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Pain Control in Healthcare Organizations: Developing Effective Disease Management Programs

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ABSTRACT

Although medicine possesses the knowledge and technology for preventing or relieving most pain, poor pain control is still widespread. Unrelieved pain causes unnecessary suffering and increases health care expenditures. Among the barriers to improving pain control are poor provider education in pain management, misguided beliefs about the inevitability of pain and the dangers of pain medication, provider resistance to changing practice patterns, and administrative resistance to implementing improvements that incur short-term costs but lead to long-term savings. In short, poor pain relief in America's health care institutions is a system issue, and improvement requires a system-wide change. An effective program for improving pain management requires a multidisciplinary team committed to the task, ideally a triad consisting of a physician, a nurse, and a pharmacist. The triad needs administrative support in order to undertake needs assessment, offer provider and patient education, and perform continuous cycles of assessment, intervention, and reassessment of pain management. A strong information management base and an analytic engine are essential so that the team can evaluate outcomes from multiple perspectives (provider, payer, patient). The triad should identify a service area with clear pain problems, demonstrate improvements in this area, and then systematically move to other service areas. Educating providers and patients about pain and its control is essential for bringing about change. Improved pain management is a win-win situation for patients and institutions alike. Patients and families benefit from reduced suffering and improved quality of life, while institutions can offer more cost-effective care to patients.

INTRODUCTION

Unrelieved pain has been a major problem for patients since the beginning of medicine, and it is a significant public health issue in the United States today. Substantial new clinical research, the release of various pain management guidelines, and the recent introduction of new pain management standards by the Joint Commission for Accreditation of Healthcare Organizations (JCAHO) recognize ongoing shortcomings in pain management and represent efforts to improve pain care.[1] Patient complaints of inadequate pain relief are common. In hospitals alone, unrelieved pain is a prominent patient complaint in emergency rooms, on postsurgical wards, on burn units, and during childbirth. Inadequate pain control

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also continues to be a significant and neglected problem among nursing home residents. In outpatient settings, pain assessment and demands for relief are common aspects of daily practice. Pain problems are the most frequent reasons patients seek help from family practitioners and many other providers.[2]

Although current epidemiological studies are limited, data from various sources suggest that annually in the United States and other industrialized countries, 15–20% of the population have acute pain. Acute pain is of short duration and disappears with the healing of disease or injury. However, some 25–30% suffer from pain that persists beyond the healing of tissue trauma, often indefinitely and with a poorly defined cause. This condition is chronic pain.[3,4] Seventy million Americans report chronic pain, and many are partially or totally disabled by pain. In addition to causing needless suffering and disability, unrelieved pain is costly. For low back pain alone, medical expenses, lost income, lost productivity, compensation payments, and legal fees associated with pain cost American society an estimated $16 billion annually.[5]

Although medicine possesses the knowledge and technology for preventing or relieving most pain, poor pain control is still widespread. All too often physicians and nurses have poor education in pain management, and they neglect appropriate pain care. Poor education results in the persistence of outdated habits and counterproductive beliefs about pain and its control, and failure to recognize pain as a significant disorder that requires intervention. In many institutions providers simply fail to assess pain at all. Sometimes they withhold analgesic medications from patients in pain because of fears of regulatory scrutiny or over-concern about potential adverse effects such as respiratory depression, tolerance, or addiction.[6,7] Nonetheless, the problem is more complex than provider neglect, and accusations only delay appropriate solutions. Poor pain relief in America's healthcare institutions is a system issue, based on a history of inadequate pain education and pain care initiatives in medical schools and hospitals. Improved pain care requires system-wide changes.

Given the prevalence and cost of the problem, and the fact that pain is sometimes preventable and almost always treatable, chronic pain merits consideration as a disease in its own right. Pain control as a whole appears to be an excellent target for an institution-wide disease management strategy.

DISEASE MANAGEMENT AND PAIN

Traditionally, providers in the United States and most industrialized nations have viewed pain as a symptom or complication of another condition rather than a medical problem in its own right, and consequently most pain management has been fragmented and short-sighted. Many patients with acute pain have needlessly developed chronic pain because of poor provider understanding and planning.[3] In traditional fee-for-service environments, large numbers of desperate chronic pain patients continue to shop from doctor to doctor in search of a cure, but few ever find solutions. In the late twentieth century, multidisciplinary pain clinics emerged to provide improved chronic pain care based on comprehensive assessment, patient education, and rehabilitation.[8] Nonetheless, pain management as a specialty rarely receives the recognition that it deserves.[9] Given the prevalence and cost of the problem, and the fact that pain is sometimes preventable and almost always treatable, chronic pain warrants redefinition as a disease unto itself.

The emergence and evolution of disease management represents a major change in America's health care—one that provides an opportunity to improve the plight of patients with pain. Whereas medicine in the United States has traditionally involved reactive care, experience-based treatment, and a sickness-oriented approach, disease management now provides proactive, population-based care using evidence-based approaches. Disease management is a comprehensive, system-based approach to the challenge of managing patients with a well-defined disease or condition. Today, disease management offers hope for a solution to the problem of chronic pain because it represents proactive, systematic care. It provides integrated services grounded in partner-

ships among involved providers and payors, emphasizes guided intervention, requires effective communication across the various components of the healthcare system, and continuously educates both providers and patients. Disease management approaches aim to optimize chronic pain treatment in a systematic, cost-efficient manner.

