann-
Whitney U tests showed that the mean differences for six of the ten questions were significantly greater (p < 0.05) for the pilot group.

Eighteen intervention patients and 240 nonintervention patients responded to a patient satisfaction survey. No differences in satisfaction were found pre-pilot between the two groups. Postpilot satisfaction increased for both groups. Although the magnitude of improvement was greater among the intervention group for three of the five measures, no differences were statistically significant. Two of the three surrogate measures for patient satisfaction contained in the CMI-sponsored Adults with Asthma Survey showed no significant change. The Likert scale response to the question addressing ease of getting medical care for asthma when needed did show a significant change (p < 0.05).

Ambulatory and Hospital Utilization

Early pilot results found that for the six months before and after the initial encounter with asthma care managers, ambulatory visits to primary care departments decreased significantly (p < 0.05) for the pilot intervention patients. Visits for nonintervention patients increased slightly during the same time period, although the increase was not statistically significant. The visit rate to the Allergy and Pulmonology Departments increased slightly for pilot intervention patients for the same time period.

Ambulatory care utilization measures were assessed for a sample of 17,298 asthma patients who were identified in the registry in both March 1998 and March 1999. The rate of asthma-related visits per 1000 patients per year to Primary Care Departments showed significant reductions (p < 0.001) for all age groups (Figure 1). For the age categories of patients targeted by the care managers, Figure 2 shows that the visit rate to the Allergy Department decreased significantly in the 0- to 18-year age group (p < 0.001) and in the 19- to 49-year age group (p < 0.05). Although a slight decrease in visits for the > 50-year age group was observed, the difference was not significant. The visit rate to the Pulmonology Department showed no statistically significant change.

Figure 3 demonstrates the finding that both the annual hospital inpatient and ED admission rate for 252 continuously enrolled pilot intervention patients declined significantly from March 1997 to March 1999 (p < 0.05). OBS/CDU admission rates did not change. For the sample of 17,298 asthma patients on the registry in both March 1998 and March 1999, significant reductions were found in the number of annual inpatient admissions in the pediatric (p < 0.001) and adult (p < 0.05) age groups (Figure 4). OBS utilization showed no significant changes between the two time periods. ED utilization increased significantly for pediatric patients (p < 0.05) and for adults and older adults (p < 0.001). Although reasons for the increase are unclear, the reduction in hospital utilization may have resulted in a shift to ED visits.

Figure 1. Asthma Registry members’ asthma-related Primary Care Department visits/1000 members

... both the annual hospital inpatient and ED admission rate for 252 continuously enrolled pilot intervention patients declined significantly ...

Figure 2. Asthma Registry members’ Allergy Department visits/1000 members and Pulmonology Department visits/1000 members
Pharmacy Utilization

Measures of beta2-agonist pharmacy dispensing patterns suggest that the pilot intervention patients may have been “higher risk” than the average asthma patient identified from the registry. Although during the pilot project, no significant change occurred in the mean number of beta2-agonist MDIs dispensed per patient, the baseline rate of dispensing was much higher (7.7 versus 4.5) for the pilot intervention patients compared with the nonintervention patients. Figure 5 shows a statistically significant (p < 0.05) decline in beta2-agonist overuse among pilot intervention patients from the year preceding to the year subsequent to the pilot. Figure 6 demonstrates that during this same time period, the percentage of pilot intervention patients receiving high-dose beta2-agonist medications who were also dispensed an inhaled steroid significantly increased (p < 0.05). Follow-up analyses of these same measures (Figures 7 and 8), evaluated for the entire sample of asthma registry patients and stratified by age category, were performed using data collected two years subsequent to the pilot. Statistically significant improvement in most age categories for both measures was demonstrated (p < 0.05).

Process of Care

The percentage of intervention patients with a pharmacy-dispensed peak flow meter increased significantly from 42% before the pilot to 75% after the pilot project (p < .05). No change occurred for the nonintervention patients. Analysis of pharmacy dispensing of peak flow meters by product code was also undertaken for a cohort of 17,298 asthma registry patients in 1998 and 1999. The percentage of patients with a dispensed peak flow meter increased significantly (p < 0.05) in the 0- to 19-year age group (45.9% to 49.1%), but relatively no change was found for the other age categories. Results from data derived from the CMI-sponsored Survey of Adults with Asthma found a 4.5% increase (73% to 77.5%) in number of asthma patients responding to the survey who reported owning a peak flow meter (n = 1222). These data demonstrate a discrepancy between patient reports of having a peak flow meter and pharmacy dispensing. Reasons for the differences are unknown; however, pharmacy dispensing data were available only from 1995 to the present, so we presume that part of the variation is due to some patients having received a peak flow meter prior to 1995 or
having received it somewhere else besides a KPCO pharmacy. Because the patients responding to the CMI survey were not drawn from exactly the same sample as the patients for whom we collected pharmacy dispensing records, additional statistical calculations could not be made to further examine the source of the discrepancies.

Analyses using chart audit data for the pilot intervention patients and for a random sample of nonintervention patients found a statistically significant increase (from 16% to 60.0%) in percentage of pilot intervention patients with a documented home care plan (p < 0.05). For the sample of nonintervention patients, the prevalence of home care plans increased from 21% to 26%, but this change was not statistically significant. The percentage of pilot intervention patients who had received spirometry testing also experienced a statistically significant increase (4.6% to 58%). No change was found for the sample of nonintervention patients. Although not statistically significant, results also derived from the CMI-sponsored Survey of Adults with Asthma found that more than 4% (62% to 66.7%) of the 1222 asthma patients responding to the survey had received written directions about how to take their asthma medication and what to do if they had a severe attack.

Comment

Effect of Program on Direct Patient Care

The Asthma Disease Management Program’s effect has been to extend the physician’s ability to 1) educate patients about their disease, 2) provide appropriate treatment, and 3) monitor patient care over time. The registered nurse’s role is expanded to include monitoring and management of asthma patients. Improved collaboration and communication between subspecialty and primary care departments has resulted in improved asthma control in this population.

What Makes the Project Innovative?

The Asthma Disease Management Program is unique because it provides a mechanism to identify patients who are at high risk for complications and exacerbation and to implement proactive interventions to prevent these occurrences. The patient’s care plan is negotiated according to the patient’s readiness to change and lifestyle choices. The care managers assure communication between key departments such as Allergy, Pulmonology, Pharmacy, and Primary Care.

![Figure 6. High-dose** beta2-agonist use with inhaled steroids](image)

![Figure 7. Asthma Registry patients overusing beta2-agonist in past 12 months (N = 15698)](image)

![Figure 8. Asthma Registry members receiving high-dose beta2-agonist with no anti-inflammatory**](image)

** Total N for each strata are variable
Has the Program Led to Development of New or Improved Processes That Can Be Considered “Best Practices”?

KPCO’s Primary Care Quality Council targeted asthma as one of its primary areas of focus for 1999. The Council adopted asthma quality measures recommended by the Asthma Disease Management Program and is piloting an asthma initiative in the Pediatric Departments. In 1998, all KP Divisions collaborated to create the CMI to disseminate knowledge and assist with local implementation of evidence-based clinical best practices throughout all regions. Our established Asthma Disease Management Program has been highlighted in interregional discussions and is being evaluated as a best practice.

Has the Project Resulted in Excellent Performance Compared with Other Programs or Relevant Benchmarks?

In October 1998, the CMI published data comparing the results for care processes and outcomes for all KP. For the period 8/1/96 through 7/31/97, which included our six-month pilot period, the KPCO compared favorably with other KP Regions.

Benefits of Multidisciplinary Team Involvement

The volume and focus of the Program’s development required the skills of clinical and nonclinical staff. The Program is not viewed as replacing any part of patient care but is well integrated into the primary care milieu. The Program’s successful implementation occurred because the viewpoints, concerns, and interests of the staff who would be affected were represented. These individuals continue to be on-site champions of the program.

Implications and Conclusion

The pilot project resulted in implementation of asthma care management for all clinics in the Denver/Boulder Local Market and the addition of four asthma care managers. KP Kansas City recently instituted an asthma care management program based on the successful results of our Denver/Boulder Local Market project. The KPCO Colorado Springs Local Market is working collaboratively with the Denver/Boulder Disease Management Team to implement an asthma disease management program.

In conclusion, evaluation of the Asthma Disease Management Program demonstrated improved patient and physician satisfaction, improved treatment/care planning, and improved medication utilization with gains sustained over a two-year period. The evaluation thus demonstrated that systematic, population-based asthma disease management can improve quality, satisfaction, and utilization outcomes and can sustain these gains over time. ❖

References

Despite the availability of highly effective methods of contraception, one half of the pregnancies in the United States are unintended, and 28% of all pregnancies end in abortion. Nearly one half of the approximately three million unintended pregnancies each year occur among women who report using a contraceptive method, suggesting that many of these unintended pregnancies are a result of contraceptive failure. It has been known since the early 1970s that oral contraceptives given in high doses post-coitally are highly effective in preventing pregnancy, but their use has been limited.

In July 1996, Kaiser Permanente Southern California (KPSC) began a research and demonstration project on emergency contraceptive pills (ECP). The project was a collaboration between KPSC, the Pacific Institute for Women’s Health (a Los Angeles-based nonprofit organization specializing in research on women’s health), and the Program for Appropriate Technology in Health (PATH, a Seattle-based not-for-profit group specializing in development of contraceptive health education materials for consumers and providers). The project was designed to evaluate the feasibility and acceptability of ECP within KP, to increase the availability and use of ECP, and to develop institutional templates, provider training materials, and patient education materials that could be used to replicate the project in KP and elsewhere.

The demonstration and evaluation portions of the project were successfully completed in the San Diego Service Area of KPSC. Women who received ECP as part of the project were highly satisfied with this service. There was some evidence that abortion rates decreased more in San Diego than in other KPSC Service Areas, although this change cannot be attributed solely to provision of ECP.

The repackaging of oral contraceptives was “institutionalized” in San Diego, and the ECP kits that were developed and piloted in the project are now available throughout the KP Program. The Project has been replicated throughout KPSC, and ECPs are available and being provided in all KPSC Service Areas. The supporting materials (brochures, posters, templates) have been made widely available both inside and outside KP. A cost analysis showed that provision of ECPs would be cost-saving to KP even if a commercial product were substituted for the ECP kits used in this project.

Table 1. Team members—Emergency Contraception Research and Demonstration Project

<table>
<thead>
<tr>
<th>Kaiser Permanente Southern California</th>
<th>Pacific Institute for Women’s Health</th>
<th>Program for Appropriate Technology in Health (PATH)</th>
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<tbody>
<tr>
<td><strong>Contact person:</strong></td>
<td></td>
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<tr>
<td>Diana B. Petititi, MD, MPH</td>
<td>Linda J. Beckman, PhD Senior Scientist</td>
<td>Elisa Wells Senior Program Officer</td>
</tr>
<tr>
<td>Director, Department of Research and Evaluation</td>
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<tr>
<td></td>
<td>S. Marie Harvey, PhD Senior Scientist</td>
<td>Scott Wittet Senior Program Officer</td>
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<tr>
<td>David Preskill, MD</td>
<td></td>
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<tr>
<td>Chief, Obstetrics and Gynecology, San Diego</td>
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<tr>
<td>Kathie Heller</td>
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<tr>
<td>Field Work Supervisor, Department of Research and Evaluation</td>
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<tr>
<td>Michelle Paul</td>
<td></td>
<td></td>
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<tr>
<td>Department Administrator, Obstetrics and Gynecology, San Diego</td>
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<tr>
<td>Debbie Postlethwaite, RNP, MPH, Project Coordinator, Obstetrics and Gynecology, San Diego</td>
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<tr>
<td>Howard Switzky, RPh, FCSHP</td>
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<tr>
<td>Manager, Drug Distribution, California Division-South</td>
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Background

The project was initiated in response to the observation that in spite of the demonstrated efficacy of oral contraceptives as emergency contraception (EC), several problems prevented their widespread distribution and use. At the time that the project was initiated, no commercially available ECP product existed, provider knowledge of how to correctly prescribe ECP was low, and obtaining ECP was inconvenient for women.

The project follows trends in patient care, both inside and outside KP, that focus on women's health. The project is in keeping with initiatives in KPSC and elsewhere in the KP Program that seek to reduce the risk of unintended pregnancy. The project is in alignment with the public's desire to see contraceptives treated in the same way as other medications by health plans and insurers.

The ECP program had six components. The formal evaluation had five components. These are listed in Table 2 and described in the sections on Methodology and Evaluation.

Objectives

The project was designed to evaluate the feasibility and acceptability of ECP within KP, to increase the availability and use of ECP, and to develop institutional templates, provider training materials, and patient education materials that could be used to replicate the project in KP and elsewhere.

Scope and Significance

Problem Statement

Despite the availability of highly effective methods of contraception, one half of the pregnancies in the United States are unintended, and 28% of all pregnancies end in abortion. Moreover, nearly one half of the approximately three million unintended pregnancies each year occur among women who report using a contraceptive method, suggesting that many of these unintended pregnancies are a result of contraceptive failure. Experts agree that increasing the menu of contraceptive choices is desirable and that providing women a method of contraception that prevents pregnancy after unprotected sexual intercourse or contraceptive method failure is critically needed.

Emergency contraceptive pills (also known as "morning-after pills") are a form of postcoital hormonal treatment intended to prevent pregnancy after unprotected sexual intercourse. It has been known since the mid 1970s that oral contraceptives (OCs) given in high doses postcoitally are effective in preventing pregnancy. Studies done over the last two decades have confirmed that a specific regimen of emergency contraception, known as the Yuzpe regimen, reduces the risk of pregnancy by about 75%. It is estimated that among 100 women who have unprotected intercourse, eight would be expected to become pregnant without ECP whereas only two would be expected to become pregnant with use of ECP. Other ECP regimens that provide only levonorgestrel in high doses reduce the risk of pregnancy by 90%.

Relevance to Patient Care

About two million members (24%) KP Medical Care Program are women of reproductive age (15-44 years) and are potentially in need of contraceptive services.

Table 2. Emergency contraception project

<table>
<thead>
<tr>
<th>Program Components</th>
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<tr>
<td>Repackaging of oral contraceptives as ECP kit</td>
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<tr>
<td>Development of provider and patient education materials</td>
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<tr>
<td>Development of environmental intervention materials to support program</td>
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<tr>
<td>In-service training of providers</td>
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<tr>
<td>Making ECP kits available at convenient locations</td>
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<tr>
<td>Packaging and distribution of &quot;Replication Packs&quot;</td>
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<table>
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<tr>
<th>Evaluation Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before/after survey of providers' knowledge and practices</td>
</tr>
<tr>
<td>Survey of members who received an emergency contraception kit in San Diego during the demonstration period</td>
</tr>
<tr>
<td>Assessment of rates of induced abortion for members in San Diego in comparison with the rest of KPSC</td>
</tr>
<tr>
<td>Monitoring of utilization of ECP kits</td>
</tr>
<tr>
<td>Analysis of the cost-effectiveness of provision of ECP</td>
</tr>
<tr>
<td>Analysis of induced-abortion rates</td>
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</tbody>
</table>
At least 25,000 KP members per year obtain an induced abortion (precise figures for abortions are not available) in spite of the fact that all members have access to contraceptive services. The number of members who are potentially affected by the quality issue addressed in this project—unintended pregnancy and the need for a method to backup failure of condoms and other contraceptives—is much larger, because the male partners of women members and male members of the Health Plan are potentially affected by the availability of ECP. All family members are affected by unintended pregnancy.

External Impact

In initiating this project, KP assumed a role of leadership in the local community and nationally. The project had an important influence on other organizations’ willingness to provide ECP. The tools and templates developed in the project have been used as models or without modification in implementation of provision of ECP throughout the US. More than fifty EC Training Toolboxes have been purchased by organizations outside KP, including nursing schools, medical schools, and pharmacy schools; Planned Parenthood Federation of America, the Departments of Health and Human Services for Alaska, New Mexico, and Georgia; and an international health organization in Thailand. Project materials and protocols have been adopted by local Planned Parenthood affiliates, San Diego State University, the University of California at San Diego, and many local and regional community clinics.

ECP project team members have become recognized, influential experts on provision of ECP and have been speakers at multiple national conferences on this topic. Project participants were consultants to the national media firm that developed Public Service Announcements concerning ECP that were aired in four cities and public education materials used in several magazines with national circulation. Project team members have been consulted by a California State Senator regarding two submitted bills that would increase access to emergency contraception in California.

Methodology

Repackaging of Oral Contraceptives as ECP Kit

A cornerstone of the demonstration project was repackaging of oral contraceptives as ECP. When the project began, there was no commercially available product packaged as ECP. Providers who wanted to prescribe OCs as ECP would first need to write a prescription for a full cycle of regular oral contraceptives. They would then need to instruct the patient about how many of these pills to take at what interval. Oral contraceptives that contain norethindrone, which are the most commonly prescribed OCs given as regular oral contraception, have not been proven as effective as ECP. Even for OCs that contain norgestrel or levonorgestrel, which have been shown effective as EC, the number of pills that need to be taken differs between different OC brands (eg, two pills every 12 hours for Ovral; four pills every 12 hours for Levlen). These complexities meant that a provider would need to be very knowledgeable about some subtle issues in OC formulation to prescribe ECP correctly.

To remove any problems that might arise from a need for providers to have detailed knowledge of what kind and how many regular OCs needed to be given to be effective as ECP, oral contraceptives were repackaged in the KPSC Regional Pharmacy. In the demonstration phase, a combination oral contraceptive with 500 µg of dl-norgestrel and 50 µg of ethinyl estradiol (Ovral) was repackaged because, at the time the project began, all of the published data on efficacy reflected the use of this type of product. In the replication phase, Pharmacy is repackaging Levlen, which is less costly and equally effective. It is anticipated that repackaging by KP will be replaced with a commercial product.
The ECP kit included two doses of antinauseant capsules (50 mg diphenhydramine) because nausea is a very common side effect of ECP.

We wrote instructions for the use of ECP and the antinauseants, evaluated the instructions using focus groups, and revised them based on input from focus group participants. These instructions were printed in Spanish and in English.

For ease of dispensing, we placed all of these items in a small box with special labeling. Thus, our ECP kit consisted of six oral contraceptive tablets (500 µg of dL-norgestrel and 50 µg of ethinyl estradiol), a sealed plastic bottle, four 50 mg diphenhydramine capsules in an envelope, instructions for use in Spanish and English, all in a labeled box about two inches on a side.

**Development of Education and Environmental Intervention Materials and Screening Protocols**

In collaboration with PATH, we developed informational posters, brochures, and wallet cards, in English and Spanish, for placement and distribution in appropriate places in medical offices where women seek care. We recorded a HealthPhone message, which was added to the San Diego Member Health Education phone service. The “HealthPhone Tape” was described in the patient brochures along with instructions for using it.

We developed protocols for screening women seeking ECP along with a worksheet to guide the provider through the screening process. These ensured that relevant information necessary to identify women for whom EC was contraindicated would be gathered systematically.

**Inservice Training**

We conducted inservice training programs for care providers and appointment center agents in San Diego. Care providers attended a formal lecture presentation by one or more project members. These

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>% (95% CI)</th>
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<tbody>
<tr>
<td><strong>Age</strong></td>
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<tr>
<td>18-25</td>
<td>48.1 (41.7, 54.5)</td>
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<tr>
<td>26-30</td>
<td>26.4 (20.1, 32.0)</td>
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<tr>
<td>31+</td>
<td>26.4 (20.8, 32.0)</td>
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<tr>
<td><strong>Ethnicity</strong></td>
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<tr>
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<tr>
<td>Caucasian</td>
<td>46.5 (40.1, 52.9)</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>24.6 (19.1, 30.1)</td>
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<tr>
<td>Asian/Pacific Islander</td>
<td>7.9 (4.5, 11.3)</td>
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<tr>
<td>Other/Unknown</td>
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<td><strong>Education</strong></td>
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<tr>
<td>High school or less</td>
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</tr>
<tr>
<td>Some college</td>
<td>45.5 (39.1, 51.9)</td>
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<tr>
<td>College +</td>
<td>32.3 (26.3, 38.3)</td>
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<tr>
<td><strong>Marital status</strong></td>
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<tr>
<td>Single</td>
<td>63.4 (57.2, 69.6)</td>
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<tr>
<td>Married</td>
<td>23.3 (17.9, 28.7)</td>
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<tr>
<td>Separated/divorced/widowed</td>
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<tr>
<td>Prior live birth</td>
<td>43.4 (37.1, 49.7)</td>
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<tr>
<td>Prior abortion</td>
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<td>Prior ECP use</td>
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<td>None</td>
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<td>Condoms</td>
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<td>Oral contraceptives</td>
<td>11.9 (7.8, 16.0)</td>
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<td>Diaphragm</td>
<td>4.2 (1.6, 6.8)</td>
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<tr>
<td>Depo-provera</td>
<td>2.2 (0.3, 4.1)</td>
</tr>
<tr>
<td>Other</td>
<td>4.2 (1.6, 6.8)</td>
</tr>
</tbody>
</table>
sessions took place at department meetings or specially arranged education sessions. We presented a copy of a comprehensive clinical manual on ECP to each participant and sent manuals to those unable to attend a presentation. The clinical manual provides detailed information about ECP with specific recommendations for treatment, and a bibliography.

Making ECP Kits Available in Convenient Locations

We arranged to have ECP kits dispensed under physician supervision in convenient locations within the San Diego Medical Center and at selected San Diego medical office buildings. When a woman called for advice and/or an appointment and the call center determined that she wanted ECP, she was directed to a screening/triage nurse, then to one of these locations to pick up an ECP Kit. A message was sent to the primary care provider to inform him/her of the request. If the provider ordered an ECP kit, it was sent from the nurse's station or centralized nursing treatment centers in the selected locations based on a physician order given under a standard, written protocol that was consistent with California pharmacy law.

KP San Diego Pharmacy personnel stocked each of the locations where ECP kits were provided and replenished supplies when they ran out.

Packaging and Distribution of “Replication Packs”

We assumed from the beginning of the project that there would be interest in replicating the project at other locations within KP as well as outside KP. To facilitate replication, we developed a “Tool Kit,” whose contents are described in Table 3. We arranged with a local printer to customize the informational brochures, posters, and wallet cards with information (eg logo, telephone numbers) from the replication site. The printer has made these materials available to those inside and outside the organization.

We also developed the Training Toolbox (see Table 4 for description of contents), consisting of the materials a project manager would need to implement the project fully in another site. The Toolbox included a video written by the project team, filmed at KP, and “starred” Dr Preskill and Debbie Postlethwaite, members of the project team. Training Toolboxes have been distributed to the Chiefs of Obstetrics and Gynecology, Family Medicine, Internal Medicine, Pediatrics, and Emergency Medicine in all medical centers in all Regions of the KP Program (210 Toolboxes in all).

Evaluation
Before/After Survey of Provider Knowledge and Practice

The evaluation included a pre/post survey of health care providers (physicians, NPs, CNMs, PAs in Departments of Obstetrics and Gynecology, Family Medicine, Internal Medicine, Pediatrics, and Emergency Medicine) at baseline (September 1996, prior to training and availability of ECP kits, and implementation of posters, HealthPhone messages, etc) and one year following full implementation (March 1998). Of 288 health care providers who were asked to participate in the baseline survey, 164 (57%) completed it. The baseline survey showed that providers had a positive attitude about ECP but that their knowledge of how to prescribe it was incomplete. Only one-third knew that treatment could be initiated within 72 hours. Unavailability of a prepackaged product was considered a barrier to provision of ECP by 90% of survey respondents.

A total of 101 providers responded both to the baseline and follow-up survey, and showed improved knowledge about ECP. Specific areas of significantly greater knowledge included timing of doses for ECP, risk of teratogenic effects, rate of efficacy, mode of action, and contraindications. There were, however, no significant changes in global attitudes about ECP in respondents to both surveys.

Survey of Members Who Received an ECP Kit During the Demonstration

Data were collected using structured telephone interviews conducted by trained female interviewers from January 1997 through February 1998. Eligible

<table>
<thead>
<tr>
<th>Sources of information about ECP</th>
<th>N = 235</th>
<th>% (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaiser Permanente materials (brochures, posters, Member Health News)</td>
<td>24.3</td>
<td>(18.8, 29.8)</td>
</tr>
<tr>
<td>Kaiser Permanente provider</td>
<td>19.1</td>
<td>(14.1, 24.1)</td>
</tr>
<tr>
<td>Friend or family member</td>
<td>17.2</td>
<td>(12.4, 22.0)</td>
</tr>
<tr>
<td>Newspapers, magazines, other media</td>
<td>11.6</td>
<td>(7.5, 15.7)</td>
</tr>
<tr>
<td>Kaiser Permanente staff</td>
<td>9.5</td>
<td>(5.8, 13.2)</td>
</tr>
<tr>
<td>Other</td>
<td>16.4</td>
<td>(11.7, 21.1)</td>
</tr>
</tbody>
</table>

Note: Total percentage exceeds 100.0 because women could report more than one source of information.
for the survey were all women 18+ years who received ECP through the demonstration project in KP San Diego during the demonstration period. Of the 375 women for whom permission for contact was obtained from their health care providers, 248 were contacted and agreed to be interviewed. Thirteen had not taken the ECPs by the time they were contacted and the analyses are based on 235 women who had experience taking ECPs.

Tables 5-7 describe characteristics of surveyed women who received ECP during the demonstration project, where they obtained information about ECP and the symptoms and side effects they reported.

Ninety-one percent of women surveyed were either very satisfied (77%) or somewhat satisfied (14%) with ECP; only six women reported that they were not satisfied or were very dissatisfied with ECPs. Ninety-seven percent responded "yes" when asked, "Would you recommend ECPs to a friend or a family member?" and 93% reported they would use ECPs again if needed in the future. Women who reported they would use ECPs again were asked under what circumstances. The overwhelming majority of women (97%) stated they would use ECP only in an emergency, and 2% said they would use them occasionally as a contraceptive method.

Six women became pregnant despite use of ECP. The pregnancy rate in users of ECP in the surveyed women was 2.6%, which is close to the rate in well-conducted follow-up studies designed specifically to assess the effectiveness of ECP.

### Table 7. Reported symptoms and side effects (total N = 235)

<table>
<thead>
<tr>
<th>Symptom</th>
<th>n</th>
<th>% (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drowsiness</td>
<td>112</td>
<td>47.4 (41.0, 53.8)</td>
</tr>
<tr>
<td>Dizziness</td>
<td>48</td>
<td>20.4 (15.2, 25.6)</td>
</tr>
<tr>
<td>Dry mouth</td>
<td>38</td>
<td>16.2 (11.5, 20.9)</td>
</tr>
<tr>
<td>Cramps</td>
<td>33</td>
<td>14.0 (9.6, 18.4)</td>
</tr>
<tr>
<td>Bleeding</td>
<td>30</td>
<td>12.9 (8.6, 17.2)</td>
</tr>
<tr>
<td>Headache</td>
<td>28</td>
<td>11.9 (7.8, 16.0)</td>
</tr>
<tr>
<td>Breast tenderness</td>
<td>27</td>
<td>11.5 (7.4, 15.6)</td>
</tr>
<tr>
<td>Nausea after first dose</td>
<td>82</td>
<td>35.0 (28.9, 41.1)</td>
</tr>
<tr>
<td>Nausea after second dose</td>
<td>79</td>
<td>35.1 (29.0, 41.2)</td>
</tr>
<tr>
<td>Vomiting after first dose</td>
<td>20</td>
<td>8.5 (4.9, 12.1)</td>
</tr>
<tr>
<td>Vomiting after second dose</td>
<td>21</td>
<td>8.5 (4.9, 12.1)</td>
</tr>
<tr>
<td>At least one symptom</td>
<td>31</td>
<td>81.1 (76.1, 86.1)</td>
</tr>
</tbody>
</table>

### Table 8. Comparison of abortion and live birth rates per 1000 women at risk (14-44 years old) for San Diego and other Southern California SAs

<table>
<thead>
<tr>
<th>Year</th>
<th>Abortion rate per 1000 (95% CI)</th>
<th>Live births per 1000 (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>San Diego</td>
<td>Other SAs</td>
</tr>
<tr>
<td>1994</td>
<td>20.0 (19.7, 20.3)</td>
<td>25.5 (25.4, 25.6)</td>
</tr>
<tr>
<td>1995</td>
<td>19.2 (18.9, 19.5)</td>
<td>25.2 (25.1, 25.3)</td>
</tr>
<tr>
<td>1996</td>
<td>17.4 (17.2, 17.6)</td>
<td>23.3 (23.2, 24.3)</td>
</tr>
<tr>
<td>1997</td>
<td>15.3 (15.1, 15.5)</td>
<td>22.4 (22.3, 22.5)</td>
</tr>
<tr>
<td>1998</td>
<td>14.4 (14.2, 14.6)</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Change 1994-97</td>
<td>-4.7 (-3.4, -5.8)</td>
</tr>
<tr>
<td></td>
<td>Difference in change SD compared with other SAs 1994-97</td>
<td>1.6 (0.3, 2.9)</td>
</tr>
</tbody>
</table>

SA = Service area.
NA = Not available.
*= p = 0.002 comparing the change (decrease) in the abortion rates in SD with that in other SAs.
† = p = 0.18 comparing the change (increase) in live birth rates in SD with that in other SAs.
Assessment of Induced Abortion Rates in KP San Diego

We compared abortion rates and live birth rates before and after the introduction of ECP in KP San Diego with those available in the rest of KPSC during the same period (Table 8). Abortion rates decreased in San Diego from 1994-1997 and from 1994-1998 but not in the rest of KPSC for 1994-1997 (the latest date for which non-San Diego data are complete). The estimated difference in change (decrease) in abortion rates between San Diego and other KPSC Service Areas from 1994-1997 was 1.6 (95% CI 0.3, 2.9). Live birth rates increased both in San Diego and in other KPSC Service Areas. The estimated difference in the increase in live births rate between San Diego and other Service Areas was also 1.6 (95% CI 0.6, 3.7). The change (decrease) in the abortion rates in San Diego was statistically significantly greater than change (decrease) in other Service Areas (p = 0.002), whereas the change (increase) in live birth rates in San Diego was not statistically significantly different from the change (increase) in other Service Areas (p = 0.18).

