

Improving the Quality of Pain Management Through Measurement and Action



This monograph was developed by JCAHO as part of a collaborative project with NPC.

March 2003

Joint Commission Mission Statement:

To continuously improve the safety and quality of care provided to the public through the provision of health care accreditation and related services that support performance improvement in health care organizations.

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Section I: Introduction.....	1
Section II: Getting Started on Measurement to Improve Pain Management	2
A. Measurement Is Key to Improvement.....	2
1. Internal Uses for Pain Management Performance Measurement.....	2
2. External Uses for Pain Management Performance Measurement	2
3. Addressing Concerns Related to Measuring Performance	2
B. Using Criteria for Effective Measurement.....	3
1. Overview of Criteria	3
2. Criteria Similarities and Differences	4
3. Mandated Criteria	10
Section III: Understanding Organizational Improvement in Pain Management	14
A. Viewing the Organization as a System.....	14
B. Understanding Pain Management.....	14
C. Institutionalizing Pain Management.....	15
D. Understanding Current Pain Management Practices in Your Organization.....	16
E. Understanding Quality Improvement Principles	17
1. The Cycle for Improving Performance	17
2. Repeating the Cycle at Different Phases of the Project	17
3. Integrating With Internal Quality Improvement Activities	20
Section IV: Designing Your Pain Management Improvement Initiative.....	21
A. Establishing the Project Team.....	21
B. Selecting Objectives and Target Goals.....	21
C. Establishing the Scope of Measurement	22
D. Identifying Resources and Project Timeline	24
Section V: Measuring What You Need to Know	25
A. Consider Your Measurement Approach.....	25
1. Data Quality	25
2. Data Quantity	27
B. Collecting Data With Established Assessment Instruments.....	28
1. Pain-Specific Instruments.....	28
2. Choosing Pain Instruments	28
C. Selecting a Measurement Approach	31
1. Conduct An Organizational Self-assessment.....	31
2. Review Medical Records	32
3. Test Knowledge and Attitudes	33
4. Directly Observe the Care.....	33
5. Conduct a Point Prevalence Study	35
6. Assess Patient Status and Outcome Over Time	36
7. Collect Indicator Data.....	38
8. Utilize an Externally Developed Performance Measurement System	44

Section VI: Assessing and Analyzing Your Processes and Results	50
A. Using Quality Improvement Tools.....	50
B. Analysis of Data	50
C. Interpretation of the Results of Data Analysis	53
D. Display of Data and Results.....	54
E. Dissemination of Information	55
Section VII: Improving Your Performance	56
A. Designing a Pain Improvement Intervention.....	56
B. Testing and Implementing a Pain Improvement Intervention.....	57
C. Monitoring for Success	57
D. Sustaining Change.....	58
Section VIII: Understanding Factors That Affect Organizational Improvement	59
A. Factors That Influence Change	59
1. Patient Factors	59
2. Clinician Factors.....	60
3. Organization Factors.....	61
4. External Factors	62
B. Improving Pain Management Through the Principles of Total Quality Management	63
Section IX: Examples of Organizations Implementing Pain Management– Related Measurement and Improvement Initiatives	66
A. Overview.....	66
B. Educational Effectiveness in a Home Health Agency: Visiting Nurse Association & Hospice of Western New England, Inc.....	67
1. Special Challenges.....	67
2. Choosing a Methodology	67
3. Assembling a Team.....	67
4. Identifying the Problem.....	68
5. Implementing Interventions.....	69
6. Analyzing Processes and Results Leads to Redesign	70
7. Sharing the Success and Sustaining Change	70
C. Creative Improvement in a Rural Hospital: Memorial Hospital of Sheridan County.....	72
1. Doing Some Homework	72
2. Establishing a Team	72
3. Implementing Improvements	73
4. Collaborating for Improvement.....	75
5. Integrating Nonpharmacologic Approaches	76
6. Sustaining Change.....	76

D. Integrating Pain Management Improvement Activities in an Academic Medical Center: University of Iowa Hospitals and Clinics	77
1. History of Pain Management Activities at UIHC.....	77
2. Forming a Standing Committee	78
3. Establishing an Action Plan	80
4. Fulfilling the Charge: The Assessment and Documentation Work Group.....	80
5. Complementing Centralized Pain Improvement Activities: A Division-level Initiative to Manage Circumcision Pain.....	81
E. Improving Care Across Hundreds of Facilities: The Veterans Health Administration's National Pain Management Strategy	84
1. Organizing the National Initiative.....	85
2. National Goals and Objectives	85
3. Implementing Multiple Interventions.....	85
4. Evaluating Effectiveness Through System-wide Measurement	86
5. VHA-IHI Collaborative	87
6. Implementing the IHI Initiative in Two New England Hospitals.....	88
7. Operational Strategies	89
8. Sharing Success and Next Steps	90
9. Summary: Key Lessons.....	91
Appendix A: A Selection of Resources Related to Pain Management and Improvement	93
Appendix B: A Plan-Do-Check-Act Worksheet.....	96
References	99