Cost control is one of the factors supporting the disease management approach in American healthcare. Until recently, the costs of controlling acute pain attracted little attention because, prior to the JCAHO standards, pain management was an option rather than an obligation in much of American medicine. Providers did not offer aggressive pain management if they did not have the skills, and few ever received education in pain management. Today, providers must attend to acute pain, and the hidden costs of poor pain control are becoming evident. When a healthcare organization manages acute pain poorly, patients stay in hospital beds longer, require more doctor visits, emergency services are in greater demand, and patients take longer to get well and back to work after surgery or an accident.[2]

Other costs of chronic pain mismanagement have long been conspicuous. Fee-for-service medicine has traditionally accepted without question interventions that offer some possibility of benefit, no matter how low, with little regard to cost or the risk of complications. This openness to invasive treatment has led to excessive use of surgery and other procedures for chronic pain, despite evidence indicating a low success rate for invasive approaches.[10] There is now a strong trend toward limiting interventions to those that offer high probable benefit, as defined by valid scientific evidence.

Finally, the economics of fragmented care have focused mainly on component cost control, with little regard to the long-range expenses associated with the patient's search for pain relief. Disease management helps contain the costs of chronic pain management because it employs system cost controls, recognizing the value of savings across the institution or health system.

Many difficulties still exist in managed care environments for chronic pain patients. Despite a clear-cut need for comprehensive, organization-wide pain management programs and the availability of numerous treatment guidelines, many healthcare and managed care organizations resist implementing pain management programs because they are concerned about the costs of implementation, excessive resource needs, and program complexity. Among those that do implement pain programs, many have not yet learned that the greatest patient benefit and the greatest cost savings come from multidisciplinary care that involves behavioral medicine and rehabilitation.[10] However, this problem stems mostly from a lag in getting evidence from the literature into the hands of administrators. In the long run, the outlook for improving pain management in managed care environments is positive because the evidence of benefit and cost saving is sufficiently clear.

BUILDING AN EFFECTIVE PROGRAM

A program consists of both structure and process. Without structure, the processes of lasting institutional change cannot occur. Wolf and Maljanian[11] describe both structural and process components integral to a disease management program. The structural component comprises a knowledge base that includes information on the natural history and economic structure of a disease and guidelines for the care of patients with the disease. A second structural component is a healthcare delivery system of partnerships between primary care providers, specialists, and others. The process component entails a continuous improvement system that measures and evaluates outcomes. Below, we expand on this for application to pain management and offer a generic characterization of what might comprise an effective pain disease management program in a typical setting.

Structure

The following structural elements are necessary for the development of a pain disease management program within a healthcare institution. The complexity of each element will vary based upon the unique characteristics of the institution.

Information management system. Demonstrating improvement and quality requires data gathering and information management. Claims data systems do not always measure clinical activity and may be unable to provide sensitive clinical measures. Valid, sensitive, clinically feasible tools for pain measurement are essential, and there are many choices.[12] In addition to measuring the patient's pain level, it is important to gauge provider practice patterns (e.g., opioid prescribing), patient satisfaction, provider knowledge of pain management, and costs of care. Such measurement needs to feed into a formal database that can offer multiple windows to the pain management arenas within an institution, to past practice patterns, and to costs. The information management system must be capable of recording these measures over time to quantify, record, and track change in pain management practices.

Healthcare provider communication system. Disease management requires stable channels for communication and cooperation across providers. This entails more than information sharing across physicians of different specialties, and simply prescribing the right opioid medication in the right dose is not sufficient for quality pain care. Multidisciplinary interaction among providers must assess and follow the patient as a whole person. The system needs to track patient compliance with the medication, address the negative impact of any medication side effects on function and compliance, document the beneficial effect of the intervention on activity level and mood, and recognize the family and vocational contexts in which the patient functions. Attention to such issues requires a structure for communication and information exchange to happen. Regular meetings that bring people together tend to facilitate informal, problem-oriented interactions on behalf of the patient. In addition, it is often possible to use educational programs for professionals to help implement a communication network.

There are many ways to establish a basis for communication and collaboration. We suggest creating a core infrastructure for multidisciplinary interaction that consists of a pain triad: a physician, a nurse and a pharmacist, who serve as key players (see Fig. 1). Each triad member represents his or her discipline and communicates to the other triad members the concerns and suggestions of this discipline regarding pain care. Conversely, the triad member also takes responsibility for communicating the thinking of the other triad members and their disciplines to other practicing members of his or her discipline. The triad is a small, highly flexible unit that meets regularly and has a mission statement. The triad must find ways to share knowledge and goals across the institu-

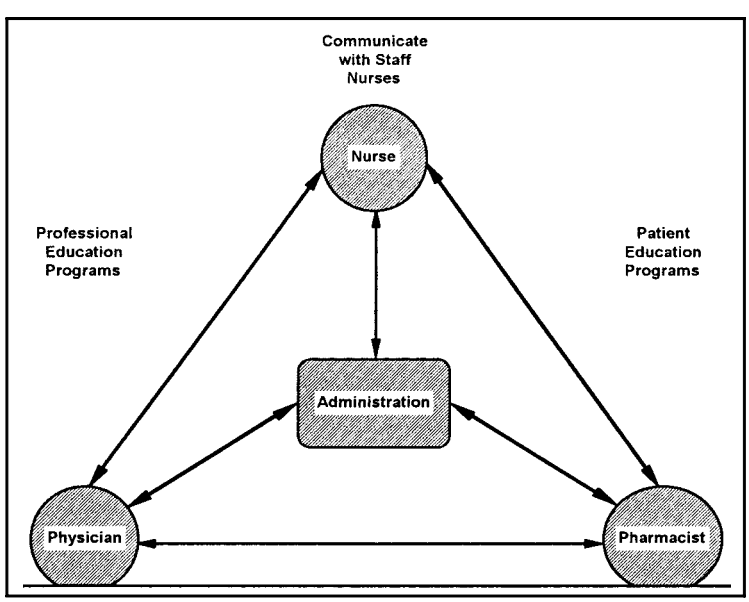

FIG. 1. A schematic overview of the triad and its activities.

tion. Ideally, the triad members should serve as pain experts and consultants for the institution. However, at early stages of development, their primary role is to initiate and sustain the process of system-wide change in pain care education and practice.