During the period of the ECP demonstration project, San Diego had an Unintended Pregnancy Task Force. This Task Force made a number of other interventions to decrease unintended pregnancy, and the decline in abortion rates in San Diego cannot be attributed solely to provision of ECP.

Monitoring of Number of ECP Kits Provided by Month and Assessment of Institutionalization

Figure 1 shows the number of ECP kits provided in San Diego during the demonstration project by month along with some of the external events that may have influenced knowledge and attitudes of members and providers about ECP. By December 1997, when all components of the program were fully institutionalized, the number of kits provided per month was about 60, but there was no evidence that the increasing trend in numbers of kits dispensed had leveled off.

Table 9 shows the number of ECP kits provided in KPSC by medical center since the availability of ECP became “institutionalized” through the assumption of responsibility for repackaging by Pharmacy Operations.

Cost-Effectiveness Analysis

We estimated the savings to KP from provision of ECP upon request using published information on the effectiveness of ECP in preventing pregnancy,
the cost to KP of ECP kits, and the cost to KP of providing abortions. The initial estimate considered only the costs to KP of abortion, and not those of births, since preventing abortion results in direct and immediate savings to KP, as the services are generally contracted at a per procedure rate.

It has been estimated that the ECPs used in this project are 75% effective in preventing pregnancy. That is, of 100 women who have unprotected intercourse, eight of them would become pregnant without using ECP and two with use of ECP. We used the literature to estimate that half of all unintended pregnancies will end in abortion and that all pregnancies in women who would seek ECP are unintended. Thus, ECPs prevent three abortions for each 100 women who receive them.

The cost to KP for abortion is estimated to be $300 per procedure based on the contracted cost of abortion in San Diego. The cost to KP of 100 ECP kits is $385. Thus, provision of ECP saves $2.3 for every dollar invested.

Based on the experience in San Diego, we estimate that the demand for ECP will be 30,000 EC Kits per year. If 30,000 kits were provided Programwide at $3.85/kit, the savings to KP from prevented abortions would be $154,500 (900 abortions prevented @ $300 - 30,000 kits @ $3.85 each).

A new kind of ECP that contains only levonorgestrel was recently evaluated against the combined estrogen/progestin regimen used in this demonstration project (Task Force on Postovulatory Methods of Fertility Regulation. Randomised controlled trial of levonorgestrel versus the Yuzpe regimen of combined oral contraceptives for emergency contraception. Lancet 1998;352:428-33). The new regimen, which was recently approved for marketing in the United States, has a much lower rate of side effects and is more effective in preventing pregnancy (only 1% of women became pregnant after using the new ECPs). Using these data, we estimate that 3.5 abortions are prevented for every 100 women who use the new levonorgestrel-containing ECPs.

Based on these data, Programwide provision of 30,000 commercial, levonorgestrel-containing ECPs is estimated to prevent 1050 abortions per year and save $315,000 in abortion costs. The levonorgestrel-containing ECP product has been priced at $14.00/kit, and provision of 30,000 commercial kits would cost $420,000. The net cost of providing ECP to Kaiser Permanente would be $105,000/year, considering only abortions and not considering collection of any co-payment. If the cost of the 1050 averted births is considered, and assuming a reduction in pregnancies from 8% to 1% with half of the unintended

![Figure 1. Number of ECP Kits provided in the San Diego Service Area during the demonstration project by month and external events that might have also affected ECP Kit provision.](image-url)
pregnancies resulting in abortion and half in birth, provision of commercial ECP at $14.00/kit will be cost-saving as long as the cost of births to KP exceeds $100 per birth.

**Institutionalization, Replication and Dissemination**

The repackaging of oral contraceptives has been "institutionalized," and the ECP kits that were developed and piloted in the project are now available throughout the KP program. The project has been replicated throughout KPSC, and ECP is available and being provided in all Service Areas in KPSC.

The Toolbox developed in the project was distributed to Chiefs of Obstetrics and Gynecology, Family Medicine, Internal Medicine, Pediatrics, and Pharmacy in all Regions of KP throughout the KP Program. Altogether, 210 Toolboxes were distributed.

Over 200 tool kits, which have been made available at cost to persons outside KP, have been distributed outside KP. Over 100 toolboxes, also made available at cost to persons outside Kaiser Permanente, have been distributed.

**Conclusion**

The objectives of the ECP Research and Demonstration Project were achieved. The project showed the feasibility and acceptability of providing ECP directly to women within KP. Providers exposed to project materials increased their knowledge about the correct use of ECP. ECP was delivered to women in San Diego through the project. Women who received ECP were highly satisfied with this service. There was some evidence that abortion rates decreased more in San Diego than in other Service Areas in KPSC, although this change cannot be attributed solely to provision of ECP.

The repackaging of oral contraceptives was "institutionalized" in KP San Diego and the ECP kits that were developed and piloted in the project are now available throughout the KP program. The program has been replicated throughout KPSC, and ECP are available and being provided in all KPSC Service Areas. Toolboxes, which contain all of the materials to replicate the project, have been distributed throughout the Program. A cost analysis showed that provision of ECP would be cost-saving to KP even if a commercial product were substituted for the ECP kits used in this project.

**Publications**


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**Find Yourself**

I expect that along the way you’ll uncover lost and forgotten pieces of yourself that have been buried like valleys filled in by years of accumulating snow.

Richard Stone, “The Healing Art of Storytelling”
The Breast Health and Cancer Detection Program

Breast cancer is the leading cause of deaths in women aged 15-64 years: 48% of new breast cancers and 56% of all breast cancer deaths occur in women aged 65 years and older. The Kaiser Permanente Georgia Region’s Breast Health and Cancer Detection Program, implemented in 1997, combines inreach and outreach activities designed to improve member access to breast cancer screening services as well as practitioner awareness for timely screening according to practice guidelines. The Program targets women aged 50 years and older. Inreach and outreach activities implemented to improve access to mammography services included Saturday appointments, van transportation of patients from centers without mammography services, self-referral and walk-in process, and adding mammography machines at high-use medical offices. Member and provider educational and awareness activities included inserting colored chart reminders for patients due for a mammogram; placing preventive service wall charts in exam rooms; establishing a Radiology-based mammography tracking system to monitor and follow up patients with abnormal clinical breast exams or mammograms; conducting Call Center telephone outreach to contact women aged 52-69 years past due for a mammogram; mailing postcard reminders and a brochure on clinical practice guidelines; and providing financial incentives to the health care team (HCT) for improving screening rates and quarterly reporting of HCT results.

Measurable impact of the Program is reflected in the mammography screening rates (aged 52-69 years) based on HEDIS specifications: 1996 = 73.8%, 1997 = 74.3%, 1998 = 80.6%, 1999 = 84.3%. The observed improvement in mammography screening rates for the period 1996-99 was statistically significant (p < 0.0001). The Georgia Region’s 1997 performance for HEDIS breast cancer screening measure was the second lowest in the Program. Its 1998 performance was among the top four KP Regions, and for 1999 was again among the top 10%. The interventions employed in this Program are common in many KP Regions but with varying degrees of success. For example, in the Georgia Region, Call Center telephone outreach to contact women aged 52-69 years who are past due for a mammogram was one of the most successful outreach methods, whereas the mobile mammography van outreach was the least successful activity. Our practice results are transferable among KP Regions but could show varying results depending on how implemented.

Table 1. Team members for KP Georgia Region’s Breast Health and Cancer Detection Program

| Program leaders: | Adrienne Mims, MD, MPH, Chief of Prevention and Health Promotion, TSPMG; Leslie Litton, Director, Allied Health Services, KFHP |
| Program sponsors: | Marcia Thompson, MD, Chief, Department of Radiology, TSPMG; Dennis Tolsma, MPH, Director, Clinical Quality Improvement, KFHP |
| Patient Education Coordinator: | Kecia Leatherwood, MS, Prevention and Health Promotion, KFHP |
| Breast cancer screening work group members: | Donna Deckard, Associate Manager, Health Care Operations, KFHP; Debra Carlton, MD, Associate Medical Director, Primary Care, TSPMG; Carrie Sprenkle, RN, Quality Project Coordinator, Affiliated Care, TSPMG; Lauren Perkins, Outcomes Measurement Analyst, KFHP; Judy Griffith, RN, MS, Maternal Child Health Coordinator, Obstetrics/Gynecology, KFHP; Toni Best, RN, Advice Nurse Supervisor, Call Center, KFHP; Martha Wilber, MD, Chief, Department of Medicine, TSPMG (1995-98); Mark Hackman, MD, Chief, Department of Medicine, TSPMG (1999); Daria Fluker, Radiology Supervisor, Southwood Office, KFHP; Gail Kraft, Clinical Information Systems Analyst, KFHP |
| Interdisciplinary Prevention Committee (IPC) Contact Person: | Thomas M. Judd, MS, PE, CCE, CPHQ Director, Quality Assessment, Improvement, and Reporting, Kaiser Permanente Georgia Region Nine Piedmont Center 3495 Piedmont Road, NE Atlanta, GA 30305-1736 |

Introduction

The Kaiser Permanente (KP) Georgia Region, which includes The Southeast Permanente Medical Group (TSPMG) and Kaiser Foundation Health Plan (KFHP) of Georgia implemented its Breast Health and Cancer Detection Program in November of 1994, when the organization’s Interdisciplinary Prevention Committee (IPC) prevention priority was set as breast cancer screening.

Background

The IPC was initiated as a part of the Quality Forum (the KP Georgia Region Quality Improvement Committee) in late 1994. A charge of IPC was to identify priorities for quality improvement in preventive health services. The IPC conducted a review of scientific literature and considered both national and state health initiatives in considering what services to establish as priorities. The IPC also considered areas where low-cost interventions might achieve KP Regional goals to enable the Georgia Region to become a leader in delivery of medical care as measured by HEDIS effectiveness-of-care measures.
Breast cancer screening was selected as a top-ten priority for guideline development and for additional intervention. Breast cancer will develop in one of every eight American women in her lifetime. Breast cancer is the leading cause of cancer deaths in women aged 15 to 64 years. Forty-eight percent of new breast cancer cases and 56% of all breast cancer deaths occur in women aged 65 years and older. Breast cancer is most treatable and curable when it is found early, and the key to early detection is screening.

The national HEDIS result of 71%, reported in May 1995, provided our baseline performance measurement. This result fell short of our goal of being in the 90th percentile of performance on this and several other HEDIS effectiveness-of-care measures.

In August 1995, the Quality Forum accepted the IPC recommendations, endorsed by the Department of Medicine, which emphasized the importance of annual clinical breast examination and mammography for women of targeted age groups. In November 1997, a new Excellence in Quality (EIQ) HEDIS Improvement Program began work. Its charge was to undertake analyses of underlying causes of reduced performance and to develop additional steps to impact year-end 1997 performance and for incorporation into care delivery processes in 1998. In March 1998, the Quality Forum Executive Committee designated breast cancer screening one of the six organizational quality priorities for 1998 and designated "owners" who would be accountable for this performance—the Chief of Radiology and the Director of Radiology. At that time, the KP Georgia Region’s Clinical Affairs Division designated mammography as one of four priorities for improvement by the local Implementation Team—a collaborative effort with KP’s Care Management Institute.

**Program Objectives**

One objective of the Breast Health and Cancer Detection Program has been to assist our members and practitioners with information and treatment to facilitate adherence to practices that promote early detection of potential breast cancer. The second objective of the Program has been to sustain measurable improvement in the screening rates to a level that meets or exceeds the 90th percentile of HEDIS breast cancer screening rates as reported in Quality Compass.¹

Program activities were implemented in 1997. The 1996 screening rate therefore served as a baseline rate. If the program activities were efficacious in increasing and sustaining the screening rate, then the 1999 rate could be expected to be much greater than the 1996 rate; and the screening rates should exhibit a trend of increasing rates from 1996 through 1999. On the basis of the current screening rates, we expected to meet or exceed projected rates.

For the sample size used to calculate each year’s mammography screening rate, we used administrative data only to calculate the screening rate. We did not select samples: thus, 100% of the eligible population was used to calculate rates.

Thus, the 1999 predicted rate was developed by using a simple linear projection from historical rates (Table 2). Year-end 1999 actual data showed a mammography screening rate of 84.3% (confirming the predicted rate; not a statistically significant difference from 1998).

**Program Description**

The EIQ’s designated Breast Cancer Screening Work Group, in cooperation with the IPC, the Implementation Team, and under the general direction of the Quality Forum, have implemented a broad array of activities to improve breast cancer screening rates. These activities have been intended to improve member access to screening services, member and practitioner awareness for timely screening, and practitioner adherence to screening guidelines.

**Improving Member Access**

Access was considered on the basis of 1996 HEDIS results to be a key barrier to improved performance. The IPC Continuous Quality Improvement team (IPC/CQI) was convened in May 1997 to discuss ways to increase access to mammography. Saturday hours and mobile mammography were identified as potential activities to overcome access barriers.

A mobile mammography pilot study was conducted in December 1997. Although 60 women were screened and two previously undetected cancers were found, the mobile mammography program was discontinued because of mammogram quality problems that led to increased patient callbacks.

In November 1997, the EIQ recommended analysis of scheduling backlogs greater than three months that began the same month. Call Center staff examined wait lists, and primary care operations began to provide backfill staffing to allow practitioners with the longest wait lists to provide examinations, including clinical breast examination and referral to mammography.
Unique aspects of the solutions developed that year and in 1998 included the following:

- Use of Saturday sessions with van transportation from other nearby centers that don’t have mammography services (and offering Pap smears at the same time);
- Developing mechanisms for self-referral by members for mammograms, including walk-in capability; and
- Ensuring appropriate capacity at high-use facilities by adding second mammography units at the Southwood and Gwinnett Medical Offices.

**Improving Member and Practitioner Awareness**

Throughout 1997, the EIQ recommended implementation of a broad array of low-cost ways of improving member and practitioner awareness of the need for timely screening.

- Fuchsia-colored chart reminders were placed in the charts of women aged 50 years and over not screened by mammography for two years. This reminder was easily recognized by practitioners during the visit of a woman overdue for a mammogram recommended by the Breast Cancer Screening Prevention Guideline.2
- Recommended Screening Preventive Services for Adults wall charts3 were placed in all adult exam rooms to remind practitioners and members about important preventive services.
- In 1997, the Georgia Region initiated a mammography tracking system based in the Radiology Department to monitor patients with abnormal clinical breast examinations or mammograms. Patients with an abnormality are contacted by phone or letter through the ordering physician to notify them of results and needed follow-up appointments.
- Health care team (HCT) and Call Center staff began to call members in the target group missing mammograms that year. Mammography Reminder Cards, entitled “You Oughta Be in Pictures”4 also were mailed to members who had missed mammograms. Adult Health Preventive Services Guidelines brochures5 were mailed to all member households.

**Improving Practitioner Adherence**

- Beginning in 1995, the Georgia Region began redesign of primary care delivery—shifting emphasis in accountability of service and clinical care quality from individual primary care physicians to HCTs. That accountability has been linked to financial incentives for improvement in selected areas of care.
- In August 1995, early detection and screening of breast cancer was identified as one of the preventive service priorities for which HCTs would be held accountable. To motivate improved screening rates, each HCT received an inservice presentation on the Breast Cancer Screening Prevention Guideline6 and mechanisms to implement it during any clinical encounter. TSPMG began to motivate its practitioners to improve

| Table 2. Year-end actual mammography screening rates for KP Georgia Breast Health and Cancer Screening Detection Program (HEDIS 3.0) |
|---|---|---|---|---|
| Year | Had mammogram | Not screened | Population | Proportion having mammogram |
| 1996 | 5179 | 1838 | 7017 | 73.8% |
| 1997 | 6535 | 2236 | 8771 | 74.5% |
| 1998 | 6895 | 1689 | 8554 | 80.6% |
| 1999 | 8386 | 1553 | 9939 | 84.3% |
Table 3. System and process interventions in the Breast Health and Cancer Detection Program

<table>
<thead>
<tr>
<th>Date of Action</th>
<th>Action taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1995</td>
<td>Department of Medicine adopts guideline for the provision of a clinical breast examination and mammography annually for women aged 50-65 years and every 1-3 years from ages 65-85 years.</td>
</tr>
<tr>
<td>August 1995 - December 1995</td>
<td>Prevention guidelines, including breast cancer screening presented by Chief of Prevention to Affiliated Community practitioners at all medical facilities and five other locations (including Callaway Gardens orientation).</td>
</tr>
<tr>
<td>August 1995</td>
<td>A breast care booklet describing the clinical breast examination and the mammography screening guideline was made available for distribution to the members by the clinicians during office visits.</td>
</tr>
<tr>
<td>October 1995</td>
<td>Quality Forum approved Interdisciplinary Prevention Committee recommendations:</td>
</tr>
<tr>
<td></td>
<td>• Undertake wide distribution of Adult Health Prevention Services Guidelines brochure to inform members about recommended preventive services, including influenza vaccination;</td>
</tr>
<tr>
<td></td>
<td>• Build systems to enable reminder notices to members in four areas: childhood immunization; mammograms for women age 50+ years; diabetic retinopathy screening; and flu shots.</td>
</tr>
<tr>
<td>October 1995</td>
<td>The KP Georgia Region set performance goal of 80% as one of the quality measures for Medical Services Agreement compensation bonus.</td>
</tr>
<tr>
<td>Spring 1996</td>
<td>Recommended Screening and Preventive Services for Adults wall charts posted in all adult primary care modules to remind primary care practitioners of target ages and frequency of mammogram screening.</td>
</tr>
<tr>
<td>April 1996</td>
<td>Mammography Reminder Card: You Oughta Be in Pictures mailed to women aged 50+ years who had not had a mammogram since 1/1/94.</td>
</tr>
<tr>
<td>April 1996</td>
<td>To acknowledge reaching the 200,000-member milestone, the Georgia Region sent a mailing to all member households promoting prevention, including a brochure to inform members about preventive services guidelines. This Adult Health Preventive Services Guidelines brochure includes a women's health section with breast cancer screening information for normal and high-risk women.</td>
</tr>
<tr>
<td>March - July; October - November 1996</td>
<td>The CME Training in Primary Care Delivery Model rolled out to all HCTs in all nine medical centers. The Chief of Prevention, Health Promotion, and Research presented one-hour training on preventive services recommendations and implementation recommended by IPC and Prevention Team (emphasizing clinical breast examination and ordering mammogram on any visit).</td>
</tr>
<tr>
<td>September 1996</td>
<td>Treatment Options for Breast Cancer printed in &quot;Partners in Health&quot; article that was mailed to all households.</td>
</tr>
<tr>
<td>November 1996</td>
<td>The Georgia Region set a performance goal of 77% minimum, 79% full attainment as one of the quality measures for the Medical Services Agreement compensation bonus.</td>
</tr>
<tr>
<td>January 1997</td>
<td>Breast cancer screening was selected as initiative for continuous quality improvement activity for Interdisciplinary Prevention Committee in 1997.</td>
</tr>
<tr>
<td>March 1997</td>
<td>Quality Forum reviewed recommended quality measures for geriatric care—flu shots for older adults, breast cancer screening, and eye examinations for members with diabetes.</td>
</tr>
<tr>
<td>March 1997</td>
<td>Results of analysis of members aged &lt;50 years receiving mammogram: distributed to Department of Medicine practitioners and Chief of Obstetrics/Gynecology Department.</td>
</tr>
<tr>
<td>April 1997</td>
<td>The IPC Department of Medicine Guidelines Team completed biennial review of Breast Cancer Screening Prevention Guidelines, emphasizing that women ages 40-49 years may be offered mammogram after discussion of risks and benefits.</td>
</tr>
<tr>
<td>May 1997</td>
<td>Interdisciplinary Prevention Committee Continuous Quality Improvement (IPC/CQI) team met to discuss ways to increase access to mammography—identifies Saturday hours, mobile mammography, chart reminders, data feedback to HCTs.</td>
</tr>
</tbody>
</table>
Using data from member and encounters system, Mammography Reminder Cards (“You Oughta Be in Pictures”) mailed to women aged 50+ years for whom we had no record of screening in prior two years.

Mammography screening rates distributed to HCT members as recommended by IPC/CQI.

Quality Forum received feasibility report to improve access to mammography through a mobile screening service and assigned responsibility to Chief of Prevention, Health Promotion, and Research to develop. Mobile Mammography Project Team met to develop plans for mobile mammography at small clinics without onsite mammography.

Updated screening rates prepared at HCT level and distributed to teams per ICP/CQI recommendation.

Outreach calls, letters, and clinic fliers used at four smaller facilities to reach target group of women aged 50+ years without mammogram in at least two years.

Georgia Region began a Radiology-based mammography tracking system to monitor patients with abnormal clinical breast examinations or mammograms. Members with an abnormality were contacted by phone or letter through the ordering physician to notify them of the results and needed follow-up appointments.

Quality Forum reviewed HEDIS Quality Compass data for the Georgia Region and for other managed care organizations inside and outside KP. Quality Forum recommended special efforts be undertaken to improve performance—senior management designated five priority areas, including breast cancer screening.

Georgia Region conducted annual mailing of Adult Health Preventive Services Guidelines to all member households. This 1997 brochure includes women’s health recommendations; chart summarizes age- and gender-specific screening recommendations, including ages and frequencies for breast cancer screening.

New Excellence in Quality (EIQ) HEDIS Improvement Team began with charge to undertake analyses of underlying causes of reduced performance and to develop additional steps for incorporation in 1997 and for incorporation into care delivery processes in 1998. Quality Forum November meeting reviewed initial targets of opportunity for improvement identified by team. Focus of interventions developed included analysis of scheduling backlogs greater than three months and recommendation for second mammography unit at Southwood Medical Office.

Fuchsia-colored chart reminder placed in chart of women aged 50+ years unscreened for two years as readily recognized cue to alert practitioners during the visit of a women overdue for guideline-recommended examinations.

Call Center-examined wait lists; Primary Care operations provided backfill to allow practitioners with longest waitlists to provide examinations, including clinical breast examination and referral to mammography.

Radiology Department contacted women scheduled for mammograms three months out and offered them current appointments at new Saturday sessions.

Mobile mammogram pilot project carried out at three small medical office sites. Total of 60 women were screened, and two previously undetected cancers were found.

The Interdisciplinary Prevention Committee (IPC) reviewed the Breast Cancer Screening Prevention Guidelines. The group was charged with evaluating strategies to increase screening in women aged 50+ years.

New preventive services wall charts, developed by Prevention and Health Promotion Department, were posted in adult primary care exam rooms to remind both primary care practitioner and patient of needed services at time of visit, including mammography for women aged 50+ years.
## Table 3. (Cont.)