List of Tables, Figures, Text Boxes, and Appendices

TABLES

Table 1. Pain Management Guidelines	5
Table 2. Consensus and Position Statements	12
Table 3. Examples of Tasks Associated with Each Stage of the Improvement Cycle	19
Table 4. Examples of Roles and Behaviors of Pain Project Team Members	23
Table 5. Scientific Review Criteria for Health Status Instruments.....	29
Table 6. Examples of Unidimensional and Multidimensional Pain-Specific Instruments	30
Table 7. Examples of Indicator Development for Pain Management	39
Table 8. Desirable Attributes of Measures	45
Table 9. Comparing Process and Outcome Indicators.....	47
Table 10. Quality Improvement Tools: Definition And Use.....	51
Table 11. Visiting Nurse Association & Hospice Of Western New England Pain Performance Improvement Time Line	68
Table 12. Memorial Hospital of Sheridan County Pain Management Improvement Initiative	74

Table 13. Examples of Departmental Pain Improvement Activities: University of Iowa	78
Table 14. Examples of Pain Management Interventions for Circumcision: University of Iowa Hospitals and Clinics (UIHC)	83
Table 15. Attributes of a Successful Pain Management Program: VHA-IHI Collaborative Planning Group.....	88

FIGURES

Figure 1. Dynamics of Systems Thinking in Relation to the Health Care Organization.....	15
Figure 2. The PDSA Cycle.....	18
Figure 3. Cycle for Improving Performance	19
Figure 4. Selection Grid: Improvement Tools	52
Figure 5. [cartoon].....	54
Figure 6. Using Appropriate Scales on Graphs.....	55
Figure 7. Examples of Factors Affecting Pain Management Improvement Initiatives.....	60
Figure 8. Second Pain Management Newsletter Distributed by the Visiting Nurse Association & Hospice Of Western New England.....	71
Figure 9. Mean Score on Staff Pain Management Knowledge Survey: Visiting Nurse Association & Hospice of Western New England, Inc.	72
Figure 10. Baseline and Post (6 Months) Indicator Data: Memorial Hospital of Sheridan County Clinical Indicators.....	76
Figure 11. Quality and Performance Improvement Program Framework Illustrating the Reporting Lines for Communication: University of Iowa Hospitals and Clinics	79
Figure 12. Mean Number of Times Pain Intensity Is Documented Every 24 Hours: Department of Nursing Services and Patient Care Intensive Care Units, University of Iowa Hospitals and Clinics	82
Figure 13. Percentage of Records With Documented Pain Scores Within the Last Year: Veterans Health Administration, National External Peer Review Program	87
Figure 14. Performance on Two Indicators Within 6 Weeks of Initiation of the Veterans Health Administration/Institute for Healthcare Improvement Pain Management Collaborative at the Togus, Maine, and Providence, Rhode Island, Veterans Affairs Medical Centers	91

TEXT BOXES

Overview of Joint Commission on Accreditation of Healthcare Organizations Standards Related to Pain Management.....	4
American Pain Society Quality Improvement Guidelines for the Treatment of Acute and Cancer Pain	10

Comparing Criteria: Guidelines, Standards, Consensus Statements	11
Eight Steps to Develop an Institutional Pain Management Program	16
Getting Physicians Involved in the Quality Improvement Process	22
Common Characteristics of Successful Quality Improvement Teams	23
Examples of Approaches to Assessing Data Quality.....	26
Examples of Approaches for Selecting Samples	27
Organizational Example: Conduct Organizational Self-assessment	32
Organizational Example: Review Medical Records	33
Organizational Example: Test Knowledge and Attitudes	34
Organizational Example: Directly Observe the Care	35
Organizational Example: Conduct a Point Prevalence Study	36
Organizational Example: Assess Patient Status and Outcome Over Time	37
Organizational Example: Collect Indicator Data	48
Organizational Example: Utilize an Externally Developed Performance Measurement System.....	49
Ten Key Lessons From the National Demonstration Project on Quality Improvement.....	53
The 14 Points of Total Quality Management Applied to Improving Pain Management.....	63
No Pain, Big Gain Kick-off Activities in February 2001	75

APPENDICES

Appendix A. A Selection of Resources Related to Pain Management and Improvement	93
Appendix B. A Plan-Do-Check-Act Worksheet.....	96

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SECTION I:

Introduction

Despite ongoing, significant advances in treatment options, studies indicate that pain continues to be poorly managed and undertreated.¹⁻⁶ The increase in clinical information related to pain management, as well as recent high-profile press coverage of individual cases of undertreatment,⁷ has resulted in heightened awareness among health care professionals and the public that this critical issue must be addressed.