Educational programs for providers and patients. The JCAHO accreditation review looks for evidence of pain education programs.[1] However, implementing a disease management program for diabetes or chronic obstructive pulmonary disease is probably easier than implementing such a program for pain. With these other diseases, all providers have strong basic education, but few have adequate knowledge about pain or pain control. Therefore, ongoing education of physicians, nurses, and pharmacists in pain assessment and management is essential; lack of knowledge among providers is one of the major barriers to change. Hospital administration needs to make provider time available for education in pain management.

Patients and their families also need education, as JCAHO recognizes in its statement of standards.[1] This is essential for valid pain assessment, treatment compliance, and rehabilitation of patients with chronic pain. Institutions with structured programs for patient education should include pain management as a topic. Because patient self-management is one of the basic principles of disease management programs, patient education in pain and medication usage is essential.

Resources for physicians, nurses, and pharmacists. Many pain problems, particularly those associated with chronic pain and cancer pain, are extremely challenging, even for seasoned pain management professionals. Moreover, everyday pain management can involve technical challenges such as changing opioid dosages and routes of administration. Institutions that take a disease management approach to pain need professionals with expertise who can provide leadership, consultation, and mentoring of younger colleagues who wish to develop their skills in pain management. When intramural experts are simply unavailable, as is often the case, administration should provide access to outside consultants. In some cases, partnering with other organizations may provide a good solution.

Clinical practice guidelines and clinical pathways. Disease management programs involve the use of guided clinical interventions. A clinical practice guideline assists providers and patients in making decisions about specific interventions for pain under specific circumstances. Practice guidelines are typically in the form of handbooks and/or flow chart algorithms. Clinical pathways are algorithms for focused patient care, typically expressed as a flow chart. A number of pain management guidelines currently exist, as Table 1 indicates. For additional pain-related guidelines, see the PainLink Web page on guidelines.[13]

The older style of pain practice guideline is unidisciplinary and provides guidance in pain management based on expert consensus. Newer guidelines offer a multidisciplinary perspective and base recommendations, when available, on published evidence drawn from randomized controlled trials. Most guideline documents rely on a blend of expert consensus with scientific evidence. Whatever the nature of a guideline, it must be credible enough to influence providers to alter habitual practice patterns and urge patients to adopt essential self-management practices. Overall, physician compliance with practice guidelines in general is poor.[14,15] Successful implementation of pain management guidelines, therefore, is challenging from the outset.

There are no general guidelines that cover all of pain management. All current published guidelines address specific subpopulations such as postsurgical patients or cancer patients. Therefore, either a specific guideline or a clinical pathway plan is necessary for each setting. Hospitals should either adopt published guidelines or develop evidence-based clinical pathways or guidelines for their own clinical services. This requires multidisciplinary collaboration and consensus among relevant intramural professionals.

Hospitals should not strive to develop the perfect guideline during early stages of pain care guideline development. Guideline development is an ongoing process comprising a cycle of development, implementation, evalua-

Table 1. Selected Guidelines for Pain Management

Professional association	*Web site address*	*Description of guidelines*
Joint Commission of the Accreditation of Healthcare Organizations (JCAHO)	http://www.jcaho.org/	Standards on patient care and pain management that healthcare organizations must meet to receive accreditation.
Agency for Healthcare Research and Quality (AHRQ) (formerly AHCPR)	http://text.nlm.nih.gov/ftrs/pick?collect=ahcpr&dbName=apmc&cd=1&t=975713728	Evidence-based guidelines for management of acute postoperative pain.
Agency for Healthcare Research and Quality (AHRQ) (formerly AHCPR)	http://text.nlm.nih.gov/ftrs/pick?collect=ahcpr&dbName=capc&cd=1&t=975713881	Evidence-based guidelines for management of cancer-related pain.
American Pain Society (APS)	http://www.ampainsoc.org/	Quality assurance guidelines for treatment of acute and cancer-related pain.
American Society of Anesthesiologists (ASA)	http://www.asahq.org/	Practice guidelines for acute pain management in the preoperative and postoperative setting.
American Geriatric Society (AGS)	http://www.americangeriatrics.org	Clinical practice guidelines for the management of chronic pain in the elderly.
New Zealand Guidelines Group	http://www.nzgg.org.nz/library/gl_complete/backpain1/index.cfm	Practice guidelines for the assessment and treatment of acute low back pain and for the prevention of chronic pain and disability.
Moffit Cancer Center and Research Institute	http://www.moffitt.usf.edu/pubs/ccj/v4n2/department2.html	Management of bone pain secondary to metastatic disease.
American Society of Consultant Pharmacists	http://www.ascp.com/public/pubs/cc/1999/supp6.shtml	Practice guidelines for treatment of chronic pain in the elderly.