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 1998</td>
<td>IPC/CQI Team met and developed list of barriers and potential interventions to guide 1998 work efforts—breast cancer screening was designated as the focus for 1998 improvement.</td>
</tr>
<tr>
<td>February 1998</td>
<td>EIQ—HEDIS Team referred to work on making 1997 steps &quot;part of the way we do business.&quot; Recommendations taken from IPC/CQI included continuing access improvements, eg, Saturday sessions, reviewing Mobile Mammography Pilot Project results, implementing second mammography unit at Gwinnett Medical Office.</td>
</tr>
<tr>
<td>February 1998</td>
<td>Previous interventions were reviewed including: Mammography Reminder Card: You Oughta Be in Pictures, fuchsia chart reminder, blue Stable Events form, HCT feedback reports, and Mobile Mammography Pilot Project evaluation.</td>
</tr>
<tr>
<td>March 1998</td>
<td>Quality Forum Executive Committee designated breast cancer screening one of six organizational quality priorities for 1998; designated &quot;owners&quot; who would be accountable for performance: Chief of Radiology, Director of Radiology.</td>
</tr>
<tr>
<td>March 1998</td>
<td>Clinical Affairs Division entered into Memorandum of Understanding with Kaiser Permanente’s Care Management Institute to share cost of two staff, Physician Implementation Manager and Implementation Manager, and designated mammography as one of four priorities for their activities.</td>
</tr>
<tr>
<td>May 1998</td>
<td>Task force was developed to create a system to allow women to call the HealthLine to schedule mammograms without having a clinical breast examination first.</td>
</tr>
<tr>
<td>June 1998</td>
<td>Prevention and Health Promotion Department mailed the Mammography Reminder Card: You Oughta Be in Pictures to women aged 52+ years without a mammogram since 1/96.</td>
</tr>
<tr>
<td>June 1998</td>
<td>First meeting of the Mammogram/Pap Smear Committee discussed coordination of same-day appointments for mammograms and Pap smears, at which group brainstormed barriers to achieving this goal.</td>
</tr>
<tr>
<td>June 1998</td>
<td>The Breast Cancer Screening Workgroup adopted the standard that routine screening mammogram would be within 20 working days for facilities with two machines.</td>
</tr>
<tr>
<td>July 1998</td>
<td>Departments of Medicine, Obstetrics/Gynecology, and Radiology collaborated on revision of Breast Cancer Screening Prevention Guidelines.</td>
</tr>
<tr>
<td>July 1998</td>
<td>In compliance with the 1997 Balanced Budget Act, a task force developed policy and procedures to provide self-referral mammograms for women aged 40+ years with Medicare—extended to all women who met screening criteria.</td>
</tr>
<tr>
<td>July 1998</td>
<td>A mammography self-referral questionnaire was developed by the Call Center and Prevention and Health Promotion Department and reviewed by the Mammography/Pap Smear Committee.</td>
</tr>
<tr>
<td>August 1998</td>
<td>A letter was mailed to all Medicare-eligible women aged 40+ years informing them that they could self-refer for mammography.</td>
</tr>
<tr>
<td>August 1998</td>
<td>New mammography appointment slots were created—a 20-minute screening (routine) appointment and a 30-minute diagnostic (nonroutine) appointment.</td>
</tr>
<tr>
<td>August 1998</td>
<td>The Call Center staff was trained on how to schedule mammograms by phone for women who called and had no symptoms.</td>
</tr>
<tr>
<td>August 1998</td>
<td>Saturday hours for mammography added to Southwood Medical Office, and the template was made available to HCT and Call Center for scheduling.</td>
</tr>
<tr>
<td>Month</td>
<td>Action</td>
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<tr>
<td>------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>August 1998</td>
<td>IPC recommended orange (instead of fuchsia) chart reminders be placed in charts of unscreened</td>
</tr>
<tr>
<td></td>
<td>women aged 52+ years as a readily recognized cue to alert practitioners during the visit of a</td>
</tr>
<tr>
<td></td>
<td>woman overdue for guideline-recommended examinations. Prevention and Health Promotion Department</td>
</tr>
<tr>
<td></td>
<td>developed chart reminder and implemented process for reminders to be placed in medical records.</td>
</tr>
<tr>
<td>August 1998</td>
<td>Call Center began outreach calls to women aged 52+ who had not had a mammogram since 1/1/95 and</td>
</tr>
<tr>
<td></td>
<td>scheduled mammograms during that call.</td>
</tr>
<tr>
<td>August 1998</td>
<td>Prevention and Health Promotion Department supplied Obstetrics/Gynecology Department with adult</td>
</tr>
<tr>
<td></td>
<td>prevention wall charts that were placed in all exam rooms.</td>
</tr>
<tr>
<td>September</td>
<td>Call Center staff began reminder calls to women scheduled for mammograms at Southwood, Glenlake</td>
</tr>
<tr>
<td>1998</td>
<td>and Crescent Center Medical Offices to decrease the no-show rate.</td>
</tr>
<tr>
<td>September</td>
<td>Obstetrics/Gynecology Department held twice-monthly Women’s Health Day on Saturdays, when</td>
</tr>
<tr>
<td>- December</td>
<td>women had both Pap smear and mammogram (if indicated).</td>
</tr>
<tr>
<td>1998</td>
<td>October 1998 New Regionwide monthly e-mail newsletter, <em>Ounce of Prevention</em> featured the revised</td>
</tr>
<tr>
<td></td>
<td>Breast Cancer Screening Prevention Guidelines.</td>
</tr>
<tr>
<td>October 1998</td>
<td>Medical center staff placed posters promoting breast health and wore pins in celebration of Breast</td>
</tr>
<tr>
<td></td>
<td>Cancer Awareness Month.</td>
</tr>
<tr>
<td>October 1998</td>
<td>The Breast Health and Cancer Detection brochure was revised and printed by Prevention and Health</td>
</tr>
<tr>
<td></td>
<td>Promotion Department, then made available to HCTs for module distribution.</td>
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<tr>
<td>October 1998</td>
<td>Adult Health Preventive Care Services Guidelines brochure was revised, printed, and mailed to all</td>
</tr>
<tr>
<td></td>
<td>subscriber households. The brochure includes reminders about frequency of mammography.</td>
</tr>
<tr>
<td>October 1998</td>
<td>Procedure developed to expedite referral process for affiliated care members when contacted</td>
</tr>
<tr>
<td></td>
<td>through Call Center outreach efforts.</td>
</tr>
<tr>
<td>November 1998</td>
<td>At the Affiliated Practitioners Advisory Council meeting, the Adult Health Preventive Care</td>
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<tr>
<td></td>
<td>Services Guidelines mailer and the Healthwise Handbook were introduced, both of which include the</td>
</tr>
<tr>
<td></td>
<td>mammogram guidelines.</td>
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<tr>
<td>November 1998</td>
<td>HEDIS mammogram results, goals, and the mammogram chart reminders were discussed at the</td>
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<tr>
<td></td>
<td>Affiliated Practitioner Advisory Council Meeting, and practitioners were invited to participate</td>
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<td></td>
<td>in the guideline revisions.</td>
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<tr>
<td>November 1998</td>
<td>Affiliated Network chart data were abstracted to augment the administrative data.</td>
</tr>
<tr>
<td>November 1998</td>
<td>Chart reminders were inserted into all Affiliated Care charts that did not contain evidence of a</td>
</tr>
<tr>
<td></td>
<td>guideline-recommended mammogram.</td>
</tr>
<tr>
<td>November 1998</td>
<td>Analysis of phone outreach calls and feedback from clinicians determined that some women in our</td>
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<tr>
<td></td>
<td>target group identified by our administrative records did have a mammogram within the last two</td>
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<td>years. A chart review was authorized to validate the negative administrative data at some sites.</td>
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<tr>
<td>November 21, 1998</td>
<td>Mammmography Days event was held at Southwood Medical Office for Cascade female members</td>
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<tr>
<td></td>
<td>without transportation. Eligible women were transported by van to the facility on a Saturday to</td>
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<td></td>
<td>receive mammogram and Pap smear if needed. Because of short notice of scheduling, only four</td>
</tr>
<tr>
<td></td>
<td>women took advantage of this service.</td>
</tr>
<tr>
<td>December 1998</td>
<td>Call Center outreach to women aged 52+ years without a mammogram since 1/1/95 was extended to</td>
</tr>
<tr>
<td></td>
<td>the Affiliated Care members.</td>
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<tr>
<td>December 1998</td>
<td>Primary care practitioner-specific 8/98 year-to-date performance rates for Pap smears,</td>
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<td></td>
<td>mammography, and diabetes retinopathy screening were provided to each physician in Adult Medicine</td>
</tr>
<tr>
<td></td>
<td>Department.</td>
</tr>
<tr>
<td>December 1998</td>
<td>A mammography machine began service at Gwinnett Medical Office.</td>
</tr>
<tr>
<td>Year</td>
<td>Action Description</td>
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<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>December 1998</td>
<td>Call Center staff called women aged 50+ years without mammogram in two years and scheduled appointments at the Gwinnett Medical Office for Gwinnett and Alpharetta Medical Office members.</td>
</tr>
<tr>
<td>December 1998</td>
<td>The Breast Health and Cancer Detection brochure was mailed to every TSPMG physician and associate provider to accompany an article on breast cancer screening in the TSPMG Newsletter.</td>
</tr>
<tr>
<td>December 1998 - January 1999</td>
<td>The Prevention and Health Promotion Department placed the updated recommended screening and preventive services chart in exam rooms at each medical office.</td>
</tr>
<tr>
<td>January - February 1999</td>
<td>The Prevention and Health Promotion Department placed mammogram posters in women's bathrooms throughout all medical centers.</td>
</tr>
<tr>
<td>January 1999</td>
<td>The Network Pulse Newsletter announced unveiling of a postage stamp to benefit breast cancer research, an effort spearheaded by KP surgeon Balasz Bodai, MD.</td>
</tr>
<tr>
<td>February 1999</td>
<td>3rd Quarter 1998 HEDIS mammogram results were distributed to the Affiliated Care practitioners.</td>
</tr>
<tr>
<td>March 1999</td>
<td>The 1998-1999 Core Catalog Health Education Publications was distributed at the Affiliated Practitioner Advisory Council meeting along with the Prevention wall charts and the “Healthwise Handbook”.</td>
</tr>
<tr>
<td>March 1999</td>
<td>The second annual Mammography Days event was held at the Panola and Cascade Medical Offices. Survey results ranged from fair to excellent. The fair rating was based on members desiring transportation be available during the week too.</td>
</tr>
<tr>
<td>April 1999</td>
<td>Breast Health and Cancer Detection brochure was sent to the Affiliated Network practitioners and made available for distribution through The 1998-1999 Core Catalog Health Education Publications, which was also distributed.</td>
</tr>
<tr>
<td>April 1999</td>
<td>Network Pulse Newsletter contained the newly created two-page insert entitled, Quality Beat, which was devoted exclusively to quality of care and service issues. Quality Beat contained an article encouraging compliance with the Breast Cancer Screening Prevention Guidelines.</td>
</tr>
<tr>
<td>April 1999</td>
<td>Affiliated care quarterly mailing included the Recommended Screening and Preventive Services for Adults wall chart, the Preventive Checklist, and the mammogram posters, which contain the mammogram guidelines.</td>
</tr>
<tr>
<td>May 1999</td>
<td>A self-requested form for patients who “walk in” to the Radiology Department for a mammogram was developed.</td>
</tr>
<tr>
<td>June 1999</td>
<td>Mammogram Reminder Card: You Oughta Be in Pictures was mailed to all new members in target population and to members aged 50+ years who had never received the brochure in the past.</td>
</tr>
<tr>
<td>June 1999</td>
<td>The survey from the June Mammography Days event at Cascade and Panola Medical Offices reflected positively that members are pleased with the free transportation provided to the medical offices and with Saturday hours.</td>
</tr>
<tr>
<td>June 1999</td>
<td>The breast health posters and the brochure, Breast Health and Cancer Detection, were revised to include the HealthLine number and information about the cost of a mammogram.</td>
</tr>
<tr>
<td>June 1999</td>
<td>Access to Screening Mammography by Self-request policy and procedure was updated.</td>
</tr>
<tr>
<td>June 1999</td>
<td>The Women’s Health Advisor was rolled out to all Obstetrics/Gynecology Departments except for Crescent Center Medical Office.</td>
</tr>
<tr>
<td>June 1999</td>
<td>HCT lead RNs were trained on how to use the self-requested mammogram questionnaire.</td>
</tr>
<tr>
<td>June 1999</td>
<td>Orange chart reminders were revised and inserted in medical records of target population during chart review to remind physicians to order mammograms.</td>
</tr>
<tr>
<td>June 1999</td>
<td>Call Center began outreach calls to women aged 52-69 years in target populations who have not been screened.</td>
</tr>
</tbody>
</table>
The Call Center staff was trained on the ICS system and now has the capability to schedule women for mammograms.

The Breast Cancer Screening Work Group confirmed activities for the October Breast Cancer Awareness Month, and activity owners were named.

The Call Center asked to do another round of calls to women without mammograms in the target populations. Once calls were concluded, a list of women who were not scheduled for a mammogram was forwarded to HCT for follow-up.

Two new breast health brochures were mailed to members who had already received the Mammogram Reminder Card: You Oughta Be in Pictures—Mammograms: Not Just Once, But For A Lifetime was sent to women aged 70+ years, and Breast Cancer Facts was sent to women aged 52-69 years.

Review of the 2nd quarter HEDIS data reflected a 6% increase in the midyear measurement compared with midyear 1998.

breast cancer screening rates as one of two clinically significant measures of quality performance for adjustment of each HCT’s incentive reward. By Fall 1998, HCT-specific screening rates were reported on a quarterly basis—making HCTs aware of their relative performance and potential relative financial benefit.

System and process interventions made since inception of the KP Georgia Region’s Breast Health and Cancer Detection Program are shown in (Table 3).

<table>
<thead>
<tr>
<th>Table 4. Improved mammography screening rate, KP Georgia Region, 1996-1999</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Comparison</strong></td>
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<tr>
<td>1996-1997</td>
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<td>1997-1998</td>
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<td>1998-1999</td>
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</tbody>
</table>

The observed improvement from 1996-1999 was statistically significant (p < 0.0001). The population targeted by this program is all women aged 50 years and older in the Georgia Region. Because the population in the measure specification covers most ages of women in the target population, we presume that program impact is accurately represented by the HEDIS rates.

Table 4 shows statistical significance of the observed improvement in mammography screening rate from 1996 to 1999. The observed improvement from 1996-1999 was statistically significant (p < 0.0001).

Figure 1 illustrates the screening rate for 1996 through 1999. The 1999 rate was projected using the year-to-date screening rate. Analyses were retrospective and were conducted using EPI-INFO 6.02. The screening rate increased from 73.8% in 1996 to 84.3% in 1999 ($\chi^2 = 271.03$, p < 0.01, df = 1). During the period 1996-1999, the screening rate increased at approximately 3% per year (absolute). This change represents a sustained, linear trend ($\chi^2 = 337.87$, p < 0.01, df = 3).
Comment

Program Evaluation

The Breast Health and Cancer Detection Program has achieved demonstrable results. In 1997 and 1998, the IPC/CQI team (and in 1999, the EIQ Breast Cancer Work Group) systematically identified issues impeding performance improvement and have recommended innovations to motivate and accelerate improvement in breast cancer screening.

The program has achieved its objectives. The breast cancer screening rate for women rose from 74% in 1996 to 84% for all insurance product lines in 1999. National benchmarks for 1998 were 81% (90th percentile for commercial members) and 84% (90th percentile for Medicare-eligible members). Our 84.3% screening rate thus apparently makes the Georgia Region a KP national leader and puts the Georgia Region in the top 10% of all health plans in the country.

The program has achieved these results with a broad array of activities: Saturday hours, mobile mammography, medical record reminders, patient and physician reminders, Call Center outreach, practitioner feedback on performance, and practitioner financial incentives. Some of these activities are relatively low in cost (eg, the fuchsia inserts in medical records). Several other innovations demonstrate the ability to integrate improved care management into evolving service delivery within KP—such as use of Call Center technology and redesign of Primary Care delivery. Although we cannot point to any one of these innovations as a key driver of improvement, implementing this cluster of innovations can substantially improve care delivery.

In particular, the Call Center outreach was one of the most successful methods implemented by the Georgia Region. The purpose of this outreach tool was to call women aged 52-69 years who were past due for a mammogram and to schedule an appointment for them. In some instances, the Call Center was not able to reach the patient; if that were the case, those names and phone numbers were forwarded to the HCT for follow-up. At least three attempts at calling the patient were made before involving the HCT. This activity should be increased to maximize future return on these efforts.

The least successful activity was the mobile mammography van outreach. Although the mobile mammography van did not have the turnout in numbers that we had anticipated, two women were found in the early stages of cancer. The purpose of this outreach effort was to provide mammography services at sites without mammography equipment. This intervention was directed at women who needed transportation to a medical center to get a mammogram. The protocol for this intervention was to process the films at the end of the day. A problem occurred in some cases where incomplete views of the breast were taken, making the films inadequate. Forty (65%) of the women had to return for repeat views. No additional mobile mammography interventions have been implemented. However, one initiative that came out of this outreach was the Mammography Days event, in which vans are used to transport women to medical offices with onsite mammography equipment. Mammography Days occurs on a quarterly basis and has been successful. Plans to use the mobile mammography van are uncertain. But the initiative to provide van transportation should be increased as a feasible alternative to the mobile mammography van outreach.

The impact of improved mammography screening access on the rate of breast cancer diagnosis and breast cancer stage at diagnosis were not available when this article was prepared. The Georgia Region began developing a Breast Cancer Registry with stage-at-diagnosis information in 1996. The 1996 and 1997 data showed results comparable with other KP Regions. The 1998 and most recent data are currently undergoing data integrity checks related to our recently required state reporting and are not available at this time.

Cost-effectiveness

Data from the Centers for Disease Control and Prevention suggest that screening women aged 50-69 years for breast cancer every one to two years can lead to a 20% to 30% reduction in breast cancer mortality. One study indicated that the combination of a clinical breast examination and an annual mammogram prevents premature death at a cost of $22,000 to $84,000 per life-year gained in women aged 55 to 65 years, depending on the effectiveness of screening. Our Georgia Region’s data on the evaluation of cost-effectiveness of the described interventions are forthcoming. In the meantime, our annual budget for the KP-Georgia Breast Health and Cancer Detection Program is $71,000, a modest investment to achieve these substantial gains.
Implications

The following activities have already become the normal practice for breast cancer screening outreach and are embedded in our ongoing processes of care. We therefore expect to sustain the gains made and possibly even improve our results.

- Each summer, the Call Center phones women aged 52-69 years who have not been screened for two or more years.
- Each May, the Prevention and Health Promotion Department will mail the "Mammography Reminder Card: You Oughta Be in Pictures" or the "Mammograms: Not Just Once, But For A Lifetime" brochure to women aged 50 years and older.
- During the second quarter of each year, the Prevention and Health Promotion Department will place colorful "chart reminders" with the Breast Cancer Screening Prevention Guidelines on them in the medical records charts of women aged 50 years and older who have not had a mammogram in two or more years.
- The breast cancer screening rate for women rose from 74% in 1996 to 84% for all insurance product lines in 1999.
- The breast health posters with the Breast Cancer Screening Prevention Guidelines will be revised and placed in the bathrooms during the second quarter of each year by the Prevention and Health Promotion Department as needed.
- The "Recommended Screenings and Preventive Services for Adults" wall chart that is placed in all medical center exam rooms is revised every two years by the IPC and the Prevention and Health Promotion Department. The wall chart is sent to the network practitioners.
- The Radiology Department will continue to offer Saturday appointments that support routine mammograms and "Well Women" examinations and will provide transportation to the medical centers for women who need it.

Transferability

None of our changes in process of care (with the possible exception of HCT incentives) are intrinsic to the Georgia Region. Some of the project processes, tools, and practices (eg, Saturday hours, self-referral, walk-in appointments, reminders) are common practice in many KP Regions.

The Georgia Region’s Prevention and Health Promotion Department is dedicated to providing high-quality care to the members. In order to do this, this Department practices networking with other KP Regions and gleans from them initiatives that have proved successful. Some of the initiatives that KP Georgia uses for breast awareness were adapted from the KP Northwest Region. Specifically, the KP Northwest Region’s EpicCare Health Maintenance Reminder became our paper version chart reminder; the Northern California Region’s Clinic Visit Summary form to alert clinicians became our exam room wall chart, and the letter outreach became our "Mammography Reminder Card: You Oughta be in Pictures" and "Mammograms: Not Just Once, But For A Lifetime" brochure mailer; and the KP Northwest Region’s Women’s Safety Net gave us the idea to select a particular population to target.

The nature of the innovations we used in the Georgia Region make this Program a model of care both for other medical conditions and for other KP Regions. In the absence of an electronic medical record, medical record inserts are a low-cost method for prompting behavior on the part of patient and practitioner whenever a visit occurs. This simple activity can be used for promoting adherence to clinical practice guidelines for other diseases, such as asthma and diabetes. We have also focused recent efforts to develop a registry for our prostate and colorectal cancers and melanomas similar to our Breast Cancer Screening Registry. In addition, the Georgia Region mailed the large-print edition of the "Mammograms: Not Just Once, But For A Lifetime" brochure to women aged 70 years and older. Dr Adrienne Mims and Kecia Leatherwood presented our results at the Kaiser Permanente Third Prevention & Self-Care Symposium in December 1999 with an exhibit called "Implementation of a Breast Health Screening Program for the Hard-to-Reach Woman."

Conclusion

In conclusion, although we have no specific feedback information yet from other KP Regions that have adopted aspects of our Georgia Region project (either regarding their experience or with respect to quality improvement results with the inreach and outreach activities and educational programs), we believe that any KP Region can apply a similar cluster of interventions to achieve measurable, sustainable quality improvement. ❖
Experience Is Interpretive

At its heart, what we call experience is an interpretive, not a perceptive, encounter. Seeing is one thing. But how we choose to interpret what we see will determine the story we tell and the life we lead.

Richard Stone, “The Healing Art of Storytelling”
Improvement of Cardiac Outcomes in Kaiser Permanente of Ohio

Introduction
Improving cardiac outcomes was first defined as an organizational goal in the Strategic Quality Plan of Kaiser Permanente of Ohio (KP Ohio) in 1992. Table 1 lists the team members and contact person for this project.

The literature indicates that the use of aspirin in patients with known coronary artery disease (CAD) can decrease cardiac events by 25%.1 Lowering cholesterol to below 100 mg/dL in high-risk patients with CAD can reduce morbidity and mortality by as much as 35%.2,3 Beta blockers after a myocardial infarction have also been shown to decrease cardiac events.4

Physician compliance with guidelines pertaining to the use of aspirin and cholesterol-lowering drugs has been low.5,6

Background
This project was a joint effort between the Kaiser Foundation Health Plan and the Permanente Medical Group of Ohio (OPMG). The team was formed in 1993 to support the Strategic Quality Plan and was led by the Associate Medical Director for Medical Information and the Assistant Medical Director for Quality, Resource Management, and Continuity. The team included the Internal Medicine and Cardiology Departments; members of the Quality, Information Technology, and Clinical Innovation Departments. During the course of the project, individual team members changed, but the goals were maintained.

Process
In 1992, during a clinical strategic planning process which reviewed effective interventions for prevalent diagnoses, we determined that four interventions could have a measurable impact on our members and could improve cardiac outcomes for CAD patients. We estimated that cardiac events could be reduced by as much as 20% if compliance with established guidelines could be improved, with possible further decreases if beta blocker and smoking cessation programs were successful.

The project was implemented in 1994 after the deployment of the Medical Automated Record System (MARS).7 In 1995, an analysis of data from KP Ohio, indicated that one half of admissions for ischemic heart disease and one third of admissions for myocardial infarction were in patients with known CAD, the group at which the interventions described here were directed.

Objectives
The project goal was to improve cardiac outcomes by using four interventions in patients with CAD:
1. Increase aspirin use
2. Increase the use of cholesterol-lowering drugs
3. Encourage smoking cessation
4. Increase beta blocker use after a myocardial infarction.

The specific objective of this project was to statistically decrease cardiac morbidity and mortality. A goal of reducing cardiac morbidity and mortality by 20% was set when this program began in 1994; half of this reduction would come from interventions directed at CAD patients (described here) and half from interventions directed at patients with no CAD.

Methodology
Scope
Cardiac disease is the most common cause of morbidity and mortality in the nation and in our Health Plan membership. The cost of cardiac-related admissions and procedures in KP Ohio is about $20 million per year; and approximately 4% of the membership have a diagnosis of CAD. This project was implemented within the normal duties of the Quality Chief of Internal Medicine, the Chief of Internal Medicine, the MARS team, the Quality, Resource Management, and Clinical Innovation Departments.

Intervention
The intervention consisted of computer-generated reminders from MARS at the time of a visit. Reminders suggested the use of aspirin for CAD patients, LDL cholesterol screening and control for patients with a CAD diagnosis, and use of beta blockers in patients who had a myocardial infarction in the past two years (Figure 1). All OPMG physicians use MARS to document treatment of patients. MARS prints a “paper intermediary” for all patients seen, which consists of a progress note.
that lists patients’ diagnoses, medications, allergies and immunizations, and a reminder page that suggests changes in clinical care when patients are not in compliance with guidelines.

Reminders were not generated for members with contraindications. For example, people with a history of aspirin allergy or side effects, gastritis, or esophagitis, warfarin use, or ticlopidine use were excluded from the aspirin intervention. Approximately 30% of the CAD patients were ineligible for the aspirin intervention due to these contraindications.

The intervention also included generation of comparative reports of physician performance in guideline areas. Literature validated the effectiveness of providing clinical guideline reminders to physicians at the moment of care. In addition, smoking status was collected at every adult visit and was prominently displayed on the progress note with the hope of triggering an education intervention in which clinical staff had been trained.

**Quality Measures**

Eight quality measures were used:

- Percentage of patients with CAD on aspirin
- Percentage of patients with CAD who have had LDL cholesterol screening in the past two years
- Percentage of patients with CAD whose cholesterol level is ≤100 mg/dL
- Percentage of patients receiving beta blockers after a myocardial infarction
- Patient-reported smoking prevalence
- Angina admission rate
- Myocardial infarction admission rate
- Death rate from CAD

Performance goals for these measures were adjusted over time. A performance goal of more than 80% of eligible CAD patients receiving aspirin was set in 1993. The literature indicated that between 13% and 58% of CAD patients take aspirin prophylactically and that only 10% to 15% of CAD patients are at target LDL levels. Baseline measurements in KP Ohio found that 56% of CAD patients were receiving aspirin and 10% were at target LDL levels.

A performance goal of 35% was set in 1996 for patients reaching their target cholesterol level of ≤100 mg/dL. The literature indicates that in a research setting, 60% of patients reached goal. A performance goal of 80% was set for cholesterol testing in the past two years. The KP Ohio baseline for this measure in 1997 was 70%.

No specific goals were set for beta blocker use or for patient-reported smoking prevalence.

The system prompted the collection of smoking status and made that information evident at the moment of care. The clinic smoking-cessation intervention is based on the TRAC program developed by the Center for Health Research. This program features brief tobacco cessation advice and counseling. Videos, written materials, and phone calls provide members with the support they need when they are ready to quit.

A hospital discharge cardiac assessment program was begun in 1995. The care path for this program includes the use of beta blockers for members with myocardial infarction.

In 1995, physician feedback reports were distributed quarterly which detailed the percentage of panel members with CAD who were prescribed aspirin. Similar reports detailing LDL cholesterol screening in the past two years, and LDL level controlled, were started in 1997.

Feedback reports also measured the percentage of panel members who smoked according to patient self-report.

The use of beta blockers after myocardial infarction, a HEDIS measure, was determined by chart review.

Beginning in 1993, hospital admissions for myocardial infarction and angina pectoris as well as CAD death rates have been measured to determine if the interventions have led to improvements in the cardiac morbidity and mortality rates. The number of cardiac deaths is determined through use of State of Ohio Vital Statistics death tapes. The number of hospital admissions is obtained through the billing systems.

**Products**

Clinical practice guidelines for cardiac disease were developed, and provider education occurred at Internal Medicine Department meetings throughout the Permanente Medical Group of Ohio.

****Reminder Notice**

- Your patient has been identified by the Encounter System as having Coronary Heart Disease (CHD). Consider the use of aspirin, because in patients with known CHD, aspirin has been shown to reduce the incidence of future cardiovascular events. (Reference: NEJM 1992; 327:175-181.)

Figure 1.
Quantitative Analysis

The data for 1993 (aspirin) and 1997 (cholesterol screening) were used as baselines prior to the interventions. Statistical Design Analysis Software (STAT-POWER™) was used to analyze the data. Two-tailed tests were used to determine significance levels given a statistical power of .80.

Results

Significant improvements have been made in KP Ohio in compliance with the guideline for aspirin use in patients with CAD (Figure 2). Compliance increased from 56% to 84% (p < .0001) and has been maintained over the 80% goal for nearly three years.

The percentage of CAD patients with LDL levels < 101 mg/dL has increased from 10% to 36% (p < .0001), and the percentage of members with no LDL cholesterol screening within two years declined from 30% to 15% (p < .0001) in the 2.5 years of the intervention (Figure 3).

Physician compliance with beta blocker treatment within six weeks after myocardial infarction was reported as 98% in the 1998 HEDIS review using audited data and HEDIS criteria, an increase from 90% in 1995. The percentage of patients with myocardial infarction in the past two years taking beta blockers was not measured.

Patient-reported smoking prevalence declined from 17.2% in 1994 to 15.8% in 1998 (p < .01).

The CAD morbidity measures are shown in Table 2. The Medicare age ischemic heart disease admissions declined by 25% from the baseline year of 1993 through 1998. The non-Medicare age rate declined by 21%. Both declines were statistically significant (p < .001). The myocardial infarction admission rate declined by 17% in the Medicare age group and 20% in the non-Medicare age group during the same period.

The cardiac mortality rate is shown in Table 3. The Medicare age mortality rate declined from 8.0 per 1000 members/year to 5.5 per 1000 members/year (p < .05). From 1993 to 1997, the cardiac mortality rate in the entire KP Ohio population declined by 20.1% (difference between proportions, p = .24 as compared with the entire population of the State of Ohio).

Comment

This project is unique because it uses computer-generated reminders which are printed at the time of a patient visit. The project has resulted both in increased compliance with guidelines and in decreased cardiac morbidity and mortality. This project was not conducted as a study with a control group, so it is not possible to attribute the results solely to the reminders. However, we observed improved guideline compliance and decreased morbidity and mortality after reminder activation.

The prevalence of CAD in KP Ohio is at Program average for each age band. However, since the KP
Ohio Region has an older population than the other Regions, total prevalence of CAD is the highest of all the KP Regions in the Program. The cardiac interventions implemented in the KP Ohio Region have led to a decline in both cardiac morbidity and mortality rates. Nationally, cardiac mortality rates have also declined.

Many factors have contributed to the secular decline, including a decrease in cigarette smoking and in mean blood cholesterol levels.

From 1993 to 1997, the cardiac mortality rate for the State of Ohio declined by 7.2% from 1993 to 1997. Had the mix of Medicare and non-Medicare members remained the same, the decrease in the KP Ohio cardiac mortality rate would have been around 30%.

Cost-Benefit Analysis

The cost-benefit analysis for these interventions appears to be compelling. In 1998, there were approximately 365 fewer admissions for angina and 120 fewer for myocardial infarction than would have been predicted from 1993 rates. There were approximately 90 fewer cardiac deaths in 1997 than would have been predicted from 1993 rates. There were no incremental personnel costs. Nonpersonnel costs included the cost of increased medications and increased laboratory tests. Between 1997 and 1999, an additional 660 members were dispensed cholesterol-lowering drugs. The amount of antihyperlipidemic agents dispensed due to the encounter reminders also shifted. Cost of the increased medications was $228,000/year. The increased laboratory test costs were $50.00 per member per year, or approximately $33,000.