At the most fundamental level, improving pain management is simply the right thing to do. As a tangible expression of compassion, it is a cornerstone of health care's humanitarian mission. Yet it is just as important from a clinical standpoint, because unrelieved pain has been associated with undesirable outcomes such as delays in postoperative recovery and development of chronic pain conditions.^{8,9(p14, Table 5)} In addition, effective treatment of pain is necessary to respond to patients' increasing expectations for health care and new standards or requirements such as those set by accrediting bodies, insurers, government regulatory bodies, and other constituent groups. In fact, Congress declared the decade beginning on January 1, 2001, as the Decade of Pain Control and Research.¹⁰

The key to judging the success of improvement efforts in an organization is measurement, because accurate data underpin all aspects of the change and improvement process. This monograph is designed to help health care organizations implement the performance measurement processes they need to achieve their goal of improving pain management. This monograph takes a practical approach to provide:

- An overview of methods for measuring performance and principles of organizational improvement applied to pain management.
- Examples of organizational use of performance measurement methods and

implemented improvement initiatives.

- References and other sources for more detailed information on selected topics.

This monograph is written for clinicians, pain management teams, quality improvement professionals, researchers, and others involved in pain management performance assessment, improvement, education, and policy making. It is intended for use in conjunction with the companion monograph *Pain: Current Understanding of Assessment, Management, and Treatments*,⁹ which focuses on the etiology, physiology, and clinical treatment of pain.

Because of the broad intended audience, some readers may find aspects of the monograph too technical while others may find it overly simplistic. Similarly, some sections (e.g., organization examples or measurement approaches) may be of greater interest to some readers than others, depending on one's care setting, role, and experience in pain management improvement activities.

Nevertheless, we hope that readers will find much of the material relevant and helpful in their efforts to measure and improve pain management processes and patient outcomes.

Given the primary focus of this monograph on measuring and improving performance, certain aspects of pain management are not addressed.

- This monograph does not review or critique recommendations for treatments, though reference material on clinical practice guidelines is provided.
- This monograph covers subjects that are integral to *evaluating* pain management programs. Readers interested in material that focuses specifically on establishing and implementing new pain management programs should consult the references cited in Section III.C (Institutionalizing Pain Management).
- Individuals and organizations seeking information on compliance with requirements for certification and accreditation programs mentioned in this monograph should request specifications and educational materials from the appropriate sponsoring agency (see references listed in Appendix A).

SECTION II:

Getting Started on Measurement to Improve Pain Management

A. Measurement Is Key to Improvement

Evaluating improvement in pain management performance depends on measurement. By its nature, measurement is comparative and used to establish relationships based on common units of analysis.¹¹ For example, during the start-up phase of an improvement initiative, measurement allows staff to establish the baseline performance of a process or activity, to assess current practice, and to identify opportunities for improvement. Then, over time, continued measurement enables them to compare current performance against baseline data to evaluate the success of their interventions.

Two important reasons to measure performance in health care organizations are to assess change for quality improvement purposes within an organization (internal) and to compare quality of care between different entities (external).¹²

1. Internal Uses for Pain Management Performance Measurement

Examples of internal uses for performance measurement in pain management include:

- Measurement of direct and indirect changes in pain management processes and patient outcomes in response to quality improvement interventions.
- Assessment of compliance with selected guidelines and evidence-based practices in order to eliminate non-evidence-based approaches to pain management grounded in habit, opinion, and biases.

- Identification of knowledge, attitudes, and competencies of clinicians.
- Identification of educational needs, individual preferences, beliefs, and expectations about pain management among patients and their family caregivers.
- Dispelling false beliefs about pain and its treatment such as fear of addiction.
- Prioritization when multiple improvement opportunities exist.
- Provision of objective data in order to gain support from organizational leadership and buy-in from clinicians for improvement activities.

2. External Uses for Pain Management Performance Measurement

Examples of external uses for measuring performance include:

- Comparison of performance on pain management processes and outcomes with those of other organizations.
- Compliance with performance data demands from external sources such as payers, accreditors, and government regulatory bodies.
- Establishment of national, regional, or other benchmarks.
- Validation and refinement of criteria such as guidelines, standards, and care recommendations. Evaluation of the effect of these criteria on areas such as patient outcomes, costs, and provider behavior.
- Collection of research data to validate treatment efficacy, evaluate assessment instruments, or establish evidence-based practice.

3. Addressing Concerns Related to Measuring Performance

Although most health care professionals would agree that performance measurement is valuable and necessary for effective quality improvement, it is often met with resistance and apprehension. Lack of familiarity with data analysis methods and tools (e.g., statistical process control) can lead to concerns about the ability to understand and commu-

nicate findings. Prior negative experiences can give rise to perceptions that performance measurement is not valuable or valid.¹¹ These include judgments based on insufficient sample size, poorly tested measures (e.g., measures that do not have an established link to patient outcomes or measures not adequately adjusted for differences in severity of illness among different patient populations), and disclosure of misleading data.

At the organizational level, performance measurement may be perceived as requiring too much dedicated staff time and resources relative to the expected benefit.

Overcoming these challenges requires early communication and ongoing education throughout the organization to ensure everyone understands the purpose of data collection, the measurement methods used, and the ultimate project goals. In general it is best to prepare special communications for management, department heads, and other influential groups to address specific concerns and solicit buy-in.

