

By Marilee Donovan, RN, PhD  
Paul O Jacobs, MD  
Martha Blake, MBA

## Vobs Award Winner — Single-Region Category: KPNW Integrated Pain Management Program

### Background: Recognizing the Need to Integrate Pain Management

One of the most common reasons for visiting a health care practitioner is to obtain relief from pain. The Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) reported that 50 million Americans are partially or totally disabled by chronic pain.<sup>1</sup> Among those living in extended care facilities, incidence of serious pain is reported at 45% to 80%.<sup>2</sup> On the basis of national data, Kaiser Permanente Northwest (KPNW) estimated, in 1995, that at least 5% of its adult Health Plan members were experiencing moderate to severe chronic pain (Bill Towery, MBA, MPP, personal communication, October, 1995).<sup>3</sup> This level of pain was experienced by an estimated 9% of Kaiser Permanente (KP) San Diego members as reported by Bill McCarberg, MD (personal communication, July 24, 1999).<sup>b</sup>

In 1992, Group Health Cooperative of Puget Sound reported that although the cost of pain care per patient was lower than for other chronic conditions, total annual costs were greater.<sup>3</sup> And although direct costs of pain treatment are estimated at \$100 billion annually, only one in four patients receives effective treatment.<sup>4</sup> In June 2001, a California jury awarded a \$1.5

million settlement to a family whose terminally ill patriarch was discharged to hospice with his pain rated as 10 on a scale of 1 to 10 (a score of 10 indicating the most pain).<sup>5</sup> Responding to increasing evidence of morbidity from unrelieved pain, the Robert Wood Johnson Foundation, in 1997, awarded the University of Wisconsin School of Medicine a grant to collaborate with JCAHO to develop what became the 2001 Pain Standards, which declare that every patient with pain has a right to have appropriate assessment and management of this pain.<sup>6</sup>

**... every patient with pain has a right to have appropriate assessment and management of this pain.**

Charged with identifying, managing, and continuously improving clinical processes and outcomes of five of the top ten most resource-intensive medical conditions, the KPNW Clinical Quality Planning Committee (CQPC), in 1993, discovered that no systematic management strategy existed for many painful conditions—especially arthritis, abdominal complaints, back and neck trauma. An anesthesia clinic offered anesthetic blocks to a small group of patients, and primary care practitioners did the

best they could with the rest of members; however, pain management nationwide lacked both coordination and knowledge of scientific advances, and access to available resources was difficult. Regionally, diagnosis and treatment were impeded by practitioners' beliefs that chronic pain is a psychiatric condition with little or no organic basis; that psychological testing can distinguish between real pain and imaginary pain; that most patients with chronic pain are simply addicts seeking drugs; and that treating chronic pain with opiates is illegal.

By 1994, the external environment was changing. Clinical appreciation of neuroplasticity challenged psychological explanations for chronic pain. Evidence linked unrelieved acute pain with morbidity, including development of chronic pain.<sup>7-9</sup> Professional organizations such as the American Pain Society were drafting guidelines for the appropriate treatment of pain.<sup>10</sup> Washington State<sup>11</sup> and Oregon<sup>12</sup> were considering passage of legislation permitting physician-assisted suicide for patients who requested it in response to their intractable pain. Focus groups of KP members (assembled to advise KPNW how to improve access to medical care) identified inadequate services for pain relief as a problem. Internal audit of telephone advice calls and data collected as part of the Kai-

ser Sunnyside Medical Center (KSMC) pain management improvement efforts showed that poor pain relief was common.

### Developing a KPNW Pain Management Program: Origins and Evolution

In response to this problem of inadequately treated pain, the CQPC began to envision an evidence-based process for managing chronic pain at the primary care level, and, in 1995, the KPNW Regional Operations Group chartered the Integrated Pain Management Project. Objectives of this project were to decrease suffering, to reduce variation in practice, to improve functioning, to increase customer satisfaction, to support primary care practitioners, and to produce cost savings. To accomplish these goals for the population with pain would mean changing the system of care delivery and not just treating individual patients.

To design an evidence-based program, original members of the pain project team surveyed 126 KPNW practitioners and administrators, evaluated 387 peer-reviewed articles, and interviewed 30 national health care leaders, including KP colleagues in Northern California, San Diego, Texas, and Colorado. Into its design the team incorporated guidelines of the American Pain Society and of the Agency for



**MARILEE DONOVAN, RN, PhD**, (top), joined KP in 1994, after a career including practice as an oncology nurse specialist, faculty in three colleges of nursing, and a hospital administrator. Through all of these roles, she has maintained a clinical practice and research interest in improving pain management. E-mail: marilee.i.donovan@kp.org.  
**PAUL O JACOBS, MD**, (left), has been with Northwest Permanente in Portland, Oregon since 1974. He began as an Internist, and an interest in musculoskeletal pain led to a second residency in Physical Medicine and Rehab. In 1990, he began his practice as a Psychiatrist. E-mail: Paul.O.Jacobs@kp.org.  
**MARTHA BLAKE, MBA**, (right), Martha Blake served the NW Region as a Quality Program manager for fifteen years and actively sponsored the Pain Management Program. She is now training as an analytical psychologist at the C G Jung Institute, Zurich, focusing on the transformation and meaning of pain. E-mail: Martha.L.Blake@kp.org.