TABLE 2. TYPICAL STAGES IN PROCESS IMPLEMENTATION

Short name	*Stages of program implementation*
Administrative support	Establish administrative support and make resources available for a comprehensive organizational change program.
Key service areas	Identify those services for which pain management is a problem (e.g., postsurgical wards, emergency room).
Evaluation technology	Select and implement the technology for pain assessment and create the database.
Needs assessment	Identify the patient populations within the institution that require pain management, and obtain data to demonstrate the need for improvement.
Information sharing	Establish methods for sharing information among healthcare providers, patients, and families, including patient/family educational tools and community outreach programs.
Clinical guidelines	Integrate clinical pathways with existing clinical treatment guidelines, or adopt existing guidelines.
Outcome measurements	Conduct outcomes measurement at baseline and at regular intervals.
Program improvement	Repeat evaluation cycle to optimize program quality.

tion, refinement, and reimplementation. Most important is to put a credible guideline or clinical pathway in place, and then to initiate the cycle.

Assessment and outcomes research program. Disease management entails a continuous feedback cycle of needs assessment, intervention, evaluation of outcome, and refinement of interventions. For evaluation to occur, the hospital must allocate adequate manpower and measurement procedures. This process requires the regular recording of pain in patient charts and developing appropriate medical record templates to capture appropriate information about pain, pain-relieving interventions, and outcomes. The American Pain Society's call for assessing and recording pain as the fifth vital sign[16] provides a convenient approach to pain assessment for most hospital settings. JCAHO, recognizing the importance of rigorous program self-evaluation and feedback, included this as a requirement in its standards for accreditation.

Processes

Table 2 provides an overview of the typical stages in the process of implementing a disease management pain program. We discuss these stages in greater detail below. Although we display them sequentially, the middle stages in the list can occur concurrently.

Administrative support. Significant institutional change cannot take place without administrative buy-in that includes provision of key infrastructure resources such as those described above (see section on Structure). Fortunately, the new JCAHO standards[1] have heightened administrator awareness of pain as a problem area and provided an incentive to support change. In addition, astute hospital administrators recognize that good pain management leads to shortened hospital stays, reducing the hospital's cost of care and making more hospital beds available for revenue-producing services.

Administrators must support the infrastructure required for improved pain care (see section on Structure above) and communicate support for this process of change to all of the hospital's healthcare providers. Forming the triad is a valuable first step for many administrators. The administration should attempt to select members of the triad who are local opinion leaders in their fields.[17] The ability of each triad member to serve as a pain expert is less important than his or her status among peers as a trusted opinion leader. Selection of a marginal or eccentric physician, nurse, or pharmacist for the triad may doom the project to failure. Informing a staff professional that he or she is viewed as an opinion leader accentuates his or her engagement in the process. Evidence indicates that the use of opinion leaders to promote guideline adoption leads to better success than the standard approach.[18,19]

Key service areas. Pain problems can exist in many areas of an institution. The triad must identify where in the institution's system pain

TABLE 3. TECHNIQUES FOR ASSESSING ACUTE, CHRONIC, AND CANCER-RELATED PAIN

Pain type	*Techniques*	*Assessment tools*
Acute pain	Ask the patient to scale pain intensity	Verbal descriptor scale Visual analog scale Numerical rating scale
Chronic pain	Ask the patient to scale pain intensity Evaluation of patient's emotional state/coping mechanism Changes in physical activity or social relationships Suitability for return to employment	Verbal descriptor scale Visual analog scale Brief Pain Inventory Psychological function measures
Cancer-related pain	Ask the patient to scale pain intensity Impact of pain on social interaction, sleep patterns, and activity levels	Verbal descriptor scale Brief Pain Inventory

Adapted and modified from Agency for Health Care Policy and Research. *Pain Management Guidelines for Adults.* Rockville, MD: US Department of Health and Human Services; 1994. AHCPR Publication 92-0032.

commonly occurs. For most hospitals this includes postsurgical wards, the emergency room, cancer care settings, and the trauma unit. In settings like nursing homes, pain is ubiquitous, even if patients cannot articulate their discomfort. It is often helpful to begin change by working intensively with one service or setting and then progressing in a stepwise fashion until the process encompasses all relevant services and settings.

Evaluation technology. As Table 3 indicates, techniques to assess pain range from simple yes or no questions to measures of psychological factors and physiological correlates of nociception.[12,20] Most patients easily understand the visual analog scale, which consists of a short line with "no pain" at one end and "worst pain imaginable" at the opposite end.[12] It is also possible to assess the impact of pain on activity and sleep, using tools such as the Brief Pain Inventory.[21,22] The most appropriate assessment technique depends on the type of pain (acute, chronic, or cancer-related) and the age, physical condition, and mental capacity of the patient. For young children who have difficulty expressing themselves verbally, the use of happy and sad faces, for example, are the most appropriate pain assessment tools.[20] In certain situations, such as when patients are too ill to describe their level of pain or are mentally incompetent or heavily medicated, healthcare professionals may estimate the patient's level of pain. Although caregiver ratings of pain are necessary in such situations, these reports are not true measurements of pain and are not adequate substitutes for patient self-reports.[12] For additional pain assessment tools, see the Pain Resource Center web page.[23]

Providers should reliably document in medical charts the information that they obtain during pain assessment, making it highly visible to encourage regular review. Such documentation must be quantitative, frequent and consistent. Towards this end, the American Pain Society recommends that healthcare professionals treat pain as a fifth vital sign, and record pain assessments at the patient's bedside on a vital signs sheet in the front of the patient's chart or in a record at the nursing station.[16]

Needs assessment. The triad must approach the problem of inadequate pain management, its causes, and barriers preventing its resolution. The first step in understanding the scope of the problem is a thorough needs assessment. A needs assessment helps the team identify and prioritize its goals, to focus on the most appropriate interventions, and to provide a baseline against which they may evaluate improvements in pain assessment and pain control.