It is important to choose measurement objectives carefully and consider the impact on related processes of care. It has been observed that measurement may have the unintended result of allocating resources, effort, and attention to targeted areas, possibly to the detriment of other functions.^{12,13} Therefore, careful planning and attention to institutional priorities is important to ensure resources are wisely distributed.

Adopting a systems-level approach to performance measurement and improvement can help overcome the concern that data will be used to single out individuals for criticism. Those charged with implementing such activities must assess data quality and reliability and use sound analysis and interpretation techniques to ensure data are translated into information that is fully substantiated and can be readily understood. More information about this issue is provided in Section VI (Assessing and Analyzing Your Processes and Results).

Whether launching new pain management improvement activities or maintaining established improvements, organizations can

enhance effectiveness by:

- Viewing measurement as part of an ongoing process rather than as an end point.
- Exercising care in choosing what to measure.
- Keeping in mind that measurement is most valuable when it is conducted with rigorous attention to quality, analyzed with accuracy, and applied in a timely manner.

As Donald Berwick, MD, a widely recognized leader in the quality improvement field, has said “measurement without change is waste, while change without measurement is foolhardy.”¹⁴ Keeping this in mind, organizations can avoid the pitfall of “measurement for measurement’s sake” as well as the negative effects on morale and costs that can result when data are collected but not used.¹¹ By recognizing and attending to common concerns surrounding performance measurement and use of data, organizations can overcome resistance.

B. Using Criteria for Effective Measurement

1. Overview of Criteria

When evaluating pain management activities, it is important to refer to credible, evidence-based sources for identifying measurement objectives and establishing performance expectations. Examples of possible sources include clinical practice guidelines, standards, consensus statements, and position papers. For the purposes of this monograph, all of these items will be referred to as *criteria*, which are defined as a means for judging or a standard, a rule, or a principle against which something may be measured.¹⁶

a. Guidelines

Guidelines are systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances.¹⁵ Guidelines are often a mechanism by which treatment recommendations are communicated. Pain

management-related guidelines have been developed for different patient populations (pediatric, adult, geriatric), types of pain (chronic or acute), and conditions or procedures (e.g., low back pain, postoperative pain, cancer pain). One source of information on current guidelines related to pain management is the National Guideline Clearinghouse Web site (www.guideline.gov). Examples of pain management guidelines are included in **Table 1**.

b. Standard

A standard is 1) a criterion established by authority or general consent as a rule for the measure of quality, value, or extent; or 2) for purposes of accreditation, a statement that defines the performance expectations, structures, or processes that must be substantially in place in an organization to enhance the quality of care.¹⁶ (Note: this definition is distinct from the use of “standard” in a “standard of care,” which may be used in a legal context or a “standard of practice” established by an organization). Standards typically are used by accrediting bodies such as the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and The Rehabilitation Accreditation Commission (CARF) to evaluate health care organizations and programs. An example of standards related to pain management from JCAHO is included in the box at right.

c. Consensus statements and position papers

Consensus statements and position papers are expressions of opinion or positions on health care issues generally prepared by professional societies, academies, and organizations and generated through a structured process involving expert consensus, available scientific evidence, and prevailing opinion. **Table 2** provides a sample of consensus statements and position papers that may provide additional resources for examining pain management practice in an organization, developing improvement interventions, and creating an organization-wide program. One consensus statement of special relevance for pain management improvement is the American Pain Society Quality of Care Committee’s

Overview of Joint Commission on Accreditation of Healthcare Organizations Standards Related to Pain Management

- Recognize the right of patients to appropriate assessment and management of pain.
- Screen for the presence and assess the nature and intensity of pain in all patients.
- Record the results of the assessment in a way that facilitates regular reassessment and follow-up.
- Determine and ensure staff competency in pain assessment and management (i.e., provide education), and address pain assessment and management in the orientation of all new clinical staff.
- Establish policies and procedures that support the appropriate prescribing or ordering of pain medications.
- Ensure that pain does not interfere with a patient’s participation in rehabilitation.
- Educate patients and their families about the importance of effective pain management.
- Address patient needs for symptom management in the discharge planning process.
- Incorporate pain management into performance activities (i.e., establish a means of collecting data to monitor the appropriateness and effectiveness of pain management).

Adapted from reference 17.

Quality Improvement Guidelines for the Treatment of Acute and Cancer Pain (see box on page 10).¹⁸

2. Criteria Similarities and Differences

Often, these terms (standards, guidelines, and consensus statements) are used interchangeably throughout the literature and

(continued on page 10)