**Table 1. KPNW Integrated Pain Management Program members**

Contact Persons: Marilee Donovan, RN, PhD; Paul Jacobs, MD		
Pain Program Design Team	Trauma Steering Committee	Original Pain Team Project Members
Marilee Donovan, RN, PhD; Barbara Dow PhD; Kitty Evers, MD; Nick Socotch, RN; Paul Jacobs, MD; Karen Gabriel; Steve Mandelblatt, MD; <sup>a</sup> Karen Sharples, RPh	James Loch, MD; <sup>a</sup> William Wojeski, MD; <sup>a</sup> Martha Blake, MBA; Carla Johnson, MN; Adrienne Feldstein, MD; Bill Towery; Meg Munger, CRRN	<b>Longview MOB:</b> (Pilot Site), Malinda Fleege, RN; Tricia Hanson, PsyD; Chris Ramsey, RPh; Barbara Samples, RN; Jennifer Rohlf, MSW; Teresa Robinson
<b>Pain Board</b>	<b>Behavioral Emotional Committee</b>	<b>Mt Scott MOB:</b> (Pilot Site), Donna Wolfer, RPh; Elex Tenney, MSW; Ruby Poon, RN; Sharon Haggstrom, RN; Keith Glasser, MSPT; Alain Machtelinckx, RPT
<b>Co-Chairs:</b> Paul Jacobs, MD; Marilee Donovan, RN, PhD <b>Core Membership:</b> Bradley Anderson, MD; Joyce Caudell, RN, MST; <sup>a</sup> Charlotte A Corelle, MBA; Maria Guglielmo, MD; Tom Janisse, MD; Gonul Jones, RPT; Susan Kiley, MSW, LMT; Randy Kreps, MD; Wai Ming Lee MD; Carolyn Luetzgerodt, RPh; Jim Lynett; LaVonne Macklem-Cross, BA; William Melcher, MD; Ray Noel, MD; Stuart Oken, MD; Ruthe Putnam, RN, MBA; LouAnn Thorsness, RPh; <sup>a</sup> Marianne Wallace, RN <b>Corresponding Members:</b> Dan Granville, DPM; Loren Jenkins, MD; Thomas Harburg, MD; Sherry Heying, RN; Sharon Higgins, MD; Paulette Keller, RN, MEd; Ann Lopez, RN; George Oh, MD; Pam Palmer; Cara Rozell, DO; Chuck Rush; Mary Weiler, RN, JD; Andreas Wolf, MD <b>Coordinating Committee:</b> Joyce Caudell, RN; Dan Colley, RPh; Jude Gilbertson, RN; Martha Himmelwright; Jennifer Houten, RN; Marcia Liberson, MPH; Beth Parmenter, RN; Denise Schacter, RN; David Young, MD	<b>Clinical Quality Planning Committee</b> <b>Co-Chairs:</b> <sup>a</sup> Mitch Greenlick, PhD; Tom Syltebo, MD; Richard Bills, MD; <sup>a</sup> Martha Blake, MBA; Jonathan Brown, PhD; <sup>a</sup> Jim Dameron; Peggy McClure, MBA; Susan Pozdena; Matt Stiefel, MPA; <sup>a</sup> William Wojeski, MD <b>Health Education</b> Hope Sasek; Joy Gray; Mary Lockhart, PhD; John Crawford, MPH <b>KSMC</b> Stephen Bachhuber, MD; John Culp, RPh; Sandy Heresa; <sup>a</sup> Lynne McAllister, MN, NP; Kathleen Wegener <b>Sponsors and Champions</b> Alide Chase, RN; Bhawar Singh, MD; Beth Christianson; Eileen Brown, RN; <sup>a</sup> Jan Fletcher, RN; Judith Gilbertson, RN; Thomas Harburg, MD; Joe Davis, MD; Sharon Higgins, MD; Bunny Ebinger, RN; Ron Potts, MD; Jesse Gamez; Tom Syltebo, MD; Jennifer Houten, RN; Peggy McClure, MBA; Carla Johnson, MN; Paul Wallace, MD; Ken Terhaar	<b>Beaverton MOB:</b> Gene Boschee, RPh; Laurie Davis, MSW; Gonul Jones; Julie Rettig, RN; Mary Lou Strong, RPT; Rob Wong, RPh <b>Cascade Park MOB:</b> Monica Kleier, MSW; Lois Neet, RPT; Fred Turner, RPh; Jeniece Wynne, RN <b>Division MOB:</b> Mimi Lein, MSW; Cindy Smart, RPh <b>East Interstate MOB:</b> Martina Fetter, RN; Patricia Perry, RPh; Christine Quigley <b>Rockwood MOB:</b> Jacquelyn Gray, RN; Cindy Kirkpatrick, LCSW; Rob McDole, RPh; Dennis Hemmer, RPh <b>Salmon Creek MOB:</b> Margaret Carey, RN; Marilee Donovan, RN, PhD; Tom Ernst, RPh; Jim Finlayson, RPh; David Henrichsen, RN; Susan Kiley, MBA, LMT <b>Skyline MOB:</b> LouAnn Thorsness, RPh; Bill Sullivan, RPT; Sue Kruger, RN; Judith Gilbertson, RN; Robinette Fitzsimmons, MSW <b>Vancouver MOB:</b> Bruce Chavalier, RN; Monica Kleier, MSW; Mary Thompson, RN <b>Health Systems:</b> Diane Taylor; Gay Sipes
<b>Pain Clinic</b>		
<b>Medical Director:</b> Randy Kreps, MD <b>Manager:</b> Marilee Donovan, RN, PhD <b>Team Leader:</b> Kathy Covarrubias, RN Alisa Conrad, MA; Laray Grisso, MA; Dannielle Johnson, CNA; Gonel Jones, RPT; Susan Kiley, MSW, LMT; Kara Keels; Tom Renner, RN; Mary Sundby, RN; LouAnn Thorsness, RPh; Twila Wilkins, RN; Donna Wolfer, RPh; Englok Yap, MD, DABPM; Suzanne Zarling, MD		

<sup>a</sup> No longer at Kaiser Permanente.

KSMC = Kaiser Sunnyside Medical Center; MOB = Medical Office Building.

Data analysts: <sup>a</sup> Charlotte A Corelle, MBA; and Brian Bergquist, MA

Health Care Policy and Research as well as findings from a Market Decisions Corporation survey of 500 KPNW members with pain.<sup>13</sup>

In 1996, the KP Regional Operations Group approved an integrated model of pain management that built on resources already available within the KPNW

Region. The model featured: 1) multidisciplinary pain management groups offered in the primary care setting to assist primary care practitioners to apply evidence-based care; 2) education; 3) change in the processes of care to make it easier to do the right thing; 4) case manage-

ment; and 5) methods to evaluate patient and system outcomes. The model was designed to change attitudes and beliefs about pain while effectively treating Health Plan members who are in pain and improving pain management for all adult Health Plan members in the region.

Multidisciplinary pain management groups implementing the model were formed at two medical offices in 1996. In 1997, the model was expanded to seven medical offices and quadrupled its number of enrollees. In 1998, the nine-member multidisciplinary pain board assumed responsibility to oversee development of the model, to develop and disseminate best practices, to educate practitioners, and to adapt implementation strategies to the reality of limited medical office resources. By late 1999, resource constraints dictated a shift to a more centralized model with multidisciplinary pain management groups centered at one medical office in each primary care service area. A traveling team of experts coordinated care, and the anesthesia pain clinic merged with the pain management groups to form the KPNW Integrated Pain Management Program. The pain management program was designed to reflect the Permanente principles of evidence-based medicine and addresses KP regional goals for improving member satisfaction and reducing costs. The KPNW Pain Management Program enhances clinical service delivery by focusing on improving pain management for adult members with chronic or recurrent pain, which KPNW defines as occurring daily or recurring for six months or longer.

### Structure and Implementation of the KPNW Pain Management Program

Many types of therapy can effectively treat pain, but no therapy is effective for more than half of those with chronic

pain<sup>14</sup>—and the more therapies become available, the higher the likelihood of successful treatment. The KPNW Pain Management Program therefore offers a combination of assessment of complex pain cases, consultation, assistance to primary practitioners in developing an effective treatment plan, patient group visits with a multidisciplinary pain management team, health education classes, medication management (in collaboration with primary care practitioners), time-limited case management, and interventional anesthetic pain management. Team members have conducted more than 200 hours of continuing medical education, often at the medical office level.

The KPNW Pain Management Program was designed to increase knowledge and skills of primary care practitioners so they can recognize pain earlier and can match the intervention to the complexity of the patient's pain syndrome. To accomplish these goals, the program was structured to consist of four components:

- *The KPNW Pain Board*, a multidisciplinary group of content experts assembled to set policy and to design educational programs.
- *Patient group visits with a multidisciplinary pain management team* consisting of a physician, nurse, social worker, pharmacist, and physical therapist. The team is formed to support primary care practitioners in bringing evidence-based pain management to Health Plan members within each KP primary care service area. Patients

---

***Pain is no longer routinely considered a manifestation of a psychiatric disorder or an expression of drug addiction but is instead addressed as a neuropathologic disease ...***

---

are excluded from the pain group only if they have active psychosis or are less than 18 years of age.

- *A multidisciplinary pain clinic* that provides tertiary care, intervention in complex cases, case management, and patient education.
- *Communication systems* that offer practitioners peer consultation and mentoring via the patient's electronic medical record (EMR) as well as by telephone.