To begin the needs assessment, the triad examines current pain management at the institutional level: current practice patterns and barriers to change. Using this information, the triad analyzes the organization's current pain management process, identifying strengths

that they can capitalize on and weaknesses that they can correct.

The process of standardized pain assessment identifies those patients for whom pain is a significant problem. Good practice dictates that a pain intensity score higher than 3 on a 10-point scale should trigger intervention. The major features of pain are intensity (which represents severity), location, and the effect on the patient's functional capability. Because persisting pain has physical, psychological, economic, and social ramifications, it can degrade the patient's quality of life.

The triad's needs analysis leads to an action plan, or a set of tasks that the triad must complete to meet its mission. After they identify specific objectives and measurable outcomes, triad members develop the action plan to meet those objectives and outcomes. The action plan must clearly delineate how the triad will gauge the success of the program. The triad will periodically evaluate and revise the action plan as practice patterns change.

Information sharing. Guidelines and policies may look impressive on paper, but they are meaningless unless providers understand them, embrace them, and incorporate them into daily practice. Once the triad selects guidelines, they must ensure their integration into organizational and treatment protocols. Intra-institutional education is a critical component of a pain disease management program, and it must address staff as well as patients and their families. Educational programs must meet the diverse needs of each target group.

Educating professionals

Staff education about pain care requires continuous reinforcement over time. Such education is a challenge because simply exposing clinicians to new ideas or facts does little to change practice patterns.[24] Moreover, counterproductive attitudes, such as biases against opioid drugs, tend to persist despite intensive education efforts.[25] Motivation to learn is essential, and administrators should provide encouragement and incentive. Successful pain education typically involves instruction on how to take detailed pain histories, application of pain-care algorithms, instruction in pain medication dose calculation, and explanation of both direct and indirect outcome measures.[26] Weissman[27] suggested that pain education efforts should attempt to: (1) make physicians aware that their current practice behavior is less than optimal; (2) match education objectives with appropriate education formats; and (3) change pain management behavior without imposing new burdens on physician practice.

There are many model programs for staff education in pain management. The educational practices of state cancer pain initiatives are often good models for how to accomplish these ends.[28] The Memorial Sloan-Kettering Cancer Center has initiated an observership-training program in pain management that has proven effective in improving and disseminating knowledge regarding psychological distress in cancer patients and the multidisciplinary management of pain. The Pain Resource Nurse Training Program developed by the City of Hope National Medical Center[29] is an example of a comprehensive pain-training program for nurses. The 40-hour course includes classroom instruction and clinical application. Among the topics it covers are pain assessment, pharmacology, non-drug interventions, and cultural, ethical, and psychosocial issues related to pain management. To help program participants implement the techniques learned during the program, the program director meets with participants at the conclusion of the course, and participants regularly receive articles, materials, and other information. Monthly meetings provide opportunities for networking and sharing of information, and reinforcement of new learning. Gordon and colleagues applied this approach successfully in an effort to institutionalize pain management in Wisconsin hospitals.[25]

Educating patients

The broad purpose of patient education is to provide patients and families with accurate, timely, and understandable information about pain, pain assessment, medications, and other methods of pain relief. Healthcare organizations implementing pain management programs may create a dedicated resource center for patients and their families to obtain infor-

mation about pain and its management. The resource center may also contain materials for use by nurses, physicians, pharmacists, and other health professionals when working with patients, families, and caregivers. Patient education materials may include booklets, audio or videotapes, CD-ROM presentations, or information kiosks. Self-paced programs allow patients sufficient time to absorb as much information as they are able to handle.

Most patient education programs address patient-specific barriers to effective pain management such as patient reluctance to talk about pain with care providers and inappropriate concerns about becoming addicted to opioids. Often, patients harbor fears and forebodings that compromise their compliance with prescribed medication regimens and rehabilitation programs.[30] One common misconception is that one should save pain medication until pain levels become severe, otherwise it will not be effective. Another is that analgesic drugs will produce harmful side effects. Some patients with cancer fear that the physician may have to choose between treating the cancer and treating the pain. One of the most common self-defeating beliefs among pain patients is that the use of opioid drugs will cause addiction or render the drug ineffective when the pain worsens in the future. Chronic pain patients, such as those with low back pain, often believe that "hurt equals harm." In other words, the presence of pain must mean that something is structurally wrong and that they should rest or seek medical attention. Patients need to learn that chronic pain often exists for no definable reason and its presence does not necessarily signal bodily injury or disease.

Recent trends in patient education also address issues of how the patient should behave in his or her encounters with the healthcare environment. Some think that if they complain of pain or inadequate pain relief, their healthcare providers will not consider them "good" patients.[30] Often, patients think that the nurses and doctors are doing the best that they can do to relieve pain and so they should not ask for better pain care. In many cases, however, the providers could do much more to relieve the pain if only they were better informed and organized, working within a system that makes pain relief a priority.

The newest thrust of patient education is patients' rights. The American Pain Foundation,[31] a patient advocacy organization, distributes a patient statement of rights, which it urges hospitals and other healthcare institutions to adopt and provide to their clientele. Table 4 shows this statement. In addition, the American Pain Foundation distributes a brief guideline entitled, "How do I talk with my doctor or nurse about pain?" It urges patients to tell providers about their pain, suggests ways to describe and quantify the magnitude of the pain, points out the importance of specifying how the pain impairs functioning and sleep, and notes the importance of mentioning past treatments for pain. This educational outreach, and others like it, empowers patients and creates a responsibility for healthcare organizations, which must meet clientele expectations for pain assessment and management.