Table 1. Pain Management Guidelines

Guideline Title	Date of Release/Update	Developer	Focus/Application	Contact Information
Acute Pain Management: Operative or Medical Procedures and Trauma AHCPR Publication No. 92-0032	Release date: 1992	U.S. Department of Health and Human Services Agency for Health Care Policy and Research (AHCPR) now known as Agency for Healthcare Research and Quality (AHRQ)	Acute pain associated with operations, medical procedures, or trauma; includes all age groups from neonates to the elderly	AHRQ Clearinghouse; 800-368-9295 www.ahrq.gov; Agency for Healthcare Research and Quality; 2101 East Jefferson Street, Suite 501; Rockville, MD 20852
Acute Pain Management in Adults: Operative Procedures. Quick Reference Guide for Clinicians AHCPR Publication No. 92-0019	Release date: 1993	U.S. Department of Health and Human Services Agency for Health Care Policy and Research (AHCPR) now known as Agency for Healthcare Research and Quality (AHRQ)	The Quick Reference Guide includes excerpts from the guideline, Acute Pain Management: Operative or Medical Procedures and Trauma; the excerpts are designed to provide clinicians with some suggestions for practical and flexible approaches to acute pain assessment and management	AHRQ Clearinghouse 800-368-9295 www.ahrq.gov; Agency for Healthcare Research and Quality 2101 East Jefferson Street, Suite 501 Rockville, MD 20852
Acute Pain Management in Infants, Children, and Adolescents: Operative and Medical Procedures. Quick Reference Guide for Clinicians AHCPR Publication No. 92-0020 In: J Pain Symptom Manage. 1992;7:229-242	Release date: 1992	U.S. Department of Health and Human Services Agency for Health Care Policy and Research (AHCPR) now known as Agency for Healthcare Research and Quality (AHRQ)	The Quick Reference Guide includes excerpts from the guideline, Acute Pain Management: Operative or Medical Procedures and Trauma	AHRQ Clearinghouse; 800-368-9295; www.ahrq.gov; Agency for Healthcare Research and Quality; 2101 East Jefferson Street, Suite 501; Rockville, MD 20852
Practice Guidelines for Acute Pain Management in the Perioperative Setting	Release date: April 1995	American Society of Anesthesiologists	Perioperative pain management	American Society of Anesthesiologists; 520 North Northwest Highway; Park Ridge IL 60068-2573; E-mail: publications@asahq.org

Table 1. Pain Management Guidelines (continued)

Guideline Title	Date of Release/Update	Developer	Focus/Application	Contact Information
Guidelines for the pediatric perioperative anesthesia environment	Release date: February 1999	American Academy of Pediatrics	Care of the pediatric patient in the perioperative anesthesia environment	American Academy of Pediatrics; P.O. Box 747; Elk Grove, IL 60009-0747; www.aap.org
Clinical Practice Guideline: Management of Cancer Pain AHCPR Publication No. 95-0592	Release date: March 1994 Revision In Press – The American Pain Society: Expected Spring 2003	U.S. Department of Health and Human Services Agency for Health Care Policy and Research (AHCPR) now known as Agency for Healthcare Research and Quality (AHRQ)		AHRQ Clearinghouse; 800-368-9295; www.ahrq.gov; Agency for Healthcare Research and Quality; 2101 East Jefferson Street, Suite 501; Rockville, MD 20852
NCCN Practice Guidelines for Cancer Pain	Revision date: June 2000	National Comprehensive Cancer Network (NCCN)	Recommendations for standardized assessment and treatment of cancer pain	National Comprehensive Cancer Network; 50 Huntington Pike, Suite 200; Rockledge, PA 19046; 215-728-4788; www.nccn.org
Cancer Pain Treatment Guidelines for Patients	Release date: January 2001	American Cancer Society (ACS) AND National Comprehensive Cancer Network (NCCN)	A source of cancer pain treatment information for patients based on the NCCN treatment guidelines	American Cancer Society; 800-ACS-2345; www.cancer.org OR National Comprehensive Cancer Network; 800-909-NCCN; www.nccn.org
Cancer Pain Relief and Palliative Care in Children	Release date: December 1998	World Health Organization in collaboration with the International Association for the Study of Pain	Consensus guidelines on the management of pain in children with cancer	WHO Distribution and Sales Office; 1211 Geneva Switzerland; Phone: 41-22-791-24-76; Fax: 41-22-791-48-57; E-mail: publications@who.ch
Practice Guidelines for Cancer Pain Management	Release date: 1996	American Society of Anesthesiologists (ASA)	Evaluation and assessment of the patient with cancer pain	American Society of Anesthesiologists; 520 North Northwest Hwy; Park Ridge, IL 60068-2573; E-mail: publications@asahq.org

Table 1. Pain Management Guidelines (continued)

Guideline Title	Date of Release/Update	Developer	Focus/Application	Contact Information
Cancer Pain Relief	Release date: 1986	World Health Organization	Management of cancer pain	WHO Distribution and Sales Office; 1211 Geneva Switzerland; Phone: 41-22-791-24-76; Fax: 41-22-791-48-57; E-mail: publications@who.ch
Migraine Headache Treatment Guidelines	Release date: 2001	U.S. Headache Consortium	Diagnosis, treatment, and prevention of migraine headache	American Academy of Neurology; 1080 Montreal Avenue; St. Paul, MN 55116; 651-695-1940; www.aan.com
Practice Guidelines for Chronic Pain Management	Release date: 1997	American Society of Anesthesiologists	Management of chronic pain and pain-related problems	American Society of Anesthesiologists; 520 North Northwest Hwy; Park Ridge, IL 60068-2573; E-mail: publications@asahq.org
Guideline for the Management of Acute and Chronic Pain in Sickle-Cell Disease	Release date: August 1999	American Pain Society	Guideline to aid physicians, nurses, pharmacists, and other health care professionals in managing acute and chronic pain associated with sickle-cell disease	American Pain Society; 4700 W. Lake Ave; Glenview, IL 60025; Phone: 847-375-4715; Fax: 847-375-4777; www.ampainsoc.org