Each year, the KPNW Pain Management Program has direct contact with approximately 15% to 20% of KPNW members in chronic pain. From 450 to 500 patients are seen in multidisciplinary pain management groups; 200 patients are seen by a member of the multidisciplinary pain team; and 1700 patients are treated by a pain clinic physician. In general, an oncologist rather than the chronic pain program manages cancer pain. From 1997 through 2000—a period in which membership grew by 6.5%—the number of pain clinic patients seen annually increased from 1548 to 2127, a 37% increase.

To be able to compare the populations served in various regions, KPNW stratifies patients by using a three-tiered system (developed in 1998 by KP Northern California), in which classification at Level III indicates that the patient has moderate to severe depression and

anxiety as well as severe deterioration of functioning, deconditioning, and high use of medications (Andrew Bertagnolli, PhD, personal communication, March 2000, July 2001).<sup>c</sup> KPNW members who attend the pain management groups are primarily Level III patients.

### Recent Changes in the Program

KPNW has implemented specific clinical and operational changes as part of its pain management program:

- Since 1997, the multidisciplinary pain board has been the policymaking body for pain management in KPNW. In February 2000, the KPNW Pain Clinic also became a multidisciplinary care team. The referral process via the electronic medical record, EpicCare, reflects the multidisciplinary treatment approach. EpicCare allows clinicians to select any pain management option, such as chart review, consultation, assistance with development of a treatment plan, group visits, medication management, and anesthetic procedures.
- Communication systems allow primary care and specialty practitioners to “discuss” pain management issues related to a specific patient and to share information, findings, and recommendations in real time.

Each day, members of the pain clinic's multidisciplinary team answer more than 20 electronic or telephone inquiries that are directly related to individual patient needs.

- Current attitudes expressed by clinicians are generally more consistent with the science of pain pathology than in 1995. Pain is no longer routinely considered a manifestation of a psychiatric disorder or an expression of drug addiction but is instead addressed as a neuropathologic disease that can be modified by psychosocial variables and that can coexist in members who have problems of substance abuse.
- Changed attitudes are reflected by several factors: practice resources available on KPNW Web sites; reasons for referral of patients to pain services; and treatment plans developed for members with both addiction and pain.<sup>15-18</sup>
- Pain assessments are concise, comprehensive, and developed on the basis of reliable and valid instruments and are made available in a patient's electronic record within a few days.<sup>19</sup>
- Care is stratified to match complexity of the intervention to complexity of patient needs.
- Patient-specific consultations—currently numbering more than 20 per day—are available to clinicians face to face, by phone, or electronically.
- Electronic medical record tools improve access,



reduce variation, and facilitate evolving standards of care<sup>20</sup>

- Patient education materials and guidelines, collaboratively developed, address the continuum of care.<sup>21</sup>

### Methods of Program Evaluation

To evaluate the impact of the program, a study sample was chosen consisting of Health Plan members who attended at least four of the seven multidisciplinary group sessions (or received case management) and who were KPNW members continuously throughout the period beginning 12 months before the month of first appointment and ending 12 months later. As the program has evolved, the number of members included in the sample has dramatically increased from 26 (in the last half of 1996) to nearly 2000 (in the first half of 2001).

The pain management program was evaluated by using: 1) number of visits by program component, 2) pregroup and postgroup pain and interference with function questions from the Wisconsin Brief Pain Inventory,<sup>22</sup> 3) two satisfaction questions adapted from Ware,<sup>23</sup> 4) pre- and postutilization of outpatient visits excluding mental health and urgent care, 5) cost per hour of program components, 6) pharmacy prescriptions filled and cost of neurontin, and 7) admissions to the hospital in the year after treatment.

A standardized assessment<sup>19</sup> was administered before an initial visit in any component of the program—group visits, team visits, or pain clinic. The assessment elicited information about pain,

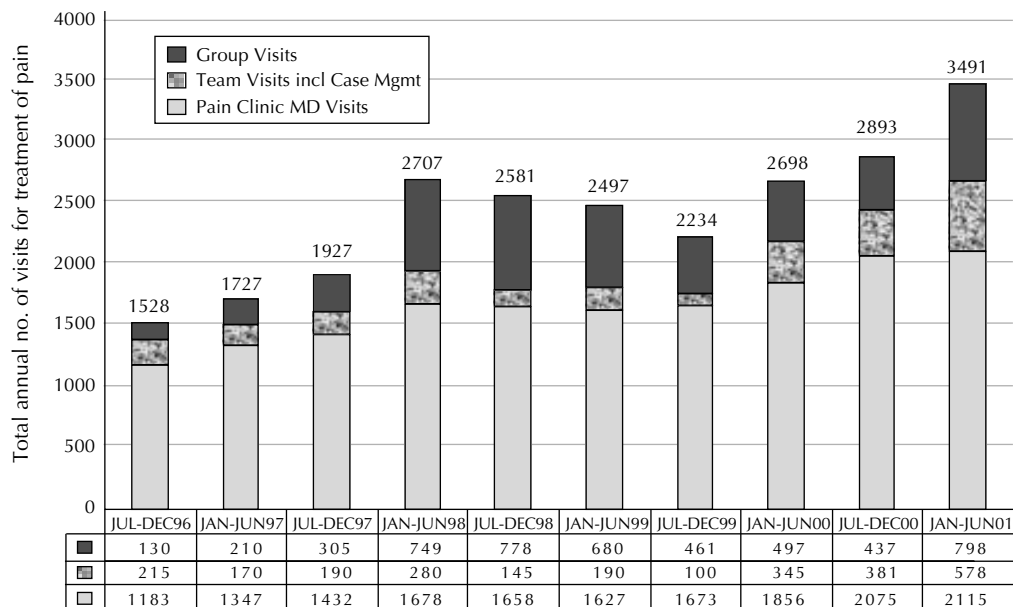


Figure 1. Total annual number of visits to pain program.

interference with function, depression, psychosocial variables, satisfaction, and data needed to evaluate previous therapy and to implement a more effective treatment plan. Six months after initial treatment in any component of the program, each patient received a follow-up survey. For this report, assessments conducted before and after participation in the group were compared. (Physician and team consultation results—which became available beginning with July 2001—were not analyzed for this study.) Patient identification, demographic, and utilization data from the end-user database were analyzed by staff from the consulting and analytical services department 12 months after patients received initial treatment in the pain management program. To monitor changes as the delivery system continued to learn, data were analyzed for six-month cohorts of patients who began treatment in either the first or second half of

each year. During integration to the current service delivery configuration in the second half of 1999 and the first half of 2000, the program did not conduct post surveys. Each year, outcome data were peer-reviewed by the KPNW Pain Board, by the KPNW Clinical Strategies Integration Group, and by the KP Regional Operations Group.

### Program Quality Measures

Originally, the pain management program tracked three pain variables, seven functional variables, two satisfaction variables, and six utilization variables. Number of emergency department (ED) visits was an excellent measure for KPNW members who have access to only one hospital (eg, in Salem, OR) but was not a reliable measure for members who have access to several EDs (eg, in Portland, OR). In addition, analysis of the first five years of

data indicated that six of the original variables were sensitive enough to be used as measures of program quality, thereby precluding the need to monitor all original variables. These variables included pain now; interference with sleep; satisfaction with pain management efforts and effects; utilization of outpatient visits; and number of pharmacy prescriptions filled.