Although extensive literature is not yet avail-

TABLE 4. AMERICAN PAIN FOUNDATION'S PAIN CARE BILL OF RIGHTS FOR PATIENTS

As a person with pain, you have:

- The right to have your report of pain taken seriously, and to be treated with dignity and respect by doctors, nurses, pharmacists, and other healthcare professionals.
- The right to have your pain thoroughly assessed and promptly treated.
- The right to be informed by your doctor about what may be causing your pain, possible treatments, and the benefits, risks, and costs of each.
- The right to participate actively in decisions about how to manage your pain.
- The right to have your pain reassessed regularly and your treatment adjusted if your pain has not been eased.
- The right to be referred to a pain specialist if your pain persists.
- The right to get clear and prompt answers to your questions, take time to make decisions, and refuse a particular type of treatment if you choose.

able on the topic, it is clear that patients who receive medication-related education have a higher rate of compliance with analgesic prescriptions, fewer concerns about taking opioid medications, and lower pain levels than patients not receiving such information. Moreover, some of the research in this area helps providers to understand that they, too, have misconceptions about pain care. One common misconception is that telling patients about the possible side effects of a drug will, for psychological reasons, cause those very side effects. Evidence exists, however, that informing patients about possible side effects of therapy will not increase the occurrence of side effects or have other adverse effects.[32] Although information in itself is not enough to change either provider or patient behavior, it can be a powerful asset in the context of a system-wide effort to improve pain management. Involving patients in their own care is a cornerstone of a disease management approach to pain.

Clinical guidelines. The needs assessment and analysis will typically point to the need for clinical guidelines and practice standards that establish a minimum level of pain management. Numerous professional organizations have produced clinical practice guidelines.[33,34] Table 1 lists some of the guidelines available for pain management. Although this wealth of information establishes a starting point for healthcare organizations to create their own internal policies, the diversity may create confusion as clinicians attempt to find the most appropriate guidelines to follow.

In order for guidelines to influence practice, two conditions must occur. First, practitioners must believe that the recommendations in the guidelines are appropriate and applicable in the immediate setting. Second, there must be some process in place to measure and evaluate the cost-efficiency and quality improvement that ensue from adherence to the guidelines. When evaluating the appropriateness of published guidelines for a given setting, it is important to consider the following elements: strength of evidence, reliability, clearly defined patient populations, flexibility, clarity, multidisciplinary focus, documentation of methods, and regularly scheduled review of recommendations.[25] Because of the growing influence of the Cochrane Collaboration,[35] which sets the standards for evidence-based medicine, the value and validity of a practice guideline depends heavily on the quality of its evidence base. Unfortunately, few areas of pain management have well-designed, controlled research studies. It is currently impossible to develop strong evidence-based guidelines for many pain problems.

In situations where guidelines are neither available nor useful for the situation at hand, providers can create a clinical pathway, or algorithm, that standardizes assessment and treatment for a given type of common problem. Examples of these abound in the literature. Wrede-Seaman[36] provides a compilation of symptom management guidelines for cancer patients and end-of-life care. PainConsult.com,[37] a Web resource based on extensive medical and nursing experience, provides valuable algorithms for pain assessment and re-assessment, choice of medication, and pain management.

Outcomes measurement. Continuous evaluation and assessment of pain management practices is an important part of guideline implementation. By comparing the information obtained in ongoing assessments with baseline data, this method of continuous quality improvement tracks progress and identifies areas needing further improvement. The quality of outcome evaluation depends heavily on the quality of the assessment technology and information management components of the infrastructure. The choice of outcome measures depends on the goals of the program established by the triad.

Three types of outcomes are important for a disease management program targeting pain: clinical, economic, and humanitarian. Table 5 lists these types of outcomes for three types of pain: acute, chronic, and cancer-related pain. Clinical outcomes are the short-term and long-term end results of medical care delivery. One might ask, for example, whether patients who received wound infiltration with local anesthetic during surgery report less pain during the first 3 days of recovery. Economic outcomes, in contrast, are concerned with cost savings derived from pain management. One

Table 5. Some Common Outcome Measures for Acute, Chronic, and Cancer-Related Pain

	Type of pain		
Type of outcome	*Acute*	*Chronic*	*Cancer*
Clinical	Pain reduction	Increased activity level	Pain reduction
	Improved analgesic-to-side-effect ratio	Improved sleep	Increased activity level
Economic	Number of office visits for pain	Reduced drug requirement	Number of emergency room visits for pain
	Time of discharge after surgery	Number of iatrogenic complications following pain intervention	Number of office visits for pain
	Number of emergency room visits for pain	Return to work	Rate of hospital admission or readmission for pain
		Closure of disability claims	
Humanitarian	Pain reduction	Functional capability	Pain reduction
		Quality of life	Quality of life

might ask, for example, whether improved pain management of cancer patients leads to fewer emergency room visits and shorter hospital stays. Humanitarian outcomes have to do with protecting patient quality of life: minimizing personal and family distress, sustaining a sense of personal well-being, and protecting against loss of functional capacity due to pain. One might study the impact of a rehabilitation-oriented chronic pain management program on functional capability or quality of life, as measured with a quality of life instrument. Each type of outcome requires different measuring tools. Patient chart records may provide an answer to the first question and hospital records to the second question. The third question would require performance records and quality of life outcomes obtained from one of many standardized instruments.