Table 1. Pain Management Guidelines (continued)

Guideline Title	Date of Release/Update	Developer	Focus/Application	Contact Information
Acute Pain Management (in the elderly)	Release date: 1997 Revision date: April 1999	University of Iowa Gerontological Nursing Interventions Research Center	Acute pain management in the elderly patient	University of Iowa Gerontological Nursing Interventions Research Center, Research Dissemination Core, 4118 Westlawn, Iowa City, IA 52242-1100 www.nursing.uiowa.edu/gnirc
Model Guidelines for the Use of Controlled Substances for the Treatment of Pain	Release date: May 1998	The Federation of State Medical Boards of the United States Inc.	Evaluating the use of controlled substances for pain control	Federation of State Medical Boards of the United States, Inc.; Federation Place; 400 Fuller Wiser Road, Suite 300; Euless, TX 76039-3855; Phone: 817-868-4000; Fax: 817-868-4099; www.fsmb.org
Clinical Practice Guideline: Chronic Pain Management in the Long-Term Care Setting	Release date: 1999	American Medical Directors Association	Addressing chronic pain in the long-term care setting	American Medical Directors Association; 10480 Little Patuxent Parkway, Suite 760; Columbia, MD 21044; Phone: 800-876-2632; Fax: 410-740-4572; www.amda.com
Principles of Analgesic Use in the Treatment of Acute Pain and Cancer Pain	Release date: 1999	The American Pain Society	Principles and recommendations related to analgesic therapy	American Pain Society; 4700 W. Lake Ave; Glenview, IL 60025; Phone: 847-375-4715; Fax: 847-375-4777; www.ampainsoc.org
Treatment of Nonmalignant Chronic Pain	Release date: 2000	The American Academy of Family Physicians	Management of non-malignant chronic pain	American Academy of Family Physicians; 11400 Tomahawk Creek Parkway; Leawood, KS 66211-2672; 913-906-6000; www.aafp.org

Table 1. Pain Management Guidelines (continued)

Guideline Title	Date of Release/Update	Developer	Focus/Application	Contact Information
Guideline for the Management of Pain in Osteoarthritis, Rheumatoid Arthritis and Juvenile Chronic Arthritis	Release date: 2002	The American Pain Society	Pain management for juveniles with osteoarthritis, rheumatoid arthritis, and juvenile chronic arthritis	American Pain Society; 4700 W. Lake Ave.; Glenview, IL 60025; www.ampainsoc.org ; Phone: 847-375-4715; Fax: 847-375-4777
Management of Low Back Pain or Sciatica in the Primary Care Setting	Release date: May 1999	Veterans Health Administration and Department of Defense	Management of low back pain in the ambulatory care setting for patients older than 17 years of age	Department of Defense Department of Veterans Affairs Veterans Health Administration (VHA) Office of Quality and Performance (1OQ); 810 Vermont Ave, NW; Washington, DC 20420
Acute Low Back Problems in Adults AHCPR Publication No. 95-0642	Release date: 1994	U.S. Department of Health and Human Services Agency for Health Care Policy and Research (AHCPR) now known as Agency for Healthcare Research and Quality (AHRQ)	Management of low back pain-adults	AHRQ Clearinghouse; 800-368-9295; www.ahrq.gov ; Agency for Healthcare Research and Quality; 2101 East Jefferson Street, Suite 501; Rockville, MD 20852
The Management of Persistent Pain in Older Persons	Release date: 2002	American Geriatric Society (AGS)	Management of persistent pain in older adults	American Geriatrics Society; The Empire State Building; 350 Fifth Avenue, Suite 801; New York, NY 10118; 212-308-1414; www.americangeriatrics.org

American Pain Society Quality Improvement Guidelines for the Treatment of Acute and Cancer Pain

- Recognize and treat pain promptly.
 - Chart and display patient's self-report of pain.
 - Commit to continuous improvement of one or several outcome variables.
 - Document outcomes based on data and provide prompt feedback.
- Make information about analgesics readily available.
- Promise patients attentive analgesic care.
- Define explicit policies for use of advanced analgesic technologies.
- Examine the process and outcomes of pain management with the goal of continuous improvement.

(18) Source: *JAMA*, 1995; 274:1874-1880. Used with permission

across the health care field by entities ranging from government agencies to accrediting organizations to professional societies to legal experts. Although similarities exist among them, there also are some distinct differences that should be kept in mind to prevent confusion over terminology (see box on pg. 11).