Where cost centers existed, budget actual figures were used for determining program costs; when cost centers did not exist for relevant personnel or nonlabor expenses, a consistent cost modeling process was employed.<sup>4</sup>

### Statistical Analysis

Linear and second-order regression analyses were used to test for trends. Two-tailed t tests were used to test for significance in three categories: pain, patient function, and medical utilization. Statistical significance was

set at 0.05. Whenever possible, trends and changes were compared with those for the general KPNW membership, other KP pain management programs, or national data. Changes similar to or better than those reported by major referral pain clinics were the most clinically significant.

### Results of Program Evaluation

The mean score of reports of “Worst Pain in the Past Week” for patients in the first pain management groups was 8.78, considerably higher than the 6.5-7.6, using a similar instrument, reported by patients in other studies conducted by the authors.<sup>13,24,25</sup>

Although 16% of the members served by the multidisciplinary pain management groups were 65 years or older, the program has admitted members as young as 18 years of age.

The pain management program has enabled KPNW to see more patients; reduce their suffering and enhance their quality of life; satisfy customers; improve pain management in primary care; decrease medical utilization; and manage costs. The KPNW Pain Management Program accomplished these results for \$525 per patient per series of group visits, or \$120 per pain clinic visit.

### More Patients Seen

Between the first full year of the program in 1997 and 2000 (the last full year included in the study), total number of visits within the program rose from 3654 to 5591, an increase of 35%

(Figure 1). KPNW membership rose 6.5%—from 422,696 to 452,156—during this period. In 1998, a member could wait eight to 12 months to enter a group; in 2001, the wait was less than three months, because new groups opened each quarter.

### Less Suffering and Enhanced Quality of Life

Whereas in a 1995 survey of members with pain, 39% of respondents rated pain higher than 5 on a scale of 0 to 10,<sup>13</sup> 65.07% of those who entered the multidisciplinary groups reported pain scoring higher than 5. Six months after participating in the multidisciplinary groups, 55.9% of respondents reported pain

scoring higher than 5; this decline was statistically significant at the 0.05 level (Figure 2<sup>a</sup>).

On the 1995 survey of members in pain, 49.7% of respondents reported pain that interfered with activities to a degree which the members scored higher than 5 on a scale of 0 to 10.<sup>13</sup> Of members who were assessed before their admission to a multidisciplinary group, 78.6% reported pain interfering with activities to a degree which members scored higher than 5; six months after participation in the group, 69% of respondents reported pain interfering with activities to a degree which members scored higher than 5 (Figure 2<sup>b</sup>).

In 1995, 41.3% of members in pain reported pain that interfered with mood to a degree which members scored higher than 5 on a scale of 0 to 10 (Figure 2<sup>c</sup>).<sup>13</sup> Of those admitted to multidisciplinary groups, 71% reported pain that interfered with mood to a degree which members scored higher than 5. Six months after participating in the multidisciplinary groups, 66% of respondents reported pain that interfered with mood to a degree which members scored higher than 5. The score change from before participation in the group was statistically significant at the 0.05 level (Figure 2<sup>c</sup>).

### Enhanced Customer Satisfaction

As members became more knowledgeable about pain management, their pregroup satisfaction with efforts of the KPNW Pain Management Program decreased over time from 54% (in 1997) to 43% (in 2001) and to a low of 28% in the 1998

***The pain management program has enabled KPNW to see more patients; reduce their suffering and enhance their quality of life***

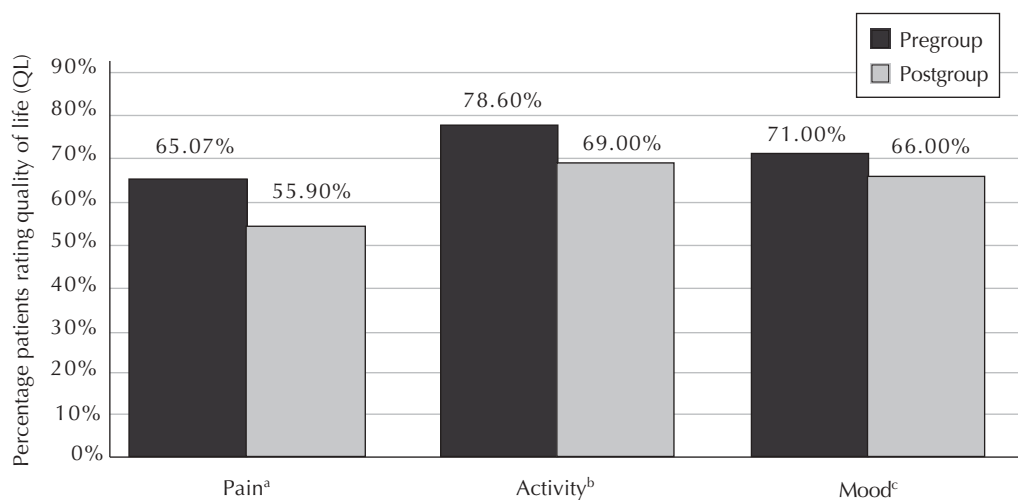


Figure 2. Self-reported KPNW patient survey responses about quality of life (rated on scale of 0 to 10, with 10 indicating maximum degree) before and after participation in multidisciplinary pain management group: <sup>a</sup>degree of pain; <sup>b</sup>degree to which pain interfered with activities; <sup>c</sup>degree to which pain interfered with mood.



groups (Figure 3). Prego group satisfaction with the effects of treatment declined from 39% (in 1997) to 17% (in 2001) and to a low of 11% in 2000 (Figure 4). However, in each cohort since 1996, group participant satisfaction with efforts of the health care team to address pain rose 30+ points between admission to a group and the six-month survey after (Figure 3). Of KPNW members who completed a pain group series, 82% were satisfied or very satisfied.

Similarly, group participant satisfaction with effects of treatment increased between admission and six months after the survey. Since the first cohort of 1998, patients' postsession satisfaction with the effects of treatment rose between 20% and 40% compared with pre session satisfaction (Figure 4).

Practitioners who referred patients to the program, in 1997 and 1998, reported high levels of satisfaction. Primary

practitioners said that they felt more comfortable acknowledging and treating pain since inception of the KPNW Pain Management Program. Since 1996, more than 240 different clinicians—three fourths of the primary care practitioners seeing members during this time—referred patients to pain management groups. Clinicians who referred once, referred repeatedly; some clinicians referred more than 20 patients.

### Improved Pain Management in Primary Care

Sleep is essential to achieving effective pain management. During the six years of using this evaluation model, interference with sleep is the most sensitive measure of improved pain management. The 1995 Market Decisions Corporation survey of KPNW members with pain showed that 50.6% reported interference with sleep to a degree scored higher than 5,<sup>13</sup> whereas the rate ranged from 60% to 80% of those who entered groups. Since 1996, each cohort has reported reduced interference with sleep after participating in the group sessions (Figure 5). With a regression coefficient of .6241, the declining trend even before group participation is not likely to be a matter of chance and may represent effects of better overall pain management in KPNW.

***During the six years of using this evaluation model, interference with sleep is the most sensitive measure of improved pain management.***

In the 1995 survey, 47% of respondents reported interference with enjoyment of life to a degree scoring higher than 5.<sup>13</sup> Seven of the eight cohorts reported less interference with enjoyment of life after participating in group sessions. Linear regression for pregroup interference with enjoyment of life suggested that some process within KPNW before the pain groups began was acting on this variable ( $R^2 = .4292$ ) (Figure 6).