Transferability

The computer support in KP Ohio will become available to the rest of the organization as the Population Care Registry of the KP Clinical Information System is deployed. The same quality improvements that MARS has provided in Ohio may be seen nationally.

Conclusions

The use of computer-generated reminders and physician feedback reports has led to increased compliance with guidelines and to decreases in both cardiac morbidity and mortality. This program has met our goal of improving cardiac outcomes. The computer-generated reminders have assisted physicians in complying with the guidelines related to care of patients with coronary artery disease. In addition, physician-specific reports have

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a Aspirin and beta blocker reminders, smoking program activated 3/94
b Cholesterol/CAD reminders 3/97
c Cholesterol/Diabetes reminders 9/98
d Decrease from 1993 to 1998 is significant (p < 0.001)
e Decrease from 1995 to 1996 is significant (p < 0.05)
f Decrease from 1995 to 1997 is significant (p < 0.01)

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a Aspirin and beta blocker reminders, smoking program activated 3/94
b p < 0.05 (1995 compared with mean in 1993 and 1994)
c Cholesterol/CAD reminders 3/97
d Decrease from 1993 to 1997 is significant (p < 0.05)
Figure 3. LDL cholesterol levels in CAD patients over time.

Date of measurement:
- 11/97
- 3/97
- 5/97
- 7/97
- 9/97
- 11/97
- 1/98
- 3/98
- 5/98
- 7/98
- 9/98
- 11/98
- 1/99
- 3/99
- 5/99
- 7/99

Percentage of CAD patients
- LDL cholesterol levels < 101 mg/dL
- No LDL cholesterol screening within two years

Reminder activated:
- 1/1/97
- 3/1/97
- 5/1/97
- 7/1/97
- 9/1/97
- 11/1/97
- 1/1/98
- 3/1/98
- 5/1/98
- 7/1/98
- 9/1/98
- 11/1/98
- 1/1/99
- 3/1/99
- 5/1/99
- 7/1/99

Percentage of CAD patients with LDL cholesterol levels < 101 mg/dL.

Percentage of CAD patients with no LDL cholesterol screening within two years.
alerted individual physicians to their performance and have affected practice patterns. These reminders and reports appear to have decreased cardiac mortality more than the national trends. The success of the project is due to reminders and feedback reports in combination with the usual physician education efforts. Although a specific intervention may have had a greater impact than another, each component contributed to the overall success of the KP Ohio Improvement of Cardiac Outcomes project.

References


The Stained-Glass Past

Viewing the past is like peering through a stained-glass window from dawn to dusk. As the sun moves across the sky, the illumination of the many facets of glass changes. As I walk about the room, intricate patterns that were hidden in darkness reveal themselves only from certain angles.

Richard Stone, “The Healing Art of Storytelling”
A Bunker in the Storm
Anonymous*

One-thirty in the morning.
No seats were without bodies in the waiting room.
ER Treatment One was smoking.
Three ambulances arrive back to back,
And the red phone rings again—two more coming in.
One bringing an asthmatic, another with an MVA.
“Sorry, Queens is closed,” they say.
I collide with the day shift Team Coordinator—“You still here?”
“Can’t leave now,” she says, “look at the board.”
No one else could stay late to help.
“We need sub-Q epi, solumedrol, and albuterol for the allergic reaction in F1.”
The elderly man in Trauma C has EKG changes. “I need his old chart please.”
‘DOD needs an ICU bed.”
The seizure patient in Trauma E pulls out his IV and attempts to get up, albeit intoxicated.
“Why is the Tylenol OD in the GYN room?”
“No other beds, Doc.”
“Move him to the hallway, Psych can talk to him there…”
“Doc, EPRP on the line…”
“Get it out, get it out, oh my God, get it out!” introduced us to the woman hosting a frantically misguided bug
in her ear canal.
“Do we have a room?”
“No—empty gurney against the back wall only.”
“Put her there and get me some two percent lidocaine.”
The ultrasound result handed to me shows acute cholecystitis.
“Call the surgeon on call for me please.”
“Doc, you may want to take a look at the allergic reaction—he’s getting worse…”

Suddenly, everything stopped. The lady in Trauma D dismissed the curtain like a strong wind through an
open window. In slow motion, she led her well-appearing child with a probable viral syndrome past the ER
Nurses’ Station. She used his arm as a leash. He was being towed with embarrassment. With agility and
disgust, she used her free arm to wave me off, demanding that her card be returned to her from the chart
rack, as the wait was intolerable. It was clearly an outrage. Her soliloquy continued but faded as she walked
down the ER hall and turned right to the waiting room exit. She was gone, and as she had assured us, would
not be back soon. A pause of bewilderment and self-doubt ensued, interrupted only by disbelief and
bitterness. Surely she had heard the same ruckus, witnessed the same fray, and felt the same storm I had.
After all, wasn’t the ER Treatment One area just one big room? Or was the thin curtain enclosing Trauma
Room D an adequate barrier to the atmosphere of urgency surrounding it? The chaotic winds stirred by the
sick and injured seemingly spared Trauma Room D. It was like a bunker in the storm.

Next time, maybe we ought to send a bulletin to the bunker to update its occupants regarding the danger
outside, and advise them to please wait for a calm. ❖

* Emergency Department, Baldwin Park Medical Center, Baldwin Park, California
A Word from the Medical Directors:  
Can Managing Cost Be Part of Managing Care?

Perhaps the older physicians among you will recall the thirteenth and last law proclaimed in the novel, The House of God: “The delivery of medical care is to do as much nothing as possible.” Written with tongue firmly in cheek in the late 1970s, this novel reminds physicians that a less aggressive approach is sometimes the most reasonable. Perhaps the more sage among you will even be reminded of that part of the Hippocratic Oath that warns against errors of commission. (Recent studies suggest that such errors may be a major problem for American medicine.) Today, the advice proposed by The Thirteenth Law is sometimes greeted with suspicion at best and with accusations of denial of care and threats of lawsuit at worst. What has caused this change of thinking?

In the past ten years, the managed care industry has used “new” methods of physician compensation (capitation rates, “withholds,” etc) that require physicians to share economic risk with the institutions that organize and pay for medical services. The managed care industry has also examined the wide variation in clinical approaches to common problems and has sought “best practices” in an attempt to standardize perceived quality and cost-effectiveness.

PMG physicians have had a different experience than our private-practice peers, many of whom have felt a loss of control and frustration with a system that “denies their patients the care they require.” These physicians firmly believe—and I concur—that the physician/patient relationship is the cornerstone of medicine as we know it. Many PMG physicians believe that managed care as conducted by our for-profit competitors intrudes on that relationship.

Why has this change occurred? I believe that these issues are only symptoms of the real problem: In most cases, neither participant in the physician/patient relationship is placed at great financial risk by the decisions made. In most cases, the employer is the party responsible for making most payments to a health care insurer; and the insurance company is at risk for any medical costs that exceed the sums paid. Unfortunately, as we know, this arrangement of multiple payors (patient, employer, insurance company, and, yes, in many instances, the government) often leads to cost-shifting.

The real question is thus, “Should the employer and/or health insurance company at financial risk for medical decisions have a right to ‘intrude’ into the traditionally sacrosanct physician/patient relationship?” I believe the answer should be no, but only if the physician/patient relationship meets certain conditions.

The first of these conditions is that both participants in the physician/patient relationship be willing to base their medical decisions on evidence-based medicine.

Increasingly, as large volumes of medical information become available to patients “at the click of a mouse,” patients are discovering what most doctors have known for years: Medical literature can be found that will support almost any approach to treating almost any illness. The physician must know the most appropriate one or two approaches for that patient (not an easy task with today’s information explosion). Perhaps an even more difficult task is for the physician to be willing and able to help the patient understand why these evidence-based approaches are the appropriate care for that patient. As requests for medical services increasingly diverge from what would be considered the appropriate “evidence-based” approach, patients should bear an increasing amount of the cost for services they request. Otherwise, Adam Smith’s concept of the Invisible Hand (i.e., purchaser paying more for an item in short supply) will not come into play, and the affordability of health care will decline. For those who suggest that this approach constitutes “rationing of medical care,” I would suggest that many of the 47 million people in America today who cannot afford medical insurance would say that medical care in America is already rationed.

Both the physician and the patient need help to identify evidence-based approaches to diagnosis and treatment. Certainly the state and federal government could have some role in this arena, as have the State of Oregon and the US Centers for Disease Control and Prevention (CDC). More help is required, however—and medical specialty societies could assume a greater role. Traditionally, their role has not been emphasized; instead, the physician/patient relationship has been the cornerstone of health care. This cornerstone now needs help to bear the additional weight of today’s medical decisions. I believe that by helping to define evidence-based medical approaches (especially when a better approach is available or...
when several approaches have equal effectiveness but one approach costs substantially less), medical specialty societies could help physician members to regain the control they so desperately seek.

Some contend that the second condition required to forestall giving employees and/or health insurance companies a right to intrude into the physician/patient relationship is that the physician/patient team be willing to make cofiduciary decisions. I strongly recommend the controversial and provocative paper written by Laurence B. McCullough on this issue. By “cofiduciary,” McCullough means that ethically clinical decisions must not only be best for the individual patient but must also be population-based. “The regulation of clinical judgment, decision making, and behavior should be developed and implemented on the basis of rigorous scientific evaluation of processes of care, to identify those that can be reliably expected to produce a greater balance of goods over harms for patients as these goods and harms are identified and balanced in a rigorous clinical perspective that will define the medically necessary.”

McCullough suggests that without the physician and patient being willing to at least consider their decision in the light of all patients as well as the one patient involved, the financial decisions paid for by others cannot be put into perspective. This idea is indeed controversial. Some will say that this scenario will never take place. Trust and confidence are mandatory for the patient/physician relationship to work. For the participants in this relationship to consider others during deliberations will be a significant challenge.

Without this “reality check,” however, some will suggest that the system will eventually collapse under its own economic weight. If these commentators are right, this collapse cannot be allowed to occur; it will be stopped by seizure of the financial controls—if not by employers or the insurance companies, then presumably by the government in some form—and the control desired by physicians and patients will undoubtedly erode.

This editorial reflects the personal opinion of the author, and not necessarily that of PMG of MA or Kaiser Foundation Health Plan.

References

My Doctor
Never stay in treatment with a doctor who thinks that you can’t get better.
Andrew Weil, MD, “Spontaneous Healing”
Potential Abuses of Group Visits

Adapted from material previously published in: Group Practice Journal 2000 May;49(5):37-8,40-40-2,44-6.

Introduction
To fully capture the increased efficiency, multiple patient care benefits, and economic advantages which group visit programs can provide, it is important that these programs be set up in a group practice or managed care organization so as to be well designed, adequately supported, and properly run. A carefully thought-out group visit program can maximize benefits to patients, physicians, purchasers, insurers, and health care organizations alike; however, it is very important that any potential for abuse also be thoroughly examined and scrupulously prevented if the benefits of the program are to be fully realized.

In another article,1 we described three different models of group medical visits: the Cooperative Health Clinic of Colorado (CHCC),2,3 Specialty CHCC,2,3 and Drop-In Group Medical Appointment (DIGMA)4-18 models. These models are designed to serve different patient groups, and the effectiveness of these models depends upon meeting the needs of these patients at any given time as they try to live well despite one or more medical problems. These models are not mutually exclusive and work best if combined as patients’ needs change over time. For example, geriatric patients with multiple medical problems including diabetes and hypertension would do well in a CHCC setting, might benefit from a specialty diabetic or hypertension group, and could use their own physician’s DIGMA for continuity of care and for convenient routine blood glucose and blood pressure monitoring.

By definition, group visits (ie, group medical visits or group appointments) include delivery of medical care in a group setting with other patients—in fact, it is the delivery of medical care in a group setting that is the core characteristic of a group visit. However, because DIGMAs, CHCCs, and Specialty CHCCs differ in structure and function, each model suggests the need for different precautions to be taken during planning and implementation. This article outlines potential pitfalls inherent in implementing each model. These pitfalls can involve administrators, physicians, or patients.

Emergence of Group Visits in Mainstream Medical Care
Group visit programs are rapidly proliferating in group practice and managed care organizations throughout the United States in an effort to leverage existing resources and to provide high-value, high-quality health care in this era of increasing purchaser and patient demands for enhanced services at reduced cost. Substantial economic pressures are at work in today’s rapidly changing, highly competitive health care environment. Despite working long hours and as hard and efficiently as possible, many physicians are nonetheless finding that their patient panels are becoming larger, that access problems are emerging, and that the increasing size of their practices is making them difficult to manage. Others are striving to move to same-day access but are finding that they need a tool such as group visits to help them achieve and then maintain this level of accessibility.

Health care organizations must address the fact that insufficient financial resources exist in the system to solve problems of workload, access, utilization, service, and quality of care solely through traditional means (ie, simply by hiring more physicians to give individual patient care). Despite organizational inertia and physician resistance to change, innovative group visit programs are gradually but steadily emerging in an effort to increase efficiency, leverage physician time, improve service and quality of care, and better manage high-risk patient populations. Various types of proven group visit programs will be used increasingly in the delivery of health care because of their ability to provide better, more efficient care at reduced cost and to create high levels of both patient and provider professional satisfaction. Therefore, it is important to safeguard against any potential for abuse and to begin planning for this possibility now.

Major Group Visit Models
Most group visits and programs for managing high-risk patient populations use one of two major group visit models which have emerged in recent years.1 The Kaiser Permanente Cooperative Health Care Clinic in Colorado focuses on patient populations either by utilization behavior (eg, the CHCC model for high-utilizing geriatric patients) or by disease...
state (eg, the Specialty CHCC model), which is the foundation for programs which manage high-risk patient populations such as those with diabetes, asthma, hypertension, hyperlipidemia, congestive heart failure, depression, and irritable bowel syndrome.\textsuperscript{2,3}

The other major group visit model, the Drop-In Group Medical Appointment (DIGMA) model, was originated by Dr Noffsinger in 1996 at the Kaiser Permanente San Jose Medical Center. The DIGMA model focuses not on patient populations by either disease state or utilization behavior, but instead on the entire patient panel of each individual physician.\textsuperscript{4,10}

The DIGMA is an extended medical appointment with the patient’s own physician, held in a supportive group setting. Open only to the physician’s own patients, each DIGMA is custom-designed around the specific needs, goals, practice style, and patient panel constituency of the individual physician. Specifically focused on improving accessibility and enabling physicians to both leverage their time and better manage their entire patient panel, DIGMAs have been shown to dramatically increase physician productivity in a way which enhances patient and physician professional satisfaction while improving service, access, and quality of care.\textsuperscript{9,10}

As is true of traditional office visits, DIGMAs address whatever medical needs patients bring to the medical visit as well as routine health maintenance issues. However, due to the greater amount of time available and the presence of both the behavioral health professional and the group itself, the needs of both mind and body can be comprehensively attended to. DIGMAs give patients what they most want: prompt access, high-quality health care, and more time with their own doctor.

In addition to other successful models that might be developed in the future, the CHCC, Specialty CHCC, and DIGMA group visit models can be expected to play an increasingly important role in tomorrow’s health care environment. These models work well not only as stand-alone programs but also when combined; indeed, combining these models can provide even greater efficiency than either model alone.

### The Need for Safeguards Against Abuse

Not only must the group practice or managed care organization implementing a group visit program ensure that the program is properly designed, adequately supported, and well run: potential abuses must also be considered, and proper safeguards put in place. These new and innovative group visit models carry a real potential for being abused, and such abuse could both undermine the credibility of the entire program and severely reduce the economic, patient care, and productivity advantages that they offer.

Simply stated, health care organizations can “shoot themselves in the foot” if they fail to minimize the risk for abuse while maximizing the benefits of well-run group visit programs. Minimizing this risk will ensure continued support from patients, physicians, purchasers, and insurers.
The group visit experience must be professional and of high quality. This is achieved through the specific advantages which group visits offer: additional time available, a more relaxed pace of care, increased efficiency and productivity, closer follow-up care, a focus on the needs of mind as well as body, and the information and support provided by others. Group visits integrate all these advantages into each patient's health care experience.

In today's challenging, competitive health care environment, group visits can be abused in two basic ways: 1) by putting fewer resources into group visits than adequately supported, properly run programs require, or 2) by attempting to extract more from group visits than is commensurate with good care. Problems in both of these areas can be reasonably anticipated as group visit programs continue to proliferate. Abuse must therefore be vigilantly and continuously guarded against if group medical visits are to retain credibility in the eyes of patients, purchasers, physicians, insurers, and health care organizations. From the outset, professional and ethical constraints, as well as "checks and balances," will be required as group visit programs continue to emerge.

The Importance of Addressing Potential Abuses Now

As the originators of the CHCC and DIGMA models, the authors are staunch advocates of well-designed, properly run group visit programs because they offer increased efficiency and multiple economic and patient care benefits—a "win-win-win" situation for consumers, providers, and insurers. Even at this early stage in the development of group visit programs, one is able to glimpse into the future, where full-scale implementation of group visits is likely to play a substantial role in health care delivery. Group visits represent an important tool for achieving improved access and optimal value, both in the medical services currently being delivered and in the cost-effective delivery of high-quality health care in the increasingly integrated systems of the 21st century.

However, the authors already have concerns regarding the potential for abuse of group visits. Safety guards against this abuse must be built in from the outset. Organizational self-interest demands that these concerns be addressed—even at this early stage in the development of various group visit programs—before fee-for-service billing codes are developed for group visits and before these programs become widespread and begin to play a major role in the delivery of health care. If group visit programs are to achieve their full potential (which would include buy-in by corporate purchasers, patients, physicians, health care organizations, and insurers), abuse must be avoided at all cost.

If we wait until some abuse of group visits actually occurs and receives negative publicity, we could incur a public relations "black eye" which could seriously undermine the credibility of all such programs in the future—a predictable, preventable, and completely unnecessary injury to the image of group visit programs.

Because group visit programs such as DIGMAs, CHCCs, and high-risk patient population management programs (ie, Specialty CHCCs) offer a "win-win-win" situation for patients, physicians, health care organizations, and insurers, everyone has much to gain from well-run group visit programs. Therefore, we must be careful to avoid jeopardizing these benefits by succumbing to any temptation for abuse, the ultimate consequence of which could be rejection of all group visit models.

This paper examines potential abuses of group visits from the perspectives of patients, physicians, health care organizations, and insurers.

Preventing Patient Abuses of Group Visits

Abuses can be either intentional or unintentional. Along with the physician who is providing medical care, patients are in fact primary caregivers in chronic disease management because they have the most first-hand experience in coping with illness and in developing the requisite coping skills. Patients are also the key ingredient in the interactive educational process which occurs in the group medical visit milieu; and patients must be reminded of this as well as valued for it.

Although no one is required to comment at any specific time during the group visit, relationships between patients as well as healthy group dynamics are key to building self-efficacy skills and enabling patients to help one another. Conversely, nonparticipation adversely affects both the group dynamic and the benefit to each patient. Therefore, patients need to be encouraged to speak up openly and candidly.

The entire group visit environment must be designed to foster feelings of safety, trust, and comfort so that patients will be willing to speak up.
question or another facet of that question which needs to be addressed. However, for this participation to occur, patients must trust the group visit experience—and this trust cannot grow unless patient abuses are scrupulously guarded against.

Do Not Restrict Access to Individual Visits

Restricting access to traditional individual office visits could precipitate unintended consequences and be perceived by patients as an abuse of group visits. All patients attending group visit programs such as DIGMAs, CHCCs, or Specialty CHCCs must be fully informed both that participation in these programs is completely voluntary and that patients who attend them are always entitled to still have individual appointments as needed. Using group visits to largely or completely replace individual office visits would violate this important condition and would restrict patient access to the appropriate use of individual office visits. Everyone should remember that group visits are tools for providing better care, for helping physicians to more efficiently manage their large patient panels, and for improving access to medical care; group visits are not meant to completely replace individual appointments or to give health care organizations an excuse to drastically reduce specialty and primary care staffing.

Group visit programs are designed to offer the advantages of increased efficiency, cost reduction, improved service, and more comprehensive attention to the needs of mind and body. Nonetheless, judicious use of individual appointments will always play an important role in health care delivery: Through proper use of group visits, patients best treated by group visits will be appropriately seen in group appointments, whereas patients who require individual appointments can still be seen individually.

Group visits excel in treating the relatively stable chronically ill, the “worried well,” patients who are lonely or who have extensive emotional and psychosocial needs, patients who need more physician contact and professional “hand holding,” and patients who require closer follow-up monitoring, surveillance, and care. Individual visits are usually superior for initial evaluations, one-time consultations, lengthy individual examinations, care of rapidly evolving medical conditions, acute infectious illnesses, most medical procedures, and for patients who refuse group visits.

Despite the almost certain rapid future growth of efficient and cost-effective group visit programs, patients will always have a need for individual care in the fully integrated health care delivery systems of tomorrow. Using group visits to largely or completely replace individual visits would cause purchasers, patients, and physicians to lose confidence in group visit programs.

Make Group Visits Voluntary, Not Mandatory

The authors’ group visit models were designed to be completely voluntary for patients as well as for staff and to give patients both freedom of choice and improved care. To insist that patients attend a group visit program despite their reluctance to do so would not only probably prove unsuccessful but would also be an abuse of the group visit concept. Patients who refuse group visits should never be forced to attend, and traditional office visits should always be made available to such patients.

However, when an individual appointment is required, two points are worth noting: 1) because group visit programs are designed to convert numerous individual visits into group visits, individual visits are eventually made more accessible to patients who want or need them; and 2) as patients become more familiar with the group visit program and hear positive comments about it from other patients (for example, in the physician’s lobby by hearing favorable remarks from other patients discussing their recent group visit experience while waiting for an individual office visit), the number of patients who refuse group visits has been observed to decline over time. An important component to winning patients over to group visits is to have physicians use 15 to 30 seconds during every routine office visit to personally invite suitable patients to have their next visit be a group visit.

Always Address Confidentiality and Privacy Concerns

Group visit programs must address any concerns that patients might have regarding privacy and confidentiality. Time must be allocated during each group visit session for patients to be able to have a brief private discussion or a brief individual examination with their physician as needed.

Confidentiality issues have seldom, if ever, been brought up by patients in DIGMA and CHCC visits. The rarity of these concerns is due in part to these group visit models being designed and conducted with sensitivity to patients’ confidentiality and privacy needs. For example, in the DIGMA model, patients are told at the beginning of each group session...
(as well as in fliers describing the group visit program and by the physician and staff when inviting patients to join the program) that any patient who wants to speak to the doctor in private or who wants or needs a brief private examination will be given that opportunity toward the end of the group session. In the CHCC model, one-to-one time with the health care team is available both during the break and at the end of the group session.

In addition, physicians who have concerns about confidentiality in their group visit program can give all attendees a brief informed consent/full disclosure document describing the limits of confidentiality which requires the patient’s signature. This document can be distributed at the beginning of each group session and can fully explain the limits of confidentiality in the group visit format, the availability of some one-to-one time with their physician during the group session, and that all patients attending a group visit program are still welcome to schedule individual appointments as needed.

Provide Adequate Facilities

Adequate facilities must be provided for all group visit programs. These facilities include conveniently located group rooms which are sufficiently large, adequately ventilated, and wheelchair-accessible with bathrooms nearby. The group room should be comfortable, well-lighted, clean, and equipped with enough chairs to accommodate all participating patients, support persons, and staff. A well-stocked examination room should be located nearby and contain all appropriate equipment and referral forms.

If no appropriate group room is available, creativity is required: Consider using conference rooms, unused space which could be converted to group rooms, or even the lobby during off-hours. If no such space is available for use as a group room, then consider taking the group visit program off campus to a nearby building or even into the community. Although health care organizations may need to make do with whatever facilities are available during the pilot phase of evaluating group visit programs, the obvious long-term solution (as they move toward full-scale, organizationwide implementation to fully capture the increased economic and patient care benefits that group visits can provide), is to reinvest a portion of the savings which group visits provide into retooling the physical plant in order to provide enough appropriate group and examination room space.

If no examination room is located in the vicinity of the group room, consider converting nearby space (such as a staff break room) to an examination room for the group. If all else fails, consider improvising an examination room by curtaining off one corner of the group room. In any case, always be careful to ensure that patients’ privacy needs are attended to and that they are kept comfortable throughout the group visit session by use of adequate group and examination room facilities.

Provide Marketing Materials Which Have a Professional Appearance

Some group practices, HMOs, and managed care organizations might be tempted to consider saving money by not using professional-appearing marketing materials to make patients aware of the program. Instead of using carefully designed text and coordinated graphics for both the framed wall posters (ie, mounted in the physician’s lobby and examination rooms) and program description fliers (ie, contained in a clear plastic dispenser mounted next to the poster), the organization might be tempted to tape to the wall a cheap announcement hurriedly produced on somebody’s copier or personal computer. Worse yet, the organization might be tempted to omit these materials entirely.

Because patients have come to expect individual office visits with their physician, posters and fliers describing new group visit programs must be displayed prominently in appropriate places throughout the medical center if we want to adequately inform patients about new group visit programs and expect them to attend. In addition, informational materials must have a professional appearance to accurately represent the high quality of medical care which properly run group visit programs provide. The graphic design of the wall posters can be used as a template to establish a particular look for all marketing materials for all such group visit programs developed at that facility.

Excessive attempts to save money in this area will cause patients to be inadequately informed about new group visit programs and the many patient care benefits they provide. This result would not only undermine the success of the entire program but would also be unfair to patients who would want to attend if they knew about the new program and understood its benefits.

The appropriate way to save money in the area of marketing materials is to use the same high-quality...
graphics on all wall posters and fliers so that the materials look expensive even though they are not. By developing a graphic design template for all group visit programs, DIGMA organizers can generate any future posters and fliers from the template at minimal cost while preserving the professional appearance of the original; only the names of both the group and the physician will need to be changed. Additional savings can be realized by using inexpensive, premanufactured frames to complement the graphic design of the poster at minimal expense.

Use of inappropriate, cheap-appearing, or sloppy marketing materials is likely to result in poor attendance, lack of patient buy-in, reduced efficiency and productivity, and lack of success for the group visit program. Omission of all marketing materials—wall posters, program description fliers, announcements, and follow-up letters—could even more seriously undermine the success of the program.

Schedule Adequate Time for the Number of Patients Attending

To fully realize the benefits which well-run DIGMAs, CHCCs, and Specialty CHCCs can offer to patients, group visit sessions must be long enough for all attendees to receive a high level of care. Therefore, 90-minute DIGMAs should include not more than 15 to 20 patients (not counting caregivers or family members), even though larger groups have on several occasions been successful. One-hour DIGMAs should not include more than 13 patients, and two-hour DIGMAs should not include more than 25 patients. Similarly, 2.5-hour CHCC visits should not include more than 25 patients. We have observed that, when group visit census exceeds these numbers, patients begin to feel rushed, personalized care is diminished, and patients bond less with one another. In addition, if insufficient time is available to adequately attend to each patient’s mind-body medical needs, then patients might begin to view the group visit program as a class or a support group instead of a medical appointment in a group setting.

Sessions which include too many patients and too little time constitute an abuse of group visits because such sessions sacrifice the high levels of quality of care, service, patient satisfaction, and physician professional satisfaction which group visits are intended to deliver. Carefully designed and properly run group visit programs offer substantial cost savings by increasing physician productivity and efficiency while providing a myriad of patient and physician benefits. Group visit organizers should not become greedy by driving the time available per patient below acceptable limits in a misguided effort to achieve even more productivity and even lower costs; this effort is likely to result only in reduced quality of care and decreased patient and physician professional satisfaction.

Avoid Holding Group Visits Too Infrequently

If group visits are to be successful, they must be held with adequate frequency. DIGMAs are typically held weekly and occasionally held biweekly, although they could be held daily if the demand is high enough. CHCCs designed to accommodate high-utilizing geriatric patients are typically held monthly. Specialty CHCCs are held at more variable time intervals, depending on the particular needs of each patient population (ie, populations selected by diagnosis). Consider, for example, the CHCC model—where adequate frequency of visits appears to be critical to success. In this model, increased contact with patients in the group format is not only clinically beneficial but also facilitates identification of problems before they become crises. A recent two-year study of a quarterly group intervention held every three months in a frail elderly population failed to show any effect on utilization, falls, incontinence, etc.20

Experience at the Cooperative Health Care Clinic in Colorado has shown that if a monthly CHCC session is canceled for any reason, a large percentage of its patients will make an individual appointment during the weeks after the scheduled meeting.