Although criteria can be highly beneficial for assessing and improving organizational performance and quality of care, health care organizations must ensure that the sources are credible, evidence-based where applicable, scientifically sound, and accepted by clinicians. As options for managing pain continue to evolve, it is important to consider the extent to which information in the criteria reflect the current state of knowledge. Some criteria are subject to established cycles of review and revision, while others are not. For example, a recent study designed to assess the current validity of 17 guidelines developed by the Agency for Healthcare Research and Quality (AHRQ) (including the landmark 1992 postoperative pain guidelines) and to use this information to estimate how quickly guidelines become obsolete, led

to the recommendation that, as a general rule, guidelines should be reassessed for validity every 3 years.¹⁹

3. Mandated Criteria

Another important set of criteria consists of those mandated by federal, state and local statute or regulation. All health care professionals and organizations need to be aware of the statutes and regulations applicable to their practice. Though a detailed discussion is beyond the scope of this monograph, due in part to the complexity and changing nature of such criteria, an introduction with references is provided.

a. Statute

A statute is a law created by a legislative body at the federal, state, county, or city level. Commonly called a law or an act, a single statute may consist of just one legislative act or a collection of acts.²⁰ Examples include the Pain Patient's Bill of Rights (California, 1997) and the Intractable Pain Act (West Virginia, 1998).

b. Regulation

A regulation is an official rule or order issued by agencies of the executive branch of government. Regulations have the force of law and are intended to implement a specific statute, often to direct the conduct of those regulated by a particular agency.²⁰ An example is the 1999 pain management regulation provided by the Washington Medical Quality Assurance Commission.

Detailed information on state statutes and regulations addressing multiple aspects of pain management is available from the Web site for the Pain and Policies Study Group, University of Wisconsin Comprehensive Cancer Center, which is a World Health Organization collaborating center for policy and communication in cancer care (www.medsch.wisc.edu/painpolicy/). The Pain and Policy Studies Group publishes an annual review of state pain policies on its Web site; this review summarizes and comments on each new or amended state statute, regulation, and medical board policy affecting pain management. The complete citation, full text, and Internet citation also are provided for each pain-related policy.

Comparing Criteria: Guidelines, Standards and Consensus Statements

Similarities

- They are useful for establishing expected or desired levels of performance that are credible, evidence-based, and recognized by professionals.
- Scientific evidence and/or expert consensus are used in development.
- They can be multidisciplinary in scope and focus.
- Usually compliance is considered voluntary rather than mandated by law.
- They are useful for improving consistency and reducing variation in care processes and for evaluating links between processes of care and outcome quality management.
- They can serve to educate clinicians, organizations, and others in the health care community regarding advances in the field and subsequent care recommendations.

Differences

- The intended audience can vary widely. For example, guidelines are often written for clinicians who deliver care, while standards often are written for a broader audience such as a department or organization.
- The intended purpose can vary. For example, standards of all types are frequently seen as authoritative statements, expectations, or requirements and are used at the level of assessment for organizations or programs. Guidelines, on the other hand, generally are viewed as strategies for clinical decision-making, and hence are more flexible. They also are used to develop protocols allowing for clinically justifiable deviations in treating individual patients or for alleviating specific conditions or symptoms.
- The degree of clinical certainty can vary across and even within each criterion category based on the developmental approach used and the availability of documented scientific evidence.

Table 2. Consensus and Position Statements

Title	Date of Release	Developer	Focus/Application	Contact Information
Quality Improvement Guidelines for the Treatment of Acute Pain and Cancer Pain	1995	American Pain Society Quality of Care Committee	Improving treatment for patients with acute pain and cancer pain.	American Pain Society 4700 W. Lake Ave; Glenview, IL 60025-1485; www.ampainsoc.org
The Use of Opioids for the Treatment of Chronic Pain: A Consensus Statement From American Academy of Pain Medicine and American Pain Society	1996	American Academy of Pain Medicine and American Pain Society	The management of chronic pain	American Pain Society; 4700 W. Lake Ave; Glenview, IL 60025-1485; www.ampainsoc.org; or American Academy of Pain Medicine; 4700 W. Lake Ave; Glenview, IL 60025-1485; www.painmed.org
Treatment of Pain at the End of Life: A Position Statement from the American Pain Society	1997	American Pain Society	The management of pain at the end of life	American Pain Society; 4700 W. Lake Ave; Glenview, IL 60025-1485; www.ampainsoc.org
Pediatric Chronic Pain: Position Statement	2001	American Pain Society	The special needs in pediatric chronic pain assessment, treatment, research, and education	American Pain Society; 4700 W. Lake Ave.; Glenview, IL 60025-1485; www.ampainsoc.org
Pain Assessment and Treatment in the Managed Care Environment: A Position Statement from the American Pain Society	2000	American Pain Society	Assist managed care organizations (MCOs) in advancing the quality of pain management services and the patient satisfaction and clinical outcomes for people receiving care through these organizations	American Pain Society; 4700 W. Lake Ave; Glenview, IL 60025-1485; www.ampainsoc.org
Oncology Nursing Society Position on Cancer Pain Management	2000	Oncology Nursing Society (ONS)	Pain management in patients with cancer	Oncology Nursing Society; 501 Holiday Drive; Pittsburgh, PA 15220; www.ons.org
The Assessment and Management of Acute Pain in Infants, Children, and Adolescents	2001	American Pain Society; AND American Academy of Pediatrics	Pediatric acute pain	American Pain Society; 4700 W. Lake Ave.; Glenview, IL 60025-1485; www.ampainsoc.org or American Academy of Pediatrics; 141 Northwest Point Blvd.; P.O. Box 927; Elk Grove Village, IL 60009-0927; www.aap.org