When the program began in

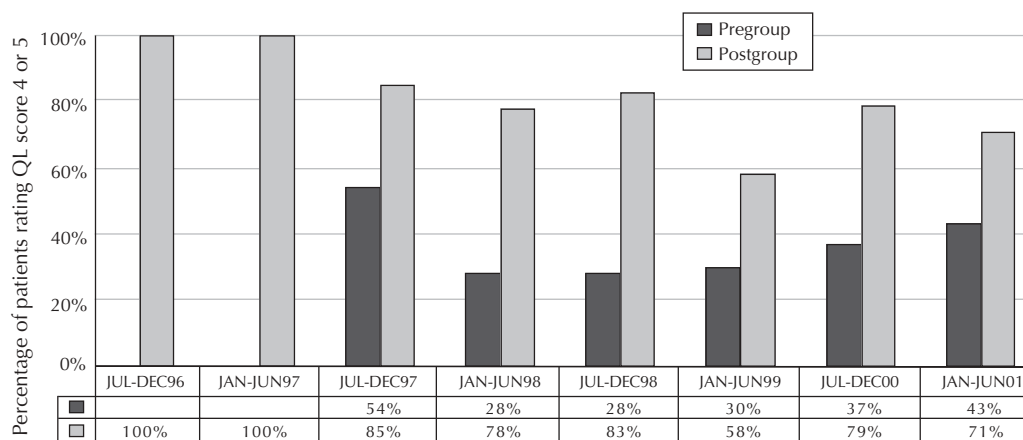


Figure 3. Self-reported scores for patient satisfaction with pain management program efforts before and after participation in pain management group.

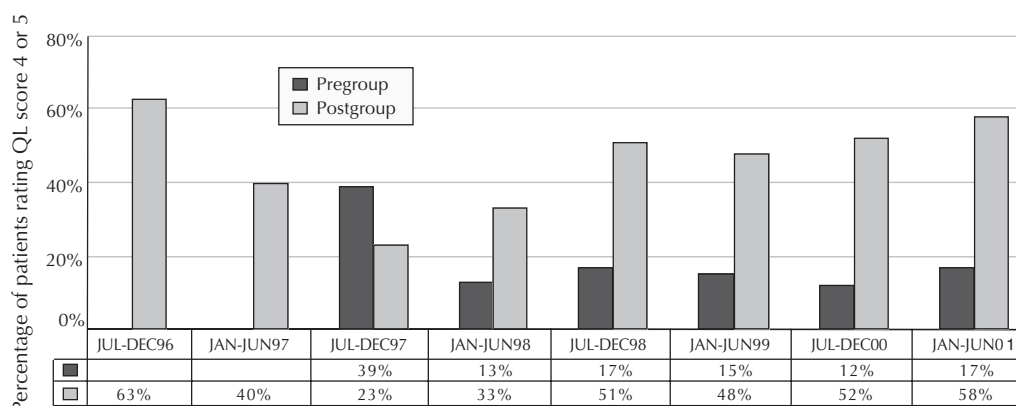


Figure 4. Self-reported scores for patient satisfaction with outcomes of treatment before and after participation in pain management group.

1996, 81% of those who enrolled in a group reported pain scoring higher than 5 at admission to the group. More recently, 65% of those appointed to a group reported pain scoring higher than 5 at admission to the group. Mean number of years a member had had pain at admission to a group decreased from 14.1 (in 1996) to 8.7 (in 2001). Overall, the incidence of these changes before entry into the pain program suggests that pain is being given more attention and that better pain management is occurring in primary care.

### Decreased Medical Utilization

Analysis of 1997-1998 data in Salem, OR, showed a 43% reduction in ED visits for the 137 patients who participated in the series of group visits. Since January 1999, the pain management program has reduced external referral for pain management services (other than implants) by 80%.

Consistent with the KPNW Pain Board's belief that patients with chronic pain who think it is discounted by clinicians often fail to utilize medical services to identify the cause of pain or to prove to clinicians that the pain is real, our study results showed higher medical utilization by patients in pain than by most Health Plan members. Attending a pain group reduced medical utilization, although this measure was still higher than for the general population of members. Since 1996, 16.1% of KPNW patients participating in groups were admitted to the hospital within one year thereafter (Figure 7).

The general trend in the num-

ber of pharmacy prescriptions filled by members who eventually attended a group declined from a mean 71 prescriptions per year to 54 per year, a 31% reduction during a period in which Lande reported a 33% increase nationally<sup>26</sup> and KPNW reported an 11% increase (Figure 8). The pain management program attributes the trend to education and mentoring, ie, to increase more effective pain management and to decrease use of polypharmacy.

Linear regression for pregroup utilization of outpatient visits predicted 75% of the variance in pregroup utilization

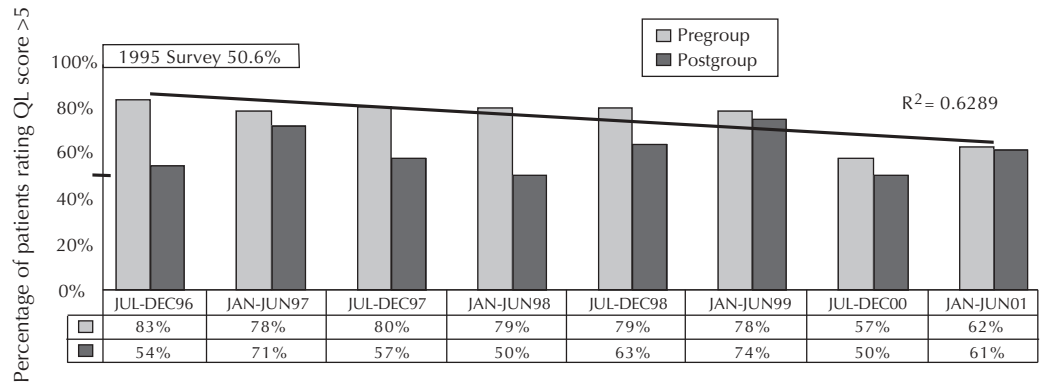


Figure 5. Self-reported scores > 5 for pain-induced interference with sleep before and after participation in pain management group.

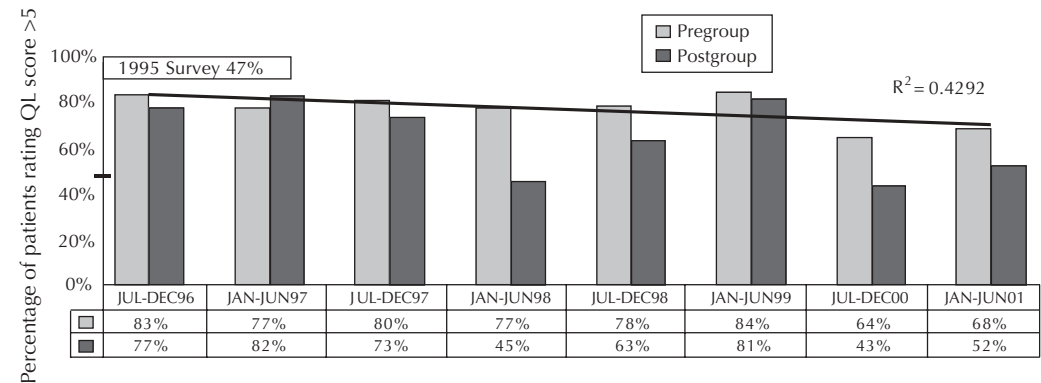


Figure 6. Self-reported scores > 5 for pain-induced interference with enjoyment of life before and after participation in pain management group.