Preventing Physician Abuses

Avoid issuing “top-down” demands for all physicians to provide group visits

From their inception, DIGMAs, CHCCs, and Specialty CHCCs were intended for use by interested physicians on a voluntary basis to provide better and more cost-effective care, to increase productivity and
efficiency, and to enable physicians to better manage their large medical practices. The authors always envisioned that physician participation would be entirely voluntary and achieved out of self-interest at the grassroots level—i.e., achieved “from the bottom up” instead of being imposed upon physicians “from the top down” by administration. “Top-down” imposition of group visits is likely to engender resentment, distrust, and passive-aggressive resistance among physicians.

Group visits must not be mandated for patients, physicians, nurses, medical assistants, schedulers, or nurses. All staff, including any guest speakers, must share in the positive perspective and enthusiasm which are required if the group visit program is to succeed. Reluctant participants communicate their resistance—if only through their body language—and inhibit the beneficial effect of the group process.

We strongly encourage that group medical practices, managed care organizations, and HMOs interested in establishing group visit programs implement them initially at a pilot site and then, if successful, eventually disseminate them throughout the organization. This gradual approach allows physician buy-in to develop on a voluntary basis at the grassroots level. To insist that physicians participate in group visit programs, regardless of whether they want to or not, would not only be self-defeating but would also constitute physician abuse of group visits as they were originally conceived (i.e., as a way to help physicians instead of burdening them).

**Do Not Create Large Increases in Patient Panel Size**

In an earlier article, Dr Noffsinger cautioned against stripping away most or all of the benefits which group visits provide for physicians (e.g., increased productivity and efficiency) through a corresponding large increase in the physician’s patient panel size. Physicians express this concern by asking, “Why should I start a group visit program when the net long-term effect will be 1000 more patients added to my panel?” Physicians in capitated systems are concerned that participation in a group visit program (which they otherwise might consider implementing to increase productivity and better manage a large practice) would only result in a corresponding large, long-term net increase in patient panel size. From the physician’s perspective, this result would completely nullify any net gain in efficiency that the group visit program might provide.

To create a “win-win-win” situation for patients, physicians, and health care organizations, physicians too must derive a substantial long-term net benefit from the increased productivity and efficiency provided by their DIGMAs or CHCCs. Physicians view this matter as one of fairness and trust.

A health care organization seeking to realize the many patient, physician, and organizational benefits offered by group visits must adopt long-term business policies which build physicians’ trust and which provide benefits to physicians as well as to patients and to the organization. Physicians in capitated systems must be assured that any future increase in panel size resulting from the increased efficiency that the group visit program provides will be reasonable, so that they will nonetheless be left with a substantial net gain for their efforts.

**Avoid Excessively Large Group Sizes**

Because increased physician professional satisfaction is a primary objective of the DIGMA and CHCC models and because physician buy-in is critical to the success of these models, insistence on overly large group census (i.e., imposed to extract even greater physician productivity) would be self-defeating and would constitute an abuse of these group visit models. It is important that all aspects of the group visit program stay within the physician’s zone of comfort—professionally, ethically, and in terms of productivity.

The limiting factor for maximum group census appears to be physician professional satisfaction. For 90-minute DIGMAs, physicians seldom like group census to exceed 22 members, even though patients have been satisfied with considerably larger group sizes. For example, after the conclusion of one particularly large DIGMA session of 28 attendees, the group gave the physician a standing ovation; nonetheless, the physician felt that the large size of the group created excessive workload demands. Therefore, because physician professional satisfaction remains a priority, the group census for 90-minute DIGMAs should not generally exceed 22 members.
completely control for the number of patients who will drop into any given session.

An interesting observation is that, in actual practice, the greatest census-related problem is not frequent excesses in group census; this problem happens occasionally, but not often. Instead, the greatest problem appears to be establishing (on the basis of medical economics) and then consistently maintaining a minimum group census for each group visit program.

An exception to this recommended maximum group census can be made for DIGMAs conducted by subspecialists whose patient panels have substantial emotional and psychosocial needs. This exception would thus apply to nephrology, oncology, and rheumatology DIGMAs; for these DIGMAs, experience has shown that the group census can occasionally be set slightly higher.

**Reward Physicians by Giving Them Time**

In the effort to increase access to care, administrators might be tempted to allow physicians just enough time to conduct the group visit for 15 to 25 patients, often high-intensity patients, and then expect the physicians to rush back to the clinic to see a large number of “routine” patients (ie, those who have acute minor illnesses or who come to the clinic on a walk-in basis) immediately after the group is over. In a fee-for-service practice, physicians may choose to do this to maximize productivity and revenue; however, in a capitated health care environment, this practice provides little incentive for physicians to be more efficient and is even a disincentive.

To ask physicians to be doubly efficient by seeing substantially more patients but reward them with nothing but more work will not help in the effort to recruit physicians to care for the burgeoning chronically ill population. Instead, consider providing physicians participating in group visit programs a meaningful reward such as additional time for “desktop medicine”—ie, phone calls and paperwork.

**Provide Adequate Preparation and Training**

If a group visit program is to be successful, sufficient staff preparation time and training must be provided. For example, the DIGMA model not only requires that the physician be prepared for his or her role in the DIGMA and know how to refer patients into it but also requires that training be provided for the other members of the DIGMA team (ie, the champion, behavioral health professional, nurse or medical assistant, scheduler, and reception staff). When starting out with the CHCC model, the traditional, minimal-preparation method (ie, “see one, do one, teach one”) works reasonably well; however, if more than five or six groups are implemented, and especially if they are in different facilities, formal orientation and coaching of providers and patients becomes more important, as does subsequent monitoring of both quality and effectiveness of the groups. Our experience has shown that, ideally, these training and monitoring functions are done by a nurse-administrator, who can maintain as many as 40 or 50 CHCC programs with the help of a monitoring checklist.

**Evaluate the Effectiveness of the Group Visit Program**

Physicians’ professional satisfaction can be enhanced by showing the physicians that the group visit program is achieving its intended objectives in terms of cost savings, improved access, reduced utilization, leveraging of physician time, and increased levels of patient satisfaction, service, and quality of care.

This assurance is reasonable because group visits require physicians to deliver medical care in a way dramatically different from the individual office visit model, in which physicians have traditionally been trained and have become comfortable. If physicians are to be satisfied with the expenditure of time and effort necessary to adapt to the DIGMA or CHCC models, then they must receive a demonstrable benefit for this time and effort. The same is true for administrators in the health care organization.

The importance of the evaluation process needs to be emphasized. If use of group visits is to continue to grow and if they are to eventually be assigned a CPT code, ongoing documentation must show the effectiveness, efficiency, and consistency of these models in achieving their desired objectives.

**Do Not Require Physicians to Conduct Group Visits Alone**

Demanding that physicians run group visit programs alone (ie, without the assistance of important support personnel such as behavioral health professionals, nurses, medical assistants, schedulers, and reception staff) to further reduce costs would constitute an abuse of group visits. Physicians would dislike this demand, and professional satisfaction would decrease. In addition, such an arrangement would be unlikely to succeed because those support personnel play critical roles in the CHCC and DIGMA models. Further, it is the use of the less costly support personnel associated with the DIGMA, CHCC,
and Specialty CHCC group visit models that enables expensive physician time to be so highly leveraged.

For example, consider the DIGMA group medical visit model, which was designed to be led jointly by a physician and a behavioral health professional (eg, health psychologist, social worker, marriage and family therapist, nurse, or health educator) who possesses special, complementary skills for addressing group dynamic, emotional, and psychosocial issues. The behavioral health professional starts the group on time—even if the physician is late; handles group dynamic and psychosocial issues; keeps the group running smoothly and on time; takes primary responsibility for maintaining group census; conducts the group alone when the physician is called out on an emergency or leaves the group to conduct brief private examinations; and does everything possible to enable the physician to focus on delivering high-quality medical care.

Presence of a carefully selected behavioral health professional who is experienced in running groups, handling group dynamics, and in addressing psychosocial needs (and who is trained to assist the physician in running the DIGMA and is well matched to both the physician and the patients) is critical to success of the DIGMA. Enjoyable camaraderie and occasional bantering also occur between the physician and the behavioral health professional—which has been found to enhance physician professional satisfaction. Some physicians might be able to run the DIGMA alone, but not even one physician has indicated any interest in doing so—even though more than 9000 DIGMA patient visits have been logged in 22 different DIGMAs to date.

**Prevent Physician Abuse of Group Visits**

In addition to being misused by the organization, group visits can also be misused by physicians. For example, consistent lateness of physicians in arriving at their group sessions is likely to leave insufficient time to adequately attend to all patient needs. Similarly, although support personnel are trained to address most of the details in designing, implementing, conducting, and evaluating the group visit program, some physician involvement is nonetheless required during each phase.

Physicians cannot realistically expect a group visit program to be designed for them solely through the efforts of others without investing any personal time and effort. In addition, physicians must play an active role in achieving and maintaining the desired level of group census. This participation can be achieved if physicians take 15 to 30 seconds during every routine office visit to personally invite suitable patients to have their next visit be a DIGMA visit. Similarly, physicians must continually advise all personnel associated with the program regarding which activities are being done satisfactorily or unsatisfactorily, what improvements still need to be made, and what suggestions the physician would make as to how to achieve the desired results.

**Avoiding Organizational and Insurance Abuses**

**Do Not “Overincentivize” Group Visits**

Clearly if insurers and health care organizations underincentivize group visits through inadequate reimbursement and support, there would be no reason or incentive for physicians to substantially alter their style of practice from traditional one-on-one care to include the offering of group visits. Clearly, underincentivizing group visits would undermine the entire program and preclude its widespread use.

However, there is another concern as well, and one that is less obvious: Once insurers and health care organizations become aware of the substantial economic and patient care advantages that group visits offer, they could overincentivize them relative to individual office visits.

The authors have concerns regarding the long-term potential for abuse of group visits by overincentivizing them at the expense of individual visits. These excessive incentives would reduce freedom of choice for patients as well as for physicians. In addition, an effective, fair billing system must be developed with appropriate billing codes for the different types of group visits; however, after such a billing system has been developed, it must be followed honestly and scrupulously by physicians and health care organizations alike.

At present, the authors are aware of no fee-for-service or Medicare billing codes specifically designed for group medical visits. Should third-party insurers, upon recognizing the multiple economic and patient care benefits that group visits can offer, overincentivize them relative to individual visits, abuse could result that would reduce the voluntary nature of group visits for physicians and patients alike.

Similarly, if health care administrators overincentivize group visits in terms of physicians’ future salaries within the organization, physicians who would otherwise be reluctant or not be ready to start a group visit program might feel compelled to do so. The authors strongly...
recommend against this practice because we have always intended that physicians participate in group visit programs strictly on a voluntary basis. To do otherwise would create physician resistance to the entire program.

**Both Group and Individual Visits Are Important**

Group visits are intended to work in conjunction with the judicious use of individual visits and not to completely replace them. In this way, patients who can appropriately be efficiently and cost-effectively seen in group medical visits will be seen in that venue whenever possible. By off-loading numerous individual visits appropriately onto group visits, individual appointments will be made more accessible for patients who need or want them. Both group and individual visits will be important for the future delivery of high-quality, cost-effective care. Nowhere will this importance be more evident than in the high-value care provided by the progressive, fully integrated health care delivery systems of the future.

As group visits begin to play an increasingly important role in the delivery of quality medical care, individual visits will nonetheless be expected to continue to play a key role in the delivery of health care. Therefore, it is important that the incentives for both group and individual visits be carefully thought out, appropriate, and fair.

An interesting observation is that group and individual visits work well together and complement each other: the strengths of one model are often the weaknesses of the other, and vice versa. For example, individual appointments are most appropriate for acute infectious illnesses, lengthy individual examinations, initial evaluations, one-time consultations, most medical procedures, and care of patients who refuse group visits. In contrast, group visits are most appropriate for relatively stable chronically ill patients, patients who are anxious or depressed, the “worried well,” patients who are difficult or demanding, patients who have excessive psychosocial and emotional needs, and patients who require more time with their doctor or who require more professional “hand holding.”

**Miscellaneous Tips for Group Visits**

**Facilitate, Do Not Dominate!**

In group visits, physicians should be interactive instead of giving lectures. The primary benefits of group visits, other than the excellent access and comprehensive medical care provided, include a combination of shared information, mutual support, and an enhanced sense of self-efficacy for each member of the group. A world of difference exists between delivering a lecture on angina and asking the group: “Has anyone here ever had heart pain?” “What was it like?” and “What did you do?” In an interactive group process, several people will respond to these questions and relate their own special stories. The physician acts as a facilitator, adds information, emphasizes key points, and elaborates as necessary.

This interactive model validates participants in the eyes of the other group members. The interaction shows that patients are legitimate sources of information for coping with particular health problems. Patients’ skills are reinforced by the physician as well as by the behaviorist or nurse, and everyone benefits from the therapeutic process of the group. Like physicians, patients enjoy being of value to others. In fact, patients often have more “hands-on” experience in coping with illness and aging than do the providers of care. It is important to validate the patients’ role in being their own caregivers.

In addition, physicians providing group visits should feel free to be themselves. Patients choose their physicians on the basis of the way the physicians normally interact with their patients. Physicians need not try to be either professorial or entertaining in the group visit. Patients simply want quality medical care and more time with their physician.

The “bottom line” is that the most important thing is what patients take home with them from the group visit session: What they have learned about better managing and coping with their illness. Patients will have learned much from the physician, from the support personnel (behaviorist, nurse, medical assistant), and in large part from interacting with other patients. Physicians should think of patients as “primary caregivers” who are learning to help themselves and each other to better manage their health problems. A critical aspect of achieving this is to foster interaction among patients and between patients and staff.

To undermine this sharing of information, mutual support, and dynamic interaction would be a mistake which could easily happen. Group visits can provoke anxiety in physicians because they have not been trained in conducting group visits during medical school and often have had little or no experience in running groups. Group visits can also be intimidating to physicians, as shown by statements such as: “What if I lose control of the group?” “What if...
negative emotions spiral out of control?" and "What if I say something stupid and embarrass myself in front of 15 or 20 of my patients at once?"

Physicians may try to cope with this anxiety by becoming professorial and turning the group into a class instead of conducting it as an interactive group. This approach is ultimately self-defeating, however, because it disrupts the normal social interaction and emotional support which group visits can provide. If the professorial approach is adopted—thereby reducing the healthy interaction both among patients and between patients and staff—the group visit cannot be nearly as helpful to patients, which can consequently reduce physician professional satisfaction.

Instead, physicians should remain aware of this tendency to adopt a professorial role and should guard against it so that the group maintains a healthy, lively, interactive nature whereby much information and support is exchanged and medical care is delivered. This type of group will not only prove to be maximally beneficial to patients but will also be much more professionally satisfying for the physician conducting the group visit program.

Focus on Patients Who Want to Attend Group Visits

Since CHCC groups began in 1991, experience has consistently shown that roughly 40% of older patients respond enthusiastically to the invitation to join a CHCC group. Twenty percent say they might be interested, and 40% decline to participate. The greatest economic benefit to the organization is clearly to be found in patients who respond with unqualified willingness to participate. These patients are the most likely to participate and thus to benefit; therefore, the focus should be placed on this patient population.

A related finding is that experience with DIGMAs has shown that with the passage of time, patients gradually become more familiar with, and accepting of, the group visit program. Eventually, the population of patients refusing to attend a DIGMA program grows smaller and smaller.

Remember: Support Is Required for Success

In another article published in this journal, we stated a point which cannot be overemphasized: "A major hurdle for the CHCC model is the fact that the benefits are invisible to the staff in the clinic providing the care. Nursing staffs are stretched to the breaking point providing same-day access for a myriad of minor complaints that must be addressed in the service-quality imperatives of managed care. Frontline nursing supervisors are faced with the here and now issues of same-day access, unscheduled walk-in patients, and emergency care. Although aware of the long-term favorable results of CHCC, staff is frequently diverted to more visible demands. High-level administrative support for CHCC, even when present, is not enough. Dedicated nurse support is a necessity."

This issue of invisibility is not a concern for the DIGMA model because it focuses on the entire patient panel of the individual physician and its benefits are highly visible to the physician conducting a DIGMA. Therefore, the physician then becomes a strong advocate for maintaining the DIGMA. However, the issue of necessary staff being diverted to more pressing demands of the moment is as real for DIGMAs as for CHCCs, where important scheduling or medical assistant support can be pulled from the group on any given week—the result of which is often a substantial reduction in that week’s census from what it otherwise could have been (in the case of the scheduler) or not having patients’ vital signs taken and other important duties performed (in the case of the medical assistant).

Speak Frankly about the Program

Physicians should not be afraid to state the goals of the group visit program. In focus group interviews, patients tell us that they are well aware of the overburdened state of most providers and actually sympathize with their physicians. For their part, patients often cut their question list short or decide that a particular symptom need not be mentioned during a "routine" visit for a different problem. They often make another appointment not only to deal with their issues but also to reduce the stress on their physician. All too often, the pejorative label of "high utilizer" is then applied to these patients.

When implementing a group visit program, physicians may find it helpful to openly acknowledge these facts and then explain that plenty of time is available to address everyone’s issues today; to respond fully to all questions; and then to follow-up on all issues, either individually or in the next group session. Physicians should explain that if the group visit program succeeds, it will result not only in multiple benefits to the patients attending, but also in cost savings for the organization, which will allow continuation of the program. Follow-up visits for routine care are always allowed but are encouraged, whenever possible, to occur within the group visit setting. Physicians can also increase patients’ awareness of critical symptoms (short-
ness of breath, chest pressure, etc.) during group visit sessions and can educate patients as to the appropriate use of same-day appointments and emergency care.

In the CHCC model, regular attendance is encouraged, both because of its economic impact and because of the effective group dynamic which it creates. Nonattendees should be replaced by patients who are more committed to the program. In the DIGMA model, patients attend only on an as-needed basis so that different patients are typically present during each week’s session.

Conclusion

Despite all of these concerns surrounding potential abuses, group visits will undoubtedly continue to grow in importance and be even more frequently used during the coming years. Although physicians are already working as hard and as efficiently as possible using traditional office visits, they are finding that this is often still not enough. What is needed now is an additional tool which will leverage physician time and increase productivity, improve access and quality of care, enhance patient and physician professional satisfaction, and do all this without requiring physicians to put more hours in at the office or to increase their fatigue due to workload demands.

Group visits provide such a tool.

Without question, group visits have an important role to play in the future of health care. Well-designed, adequately supported, and properly run group visit programs (such as DIGMAs, CHCCs, and high-risk patient population management programs—Specialty CHCCs) not only offer the benefits of greater efficiency and reduced costs through economies of scale but also offer the additional benefits of improved access, comprehensive mind-body care, better follow-up monitoring, and increased patient and physician professional satisfaction.

Nonetheless, the potential for abuse of group visits is real and must therefore be carefully thought out in advance and scrupulously safeguarded against. This will preserve the credibility of group visit programs and protect the multiple economic and patient care benefits which they can provide.

The views expressed in this article are those of the authors and do not necessarily represent those of The Permanente Medical Group.

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Understanding Today’s Group Visit Models


Introduction

With its increasing patient demands for expanded services at reduced rates, today’s rapidly changing and highly competitive health care environment requires health care organizations to look for innovative ways to improve level of service and quality of care while reducing costs. Group visit models have been developed to achieve these complex objectives effectively and simultaneously through use of existing resources. As developers of today’s group visit models, the authors realize that much confusion unfortunately exists as to what defines these group visit models, how they differ, and how they can work together. Nonetheless, experience with group visits to date has been exciting and encouraging. This article discusses the features, advantages, and disadvantages of the basic models of group medical visits, what their future looks like, and how they might best work together to produce even greater efficiencies than any one model alone or individual office visits could provide.

We invite physicians, administrators, and health care organizations to take a closer look at using group medical visits for their own practices. Many physicians and administrators are concluding that the current paradigm—individual office visits only—is economically unsustainable. There simply isn’t enough money in the system to allocate enough physicians to solve current access, service, and quality-of-care problems through traditional means. We need a tool for leveraging physician time and for increasing both efficiency and production while improving service and quality of care. The authors feel strongly that properly run and adequately supported group medical visits can provide this much-needed tool.

The Need for New Models of Delivering Care

The physician-patient relationship, widely believed to be the bedrock of medical care, is being eroded to the detriment not only of both those parties but also to the detriment of those who would manage that care. The glue that cements the physician-patient relationship and that ought to cement the physician-management relationship is trust; indeed, erosion of trust is the key issue. It is pointless to try to assign blame for this erosion, which is a product of complex changes in the world—everything from the business imperatives of a global economy to the impact of technology on both patient and provider in the information age.

Physicians must master a huge and growing body of scientific and technical information. This learning process often requires a decade of formal training and must be ongoing. Discussing the applicable pieces of this technical knowledge and translating it into meaningful, individualized decisions requires spending more time with patients than in the era when there were only a half dozen antibiotics and only two imaging techniques available (ie, x-ray films and laparotomy). The emerging guidelines and checklists of evidence-based medicine compete with time available for seeing patients. The medical record has become an instrument of reimbursement instead of a record of medical decision-making. Data entry further competes with time available for seeing patients.

Patients, too, are overwhelmed with information and with expectations of accountability. Some are able to extract the information they need for their medical care directly from the Internet, but most are swayed by the mass media urging them to “ask your doctor about...” Sound bytes on advertisements rarely discuss the complexities of false-positive and false-negative test results and risk-benefit analyses. Thus, patients often bring a great deal of information, but frequently much less knowledge, along with many sets of questions and expectations that also must be addressed in the limited time allotted for the doctor office visit. The general movement toward more patient empowerment lends validity to these questions and expectations.

Managers of the time allotted for doctor office visits are not unaware of the above issues and are acutely aware that patient satisfaction is the key to success. Nonetheless, these managers must focus on access and cost as primary issues. The almost universal response to these twin pressures is to see more patients. Because clinicians’ capacity for late hours and weekend clinics has already been stretched to maximum tolerance, the result is generally less time for the doctor office visit—less time for the patient to communicate fears, expectations, and even critical symptoms. The physician has less time to discuss diagnostic or treatment options along with their risks and benefits and has virtually no time to address the psychosocial issues which often drive medical visits and which result in different outcomes from the same process of care. Unanswered questions and inadequate explanations generate more anxiety and thus more utilization—and the spiral continues.

Eventually, patients feel that the physician is not listening or doesn’t have the needed answers. Trust...
is eroded. Physicians begin to categorize their patients’ concerns as either appropriate or inappropriate and to communicate the verdict through body language. Effective communication is difficult, and administrators bemoan declining patient satisfaction. For their part, patients frequently turn to alternative medicine, which emphasizes the humanistic instead of the scientific and technical aspects of medical care.

What is the answer? Better communication, addressing fears and anxieties, focusing more on psychosocial issues, active listening, increasing access to care, and lowering costs are some obvious answers which would satisfy everyone concerned. Unfortunately, these answers are impossible to achieve within budget through the current physician-patient dyad, the individual doctor office visit.

**Advantages of Group Visits**

Many physicians feel that the traditional individual office-visit model for which they have been trained and with which they have been practicing is the best form of care; they would therefore like to maintain the status quo. Unfortunately, patient panel sizes are now so large that schedules are backlogged, waiting lists are common, patients have difficulty obtaining timely appointments, and the level of accessibility is not commensurate with good care. A tool is needed to enable physicians to leverage their time and to “work smarter, not harder.” Group visits can be such a tool.

We invite the reader to consider the benefits that group visits offer. For example, by integrating into medical care the encouragement and support of other patients, group visits reduce the sense of isolation that medical patients often feel. Not only do patients no longer feel alone, but they also gain a more balanced perspective because they leave group visits realizing that many others are much worse off. Patients often comment that attending group sessions relieved them of the “woe is me” type of thinking and caused them to realize three things: that their situation could be worse, that they can still do much which others cannot do, and that they can build on their strengths without merely perseverating on their illness and disability.

Unlike individual office visits, where physicians must do everything themselves, group visits provide the help of other patients and support staff (eg, the behavioral health professional in the DIGMA model and the nurse, pharmacist, and health educator in the CHCC model). In group visits, patients teach patients by discussing successful coping strategies, by sharing personal experiences, and by providing helpful information. Unlike rushed individual visits, the pace of group visits is generally more relaxed because of the greater amount of time available.

For many patients, group visits reduce the stigma of illness through the emotional support of others, including those who are similarly afflicted. Often, patients state how much they have been wanting to talk to someone else experiencing the same health problems but that they never knew such a person until they attended the group. After attending a group visit, they comment upon how much they appreciated the opportunity to finally meet and talk to such a person.

Group visits are meant to work in conjunction with the judicious use of individual office visits—not to completely replace them. Group and individual appointments both have their own advantages and disadvantages, and neither is best for all situations and circumstances. In this article, we discuss the advantages and disadvantages of major group visit models and how they can work together with individual office visits to provide optimal value through both reduced cost and improved, integrated care.

**Types of Group-Visit Models**

Two major group visit models have been developed—one that is patient-focused and another that is physician-focused. The first—the result of pioneering work begun in 1990 in the Cooperative Health Care Clinic (CHCC) at The Permanente Medical Group in Colorado1-4 (Beck A, PhD, unpublished data)—focuses on patient populations. Although the CHCC model initially focused on specific patient populations categorized by their utilization behavior (ie, high-utilizing geriatric patients), the model was later extended to focus on various specific patient populations categorized by their diagnosis (ie, Specialty CHCC groups). The Specialty CHCC model serves as the foundation on which high-risk patient population management programs can be based (eg, for management of diabetes, asthma, hypertension, hyperlipidemia, congestive heart failure, depression, anxiety, irritable bowel syndrome, chronic fatigue syndrome, fibromyalgia, and headache). The CHCC model was designed to provide adequate time to deliver the quality of care that all physicians know they should deliver. The therapeutic benefit of the group dynamic; enhanced physician and patient satisfaction; better patient outcomes; reduced utilization of the hospital, emergency department, and...
The second major group visit model, the Drop-in Group Medical Appointment (or DIGMA) model, was originated by Dr. Noffsinger in 1996 at the Kaiser Permanente San Jose Medical Center. The DIGMA model has an entirely different focus than that of the CHCC model. Instead of focusing on patient populations categorized either by utilization behavior or by diagnosis, the DIGMA model focuses on the entire patient panel of an individual physician and includes only patients from the physician’s own panel. The DIGMA model has been effectively achieving all the goals for which it was originally designed: to improve access for patients on the physician’s panel; to leverage the physician’s time and increase productivity so that the physician is better able to manage an increasingly large patient panel; to improve quality of care, both by providing closer follow-up care and by better attending to the mind as well as body needs that patients bring to the medical visit; and to simultaneously increase patient satisfaction and physician professional satisfaction.

In this article, we propose alternative delivery models that use group office visits of various types for specific patient populations as well as for the physician’s entire patient panel. Evidence shows not only that these models work but that they actually work better for a large percentage of patients than the current dyad paradigm. We will present three group visit models of care that have been shown to increase patient and physician satisfaction, enhance quality of care, improve access, and cost less than the current individual office visit model. These models include the CHCC (Cooperative Health Care Clinic) model, the Specialty CHCC model, and the DIGMA (Drop-in Group Medical Appointment) model.

Although each model is directly concerned with patient care, each has a slightly different philosophical basis. The CHCC model is designed primarily for the benefit of the patient, whereas the DIGMA’s primary goal is to improve access and to help physicians better manage their large patient panels. The Specialty CHCC model is designed primarily for the benefit of the physician and nurse to keep discussions lively. In addition, groups with fewer than 15 people start to lose the up-front cost benefit to the organization.