The evaluation of any pain management program requires measurable outcomes. Patient surveys can provide information regarding level of pain relief, satisfaction with staff responsiveness, and the impact of pain on quality of life. Medical record audits determine the nature and frequency of documented pain assessment, analgesic administration practices, and incidence of treatment side effects and complications. Measurement of costs related to pain management may include changes in length of hospital stay, reimbursement for pain treatment, rehospitalization rates, or unanticipated physician visits for pain.

Studies of multidisciplinary pain clinics, as opposed to conventional pain treatment, show pain reduction and cost savings. For example, pain reduction for one year following multidisciplinary treatment ranges from 20 to 40%, and patients generally maintain these gains.[38] This stands in contrast to the findings of Dvorak et al.[39] who studied 575 patients who received unidisciplinary surgical intervention for pain. Fully 70% of these patients continued to complain of pain from 4 to 17 years after surgery. Caudill et al.[40] reported data on 109 patients treated at a multidisciplinary pain facility within a health maintenance organization. Pain-related clinic visits for these patients dropped by 36% after the first year of multidisciplinary intervention. In addition, the risk of iatrogenic complication is low for multidisciplinary pain clinic intervention, but substantial for spinal and other surgical intervention.

Program improvement. The system should compare new evidence to records of past performance at each evaluative period, make new adjustments, revise goals, and repeat the evaluation cycle. It is useful during this process to survey providers at various levels of the system. In addition to surveys and audits, solicitation of open-ended feedback from healthcare professionals can help monitor the practical application of a pain disease management program. The experiences of those implementing the guidelines or clinical pathway will clarify which pieces of the program work well and which need improvement. Involving the staff in the process is empowering and reinforces their sense of ownership. Changes become less threatening and easier for staff to accept and implement.

Along with seeking information from those who are implementing the pain disease management processes, the triad should give information back to the staff, patients, and administration. It needs to communicate its findings on current practices, the results of the needs assessment, and the outcomes and progress of the program, so that the staff stays informed of the progress and success of the pain management program. Through communicating findings, the triad helps increase compliance with guidelines and support for the goals of its program.

An example of process

A fictitious 1000-bed community hospital has decided to implement a pain disease management program using the model that we introduced above. The triad consists of an anesthesiologist who had some minimal experience in pain management as a resident, a nurse who is enthusiastic and who draws upon information and support about pain management from a national nursing society, and a pharmacist, who believes in the importance of pain management but does not have any particular expertise with the drugs used in pain management. The physician has assumed the role of

"pain champion" for the institution. The administration has made information management support available, supported the triad's devoting manpower to building a pain program, and approved in principle the initiation of educational programs on pain for both providers and patients. Because the institution does not have statistical expertise, the administration has decided to draw upon the resources of a nearby university, with which it sometimes partners, for statistical consultation. To facilitate its work, the triad has identified two patients with pain problems (back pain and sickle cell disease), each of whom serves as a consultant. By working with patient consultants, the triad seeks to include patient perspectives in evaluating the pain disease management program.

The first step for the triad is needs assessment. By interviewing nurses, other staff, and the patient consultants, they determine (as they expected) that pain control is a pressing problem on the postsurgical wards and also in the day surgery area. However, they find further problems in the emergency services. In particular, both providers and patients are unhappy with the way that the system handles the pain of sickle cell crisis. Further exploration within the system reveals many pain problems in the outpatient services of geriatric medicine, rheumatology, and orthopedics. Chronic pain disorders appear to be widespread. There are more problems than the triad can feasibly address at one time, and they decide that they should begin with a single, manageable focused effort.

The triad elects to pick one well-defined problem area for improving pain management and to use success in this area as a model for the others. Noting that the American Pain Society has a guideline for managing the pain of sickle cell crisis,[41] they decide to begin with the emergency services. Examination of the guideline reveals several valuable features: suggested instruments for measuring pain in children and adults, an algorithm for pain assessment, a treatment flow chart, dosing guidelines for pain medications, and suggestions for creating a patient education program. They obtain multiple copies of the guideline booklet for distribution to the staff.

To introduce the idea, the triad nurse schedules several in-service teaching presentations to the emergency services nursing staff, taking care to include nurses on all shifts and weekend staff. He or she distributes copies of the guideline to all, and posts laminated copies of key information at all nursing stations. The anesthesiologist undertakes a similar didactic session with emergency service physicians. The pharmacist prepares in advance for these meetings and attends in a supporting role. He or she follows up by meeting separately with nurses and pharmacists to discuss the medication options on the institution's formulary. He or she also handles questions about dosing, concerns about medication abuse and addiction, and matters of compliance.

When the service is sufficiently informed and supportive of the triad's efforts, the triad nurse introduces the pain measurement tools. He or she teaches the nurses how to conduct pain assessment and record it in the patient chart, insisting on regular pain assessment as a fifth vital sign. In addition, the triad nurse works with the information management team to ensure that the data collected will enter smoothly and efficiently into a program database. The triad initiates data collection at this point to obtain baseline information about practice patterns. This baseline measurement period extends for 3 months.

The triad uses this 3-month period for educating staff and planning an education program for patients. The triad nurse and the nursing staff adapt the algorithms in the guideline to their setting and formulary. In parallel, the anesthesiologist and pharmacist educate the physician staff on the use of opioids, nonsteroidal inflammatory drugs, and adjuvant medications. The pharmacist gradually updates the knowledge of his or her colleagues in the pharmacy on opioids and other pain medications.