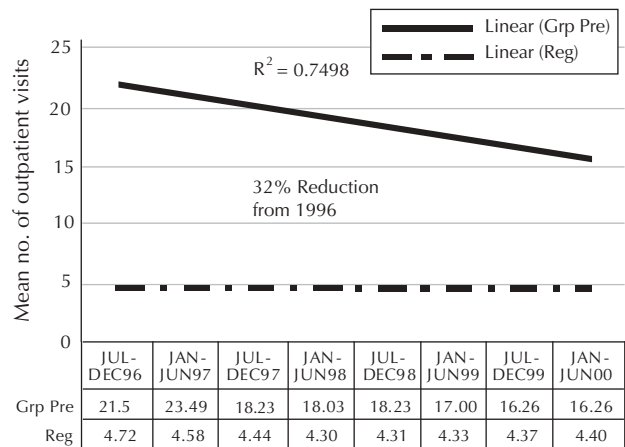


Figure 7. Percentage of admissions to hospital within one year after treatment for pain among patients receiving standard care compared with percentage among patients treated in a multidisciplinary pain clinic and compared with KPNW participating in pain management groups.



of outpatient visits. This predicted figure strongly suggested that some process within KPNW (ie, that begun before creation of the pain groups) was acting to decrease medical utilization more than regional trends showed. In conjunction with our findings that patients had less pain and spent fewer years in pain, the utilization trend suggested greater recognition of pain as well as more effective treatment of pain throughout KPNW (Figure 9).

### Effectively Managed Costs

With a regression coefficient of .9761, the second-order regression strongly suggested that after the July 2000 publication of the Pain Management Program Guideline<sup>20</sup> for use of neurontin (assembled in collaboration with the KPNW Pharmacy and Therapeutics Committee), growth of neurontin use began to flatten (Figure 10).

The cost of the pain management program is presented for each year from 1996 through 2001. Groups were initially very expensive because of the cost of training ten teams. Costs per group per hour are lower now that there is only one trained team—\$308 in 1996 vs \$38 in 2001 (Figure 11).

### Discussion

Since inception of its Integrated Pain Management Program, KPNW has pursued its twofold goal: to alleviate suffering of individual patients and to enhance ability of the region's practitioners—and to do so as effectively as pain clinics charging ten times more. The cost per series of group visits (\$525) and the cost per pain clinic visit (\$120) were far less than the

\$5900 to \$10,000 for an extended period of pain treatments reported for the 750 pain clinics surveyed in three studies.<sup>27-29</sup> The KPNW Pain Management Program is recognized by JCAHO and the American Pain Society as a national leader. Five peer-reviewed articles have described aspects of the program.<sup>14,30-33</sup> KPNW believes that its program is the most comprehensive pain management program in the managed care industry. The KPNW Pain Management Program features centralized coordination, decentralized delivery, multidisciplinary expertise, defined linkages to primary care, and data to describe performance across time. The team shares their learnings by communicating with other regions and by participating in the Care Management Institute Pain Workgroup.

***The KPNW Pain Management Program is recognized by JCAHO and the American Pain Society as a national leader.***

Conceived as a multidisciplinary resource to the primary practitioner, the KPNW Pain Management Program brings the latest in pain management to many more patients earlier in their disease and at a lower cost than did the multidisciplinary pain clinics whose data were reported in peer-reviewed articles.<sup>27-29,34,35</sup> Informal consultation and mentoring by multidisciplinary team members is pervasive. The success of these communications is reflected in changes in the primary care arena before members are referred to a pain group. The

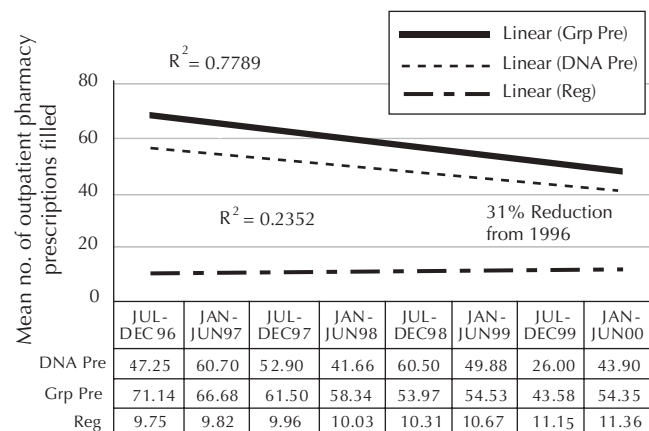


Figure 8. Trends in outpatient pharmacy prescriptions filled throughout KPNW for treatment of pain before and after participation in pain management group.

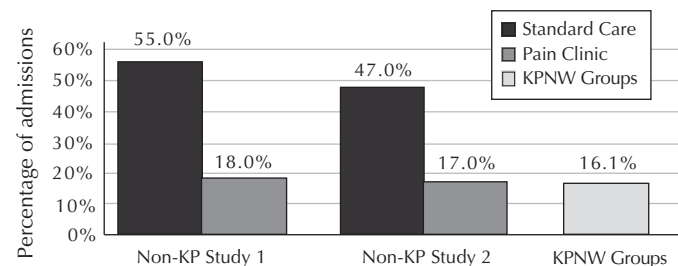


Figure 9. Trends in outpatient visits throughout KPNW for treatment of pain before participation in pain management group.

KPNW Pain Clinic group visits and case management are cost-effective methods of improving pain management because they are available in the primary care setting. More interventional, higher-cost forms of therapy are reserved for a later response instead of the first response.

By implementing the low-cost, early-intervention option of multidisciplinary group visits, KPNW has improved quality of care to its members in pain.

Moreover, care of the entire population of KP Health Plan members has been enhanced by clinicians' increased awareness of pain and by their enhanced ability to treat it effectively. Members with pain who do not attend a multidisciplinary group also benefit from the program's guidelines as well as its education and from communication systems implemented within primary and specialty care departments. Although KPNW has

no ongoing method for assessing members with pain who have not yet been admitted to its Pain Management Program, these members are assessed when they leave the general population of members to become enrolled as patients in the

program. Thus, KPNW compares 1) members who attend four or more group sessions in a series, 2) members who are enrolled in the sessions but do not attend them, and 3) the general population of KPNW members. Examining the behaviors of these three

groups has allowed inferences to be made about the impact of the program on individuals as well as on the larger population of members with pain.

Many of the findings reported here are consistent with those reported by other KP regions and

in the literature. In 1996, when the pain management program began, the same percentage of group participants at KP San Diego as at KPNW (81%) assigned a score higher than 5 to their pain (Bill McCarberg, MD, personal communication, July 24, 1999).<sup>b</sup> After patients at KP San Diego participated in a series of group visits, the number of ED visits made by these patients decreased 45%, and 77% of KP San Diego members who attended a group reported being either satisfied or very satisfied with efforts of the health care team (Bill McCarberg, MD, personal communication, July 24, 1999).<sup>b</sup> Similar to the results of our study, two meta-analyses of multidisciplinary pain clinics reported that 17% to 18% of those treated in a multidisciplinary pain clinic vs 47% to 55% receiving standard care were admitted to a hospital within one year after treatment.<sup>28,34</sup>