Groups should meet once a month on a regular basis at the same time and in the same place. The same patients are invited to attend each month, although new patients are added as group members move, change health plans, or die. Daylight hours are essential for geriatric patients because most have problems with driving in the dark. Two-and-one-half hours are set aside for each CHCC model session: a 90-minute period of group time is followed by one hour for one-to-one patient-physician visits, as needed. On average, six or seven patients are seen after each group session in this model. In the CHCC model, each group session has five key components: socialization time, education time, the break, question-and-answer time, and one-to-one physician-patient time.

Socialization Time

Each session begins with 10-15 minutes of either organized or spontaneous socialization. In the first few sessions, reminiscence therapy techniques are used to help build the cohesiveness of the groups. Questions like “What was Christmas Day like when you were ten years old?” or “What was your most memorable trip?” are passed around the U-shaped seating arrangement for optional responses. The commonality of experiences that this process elicits helps build the foundation for communication about specific diseases and coping skills, as well as the
emotional support that evolves quickly in every group. As time goes on, the socialization time becomes more informal, eg, vacation stories or even jokes are told. Formal or informal, the focused group interviews done after seven years of CHCC experience show how important this process really is. Patients describe the group as a stronger support system than even their own families.

Education Time
The next half hour of group time is allotted for education. During the first year, certain core topics are delivered in every group. These topics include advance directives, health maintenance requirements, use of the emergency system, Medicare coverage, and long-term care. Later, topics are selected by the group and range from safety at home to cardiovascular signs and symptoms among the elderly. Educational sessions are interactive and not didactic. For example, the physician might ask, “Has anyone in the group ever had a heart pain?” Usually three or four hands are raised and those folks are asked, “What was it like?” or “What did you do?” After several descriptions, the physician elaborates on key points or fills in the blanks. Not only is information conveyed, but also the patients are validated as reliable sources of information for each other.

The Break
Next comes the most active and most essential part of the group session, inappropriately referred to as “the break.” During this 15-20 minute segment, the physician and nurse position themselves at opposite sides of the U-shaped seating arrangement and address multiple issues presented by members of the group. Blood pressure levels are monitored, prescriptions are refilled, forms are filled out for everything from durable medical equipment to parking stickers, immunizations are given as needed, and “Oh, by the way, doc” issues are addressed. Everyone gets an opportunity for one-to-one contact with both the physician and the nurse. Patients who are not actively engaged with the provider interact with each other while enjoying the snacks that designated group members provide for each session.

Question-and-Answer Time
The working break is followed by a question-and-answer period that is also highly interactive and that may range from topics presented on that day to the latest media medical stories. Often one question triggers a series of questions and leads to discussion of multiple facets of complex medical issues.

One-to-One Physician-Patient Time
It is critical in describing the CHCC model to include the one-to-one physician-patient time that follows the group visit time. Six or seven patients are seen after each session—about half for intervening illness or flares in chronic conditions and about half for health maintenance (eg, physical examinations, routine checks for diabetes or heart disease). On average, each patient is seen about four times a year in this individualized setting.

Advantages of the CHCC Model
CHCC is a health care delivery system that is entirely voluntary for both patients and staff. It efficiently and effectively enhances quality of care and the satisfaction of the professional staff and patients who participate. In focus group interviews, patients tell us that this format improves the doctor-patient relationship, is far superior to the usual patient education formats, gives them an opportunity to get all their questions and issues addressed, and helps them to feel capable of coping with their various medical issues. Confidentiality, although available in the one-to-one time, is a “nonissue” because patients feel that the support group function of CHCC is “stronger than family.”

This patient satisfaction and commitment to CHCC translates into membership retention that is more than double that of seniors who do not attend CHCC sessions. This format is not only good medicine—it is good business.

Perhaps the greatest strength of the CHCC model is that it is evidence-based. The outcomes—improved independence and functional ability, improved perception of quality of life, fewer hospital days, and less need to use ambulance and emergency department facilities—are important and reproducible (Beck A, PhD, unpublished data). In these days of cost-conscious medical care, the cost-effectiveness of CHCC cannot be overemphasized.

Disadvantages of the CHCC Model
Despite its strengths, the CHCC model has four major disadvantages.

First, the financial success of the CHCC model depends upon major savings in “big-ticket” items such as hospitalization and emergency department use. The model is dramatically economically successful
only in an integrated system of care—at least in the world of medicine as it is currently constituted.

Second, the CHCC model requires constant monitoring and coaching to be sure that it remains an interactive care delivery process and does not become “a class,” ie, purely educational. We have found that even well-intentioned physicians left to their own devices often slip into the role of authority figure and professor—roles that can be much more comfortable than the role of facilitator in an interactive process.

Third, to use the CHCC model most effectively may require more up-front skill building in the group process than we have been able to provide. As mentioned above, the model requires coaching and monitoring. One person could provide these services for a minimum of 40 groups (our experience) and perhaps for as many as 100 groups.

A fourth—and major—hurdle for CHCC is the fact that the benefits are invisible to the staff in the clinic providing the care. Nursing staffs are stretched to the breaking point as they provide same-day access for a myriad of minor complaints that must be addressed in the service quality imperatives of managed care. Frontline nursing supervisors are faced with issues of same-day access, unscheduled walk-in patients, and emergency care. Although aware of the long-term favorable results of the CHCC model, staff are frequently diverted to more visible demands. High-level administrative support for the CHCC model, even when present, is not enough; dedicated nurse support is a necessity.

Future of the CHCC Model

The future for the CHCC model looks bright. Reflect at first only on the geriatric population. This population, currently about 12% of the whole, will double in the next two or three decades. It does and will control the majority of wealth in the country and thus, for better or worse, will influence federal health care policy. Medicare will not be allowed to languish, and 7 1/2-minute doctor office visits—(long predicted, currently not uncommon, and surely the scourge of the future) will not be tolerated, even under the rubric of “computer-assisted quality time” or “institutional memory.” People want to talk to doctors about aging, death, and dying. WWW.DEATH.com will not suffice—not for today’s elderly population nor for their children and grandchildren.

The same is true for virtually every chronic disease in every age group. People’s thoughts, beliefs, fears, and expectations about their medical issues cannot be bundled into simple guidelines and checklists. Human reactions to illness are often the major determinants of outcomes, regardless of prescribed interventions. It takes time to address these issues, and the CHCC model provides both the time and the environment to do this. The current one-to-one doctor-patient paradigm is not only economically unsustainable as a sole delivery system but lacks the power and the therapeutic benefit of the group dynamic.16

Two challenges loom for the CHCC model. The first is data entry and retrieval in the computer age. The current CHCC model features patients sitting with their medical chart in front of them. Notations are made in the chart both during and after the group session. Transition to a fully computerized medical record will require new formats for transfer of information. The second challenge for the CHCC model is to secure a CPT code—a process which can be long and arduous and which must include safeguards against abuse.

Description of the Specialty CHCC Model

The CHCC model of care is adaptable to a large number of diseases and patient populations. In some instances, the emotional support provided is less important than the education component. Thus, hypertension groups for working-age adults meet only twice a year; whereas diabetic groups might meet for four to six intense educational sessions followed by two to three meetings a year for routine maintenance care. Although the frequency, content, and duration may vary considerably (ie, from the original geriatric model to pediatric groups for attention deficit disorder and well-baby care), the basic elements remain the same: sufficient time for interactive care delivery with multidisciplinary assistance as needed. Thus, the CHCC model can be used as a foundation for all population management programs designed for high-risk patient populations.

Specialists find the CHCC model useful for addressing diseases associated with significant psychosocial issues. The list of such diseases is long, but successful pilot groups have been done for rheumatology (fibromyalgia), gastroenterology (functional bowel disorder), cardiology (congestive heart failure), and pulmonary medicine (chronic obstructive pulmonary disease). Specialists emphasize efficiency in caring for time-consuming patients who do not require any medical procedures. This same focus has recently been brought to orthopedics where group preoperative and postoperative visits are viewed as poten-
Patients often remark that the increased time with their own doctor, the warm and comfortable atmosphere, and the relaxed pace of DIGMAs is like “Dr Welby care” and that it puts the “care” back into health care.

**Description of the DIGMA Model**

This section discusses the DIGMA model: what it is; how it looks; what it can achieve; how it is different from other group medical appointment models; what its strengths and weaknesses are; and how DIGMAs can positively impact service, quality of care, and the bottom line.

The DIGMA model was created in 1996 to improve access to care and to enable physicians to better manage their large patient panels by seeing dramatically more patients in the same amount of time while increasing patient and physician professional satisfaction as well as improving access to care, level of service, and quality of care. DIGMAs enable physicians to “work smarter, not harder” and simultaneously provide patients with more integrated, holistic care that addresses not only physical medical needs but also their psychological and behavioral health needs—needs that typically cannot be adequately addressed during the brief timespan of an individual office visit.

DIGMAs are customized to the needs, goals, practice style, and patient panel constituency of the individual physician. Open only to the physician’s own patients (ie, they are not drawn from elsewhere in the medical center), DIGMAs are designed to encompass most or all of the physician’s own patient panel. DIGMAs combine an extended medical appointment with the patient’s own physician and an effective support group consisting of the physician, a behavioral health professional, and other patients from the physician’s panel. Surveys have consistently shown that patients are highly satisfied with DIGMAs because DIGMAs provide what patients most want: better access, high-quality health care in which both mind and body needs are addressed, and more time with their own doctor.

Co-led by the physician and a behavioral health professional (such as a health psychologist, social worker, marriage and family therapist, nurse, or health educator), both of whom are present throughout each DIGMA session, DIGMAs are typically held for 60, 90 or 120 minutes weekly or biweekly. Most current DIGMAs are 90 minutes long, are held weekly, and are supported by a medical assistant and a scheduler. DIGMAs are typically attended by 10 to 16 patients plus two to six support persons (most frequently the spouse, family members, friends, or the caregiver), bringing the total DIGMA group size to between 12 and 22 group members. Different patients attend each week, typically whenever they have a question or medical need. Patients help other patients in the group by sharing information, encouragement, support, effective coping strategies, and disease management skills.

The behavioral health provider plays a very active role throughout each DIGMA session by introducing the DIGMA group concept and discussing procedural items at the beginning of each session; by handling group dynamic issues; by keeping the group running smoothly and on time; by addressing emotional and psychosocial issues; by dealing with psychiatric emergencies; by providing behavioral health evaluations and interventions; by seeing that each patient’s mind and body needs are met during each session; by doing whatever is necessary both during and outside of the group to assist the physician in running the DIGMA; and by conducting the group alone when the physician is late or leaves the room to deliver brief private examinations near the end of the group session. The behavioral health professional then focuses on psychosocial issues of common interest which have been brought up by patients attending the DIGMA session. Fulfillment of this role of behavioral health professional frees the physician to focus on delivering high-quality, high-value medical care in the warm, supportive DIGMA group setting enjoyed by patients and physicians alike.

Patients often remark that the increased time with their own doctor, the warm and comfortable atmosphere, and the relaxed pace of DIGMAs is like “Dr Welby care” and that it puts the “care” back into health care.

Patients enter DIGMAs either by being directly booked into the DIGMA in lieu of an individual appointment (which provides much of their economic benefit) or by simply attending whenever they have

...
achieve maximum value. In this way, patients such
judicious use of traditional office visits in order to
individual appointments, but instead to complement the
session. Medical care is the central focus of DIGMA vis-
by the physician toward the end of the group ses-
private examinations and discussions are provided
options are explained; routine health maintenance
ordered, and the results are discussed; referrals are
prescriptions are changed or refilled; medications and
minimize charting time); vital signs are monitored;
charts are reviewed; visits are documented through a
progress note on each patient (which is largely
preprinted and partially in check-off form so as to
continuity to the DIGMA, and provides a warm and
compassionate side to medical care. Patients can be
directly booked into DIGMAs in two ways: 1) by
physician invitation during routine office visits, when
the physician invites appropriate patients to have their
next visit be a DIGMA group visit in lieu of an individ-
ual appointment; or 2) by a scheduler who tele-
phones patients approved by the physician from their
panel or waiting list who are either due or past due
for a return visit, inviting them through a scripted
message and follow-up letter to have their next visit
be a DIGMA visit.

More than 9000 DIGMA patient visits have been
recorded to date for the 32 DIGMAs co-led by the
author with 31 specialty and primary care physicians
at the Kaiser Permanente San Jose Medical Center
and elsewhere around the nation. DIGMAs in oncol-
ey, nephrology, endocrinology (one endocrinolo-
gist had two DIGMAs), rheumatology, neurology,
physiatry, obstetrics, gynecology (women’s health),
pediatrics, cardiology, family practice, and internal
medicine have consistently worked well in actual
practice during the past four years. The results have
shown that DIGMAs work equally well in both pri-
mary and specialty care settings.

Because a DIGMA is primarily an extended medi-
cal appointment with one’s own doctor held in a
warm and supportive group setting, extensive medi-
cal care is provided during every DIGMA session:
charts are reviewed; visits are documented through a
progress note on each patient (which is largely
preprinted and partially in check-off form so as to
optimize charting time); vital signs are monitored;
prescriptions are changed or refilled; medications and
side effects are discussed; tests and procedures are
ordered, and the results are discussed; referrals are
made; medical questions are answered; treatment
options are explained; routine health maintenance
issues are addressed, and, when appropriate, brief
private examinations and discussions are provided
by the physician toward the end of the group ses-
ion. Medical care is the central focus of DIGMA vis-
its, and the physician plays an active role throughout
the session.

DIGMAs are not meant to completely replace indi-
vidual appointments, but instead to complement the
judicious use of traditional office visits in order to
achieve maximum value. In this way, patients such
as the relatively stable, chronically ill and the “wor-
rried well,” all of whom can be appropriately seen in
a group visit, will be seen in a cost-effective and
highly accessible DIGMA group visit. Conversely,
patients needing individual visits can be seen indi-
vidually, which should now be more accessible as a
result of off-loading numerous individual office vis-
ts onto more efficient and cost-effective DIGMA
group visits. Patients should always be reminded that
participation in DIGMAs is completely voluntary and
that it is meant to offer them freedom of choice. Pa-
tients are always welcome to have individual appoint-
ments, as before, even after they have at-
tended a DIGMA session.

Profile of a Typical Digma Session
If you were to first walk into a typical CHCC group
visit and then into a typical DIGMA session, you
would immediately notice substantial differences.
Although a DIGMA session usually begins with brief
introductory comments by the behavioral health pro-
fessional about the purpose of the group, its intended
benefits to patients, and the importance of telephon-
ing and preregistering a day or two before dropping
into the group session, the focus then immediately
shifts to the delivery of medical care—a focus which
is maintained throughout the remainder of the group
session. Initial socialization or education components
can be present but typically aren’t.

Because DIGMAs typically meet weekly and are
only 90 minutes (including a few minutes for intro-
ductions and 10 to 15 minutes at the end of each
group session for individual examinations), most of
the group session is used for delivery of comprehe-
sive mind-body medical care to all patients present.
For this reason and because the physician and be-
behavioral health provider are typically present through-
out each DIGMA session, DIGMAs far more closely
resemble a traditional individual office visit than a
health education class, behavioral medicine program,
or psychiatry group. Patients never confuse a DIGMA
with a class or psychotherapy group.

Upon entering a representative DIGMA session, an
observer would see a group of 12 to 22 members
seated in a circular arrangement, along with the phy-
sician and the behavioral health professional, who
typically sit together with a small table between them
upon which medical charts, forms, and any hand-
outs are stacked. The medical assistant or nurse, who
arrives 15 minutes early, would be calling patients
out of the group one at a time at the beginning of

Patients should always be reminded that participation in DIGMAs is completely voluntary and that it is meant to offer them freedom of choice.
the session in order to take vital signs and perform other important duties—such as pulling and partially completing the patient information section of lab slips and referral forms for preventive tests and medical services which are due or past due (this tactic minimizes the amount of physician time required during group to complete the forms and make these referrals). Although DIGMAs can be designed as heterogeneous, mixed, or homogeneous models, they are typically attended by a heterogeneous mix of patients in terms of age, sex, diagnosis, marital status, race, utilization behavior, etc. (although they would be relatively homogeneous as to diagnosis in the mixed and homogeneous DIGMA models).

Introductory comments about the group are followed by a request for patients to introduce themselves one at a time with each saying whatever they would like by way of introducing themselves, starting with patients who have to leave early. However, everyone is asked to state what their medical condition is and what specific information or assistance, if any, they hope to obtain from their doctor today. They are assured that their doctor will answer all medical questions and will deliver most of the medical services normally provided during routine office visits, only at a more relaxed pace because more time is available in the group setting, where all can listen and learn. All present are invited to actively participate in this highly interactive format. A patient who volunteers to speak first starts the group, and the focus shifts sequentially from one patient to another in either a clockwise or counterclockwise direction. The physician might prefer to address patients in clusters according to diagnoses (eg, a neurologist might ask Parkinson’s disease patients to speak first, followed in turn by patients with headache, seizure disorder, and stroke). When every patient in the room has spoken, a process which typically uses all but the last 10 to 15 minutes of group time, the physician leaves to provide brief private examinations while the behaviorist takes over nursing the group.

The DIGMA group consistently provides a highly interactive experience so that the physician, behavioral health professional, and others present in the group all actively help the patient being focused on at any given moment. The physician spends much of the time in group answering patients’ medical questions, occasionally walking over to give a prescription refill to a patient, to provide a referral (ie, for a laboratory test, procedure, or medical service), or to perform a brief examination which can be appropriately conducted in group (eg, examination of thyroid, arthritic hand or wrist, swollen ankle, growth on the face, tennis elbow, skin rash on the arm or leg, or sore on the foot). Meanwhile, other patients offer encouragement and support, provide gentle confrontation when needed for noncompliant patients, and share relevant information and personal experiences—all of which can be helpful to the patient being focused upon.

This high degree of interaction between each patient and the physician, behavioral health professional, and other group members, combined with delivery of comprehensive mind-body health care, is a characteristic feature of the DIGMA model. Activities which can be appropriately conducted in the group setting are conducted during the DIGMA so that all patients can listen, learn, and respond. Issues of confidentiality are rarely, if ever, mentioned by patients, but any physician concerned about confidentiality could consider having patients sign at the beginning of each DIGMA session a full-disclosure consent form encompassing confidentiality.

Patients and staff alike consistently report that they find DIGMA sessions lively, interesting, helpful, and a wonderful learning opportunity. Physicians report learning things about their patients that they never knew, despite often having seen them previously for years during individual office visits. Patients learn from the physician, the behavioral health professional, and other patients—often stating that they even learned answers to relevant questions that they did not know to ask because somebody else did ask.

The number of patients actually requiring an individual examination at the end of group is surprisingly small—typically one or two, and occasionally three or four. This finding supports the claim of various authors that most medical visits are driven by psychosocial and behavioral health issues rather than by medical need. The reason that only a small percentage of patients require an individual examination at the end of group is that after their questions are answered and their various mind and body needs which can appropriately be attended to during the group setting are addressed, very few patients are left who actually need an individual examination.

Occasionally during the DIGMA session the physician spots a medical condition requiring a traditional individual office visit, which is then scheduled. When this referral occurs, the good news is that the office visit should be readily accessible because DIGMAs
permit many appropriate individual visits to be off-loaded onto DIGMA group visits, so that individual office visits eventually become more accessible to those who need them. A goal of every DIGMA session is to end on time with all of the physician’s duties completed. This includes writing a progress note for each patient present in the group, which is typically done in group as each patient is being focused upon. Accomplishing this end requires discipline, coordination between the physician and the behavioral health provider; and a certain amount of experience in running the DIGMA. In so doing, the physician leaves the DIGMA session back on schedule, even if the physician entered the group late—which is but one of the many physician benefits that a well-run DIGMA can offer.\footnote{The DIGMA model has been shown to dramatically leverage physicians’ time.}

**How DIGMAs Provide Cost Savings**

The CHCC and DIGMA group visit models have been shown to provide substantial cost savings. Because of the different focuses of these two group visit models, their financial benefits to the health care organization have been correspondingly evaluated in different ways.

Some of the financial benefits provided by the DIGMA model can be measured directly by evaluating the degree to which the model leverages existing staffing resources, a strategy which can solve access problems without hiring additional staff. The DIGMA model has been shown to dramatically leverage physicians’ time,\footnote{10\textsuperscript{7}}\footnote{12,13} and its implementation can be converted to cost savings based upon the lower staffing levels required to provide good service and care. In addition to off-loading many individual appointments onto more cost-effective group visits, DIGMAs also excel in addressing the behavioral health and psychosocial issues which drive such a large percentage of all medical visits.\footnote{17-19} Addressing mind as well as body needs during a medical visit decreases utilization of medical resources.

Because DIGMAs are readily accessible, patients often drop into a DIGMA any week that they have a question or medical need instead of scheduling an individual office visit, demanding an urgent work-in appointment, complaining about poor access, or telephoning with a question. This practice saves money through both reduced individual office visits and decreased phone call volume. In addition, patients can be taught during DIGMAs by the physician, the behavioral health professional, and other patients to more appropriately use the emergency department and other inpatient and outpatient services. Because DIGMAs are specifically designed to handle many of the most difficult, time-consuming, psychosocially needy, and inappropriately high-utilizing patients in the physician’s practice, such patients can often be better treated and with less cost in the more effective format of a DIGMA group visit, where mind as well as body needs can be met.

DIGMAs represent best use of staff and budget. They increase physician productivity and efficiency, provide many economic and patient care benefits, offer the competitive advantage of a new service which is much appreciated by patient-customers, and reduce costs by leveraging existing staffing. A properly run and adequately supported DIGMA program can substantially and positively impact a health care organization’s bottom line while simultaneously creating happier patients and physicians. Happier patients and physicians translates into better retention of both patients and staff—an additional cost savings. DIGMAs increase value by providing high-quality medical care with excellent access and service at reasonable cost in a warm, supportive group atmosphere which is enjoyed by patients and physicians alike. Because they optimally balance the needs of patients, physicians, and health care organizations, DIGMAs provide a “win-win-win” situation and, as a result, are expected to play an increasingly important role in the future of health care delivery.

**Advantages of the DIGMA Model**

DIGMAs are specifically focused upon improving primary and specialty care access through the use of existing resources and upon enabling physicians to better manage their large patient panels. Access has become a national problem. Physicians are already working as hard and efficiently as is possible, so that this access problem cannot be solved by simply having physicians work longer or harder—any “fat” which may have existed here has long since been removed. What is needed is a tool which will enable physicians to substantially leverage their time so that they can see dramatically more patients in the same amount of time while also providing excellent service and high-quality medical care which is satisfying to patients and physicians alike. The DIGMA model provides precisely the right tool for this purpose. DIGMAs have been shown to use existing resources to improve access by rapidly reducing return appointment backlogs at both the individual physician\footnote{10} and the departmental\footnote{11} levels.
Because they provide patients with the prompt access, quality health care, and increased time they want with their own doctor, DIGMAs increase both patient satisfaction and patients’ perception of quality of care. Patients appreciate the fact that DIGMAs comprehensively address the totality of mind-body needs they bring to the medical visit. This view contrasts with that engendered by individual office visits, which often make patients feel rushed and which might not provide enough time to address a patient’s physical medical needs, let alone psychosocial needs. One indication of the degree to which DIGMAs have been meeting patients’ needs occurred shortly after both rheumatologists at the Kaiser Permanente San Jose Medical Center started their Rheumatology DIGMAs, when a previously successful fibromyalgia and chronic fatigue syndrome program in the Division of Behavioral Medicine failed due to a complete loss of census. The reason given was that these patients preferred attending their rheumatologist’s DIGMA whenever they had a question or medical need.

Consider the noncompliant patient, whose needs are often poorly addressed during traditional, individual office visits. The information, encouragement, support, and gentle confrontation provided by other members in the group and by the behavioral health professional increases patient compliance with recommended treatment regimens. It is amazing how influential another patient who has already benefited from the recommended treatment or lifestyle change (dietary compliance, initiating insulin, undergoing chemotherapy, starting dialysis, smoking cessation, etc) can be in relieving the noncompliant patient’s anxiety about the treatment and in persuading the resistant patient to comply with recommended treatment by confronting them with the long-term consequences of noncompliance.

Individual appointments need no longer be largely occupied by either worried well or relatively stable, chronically ill medical patients requiring much professional hand-holding and contact with the physician. Such patients can be more efficiently and cost-effectively handled through DIGMA group visits and with better care because both mind and body issues are effectively addressed and closer follow-up care is made available. Because of the added help from the behavioral health professional and the group itself, DIGMAs provide an efficient and effective means of dealing with many of the physician’s most problematic patients, all of whom the physician is encouraged to invite to the DIGMA. This includes patients who are difficult and time-consuming; noncompliant; inappropriately high utilizers of health care services; angry, depressed, or anxious; demanding or mistrusting of their health care; experiencing extensive psychosocial needs; lonely or lacking social support; or having excessive needs for information, reassurance, or contact with their physician.

DIGMAs represent a biopsychosocial model for treating both mind and body needs, including anxiety and depression, which are known to be underdiagnosed in medical settings. DIGMAs excel in treating the behavioral health and psychosocial issues known to drive such a large percentage of all medical visits (with estimates running as high as 60% and more). DIGMAs also treat caregiver and family issues: Family members and caregivers are invited to accompany patients to DIGMA visits because illness impacts loved ones as well as patients.

Improved access as well as increased patient and physician professional satisfaction are certainly among the great strengths of the DIGMA model which have been consistently demonstrated in actual practice. DIGMAs which are carefully designed, properly run, and adequately supported result not only in high levels of patient satisfaction but also in increased physician professional satisfaction as each DIGMA is customized to the particular needs, goals, practice style, and patient panel constituency of the individual physician.

Physicians appreciate being able to better manage their burgeoning panel sizes and to regain control over their practices while delivering a more satisfying level of care and enjoying improved relationships with their patients. They like the more relaxed pace of DIGMAs, the reduction in repetition of information, the opportunity to try something interesting and different, and the collegial interaction with the behavioral health professional. Physicians also appreciate the ability to respond effectively in DIGMAs to angry or demanding patients and to have more compliant patients. Because of the many benefits DIGMAs offer, they are already beginning to gain acceptance and recognition for the role that they can play in delivering health care.

The physician and his or her panel of patients directly benefit from the increased efficiency and quality of care that DIGMAs offer. Because DIGMAs enable physicians to better manage their large patient panels and offer many other physician benefits, DIGMAs are “owned” by the physicians running them. DIGMAs ensure that no invisible or orphan program exists without strong physician ownership and sup-

Improved access as well as increased patient and physician professional satisfaction are certainly among the great strengths of the DIGMA model which have been consistently demonstrated in actual practice.
port, as could be the case for some group programs (such as for hypertension, diabetes, asthma, irritable bowel, etc), where only a comparatively small percentage of the physician’s panel is covered (often their easier patients, whom physicians may prefer to see individually for that very reason).

Additional strengths of DIGMAs include the following:

- Instead of repeating the same information with different patients as is done in individual office visits, the physician can address the entire group at once (and in greater detail because of the greater time available). They all can listen and learn, focusing on such issues of common interest as the information and misinformation which patients glean from the media, the Internet, friends, and direct advertising by pharmaceutical companies.

- DIGMAs improve not only patient and physician professional satisfaction but also physician-patient relationships. Patients can see their physician be more relaxed—they even joke and laugh together—and physicians get to know their patients better as people and not just as patients.

The prompt access without barriers which DIGMAs provide, when coupled with the relaxed pace and support of other group members (which makes the group feel safe to patients), sometimes results in patients opening up more in group than in office visits. The result is that physicians occasionally detect very serious and even life-threatening conditions which would otherwise have gone unnoticed. This detection often happens because the patient is minimizing or denying their symptoms. Consider the patient who dropped into an endocrinology DIGMA requesting a prescription for glasses, almost apologizing for being there and stating that he would not have bothered to come in if it were not for the fact that he was able to simply drop in without an appointment. Because fingerstick blood glucose levels were routinely measured for all diabetics attending the endocrinology DIGMA, his blood glucose level was discovered to be extremely high (49.9 mmol/L), and he was immediately given emergency care. Another patient, who had been quiet throughout most of the session, spoke up in another DIGMA when other patients were complaining about the fatigue they were experiencing, stating that he needed a pep pill. When asked why, he explained that he became extremely fatigued with even minor exertion and that when he lay down to rest, he felt like an elephant was stepping on his chest. What he received was an urgent cardiac evaluation, not a pep pill!