The triad holds monthly meetings to increase communication among emergency physicians, nurses, and the pharmacists. Insights emerge from this interaction, including that providers do not act promptly about patient pain complaints because they doubt the veracity of the patient reports. Many think it best to observe the patient claiming sickle cell crisis for some

time, often several hours, to determine whether the patient is really in pain or simply trying to get drugs. A clear solution emerges from the discussion. If the emergency service keeps a record base on each patient, then the staff can look up the history of every patient who presents at the emergency room claiming sickle cell crisis. That record will not only validate the patient's right to medication; it will also tell providers what drugs and doses have worked well or poorly in the past. Implementing such a record will reduce time to medication delivery and improve the relationships between providers and patients.

After 3 months, the physician and pharmacist introduce a protocol for dealing with sickle cell crisis pain, based on the American Pain Society guidelines.[41] At this point, the information management staff prepares a report of the first 3 months of data that will serve as baseline. Meanwhile, data collection continues. Three months following the introduction of the protocol, the information management team provides a summary of the data for the 3 months of intervention. At this point, the triad contacts the statistical consultants at the university, who analyze the change that has occurred in response to the intervention.

The statistical report reveals notable progress in time-to-medication delivery, pain level at discharge, and patient satisfaction. However, some patients have had substantial side effects from aggressive medication. The triad makes adjustments in the protocol, undertakes further staff education efforts, and begins another 3-month evaluation period.

Once the triad has documented some success in the management of pain related to sickle cell crisis, it is free to expand its influence and pursue the broad goal of bringing about system-wide change. The long range strategic plan for the triad is to: (1) extend systematic pain management to the rest of emergency services; (2) identify the next clinical area for introduction of a disease management model for pain management; and (3) begin informing the hospital staff as a whole of the program, basic presentations on data from the sickle cell crisis setting. The triad must dedicate its efforts not only to establishing quality pain management in new areas, but also to sustaining gains already made. The long-range goal is the establishment of a system-wide disease management program for pain.

SUSTAINING AN EFFECTIVE PROGRAM

Disease management programs necessarily vary across healthcare organizations and disease entities. This is especially true for pain because the nature of the problem differs with the patient population(s) that a particular institution serves and the types of pain that an institution sees. A hospital in a large city may have a burn trauma unit with many ongoing pain problems. A facility with a strong oncology unit must deal constantly with cancer-related pain. A children's hospital has to attend to pain related to invasive procedures. Moreover, the structure and economic bases of these hospitals may vary greatly. The process of change unfolds very differently in a large urban staff-model health maintenance organization than in a small community hospital. Such diversity makes it impossible to specify a single model for implementing and sustaining pain management in all institutions. We believe, however, that although the specifics may differ for each hospital, successful implementation depends on certain key elements.[25]

We suggest the following guiding principles for sustaining successful pain management:

1. Minimize the impact of improving pain management on other existing practice patterns and other elements of the system.
2. Build a strong information management base and create an analytic engine that can evaluate outcomes from multiple perspectives (e.g., provider, payer, patient).
3. Place medical and financial decision-making power, so far as possible, in the hands of clinicians.
4. Integrate pain management, so far as possible, with other disease management programs, recognizing that pain is often comorbidity.
5. Invest resources in outcomes research, including clinical pathway analysis, pharmacoeconomics, and the cost/benefit ratio of pain management.

A pain disease management program can thrive in almost any setting if these principles become an integral part of daily practice throughout the organization. However, integration must be complete, extend to all levels of the institution, and encompass all facets of patient care, including organization policies and procedures, practice standards, clinical documentation, and provider education. Without organization-wide support, individual efforts at improving the pain management process are likely to be short-lived. History shows that, when pain programs do succeed in a low integration environment, they tend to survive as isolated pockets of compassionate care in organizations that are otherwise indifferent to pain issues. The American Pain Society[41] recognized the importance of an organization-wide approach, basing its guidelines on the assumption that real changes in practice require that clinicians have full support of both administration and staff.[42]

CONCLUSIONS AND RECOMMENDATIONS

During the twentieth century, medicine largely neglected pain management and failed to educate physicians, nurses, pharmacists, and others to provide effective pain assessment and control. As a consequence, unrelieved pain has become a major clinical, economic, and societal burden for many healthcare organizations and a source of needless suffering for individual patients. This longstanding shortcoming can disappear because medicine has a strong knowledge base on pain and its control, and the technological resources for applying that knowledge are readily available. The introduction of JCAHO standards for pain assessment and control represents a turning point in the enduring trend of institutional indifference to pain management. Quality pain management is no longer optional in most of America's hospitals, clinics, and nursing homes; it is a responsibility. These institutions must meet JCAHO standards of care that specify pain assessment, appropriate intervention, and follow up. Because pain problems occur in so many clinical arenas and involve so many types of providers, meeting the JCAHO requirements is a major challenge for most institutions and will necessitate institution-wide change.

A disease management framework fits the problem of pain and its management and appears to offer a valuable approach to the longstanding challenge of inadequate pain care. Improving pain care requires attention to both the structural and process elements that sustain change in healthcare organizations. After obtaining administrative buy-in, we recommend establishing a pain triad consisting of a physician pain champion, a nurse, and a pharmacist as agents of institutional change. The triad members should consist of opinion leaders from their respective professions. The triad should identify service areas in which pain problems commonly occur, adapt guidelines or create clinical pathways in each relevant area for improving care, and initiate a cycle of evaluation, intervention, and revaluation designed to optimize pain management. In addition, triad members should take leadership roles in educating fellow professionals and patients. Disease management also involves educating patients in self-management of their own conditions. In the case of pain, it is necessary to teach patients that they have a right to pain assessment and relief, as well as how to facilitate their pain care programs.

Improved pain management is a win-win situation for patients and institutions alike. While patients and their families benefit from reduced suffering, healthcare institutions can offer more cost-effective care to its patients.

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