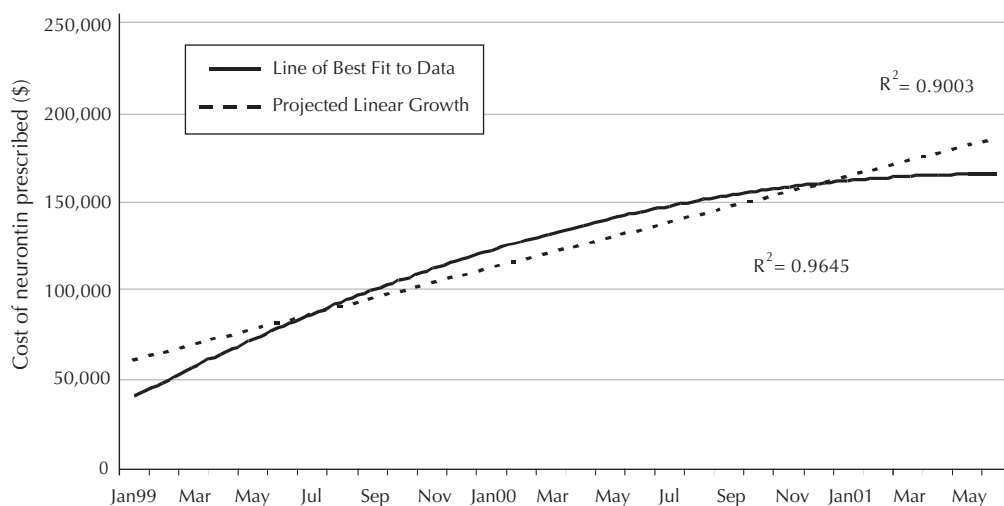


Figure 10. Cost of neurontin prescribed for pain among KPNW patients.

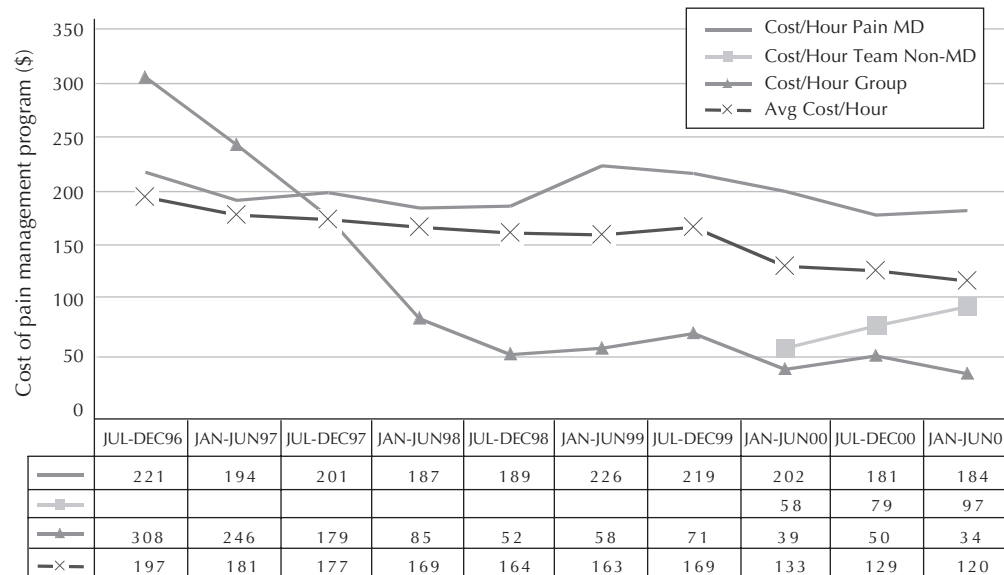


Figure 11. Cost of pain management visits.

### Study Limitations

The KPNW Pain Management Program acknowledges three kinds of confounding experiences: comorbidity of the pain population, attrition, and dynamics of change in the service delivery system. Factors associated with a risk of treatment failure include: lack of insight for change, cognitive deficits, lack of English language skills, psychosis, severe depression, history of substance abuse, or major psychiatric condition, such as borderline personality. Most pain programs, even those in managed care, exclude patients with any of these. Except for frank psychosis and age less than 18 years, the pain management program has no crite-



**... as gratifying as the KPNW outcomes are, the unsolicited qualitative evaluations from patients who are no longer suffering speak the most eloquently to the quality of the KPNW Pain Management Program ...**

ria for excluding chronic pain patients from any of the treatment options.

Rates of attrition—another confounding variable—were 15% to 20% for pain clinic consultation, 10% for anesthesia-based procedures carried out in the pain clinic, and 30% for attending fewer than three pain management groups, whereas attrition rates were 9% for routine primary care and 13% for specialty care visits. The rate of return for the postimplementation survey at six months has ranged from 12% to 49%. The program has begun to explore the factors contributing to these attrition rates.

**Conclusions**

Our KPNW Integrated Pain Management Program is transferable to other KP regions. This can be done by sharing learnings, processes, and outcomes at the quarterly pain management teleconference and the interregional meeting planned for Fall 2002. In addition, four KPNW experts participate actively in the Care Management Institute workgroup on chronic pain. Pain management program representatives have presented the KPNW model at the JCAHO Leadership Summits on Pain Management, Chicago and Los Angeles, 2001. The American Pain Society 19th Annual Scientific Meeting in 2000 and the American Association of Cancer Pain in 2001 invited KPNW representatives to present the program as an ex-

ample of how an HMO can enable pain management in the outpatient context and as an example of how to develop a program which meets the JCAHO pain standards.

Because KPNW has established its Pain Management Program, the region sees more patients, reduces suffering, satisfies customers, improves pain management in primary care, decreases utilization, manages costs, and achieves outcomes similar to programs costing ten to twenty times more. However, as gratifying as the KPNW outcomes are, the unsolicited qualitative evaluations from patients who are no longer suffering speak the most eloquently to the quality of the KPNW Pain Management Program:

*the used guitar  
I feel like the used guitar  
I bought yesterday  
my case is battered and worn  
inside there is music.*  
— C Jay Goodwin<sup>e</sup> ♦

<sup>a</sup> Data Warehouse, Kaiser Permanente Northwest, Portland, OR.  
<sup>b</sup> Family Practice, Kaiser Permanente of California, Escondido, CA.  
<sup>c</sup> Behavioral Medicine, Kaiser Permanente of California, San Jose, CA.  
<sup>d</sup> Salaries and benefits were calculated to be \$40/hour for RN, MSW, RPT; \$45/hour for Program Director and RPh; and \$125/hour for MDs. From 1996-2000, groups were calculated at \$3200/series plus \$3000/series in administration, ongoing education and supplies.

During training in 1996-1997, when all team members were present for each visit, the series cost was \$6000 plus \$3000 administration. Centralization increased travel-related costs; the overall cost continues to be approximately \$6000/series.

<sup>e</sup> Reproduced with permission of the author.