**Disadvantages of the DIGMA Model**

One weakness of DIGMAs is that they have some support needs which, while modest, must be met if the DIGMA model is to be successful. Most important is the fact that for larger group practices and managed care organizations, a highly skilled champion who is very knowledgeable of the DIGMA model is needed to move the entire DIGMA program forward throughout the facility. Second, a behavioral health professional trained by the champion is needed to take over each of the DIGMAs the champion has established. In each case, the behavioral health professional must be well matched to both the physician and the patients attending the DIGMA.

Most DIGMAs also require a nurse or medical assistant and a scheduler. The primary requirement for the medical assistant or nurse is willingness to work hard, both in terms of seeing the larger volume of patients which DIGMAs entail and in terms of the expanded responsibilities which need to be assumed. Similarly, a scheduler trained by the champion must be provided for most DIGMAs with adequate dedicated time each week (as much as four hours) to maintain the desired census level by telephoning enough patients selected by the physician with a scripted message and then sending them follow-up letters containing all important details on the DIGMA.

Clearly, any innovative health care delivery program which differs as much as the DIGMA model does from the format of traditional office visits requires a high level of administrative commitment and support. As is the case for all group programs, there are also certain facilities requirements. In particular, DIGMAs require a comfortable group room of sufficient size with an examination room located nearby. In addition, the DIGMA model requires that each physician running a DIGMA for his or her practice take approximately 15 to 30 seconds during routine office visits to invite all their appropriate patients to have their next visit be a DIGMA visit. A small one-time expense must also be budgeted for at the beginning of each DIGMA to provide the professional-appearing framed wall posters and program description flier holders to be mounted on the walls of the physician’s lobby and examination rooms. Because DIGMAs differ dramatically from the traditional one-on-one office visits patients have...
come to expect, in order to obtain patient buy-in, all marketing materials must be of high quality so as to accurately reflect the quality of care which DIGMAs do in fact provide.

Finally, it is important to note that DIGMAs work best for routine return appointments with the worried well, patients with extensive informational and psychosocial needs, and patients experiencing relatively stable chronic health problems who require mind-body care, more time with their physician, periodic surveillance and monitoring, or closer follow-up care. DIGMAs are not meant for initial evaluations, one-time consultations, inpatients, most medical procedures (although the rheumatologists are considering offering some of their simpler injections toward the end of their Rheumatology DIGMA sessions), highly contagious illnesses, medical emergencies, rapidly evolving medical conditions, lengthy individual examinations, many acute illnesses, or patients refusing to attend group visits.

With regard to patients refusing to attend DIGMAs, an interesting observation has been repeatedly made. As time passes, patients who initially refuse the DIGMA will often later be persuaded to attend after hearing other patients in the physician’s waiting room discuss how much they enjoyed and got out of their recent DIGMA visit. Sometimes patients who initially refuse the invitation to participate will eventually consider attending a DIGMA after being invited several times by their physician during routine office visits. On rare occasion, patients have mistakenly come to a DIGMA session with the misunderstanding that it will be an individual appointment. In this case, they are given the option of staying for the group or being seen immediately by the physician in private in the adjacent examination room. Such patients will often choose to stay out of curiosity to see what the DIGMA is all about. In any case, after a patient does attend a DIGMA session, he or she almost invariably is won over to this new approach and is then open to returning whenever there is a medical need. Many patients report that they actually prefer and get more out of their DIGMA visits than from traditional individual office visits.

**How Group-Visit Models Can Work Together**

Although the CHCC, Specialty CHCC, and DIGMA models individually offer their own distinct advantages in terms of reduced costs and increased efficiency, productivity, service, quality of care, and both patient and physician professional satisfaction, these models can operate together to provide even greater benefits than they could alone. The authors feel that optimal value can only be achieved in the future delivery of health care when the best possible mix of efficient group visits (using group-visit models which have been demonstrated to be effective in actual practice) and traditional individual visits is offered. Then patients who can appropriately be treated cost-effectively in group visits can be efficiently seen in group while individual visits can be used judiciously for patients truly needing them.

To fully capture the potential economic and patient care benefits which group visits can provide, all group visit programs must be carefully designed, properly run, and adequately supported. If, in the rush to roll out a group visit program, group practices and managed care organizations hurriedly launch poorly planned, inadequately supported DIGMAs or CHCC groups with flawed implementation strategies, their multiple potential benefits will never be completely realized.

As a means of fully achieving the many benefits that the DIGMA, CHCC, and Specialty CHCC models can conjointly offer, consider the following illustrative example of fully integrated care. First of all, every primary and specialty care provider at the group practice or managed care organization who wants a DIGMA would have one for their practice as a means of better managing their patient panel, leveraging their time, solving their access problem, providing comprehensive mind-body care, and increasing both patient and physician professional satisfaction. In addition, the facility would have numerous CHCC and Specialty CHCC group visit programs for managing high-risk patient populations both in terms of utilization behavior (eg, CHCC programs for high-utilizing geriatric patients) and by diagnosis (population management programs based upon the Specialty CHCC model for diabetes, hypertension, asthma, hyperlipidemia, depression, anxiety, fibromyalgia, irritable bowel, congestive heart failure, etc). Then any patient seen in a physician’s DIGMA who needed further help for their particular health problem could be efficiently referred to the appropriate CHCC or Specialty CHCC group or to an individual office visit, when appropriate. Conversely, when appropriate, patients seen in CHCC and Specialty CHCC groups could be encouraged to have their next medical visit with their doctor be a DIGMA visit. In this way, all patients who could best be seen in a group visit would be—thus, capturing the in-
creased efficiency, improved service and quality of care, and reduced cost which group visits can offer. In this schema, individual office visits would be reserved for those patients who need them.

This vision for optimizing value in health care delivery through the integration of the various group-visit models with individual office visits would involve substantial alteration in: the long-range business plan; allocation of funding; staffing resources; facilities planning; and the way in which future mainstream medical care will be delivered. Nonetheless, what is being proposed is achievable and can result not only in improved access, dramatic cost savings, and more efficient utilization of existing staffing resources but also in substantially improved service, quality of care, and patient and physician satisfaction.

Concluding Comments

Continuity of care is a recurring theme for most managed care organizations. Its benefits need no elaboration. Continuity presupposes physician retention as well as member retention. Primary care physicians as a whole are not a happy group, and turnover rates in some organizations are alarming. The professional satisfaction derived from a job well done is a major part of physician satisfaction with the CHCC and DIGMA models, yet control issues loom large for physicians in managed care. DIGMAs provide some degree of control in the management of large patient panels, and such increased control in and of itself is a positive development for the physicians. In addition, both group models provide some variety in an often tedious workday. This is especially true in an environment where hospital and emergency department duties have been assumed by dedicated teams of hospitalists and emergentologists. Satisfied physicians create satisfied patients either in the group model or in the traditional dyad. Satisfied physicians and their patients stay in the organization. Continuity is enhanced.

Next, consider panel management. About half of a panel of patients could be candidates for group visits of some type, and this percentage is expected to grow in the future as patients become more familiar with the benefits of group visits. Experience shows that the other half prefers the traditional physician-patient dyad, at least at this time, even though satisfaction with that model is in decline. This situation presents the individual physician with some potentially wonderful options for better managing their panels through group visits. However, in a fully capitated system, a physician’s panel size must be fixed for any physician to even consider the benefits of group visits. If the reward for efficiency is a correspondingly larger panel and no commensurate increase in reimbursement (either in time or dollars), then innovation is improbable from the outset. If, however, group visits are appropriately recorded and everyone in the organization participates in some way, then group appointments will increase access and efficiency, improve service and quality of care, enhance patient and physician satisfaction, more efficiently utilize existing resources, and reduce the cost of health care delivery—and all this while providing more time for effective and fulfilling physician-patient relationships.

An effectively integrated system of CHCCs, Specialty CHCCs, DIGMAs, and traditional individual office visits can provide a “win-win-win” for patients, physicians, and managers of health care. CHCCs and DIGMAs provide useful tools in helping to manage the ever-increasing demand for specialty and primary care services through the use of existing resources. We offer them for consideration to group practices and managed care organizations as exceptionally helpful tools for confronting the access, service, quality of care, and economic challenges facing them in today’s rapidly evolving and highly competitive health care environment.

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The views expressed in this article are those of the authors and do not necessarily represent those of The Permanente Medical Group.

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On Being Ill

There is, let us confess it (and illness is the great confessional), a childish outspokenness in illness; things are said, truths blurted out, which the cautious respectability of health conceals.

Virginia Woolf,
On Being Ill, The Moment (1947)
What does the STAR Survey mean to a Permanente Physician?
Interview with David Glass, National Director of Market Research

Although the STAR (Satisfaction Tracking and Reporting) survey has been used for several years by Kaiser Permanente (KP), I'm amazed how little working knowledge many Permanente clinicians have about this tool. All successful organizations listen to their customers—and we are no exception. Therefore, David Glass from Program Offices provides us with insight on just what the STAR survey is and how it can provide useful information to our medical groups.

– Lee Jacobs, MD, Section Editor

Dr Jacobs: To get us started, David, why don't you tell our readers when the STAR survey was first implemented, and why?

Mr David Glass: The STAR survey was started in the summer of 1988 as an attempt to collect member information in a uniform manner and on a regular basis across the Program. Prior to 1988, KP Regions occasionally conducted their own surveys but not on an annual basis. The nonmember component of the STAR survey was not begun until 1995.

Dr Jacobs: You mentioned that several Regions had used their own periodic member surveys prior to 1988. I thought that surveying members in health care was more of a recent business phenomenon.

Mr Glass: There is clearly a much stronger focus on member and patient attitudes now than in the past. However, the importance of those attitudes still shined through, even in our distant past. For example, we have a member and terminated-member survey from our Southern California Region from 1958 that was spurred by a large loss of membership to Blue Cross in that year.

Dr Jacobs: Could you describe for our readers how the STAR survey is actually accomplished?

Mr Glass: The survey is conducted on an ongoing basis by telephone with a random sample of our membership, and since 1995, a random sample of nonmembers in each Region.

Dr Jacobs: You mentioned that in 1995 the STAR survey was expanded to include nonmembers as well as members. Why was that?

Mr Glass: The addition of nonmembers to the survey really was a reflection of the evolution of the health care marketplace. The STAR was started in the late 1980s at a time when Kaiser Permanente still occupied a fairly comfortable niche and was somewhat internally focused. We wanted to hear from our members about our strengths and weaknesses. By the mid-1990s, however, Kaiser Permanente began to confront stiff competition, and we had a need to better understand our potential in the local market. As a result, we started asking nonmembers for their evaluation of their own health plan as well as their perceptions of Kaiser Permanente.

Dr Jacobs: David, I'm certain that through the years our organization has collected a lot of information from the STAR survey. However, I think there is some confusion in the Permanente community as to how this information might benefit Kaiser Permanente. Could you give our readers an idea how the results of the STAR survey might be used?

Mr Glass: A good question. I think that there are at least six main uses of the STAR survey (Table 1). First, it gives us a chance to determine what is most important to our members. Second, it helps us track how we are doing on those important attributes. Third, it provides us

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* These scores represent the percent of members giving a rating of 8, 9, or 10 on a 10-point scale.
health systems

with benchmarks—both internally across the Program and externally for each local market. Fourth, it helps us understand the image nonmembers have of our organization—tremendously important for our marketing efforts. Fifth, the flexible format enables Regions to add customized questions specific to their needs on a regular basis, without having to launch a separate survey. Finally, the STAR survey provides us with information on the demographics of our membership, including utilizers and nonutilizers of our services. So as you can see, the STAR survey provides valuable information.

Dr Jacobs: Finally, David, could you give us an idea what might be in store for this survey in the future?

Mr Glass: The STAR survey is only one member of the family of surveys conducted by Kaiser Permanente. In many Regions, there is also a patient satisfaction survey and a separate survey on the communication skills of individual physicians (the "Art of Medicine" survey). In addition, each Region is required by NCQA to conduct a member survey known as CAHPS (Consumer Assessments of Health Plans Study). We are currently investigating how we might better coordinate these survey efforts.

Dr Jacobs: On behalf of the readers of The Permanente Journal, I want to thank you for taking the time to educate all of us on the STAR survey. Thank you, David.

References

Figure 1. Overall satisfaction and effective versus nominal PCP linkage: Programwide YTD 1999. We know that a key driver of overall member satisfaction and retention is the degree to which members believe they have a regular physician and the degree to which they are able to see that physician. By using responses to these two questions from the STAR survey, we were able to learn that members with effective linkages (ie, members who answered in the affirmative to both questions) had an overall satisfaction rate of 80%, whereas members with nominal linkages (ie, members who reported believing that they have a physician but were not able to see him or her) had an overall satisfaction rate of 39%. Graph summarizes a major learning from the STAR survey.

Truth

An ordinary truth is one whose opposite is false.
A great truth is one whose opposite is also true.
Niels Bohr, legendary physicist
Patient safety has emerged as a major health policy issue. Fortunately, several years ago, Kaiser Permanente’s Health Policy Committee peered into the crystal ball and made a modest investment in founding the National Patient Safety Foundation (NPSF). This investment was an important first step in taking ownership of a new wave of consumer concern about health care. That wave has now crested with publication of the Institute of Medicine’s (IOM) To Err is Human: Building a Safer Health System, an effort contributed to substantially by the NPSF and its members.1

Authored by a prestigious committee, which included David Lawrence, MD, KFHP CEO, the report2 summarizes what is known about the toll taken on American life by preventable error in hospitals. The report concludes that most problems are not due to malicious intent or even to individual failure but can be ascribed to failure of systems and processes. Two large, retrospective medical record review studies (one based on 1992 experience in Utah and Colorado3 and another based on 1985 experience in New York4) indicated that, nationwide, as many as 98,000 patients each year lose their lives, most commonly because of medication error or complications of infection. Although these estimates are based on old data, direct observations have suggested that these estimates may be low. Given also that no published studies have described experience in nonhospital settings, the aggregate loss of life may be much higher. We do know that as many as 10% of hospital admissions are occasioned by adverse drug events,5 suggesting a large-magnitude problem in nonhospital settings. And no solid estimate—only speculation—has been presented to quantify the secondary contribution of medications to fatal car crashes and falls. For example, the sedating antihistamine diphenhydramine may cause driver impairment as severe as that caused by alcohol.

Errors of commission are more easily measured than errors of omission. Among the most vulnerable of our citizens, the frail elderly, noncompliance with medication prescriptions may be high and may account for preventable failure to control acute exacerbation of chronic illness—and this failure can result in fatal complications. In addition, the failure to prescribe or take medications of known efficacy (eg, beta blockers for patients who have had a myocardial infarction) is thought to contribute to many cases of preventable fatal illness.

The magnitude of the patient safety problem is poorly understood. Physicians and other health care professionals are trained—and are expected—to deliver error-free care. When regarded as indicating professional shortcomings, error causes professional blame and shame. Errors can lead to sanctions imposed by regulatory bodies, public embarrassment, and malpractice litigation. The pervasive fear of discovering grounds for lawsuit drives underground the interest of health practitioners and institutions to report errors, even (and especially) those that cause patients no harm.

During a tumultuous election year in which there is considerable restlessness on several fronts about America’s flawed health care system, the IOM report’s recommendations for mandatory as well as voluntary reporting systems have captured the imagination of both the American public and its Congressional representatives. Consumers are demanding information about specific hospitals and practitioners. Congressional hearings have generated enthusiasm about establishing new federally prescribed mandatory reporting systems for the most severe errors, such as death, permanent disability, and wrong-site surgery. Only the provider trade groups (specifically, the American Medical Association and the American Hospital Association) have voiced strong opposition to public disclosure of specific information, cautioning that this disclosure would invite trial attorneys to file a deluge of lawsuits. Currently, few instances of true negligence result in medical malpractice lawsuits. Many entities, including KP, think that strong federal peer review protections and tort reform must accompany mandatory reporting if such reporting is to be legislated, or else reporting will not occur—a situation experienced in several states that have enacted mandatory error reporting statutes. For example, Pennsylvania has implemented such a system but elicited only a single report from among all Philadelphia hospitals during the most recent reporting cycle. All health care providers and practitioners fear malpractice suits, loss of professional reputation, and media exposure.

A voluntary reporting system in which close calls and “near hits” would be aggregated and analyzed is a more acceptable approach, particularly if reports are stripped of patient and provider identifiers. Congress has heard from the Aviation Safety Reporting System (ASRS), based in NASA, about its 25-year-old system, which elicits up to 30,000 reports annually—all made anonymous after initial verification. Because no plaintiff discovery of that information has ever succeeded, great credibility and trust have been conferred in the ASRS by pilots and by other airline employees. Vastly improved aviation safety over the past two decades is a result of this system; why can’t the same thing happen in medicine? After all, the anesthesiologists in this country have shown that concerted action can mitigate damage in a high-risk environment. Operating suites are 90% safer now than they were just ten years ago because of improved patient monitoring, application of professional guidelines, and sharing of information through the Anesthesia Patient Safety Foundation.

Individual members of Congress have staked out turf in this debate already. Rep Bill Thomas (R-CA), Chairman of the House Ways and Means Committee’s Health Subcommittee, has indicated that there can be no greater protection of patients than safe medical care. Therefore, the subject of patient safety can logically be introduced into the ongoing debate on managed care options.
external affairs

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care reform and patient protection. Others have called for newly commissioned demonstration projects to test the concepts of mandatory and voluntary reporting. Sen Arlen Specter (R-PA), who chairs the Senate Health and Human Services (HHS) Labor Appropriations Subcommittee, wants to make new money available to the FDA for more intense oversight of medication errors. Sen Bill Frist (R-TN), the Senate’s lone physician—who led the push to redefine the newly named Agency for Health Research and Quality (AHRQ) in last year’s Congressional session—would like to establish a new center for patient safety within that agency. This recommendation has also been espoused by the Administration; indeed, the President has called on all federal agencies responsible for health care programs to build patient safety expectations into all systems (the Veterans Administration and the Department of Defense) and into all contracts administered by the Health Care Financing Administration (HCFA) and the Federal Employees Health Benefit Program (FEHBP). Senators Lieberman, Grassley, and Bryan have introduced legislation to set up a national center for patient safety and a national mandatory reporting system for all Medicare and Medicaid contracting providers. Patient safety is a “motherhood-and-apple-pie” issue that no legislator standing for reelection will oppose. Tom Bliley (R-VA), who chairs the House Commerce Committee, has taken the argument one step further by supporting Sen Ron Wyden’s (D-OR) call for public disclosure of malpractice and disciplinary reports on physicians contained in the National Practitioner Data Bank.

The private sector is jumping in front of the parade. The largest is the “Leapfrog Group,” which includes leaders from several large purchasers of health care, including General Motors, General Electric, GTE, the Pacific Business Group on Health, the federal Office of Personnel Management, and others. This group has developed and disseminated three standards for patient safety that have been considered by General Motors and by some large purchasers, including the “V-8” group of eight purchasing coalitions, in forming health plan contractual performance expectations for the year 2000 and beyond (Pat Salber, MD, personal communication). First, the group wants health plans to influence their contracted hospitals to adopt computerized physician order entry for medications, a technique available in only a small percentage of hospitals now but which has reduced medication errors by two thirds in the VA hospital system. Second, the group is calling for improved training and staffing for intensive care units. Third, the group is setting volume standards for hospitals where highly technical procedures, such as open-heart surgery, are done. All these new standards are evidence-based and are tied to improved patient outcomes through reduction of preventable complications, according to the Leapfrog Group’s Executive Director, Suzanne del Banco (who can be reached at (202) 973-2953 or e-mail sdelbanco@hotmail.com).

As the IOM has cautioned, medical errors and patient safety are not problems of managed care. Instead, these problems pervade American medicine.1 The good news for Kaiser Permanente is twofold: First, we have an enviable track record and have been examining our own data for some time; second, as David Lawrence is eager to point out, correcting such systemic problems requires an integrated medical care delivery system based on patient focus, professional and administrative collaboration, and excellent information technology.2 In the area of patient safety, the private sector is likely to develop innovations before Congress can act. We at KP are moving ahead with our own efforts to promote patient safety and report errors.3,4

Our new Health Policy Institute, directed by Senior Vice President Bob Crane, has convened national experts who have developed policy suggestions to guide legislative activity. We are calling for a nationwide, voluntary reporting system modeled on the Aviation Safety Reporting System and including additional protections to safeguard the information from discovery intended solely to encourage civil legal action. We also recommend State-mandated reporting of near-miss events, postmarketing drug and device surveillance, and funding for a new national center for patient safety.

With the high current level of public interest in patient safety, we can be sure Congress will take action soon.5

References
Kaiser Permanente’s Response to JCAHO’s Sentinel Event Standards: Our Significant Event Root-Cause Analysis Program Leads to Preventing Medical Errors

This article explains Kaiser Permanente’s Programwide policy regarding Significant Events and how this policy meets JCAHO standards regarding Sentinel Events. The Root-Cause Analysis Program developed in the California Division-Southern California Region to support this policy is described in detail with particular emphasis illustrating our focus on patient safety and risk reduction in our health care delivery systems. Since the policy went into effect in April 1998, our work has led us to conclude that blaming individuals solely when an adverse event occurs hinders our ability to find the true root cause, whose correction will prevent the adverse event from recurring. Similar findings are noted in relevant literature.

Introduction

The prevalence of medical errors has galvanized health care leaders, regulators, politicians, and accreditors around the issue of improving patient safety. Proposals for mandatory reporting of medical errors are currently being studied by the US Congress; at the same time, the Joint Commission for the Accreditation of Health Care Organizations (JCAHO) has heightened its requirements for analyzing root causes of Sentinel Events.

Health care is an inherently risky business that is also extremely complex—and becoming increasingly so. Hospital care is more complicated, patients are sicker, choices among medications are more numerous, and technology is more sophisticated than ever before. Paradoxically, the technologic advances that help achieve medical miracles also increase the chances that something will go wrong.

Although some medical errors are inevitable, many are preventable. Most medical errors are not the result of negligence or incompetence but of faulty systems and poorly designed processes that increase the likelihood of mistakes. We believe that frank, open discussion about the vulnerabilities in our health care systems can help reduce errors and create safer environments; however, this type of discussion requires a fundamental shift in attitude. With this requirement in mind, Kaiser Permanente (KP) developed a process designed to change the culture of reporting medical errors. Our intent is threefold: to move away from defensiveness and pointing fingers, to identify flaws in the system, and to design ways to create a safer patient environment.

Root-Cause Analysis: the Push from JCAHO

Patient safety has always been a priority of our organization. Our policies and procedures provide strict internal quality control measures that far exceed those mandated by federal, state, local, and independent oversight groups. Quality and risk management committees routinely examine unexpected deaths and errors and monitor patient safety issues.

Although not a new concept for those familiar with quality improvement, root-cause analysis has attracted a resurgence of interest as a result of the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) policy for identifying and managing medical errors. The process is designed to foster a blame-free environment that encourages several activities: systematic reporting of Significant Events; in-depth analyses done to identify the “root” or ultimate systemic cause of errors; implementation of barriers or safeguards to reduce the likelihood of similar errors occurring in the future; and dissemination of lessons learned.

To improve its processes of event analysis, the KP California Division incorporated theories and concepts taught by, among others, Drs Lucian Leape, Richard Cook, and James Reason as well as organizations such as the National Patient Safety Foundation and the Institute for Healthcare Improvement. Input of KP physicians, directors of quality assurance programs, risk managers, senior leaders, committee chairpersons, nursing representatives, and other internal resources are also reflected in these processes.

Defining JCAHO’s “Sentinel” and KP’s “Significant” Events

All would agree that a medical mistake that makes the headlines is a Significant Event. The wrong leg amputated, for example, or a chemotherapy overdose are definitely Significant Events. Most errors don’t make the headlines, however, and are considerably less dramatic.

The KP definition of a Significant Event is consistent with JCAHO’s definition of a Sentinel Event (any unexpected occurrence involving death or serious physical or psychological injury or risk thereof), but we take this definition a step further. Our definition of a Significant Event is any unexpected clinical or nonclinical occurrence that results in loss of life or bodily harm, disrupts operations, or threat-
ens the organization’s assets and reputation. The definition also includes “near misses”—any breakdown in process that carries the risk of a serious adverse outcome.2

Significant Events range from unanticipated death of a patient to outbreaks of nosocomial infection to fires and accidental release of hazardous materials. Kaiser Permanente classifies Significant Events into three levels, with Level 1 the most serious (see sidebar).

Fostering Blame-Free Reporting

Fear of blame and its consequences tends to drive mistakes “underground.” Not all mistakes are hidden, however; obviously, the more egregious errors are impossible to hide. Nonetheless, for every adverse event that sets the rumor mills abuzz, many more such events occur that we would rather ignore: mishaps where the error was caught before harm was done. Yes, our policy is to report them, but the natural inclination is not to do so.

Because health care still relies primarily on training and standards to prevent errors and enforces standards by imposing punishment for lapses, health care workers have a strong incentive not to report mistakes. This incentive robs clinicians and others of two more beneficial incentives: to investigate underlying causes that may have contributed to the error and to make the necessary changes to prevent recurrence.

Complex systems fail because of the combination of multiple small failures, each individually insufficient to cause an accident.3 Numerous steps exist along the way to completing even a simple process, and numerous steps lead to numerous opportunities for error; and any unreported error—even a “near miss”—is a lost opportunity for improvement.

The KP Significant Event policy requires regional reporting and root-cause analysis of Level 1 and 2 events, but because reporting even minor errors can help us to pinpoint flaws in the system, we encourage staff to report all errors. We emphasize that we are looking for ways in which systems fail; we are not seeking to pinpoint blame. The more we learn why things go wrong, the more safeguards can be put in place to prevent error recurrence.

An example of this is the problem of the missing identification bands for infants. When we noticed a cluster of minor (Level 3) events, our analysis revealed that the bands are very difficult to keep on small wrists. The bands slip off, and rebanding the babies is a cumbersome, time-consuming task. Postpartum obstetric units tend to be hectic places where mistakes can occur when information is transferred onto new bands. Underlying the problem was the type of bands being used: The design required nurses to slip their fingers inside the bands, thereby automatically widening them. When (as typically happens) babies lose weight, the bands become too big and fall off. The solution was a new banding system with a pull-through lock that can be tightened as the baby loses weight.

A blame-and-punishment culture would have called for discipline of the nurse who put the wrong information on the wristband. This approach would have ignored other factors that enabled the error to be made and would thus have done little to ensure that the error did not happen again. In short, nothing would have been learned.

### Significant Event Defined

#### Level One
- Infant abduction or discharge to the wrong family
- Rape of a patient
- Hemolytic transfusion reaction
- Any invasive procedure—wrong patient; wrong side, organ, or part
- Suicide of a patient in a 24-hour care facility
- Unexpected death or loss of function not related to the natural course of illness
- Significant deviation from the usual processes of care
- Adverse media attention

#### Level Two
- Nosocomial outbreak or foodborne illness
- Reportable incident to the State Board of Medical Examiners or National Practitioners’ Data Bank
- Internal or external disaster
- Regulatory sanctions
- Release of toxic substance
- Suicide within the KP Program
- Cluster of Level 3 events

#### Level Three
- Unusual occurrences
Root-Cause Analysis of a Significant Event

To prevent errors from recurring, we need a thorough understanding of why they happened. The natural tendency is to blame the person closest to the problem (in most cases, this person is the caregiver), but doing this often diverts our attention from the system’s flaws that may have contributed to the error.

Root-cause analysis drills down through the system to examine why the mistake occurred, rather than who made it; the goal is not to point fingers but to learn from the mistake so that future mishaps can be prevented.

Let’s look at a hypothetical significant incident (Table 1):

At 8:10 am, Sally Trueman, a 65-year-old woman, arrives at the Radiology Department for an intravenous pyelogram (IVP), scheduled for 8:30 am. She checks in with the receptionist and sits down in the waiting room.

Five minutes later, she is joined in the waiting room by Anna Lui, a 75-year-old widow, who is accompanied by her son. Mrs. Lui, who did not check in with the receptionist desk, sits down to wait for her 8:30 am abdominal series.