**References**

1. Pain assessment and management: an organizational approach. Oakbrook Terrace, IL: Joint Commission on Accreditation of Healthcare Organizations; 2000. p 1.
2. Ferrell BA, Ferrell BR, Osterwell D. Pain in the nursing home. *J Am Geriatr Soc* 1990 Apr;38(4):409-14.
3. Fishman P, Von Korff M, Lozano P, Hecht J. Chronic care costs in managed care. *Health Aff (Millwood)* 1997 May-Jun;16(3):239-47.
4. American Pain Foundation. Fast facts about pain [Web site]. Available on the World Wide Web (accessed June 26, 2001): [www.painfoundation.org](http://www.painfoundation.org) (click on "Media Resources" link; click on "Fast Facts About Pain" link).
5. Parker C. Court ruling pushes better pain control. *News* 2001 Jun 25. Available on the World Wide Web (accessed January 23, 2002): [www.ahanews.com/](http://www.ahanews.com/) (click on "Article Archive" link; search for keywords "pain control").
6. Joint Commission on Accreditation of Healthcare Organizations. Pain management standards for 2001. Available on the World Wide Web (accessed January 24, 2002): [www.jcaho.org/standards\\_frm.html](http://www.jcaho.org/standards_frm.html) (use link for "Standards Revisions for 2001").
7. Alexander J, Black A. Pain mechanisms and the management of neuropathic pain. *Curr Opin Neurol Neurosurg* 1992 Apr;5(2):228-34.
8. Coddere TJ, Katz J, Vaccarine AL, Melzack R. Contribution of central neuroplasticity to pathological pain: review of the clinical and experimental evidence. *Pain* 1993 Mar;52(3):259-85.
9. Dahl JB. Neuronal plasticity and preemptive analgesia: implications for the management of postoperative pain. *Dan Med Bull* 1994 Sep;41(4):434-42.
10. Standards for monitoring quality of analgesic treatment of acute pain and cancer pain. American Pain Society Subcommittee on Quality Assurance Standards. *Oncol Nurs Forum* 1990 Nov-Dec;17(6):952-4.
11. Smokowski PR, Wodarksi JS. Euthanasia and physician-assisted suicide; a social work update. *Soc Work Health Care* 1996;23(1):53-65.
12. Mullens A. Oregon vote may mark watershed for right-to-die debate in Canada, US. *CMAJ* 1995 Jan 1;152(1):91-2.
13. Market Decisions Corporation. Kaiser Permanente pain—mail study, tabulated by Market Decisions Corporation, January, 1996. Portland (OR): Market Decisions Corporation; 1996.
14. Donovan MI, Evers K, Jacobs P, Mandleblatt S. When there is no benchmark: designing a primary care-based chronic pain management program from the scientific basis up. *J Pain Symptom Manage* 1999 Jul;18(1):38-48.
15. Kaiser Permanente Northwest Pain Management Program. *Physiatry: chronic pain, a practice resource*. [Portland (OR): Kaiser Permanente Northwest Pain Management Program; 1998] Also available on the World Wide Web (accessed March 8, 2002): <http://internal.or.kp.org/cpg/resource/R2240101.HTML>.
16. Kaiser Permanente Northwest Pain Management Program. *Physiatry: fibromyalgia, a practice approach*.

- [Portland (OR): Kaiser Permanente Northwest Pain Management Program; 1998] Also available on the World Wide Web (accessed March 8, 2002): <http://internal.or.kp.org/cpg/resource/R2240102.HTML>.
17. Kaiser Permanente Northwest Pain Management Program. Chiropractic referral protocol, a patient management protocol. [Portland (OR): Kaiser Permanente Northwest Pain Management Program; 1996] Also available on the World Wide Web (accessed March 8, 2002): <http://internal.or.kp.org/cpg/support/ALBP-WEB/ALBP-chirref.htm>.
  18. Kaiser Permanente Northwest Pain Management Program. Pain management: addiction medicine evaluation for long-term opiate therapy, a patient management protocol. [Portland (OR): Kaiser Permanente Northwest Pain Management Program; 2000] Also available on the World Wide Web (accessed March 8, 2002): <http://internal.or.kp.org/cpg/protocol/P32702.HTML>.
  19. Kaiser Permanente Northwest, Pain Management Clinic. [Pain assessment tool. Three sheet questionnaire. Portland (OR): Kaiser Permanente Northwest Pain Management Program; 2000].
  20. Kaiser Permanente Northwest Pain Management Program. Pain, neuropathic: Gabapentin (Neurontin) use, a practice resource. [Portland (OR): Kaiser Permanente Northwest Pain Management Program; 2000] Also available on the World Wide Web (accessed March 8, 2002): <http://internal.or.kp.org/cpg/resource/R23304.HTML>.
  21. Kaiser Permanente Northwest Pain Management Program. [Patient handbook] 150+ ways to manage your pain: what you and your family need to know about pain to be able to control it and get on with living ... [Portland (OR): Kaiser Permanente Northwest Pain Management Program; 1998].
  22. Daut RL, Cleeland CS, Flanery RC. Development of the Wisconsin Brief Pain Questionnaire to assess pain in cancer and other diseases. *Pain* 1983 Oct;17(2):197-210.
  23. Ware JE Jr, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. *Med Care* 1992 Jun;30(6):473-83.
  24. Donovan M, Dillon P, McGuire L. Incidence and characteristics of pain in a sample of medical-surgical inpatients. *Pain* 1987 Jul;30(1):69-78.
  25. Donovan MI, Dillon P. Incidence and characteristics of pain in a sample of hospitalized cancer patients. *Cancer Nurs* 1987 Apr;10(2):85-92.
  26. Lande SD, Loeser JD. The future of pain management in managed care. *Manag Care Interface* 2001 May;14(5):69-75.
  27. Sipkoff M. Specialty clinics offer pain relief. *Qual Indicator* 2001 Feb;9-12.
  28. Turk D. Efficacy of multidisciplinary pain clinics in treatment of chronic pain. In: Cohen MJ, Campbell JN, editors. *Pain treatment centers at a crossroads: a practical and conceptual reappraisal: the Bristol-Myers Squibb Symposium on Pain Research*. Seattle (WA): IASP Press; 1996. p 257-73.
  29. Sanders SH, Brena SF. Pain Centers: what consumers want to know. *APS Bull* 1995 Jul-Aug;5:8-11.
  30. Mandleblatt S. Legal and regulatory issues about opioid therapy use for chronic non-malignant pain. *Northwest Permanente J Clin Pract* 1996 Sep;3(3):9-13.
  31. Ward S, Donovan M, Max MB. A survey of the nature and perceived impact of quality improvement activities in pain management. *J Pain Symptom Manage* 1998 Jun;15(6):365-73.
  32. Quality improvement guidelines for the treatment of acute pain and cancer pain. American Pain Society Quality of Care Committee. *JAMA* 1995 Dec 20;274(23):1874-80.
  33. Donovan M, Laack KD. Individually reported effectiveness of therapy for chronic pain. *Clin Nurs Res* 1998 Nov;7(4):423-39.
  34. Flor H, Fydrich T, Turk DC. Efficacy of multidisciplinary pain treatment centers: a meta-analytic review. *Pain* 1992 May;49(2):221-30.
  35. Friedlieb OP. The impact of managed care on the diagnosis and treatment of low back pain: a preliminary report. *Am J Med Qual* 1994 Spring;9(1):24-9.

## The Sun and the North Wind

Once upon a time there was a young man with a brand new cloak. He was very proud of it and strutted around in it with great joy. The north wind and the sun looked down upon him from the sky. The north wind said, "I bet I could blow that cloak off him." The sun said, "I'll give you a try and then I will try. We will see whose powers are more effective." So the north wind blew and blew. The young man just pulled his cloak tighter and tighter. Then the sun said, "You have tried my dear friend. You have blown all the leaves off the tree. You have turned all the water to icicles. Still the young man wears his cloak. Now it is my turn." The sun began to warm the earth. The children came out of their houses and began to sing and play. The neighbors began to chat with each other and be happy and friendly. The young man took off his cloak and laid it on the fence and began to chat with friends. The warm sun with gentleness and kindness accomplished what the north wind could not do with all of his cold and might.

*A Fable by Jean de la Fontaine, 1621-1695, French poet*