The radiology technician calls Mrs. Trueman’s name. Mrs. Lui stands up. The technician asks her if she is Mrs. Trueman. Mrs. Lui nods. At 8:35 am, the technician takes Mrs. Lui to the dressing room and asks her to change into a gown.

Mrs. Lui and her son are then taken into x-ray room #4. The radiology nurse comes in and asks the patient, through her son, about allergies and medications and then starts the intravenous line. Ten minutes later, at 9:10 am, the radiologist comes in to make his preprocedure assessment. At 9:20 am, the IVP is started for Mrs. Lui.

By 9:50 am, Mrs. Trueman, still in the waiting room, wants to know why she hasn’t been taken in for her x-ray procedure.

Wrong patient, wrong procedure: A Level 1 Significant Event.

Now the detective work begins. Root-cause analysis is designed to reveal exactly what happened, each step along the way, from the moment the patient entered the system until the error occurred. The medical center’s Risk Manager individually interviews all those involved—in our hypothetical case, this process would include the receptionist, radiology technician, nurse, and physician—makes notes, goes back if necessary to clarify discrepancies, examines charts, compares accounts, and creates a basic scenario of what happened. An interdisciplinary team is then formed with all the players in the event as well as representation from Administration and Risk Management. A facilitator keeps the process on track and discourages finger-pointing. Again, the goal is to focus on what went wrong with the system instead of just what a person might have done.

The team has two objectives: 1) Identify the root cause(s). If x had not happened, then the event would not have occurred. 2) Implement barriers, or safeguards, that will prevent the systems failure from happening again.

A chronology of action provides a clear picture of exactly what happened. In the case of Mrs. Lui, the chronology of action would look like Table 1.

Using this chronology, the team then sets out to discover what underlying conditions might have contributed to Mrs. Lui receiving the wrong procedure. During the investigation, the team discovers that Mrs. Lui did not check in with the receptionist and that she speaks no English. Asked by three different people whether Mrs. Trueman was really her name, she nodded.

Table 1. Chronology of Action

<table>
<thead>
<tr>
<th>When</th>
<th>What, Who</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:10 am</td>
<td>Mrs. Trueman, a 65-year-old member arrived in Radiology for a scheduled IVP at 8:30. She checked in with the receptionist and sat down in the waiting room.</td>
</tr>
<tr>
<td>8:15 am</td>
<td>Mrs. Lui, a 75-year-old member arrived in Radiology with her son for a scheduled abdominal series at 8:30. She did not check in with the receptionist desk, and sat down in the waiting room.</td>
</tr>
<tr>
<td>8:30 am</td>
<td>Radiology technician called in Mrs. Trueman; Mrs. Lui stood up and went to the technician.</td>
</tr>
<tr>
<td>8:35 am</td>
<td>The technician asked Mrs. Lui if she was Mrs. Trueman; she said &quot;yes.&quot;</td>
</tr>
<tr>
<td>8:50 am</td>
<td>Mrs. Lui and her son were taken into x-ray room #1.</td>
</tr>
<tr>
<td>9:00 am</td>
<td>The Radiology nurse came in, asked the patient and her son about allergies and medications, and started an intravenous line.</td>
</tr>
<tr>
<td>9:10 am</td>
<td>The radiologist came in and did his pre-procedure assessment.</td>
</tr>
<tr>
<td>9:50 am</td>
<td>Mrs. Trueman, in the waiting room, went to the receptionist and asked why she hadn’t been taken in for her x-ray.</td>
</tr>
</tbody>
</table>
Although Mrs. Lui had never been in the Radiology Department, Mrs. Trueman had been a member for many years and had received many diagnostic and treatment procedures. Mrs. Trueman apparently was accustomed to waiting. They also learned that the waiting room was full of patients and family members and that a receptionist had called in sick.

The radiology technologist, who was having a very busy day, wasn’t entirely sure that the patient’s son understood him, but because the son, too, kept nodding, the technologist decided he did.

When the son asked the Radiology Department RN how long the stomach x-ray films would take, she corrected him and told him the IVP would take 90 minutes. She thought he had made the mistake in terminology because he was a layperson.

The radiologist was suspicious of the patient’s last name because she looked Asian, but when he asked the son whether Trueman was really the family name, the son again nodded, and the physician ignored his feeling that something was “out of sync.”

Although how the error happened is fairly obvious, root-cause analysis digs much deeper. Significant Events are usually the result of multiple system failures—rather than the mistake of one person—and the team must determine all the weak points in the system before they can institute safeguards to prevent the mistake from occurring again.

Systems fail for many reasons—insufficient training, inadequate information, faulty tools and resources. In a process that might be likened to peeling away the layers of an onion, root-cause analysis keeps asking—why? This repeated questioning also identifies whether or not existing safeguards intended to prevent errors actually work.

In this instance, the chain of errors began when the technologist called for Mrs. Trueman and Mrs. Lui was taken into the exam room. Why? Because

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Figure 1. High-Level Causal Sequence Flowchart For Sample Case Study

Barrier Analysis High-Level Causal Sequence Flowchart For Sample Case Study

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Figure 1. High-Level Causal Sequence Flowchart. Example of high-level sequence flowchart developed from a chronology focuses team on the most critical activities that occurred prior to a Significant Event.
Mrs. Lui stood up. Why? Because neither she nor her son understood English. Why wasn’t this recognized? Because they both kept nodding as though they understood. This scenario raises a number of systems process questions about existing safeguards—patient identification (ID) cards, charts and consent form signatures—that should have prevented the error. The scenario also brings up issues of patient and staff attitudes and communication.

Because teams often uncover contributing factors as well as root causes, improvement activities must be prioritized. The Barrier Analysis High-Level Casual Sequence Flowchart was developed to assist in the identification of key points on the chronology. They are moved to the flowchart for more intensive analysis (see Figure 1). To help teams identify what are truly root causes—causes most fundamentally linked to the event—and those that must be corrected in order to reduce risk to the next patient, participants are asked to complete a phrase: “If x had not occurred, then this Significant Event would not have happened.” The team continues to ask questions until the answers are obviously beyond its realm of capability to change—budget constraints, staffing shortages, for example.

Blame is integral to human nature and, in a case like this, it is easy to see how the analysis process could lapse into finger-pointing. Why didn’t the technician make sure he had the right patient? Why didn’t the physician go with his hunch that something was wrong? Why didn’t Mrs. Trueman stand up when her name was called? If she had, the whole thing wouldn’t have happened...this time.

In performing root-cause analysis, the team must overcome blame and defensiveness so that the system can be opened up for review. To do this, participants are taught to focus on the system and away from the individual. The issue under review is not the clinical outcome but the event—the point in the system where the error occurred. In this case, the outcome was Mrs. Lui receiving the wrong procedure begun when Mrs. Lui answered to the wrong name and complicated by repeated missed clues. The Significant Event was the mix-up of the patients. The root cause was an inadequate patient identification system.

Outcomes are all about the previous patient. Root-cause analysis is designed to protect the next patient. What safeguards can be put into place to ensure that the error doesn’t happen again? The idea is to create a safer patient environment by eliminating future risk instead of defending past practices.

Moving Beyond Blame and Punishment

The belief that human error is the most common cause of accidents is a comfortable one because it provides satisfying closure to an accident. The culprit is identified, removed from practice, or put through remedial training. Blame is emotionally satisfying; the problem is that it doesn’t fix the problem.

In fact, blame is like a huge boulder on the road to progress. Until you can move beyond it, proceeding with the more constructive work of fixing what is wrong with the system is difficult. But although we understand how destructive blaming each other is to systems improvement, we continue to participate in it.

Through the root-cause analysis process, we have discovered that although blame is difficult to avoid entirely, it can be managed. One way to move beyond blame is simply to acknowledge its existence. Someone (in most cases, the caregiver) was to blame for the error. Mistakes happen. We can’t prevent all of them or entirely eliminate the possibility that they will occur. When blame becomes an obstacle, actiively recognize its presence and move on.

All this is not to say that we should not hold ourselves accountable for our performance. Patient care must be entrusted to those who can competently carry it out. If discipline is warranted, the decision must be made early in the review process, preferably right after the initial investigation and determination of the probable cause but before actual root-cause analysis. To expect much candor from anyone hovering under the cloud of possible discipline is unrealistic.

Ultimately, the opportunity to learn from the event may be more valuable than stifling participation with the threat of discipline. Remember, root-cause analysis expects that the people who are part of the process will make errors. By anticipating variation in human performance and designing our processes to account for them, we can go on to build safer systems.

Communicating Significant Event Findings

In Southern California, findings from each KP medical center’s Significant Event analysis are reviewed at the Risk Managers’ monthly meetings.

As a multidisciplinary clearinghouse, the Significant Event Review Committee (SERC) reviews all Significant Events occurring in KP Southern California facilities with the ultimate goal of ensuring patient safety. The committee works closely with similar structures in Northern California to coordinate and compare findings and to plan risk-reduction strategies. The
committees also disseminate findings, analyses, and improvement strategies. All this information is incorporated into quarterly reports to the KFH/HP Board of Directors (see Figure 2).

Education and Training

The Root-Cause Analysis Program includes an educational support component for the methodology and uses experiential learning opportunities that include full-day workshops, learning modules, case studies, and work tools. Participants attend workshops in which they learn to apply the methodology through the use of case studies and various work tools. Long-term consultative assistance is also available.

Training sessions are tailored to meet the needs of different audiences and management levels—leadership teams, department heads, chiefs-of-service, frontline employees, physicians, and nurses. Because these groups have diverse responsibilities, they require different levels of information regarding root-cause analysis work.

What We Have Learned to Date

Anecdotal feedback and analysis of actions taken since we implemented the root-cause analysis process tells us that measures focused totally on discipline have dropped and those aimed at systems improvement have increased.

Teams report that the Root-Cause Analysis Program methodology was helpful to them in uncovering underlying conditions and finding the root causes of the event.

Throughout the KP medical centers in California, we have also identified the following recurring themes:

- Look-alike and sound-alike medications that lead to medication errors
- Ineffective processes for patient and site identification prior to procedure and surgery
- Malfunctioning automatic staplers in perioperative areas
- Communication problems between disciplines and departments
- Coordination-of-care issues involving patients who are being cared for by many different services
- Failures in the transfer of important patient information, particularly when patients are “handed off” from one health care professional or department to another.

Conclusion

A few years ago, a KP advertising slogan was: "Good People, Good Medicine." As a philosophy, this premise has not changed. The health care professionals within our organization are competent, dedicated people, accountable for the quality of care they deliver. But we must recognize that even competent and dedicated people can make mistakes and that the mistakes are often reflections of weak points in our systems. The Institute of...
Medicine’s recent report “To Err is Human” states: “Building safety into processes of care is a more effective way to reduce errors than blaming individuals.” The report also emphasizes that the “focus must shift from blaming individuals for past errors to a focus on preventing future errors by designing safety into the system.” In accordance with JCAHO requirements, KP has established a root-cause analysis process to better understand the underlying causes of system errors and to reduce the probability of recurrence. Although this process has already proved valuable, if we are to make significant improvement, we must move beyond the entrenched blame and punishment culture toward one of greater honesty and openness. Only in this way can we truly create a safer health care environment.

References
1. Sentinel Events. In: Joint Commission on Accreditation of Healthcare Organizations Department of Publications.

Related Articles

What A Human Being Is
The last third of the 20th century has inserted, with blatant cynicism, quotation marks around most of our cherished notions of social, political, historical, and psychological existence. Indeed, the whole notion of what a human being is in the age of cloning, cyberspace, and public opinion polls has undergone a radical transformation.

Andrei Codrescu, “Messiah”
Review by Gary Stein, MD

This book is a “must read” for all clinicians seeing patients who have back pain. The Back Pain Revolution covers most of the pertinent areas of interest to the student of back pain: medical history and physical examination, epidemiology, risk factors, natural history, the differences between physical impairment and disability, and psychological distress. The chapter discussing patient beliefs about back pain is an excellent summary of the many unspoken ideas patients bring with them to the examination room and how these ideas vary enormously among different cultures.

The Back Pain Revolution has changed treatment methods dramatically. We now encourage patients to remain active and to resume usual activities as soon as possible. Narcotics are used much less frequently and usually only for severe and acute pain. We have learned the power of the medical history and physical examination for making the diagnosis, and we appreciate the appropriate and more limited role of plain radiographs and advanced imaging techniques. We have a better understanding of pain affecting and being affected by the central nervous system with insight into the diverse influences producing and sustaining pain. Dr. Waddell and others have used the phrase “back pain as a biopsychosocial phenomenon” to summarize the diverse factors influencing pain perception. Above all, our inclination to cure by wielding a blade has been inhibited: A chance to cut is not necessarily a chance to cure. Indeed, the suffering that accompanies the patient with back pain is best treated with sincere concern and wise counsel. The tricyclic and tetracyclic antidepressant agents work well to improve sleep and pain tolerance. The selective serotonin reuptake inhibitors (SSRIs) and the newer antidepressants help patients when depression is prominent.

The last third of this book contains the clinical practice guidelines developed for governmental bodies in the United States, the United Kingdom, and New Zealand. These guidelines have served as models for the guidelines established by most Permanente Medical Groups.

In addition, the book contains “Information for Patients” that can be reproduced and given to them to help them understand that back pain is both musculoskeletal and neurological. This may be of help especially to patients who insist on knowing the precise anatomic location of the pain. These patients frequently request magnetic resonance imaging (MRI) to help find the pain even when MRI is not needed for diagnostic or therapeutic purposes. A request of this sort is based on long-outdated thinking; we must help our patients and, when need be, our colleagues, to understand the newer concepts of back pain. This well-written, easy-to-read, informative book does just that. Our patients with back pain will get well with the least possible pain and suffering if we appropriately obtain the medical history and conduct the physical examination, rule out dreaded disease, recognize those few conditions that surgery can predictably improve, and explain the problem to the patient in the way Dr. Waddell explains it to us. This book is an interesting and important contribution about a very common problem.


Gary Stein, MD
Dr. Stein is an internist with The Permanente Medical Group in San Jose, California, where he is head of the Spine Clinic.
“God Unmasked; the Full Life Revealed,”
by Ernest Lane, MD

Review by Albert Ray, MD

Dr Ernest Lane practiced medicine with the Northwest Permanente Medical Group for 17 years. After spending his lifetime as a healer of humans, Dr Lane has written God Unmasked; the Full Life Revealed, a treatise on the value of bridging the schism between science and religion. Dr Lane offers a series of compelling and logical arguments concerning 1) the existence of the spiritual self and 2) the importance of recognizing the bond between the physical, measurable realm of science and the intangible, in calculable world of the spirit. Skeptics as well as religious believers with a somewhat questioning outlook will achieve reconciliation by reading this book, which, contrary to my expectations, actually embraces “openness to doubt” as the cornerstone of spiritual development. And for unwavering believers, reading this book presents an opportunity to more fully contemplate—and thereby appreciate—the gift of faith.

As educated individuals, we are taught from an early age to be critical thinkers. The scientific and spiritual realms grow apart and seem to be at odds. Dr Lane portrays an existence where these entities are brought together under a central canopy that results in a more fulfilling life. Through exploration of the psychology of human behavior, the book asserts, a person can become aware of God’s presence in the world. This awareness results in a change in mental outlook for the individual, who is rewarded with a more wholesome existence.

Dr Lane asserts that people must be committed to integrity, defined by its open door to doubt; indeed, acceptance of uncertainty is what allows a person to feel God’s presence. In this way, not only is God unmasked but each of us comes to understand what we are really all about. Ultimately, this process allows us to comprehend what constitutes the essence of a fuller life for ourselves and for all the world.

With great creativity and sensitivity, Dr Lane unveils a compelling saga for those who seek a deeper understanding of human existence. A person must look beyond personal needs to find the key to deeper comprehension of the meaning of life and must learn the fine balance between detachment and engagement in order to navigate existence successfully.

This book was not written in a vacuum. Dr Lane has drawn from the rugged circumstances of his own personal history, combining it with more than 30 years of experience working in general medical practice. If you want to be challenged, read this book. The famous words, “God, reveal yourself; hide no more” do become a reality, and, within that reality, you will be able to experience greater understanding of self.


Albert Ray, MD

Albert Ray, MD, is Assistant Chief in the Department of Family Practice at Kaiser Permanente in San Diego and an elected Director of the Southern California Permanente Medical Group.

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Please contact Naomi Howard at naomi.x.howard@kp.org.
San Diego Physician Chairs California's Young Physician Group

San Diego, CA, April 22, 2000—Jeffrey Krebs, MD, FACP, an Internal Medicine specialist with Kaiser Permanente, was recently elected chair of the Young Physician Section of the California Medical Association (CMA). Young physicians are those who are under age 40 years or in their first five years of medical practice.

“My role as chair is to oversee the entire Young Physician Section, to plan seminars of interest to young physicians in the state, to chair the Executive Committee, and respond to media questions or comment on issues affecting young physicians,” says Dr Krebs.

Young physicians are concerned about legislative issues such as malpractice premiums, according to Dr Krebs, as well as getting credentialed for hospital staffs and HMOs, financial planning, and more.

Dr Krebs was elected to his new role at the annual Assembly for Young Physicians (March 10, 2000), which is held in conjunction with the CMA House of Delegates meeting.

“This year I will be planning two professional development meetings for young physicians—one in Northern California and one in Southern California,” says Dr Krebs. “I will have representatives from the American Medical Association, CMA, and other organizations give presentations on how to interface with the media. This is an increasingly important role for physicians as we try to communicate our positions and strategic messages on a variety of medical and political issues.”

Other planned activities include increasing membership in the CMA Young Physician section and conducting seminars on financial planning, legal issues, and time management.

Dr Krebs is actively involved in the San Diego County Medical Society (SDCMS). He is the past chair of Young Physician Section, the current Vice-chair of the Professional Conduct Committee, the Co-Chair of the Membership Committee, and is serving his third year on the Council of the SDCMS.

Dr Krebs has been with Kaiser Permanente since 1989, and his practice is at Kaiser Permanente’s La Mesa Medical Offices.

In Memoriam

Naomi Elizabeth Torrez
1939 - 2000

In 1979, Naomi Elizabeth Torrez joined the Northern California Kaiser Permanente family as a librarian at the KP Vallejo Medical Librarian. The daughter of a pastor and professor of Classical Greek and Latin, Mrs. Torrez followed in his footsteps of community involvement and scholarship. In 1953, she earned a Championship at the US National Spelling Bee. She was a graduate of the University of Arizona, the University of California, Berkeley, and Golden State School of Theology. At Kaiser Permanente, Mrs. Torrez was a member of numerous committees, including the Latino Association, Affirmative Action, Health Education, and the Librarians group. In 1988, Golden State School of Theology published a “Research Manual” by Mrs. Torrez, in which she stated, in the Introduction: “... never be afraid of information ... Almost daily, claims are made about new manuscripts, new fossils, or new revelations, but Christians do not need to be concerned about such claims. True knowledge is always in harmony with true religion.”

Mrs. Torrez was an extended member of The Permanente Journal team, working on bibliographic details as Copyright Review Editor in the Medical Editing Department. We will all miss her scholarship and expertise.

Mrs. Torrez is survived by her husband, Reverend Lupe Torrez, and her children, Sterling, Linda, and Stan.
Instructions to Authors

Send all manuscripts to:
Merry Parker, Managing Editor
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Types of Papers

There is no required length, although concise, readable, and practical articles within the ranges listed are preferred. Emphasize information that clinicians can use in their practice, that gives them regional and national perspective, and that integrates Permanente Medicine into the largest scope of health care delivery.

Notes About Specific Sections

• Clinical Contributions
  Clinical articles on the practice of medicine within The Permanente Medical Groups and their affiliates. Article topics may include reviews of “successful” practices, programs and policies, and analyses of new technologies.
  (word count range is 725-5000)

• Original Research
  Articles on Kaiser Permanente’s research contributions through original, empirically-based research in areas of great clinical importance. This includes outcomes research, studies that use Kaiser Permanente databases, and rigorous evaluations of best practices and innovations in clinical care.
  (word count range is 725-5000)

• Health Systems
  Articles from a “systems” perspective, recognizing that medicine is practiced in the larger context of health care, including ambulatory care delivery, hospital strategy, program expansion, and network development and is supported by information technology and the Internet. Growth in this system occurs through the leadership, education, and development of clinicians.
  (word count range is 725-3000)

• External Affairs
  Nonclinical articles on external issues related to the practice and perception of Permanente Medicine. These may include articles by customers and consumer groups, as well as internally generated articles on health policy, the media, the marketplace, and our social mission.
  (word count range is 725-3000)

• Medical Legal Update
  Articles educating clinicians about medical-legal issues, including risk management, claims review, loss prevention, and ethical issues. Improved clinician communication with patients, families, and the health care team is the goal.
  (word count range is 725-1400)

• Soul of the Healer
  Poetry, stories, musings, and nonfiction articles written by Permanente clinicians as an expression of the soul of the healer. This is a forum to appreciate each other personally through creativity in the humanities.
  (word count range is 725-2200)

• A Moment in Time
  A look back at milestones in the history of the Permanente Medical Groups.
  (word count range is 700-740)

• Abstracts
  Abstracts from articles published in other journals, preferentially featuring the work of Permanente physicians.

• Announcements
  Significant achievements related to the practice or management of medicine by Permanente physicians or Permanente Medical Groups. Also posted will be upcoming courses, meetings, and conferences sponsored by the Permanente Medical Groups or Kaiser Permanente.

• The Lighter Side of Permanente Medicine
  Jokes, stories, and humorous encounters tied to the practice of Permanente medicine, managed care, or health care in general.

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In a cover letter, please give a concise statement of the authors’ view of the importance and uniqueness of the article. Also provide several names and addresses of non-Kaiser Permanente experts who could provide informed, objective reviews of the work. The names of any persons considered unlikely by the authors to supply nonbiased reviews may also be submitted; this request will be honored. It is important that the cover letter also include the names, addresses, phone numbers, and fax numbers of all coauthors.

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The second page of an Article (Clinical or Nonclinical) should contain an Abstract (limit: 250 words). The abstract for Nonclinical Articles should use these headings: Context; Objective; Design, Main Outcome Measure(s); Results, and Conclusion(s). Also list key words and terms, in alphabetical order; under which you believe the article should be indexed.

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Examples.

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Section A.

Bright Systems® demonstrated improvements in::
- Physician injury prevention counseling
- Physician tobacco counseling
- Parent safety behaviors
- Parent tobacco use
- A, B, and C
- All of the above

Adaptation of the office system through combined use of parent safety behavior data and physician consensus had what outcomes?
- It improved acceptance of the office system by physicians and nonphysician staff, which facilitated program dissemination
- Physicians learned more about health supervision and quality improvement by participating in the adaptation of the office system
- The system had a greater effect at improving parent safety behaviors
- The office system tools were continuously improved, and new tools were developed
- All of the above

Article 2. Emergency Contraception Research and Demonstration Project (page 57)

Which of the following progestogens has not been shown to be effective as emergency contraception (EC)?
- Levonorgestrel
- Norgestrel
- Norethindrone

Two high doses of estrogen/progestogen oral contraceptives given within 72 hours of intercourse are highly effective in preventing pregnancy. Which of the following statements describes the effectiveness of ECP numerically?
- 100 women who have unprotected intercourse would become pregnant without EC; none of them would become pregnant with it
- 100 women who have unprotected intercourse would become pregnant without EC, two of them would become pregnant with it
- Of 100 women who have unprotected intercourse, 8 would become pregnant without EC; 2 would become pregnant with it

Article 3. Asthma Disease Management Program (page 48)

Nationally, what is the percentage of patients with known heart disease who have LDL cholesterol levels < 100 mg/dL?
- 10-15%
- 20-25%
- 40-45%
- 60-65%
Physician reminders at the moment of care
   a. Improve cholesterol screening in coronary artery disease patients
   b. Improve cholesterol control in coronary artery disease patients
   c. Improve prescribing of aspirin in CAD patients
   d. All of the above

Article 4. Achieving Positive Outcomes through Collaborative Pharmaceutical Care: The KPNW Medication Management Program (page 37)
Which of the following is not an objective of the KPNW Medication Management Program?
   a. Provide evidence-based care and improve health care outcomes of populations
   b. Improve support to those medical offices which have clinical pharmacy resources
   c. Focus clinical pharmacy resources to support KPNW Regional Clinical and Pharmacy Department priorities
   d. Improve consistency and reduce service variation in providing clinical pharmacy care
The KPNW Medication Management Program (MMP) has achieved all but the following:
   a. Positioned KPNW as the Programwide leader in LDL management
   b. Clinician survey results that describe MMP as providing high-quality care and an important part of the local health care team
   c. Decreased the number of patients cared for by existing personnel
   d. Patient satisfaction results that define members as extremely or very satisfied with the care provided by MMP

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

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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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*KFHP - Kaiser Foundation Health Plan; TPMG - The Permanente Medical Group, Inc.; NWP - Northwest Permanente, Physicians and Surgeons; CPMG - Colorado Permanente Medical Group; PMGoMA - Permanente Medical Group of Mid-America, PA; TPF - The Permanente Federation; PermCo - The Permanente Company; OPMG - Ohio Permanente Medical Group, Inc.; TSPMG - The Southeast Permanente Medical Group, Inc.; MAPMG - Mid-Atlantic Permanente Medical Group; HPMG - Hawaii Permanente Medical Group, Inc.; SCPMG - Southern California Permanente Medical Group
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3 Healing Physicians: Physicians Healing. Tom Janisse, MD

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9 Evaluating Hypertension Control in a Managed Care Setting ● Diabetes Management in a Health Maintenance Organization. Efficacy of Care Management Using Cluster Visits ● Lack of Correlation of Symptoms with Specialist-Assessed, Long-Term Asthma Severity ● Effect of a Pediatric Self-Care Book on Utilization of Services in a Group-Model HMO ● Exploring Indicators of Telephone Nursing Quality ● HMO Physicians' Use of Referrals ● Cost of Care for Patients in Cancer Clinical Trials ● Spousal Concordance for Cancer Incidence: a Cohort Study ● Changing Paternity and the Risk of Preeclampsia/Edema in the Subsequent Pregnancy ● Second-Trimester Serum Chorionic Gonadotropin Concentrations and Complications and Outcome of Pregnancy ● Effect of Age on Reasons for Initiation and Discontinuation of Hormone Replacement Therapy ● Psychosocial Treatments for Adolescent Depression ● Cigarette Smoking, Alcohol Consumption, and Risk of ARDS: a 15-Year Cohort Study in a Managed Care Setting ● Warfarin Use among Ambulatory Patients with Nonvalvular Atrial Fibrillation: the Anticoagulation and Risk Factors in Atrial Fibrillation (ATRIA) Study

Clinical Contributions

15 The James A. Vohs Award for Quality.

17 Bright Systems® Sheds Light and Lightens the Load at Pediatric Health Supervision Visits. Diane Fraser

This article complements the outline by Dr Gee et al of the 2000 Vohs award-winning project. It describes the actual workings of the system and personalizes some of the details with anecdotal examples. There is discussion of the underlying personal motivations for development of the system and historical aspects. The specific tools used are described, and examples of the project in action are given.


This project targets the preventive health needs of almost 50% of Health Plan members, when children and their families are included. This article outlines the project in detail. The system emphasizes comprehensiveness and anticipation of needed counseling. Injury prevention and healthy behaviors are among the major foci of the effort. Results showed substantial improvements in quality of care as well as high patient and physician satisfaction. Potential cost savings are also discussed.

32 The Childhood/Adolescent Immunization Program. Colorado Region

This program assesses immunization status at every visit, operates tracking and audit systems, improves availability of protocols, and provides education to patients and staff. An "Immunization Tool Kit" is a key feature. Outcome data show that this low-cost program has been highly successful in achieving its goals. It achieved a first-place award from The American Association of Health Plans for "Innovative Quality Improvement."

37 Achieving Positive Outcomes through Collaborative Pharmaceutical Care: The KPNW Medication Management Program. Northwest Region

Emphasizing lipid management and diabetic glucose control, this centralized program integrates management into the care delivery system. Tools include development of a list of those at risk, streamlining test ordering, group appointments, educational efforts, and nurse care management. Measured results include improved percentages of coronary disease patients with LDL cholesterol levels below 130 mg/dL, and improved glycemic control in diabetics. Substantial reductions in acute myocardial infarction rates and coronary disease mortality are predicted.