Table 2. Consensus and Position Statements (continued)

Title	Date of Release	Developer	Focus/Application	Contact Information
Circumcision Policy Statement	March 1999	American Academy of Pediatrics	A policy statement on neonatal circumcision of the male infant	American Academy of Pediatrics; 141 Northwest Point Blvd.; P.O. Box 927; Elk Grove Village, IL 60009-0927; www.aap.org
Prevention and Management of Pain and Stress in the Neonate	February 2000	American Academy of Pediatrics and Canadian Pediatric Society	A policy statement regarding the recognition and management of pain in neonates (preterm to 1 month of age)	American Academy of Pediatrics; 141 Northwest Point Blvd; P.O. Box 927; Elk Grove Village, IL 60009-0927; www.aap.org
Symptom Management: Pain, Depression, and Fatigue (draft statement)	July 2002	State of the Science Conference Statement, Expert Panel	Assessment by expert panel of medical knowledge at the time the statement was written regarding symptom management in cancer	State of the Science Statements; NIH Consensus Development Program; www.consensus.nih.gov
Definitions Related to the Use of Opioids for the Treatment of Pain, A Consensus Document	2001	The Liaison Committee on Pain and Addiction. The committee is a collaborative effort of the American Academy of Pain Medicine, American Pain Society & American Society of Addiction Medicine	Definitions of addiction, tolerance and physical dependence	American Academy of Pain Medicine; 4700 W. Lake Avenue; Glenview, IL 60025-1485; www.painmed.org or American Pain Society; 4700 W. Lake Avenue; Glenview, IL 60025-1485; www.ampainsoc.org or American Society of Addiction Medicine; 4601 North Park Avenue; Arcade 101; Chevy Chase, MD 20615; www.asam.org
Clinical Policy: Critical Issues for the Initial Evaluation and Management of Patients Presenting With a Chief Complaint of Nontraumatic Acute Abdominal Pain	2000	American College of Emergency Physicians	Evaluation and management of patients presenting with a chief complaint of nontraumatic acute abdominal pain.	American College of Emergency Physicians; Customer Service Dept.; P.O. Box 619911; Dallas, TX 75261-9911; www.acep.org ; 800-798-1822; Ann Emerg Med. October 2000;36:406-415

SECTION III:

Understanding Organizational Improvement In Pain Management

A. Viewing the Organization as a System

Recent trends in health care performance assessment indicate organizations are moving toward systems techniques and approaches that originated in industrial improvement models. A system is a group of interacting, interrelated, or interdependent elements or processes that form a collective entity and share a common goal.²¹ Taking a systems approach means emphasizing the organization as a whole, focusing on the interconnectivity of processes and underlying structures, recognizing relationships and interactions across the organization, and identifying root causes of problems. **Figure 1** illustrates how an organization's culture and leadership are influenced by patients (customers), staff (people), strategies, and processes.

Similarly, improving pain management performance requires “systems thinking,” much like that used for identifying opportunities to improve the medication use process.^{23,24} The use of a systems approach when designing or redesigning processes requires one to consider ways to overcome potential process or task design failures in such areas as equipment, organizational and environmental factors, psychological precursors, as well as team building and training.²⁵

Experts consistently emphasize the need for a system-wide, collaborative, and interdisciplinary approach to pain management.^{17,26-28} Strategies for improving pain management can be viewed in relation to a system composed of:

- Inputs—including patients, clinicians, technology, equipment, pharmacologic and nonpharmacologic therapies.
- Throughputs—care processes.
- Outputs—including patient satisfaction, pain experience, outcomes (e.g., morbidity, length of stay), changes in clinician behavior, and healthcare utilization (e.g., emergency room visits, rehospitalization).

Improvement efforts will produce the greatest effect when inputs and throughputs are simultaneously addressed by altering how these elements interact to change outputs.²⁹ As Donald Berwick, MD, has said, “Every system is perfectly designed to achieve exactly the results it achieves” (cited in reference 29, p. 6). Poorly designed systems often lead to inefficiency and inadequate quality of care. Understanding and simplifying the steps of a process can yield substantial improvements in performance.

B. Understanding Pain Management

As with any clinical performance evaluation, it is essential to obtain and review the latest information available before proceeding. The rapidly expanding body of evidence-based findings related to pain management makes it imperative to conduct such a review before implementing quality improvement activities. Resources include criteria (guidelines, consensus statements, and standards), journal articles, texts, Web sites, and other publications. McCaffery and Pasero²⁷ suggest that pain management reference materials, including books, journals, and videos, be used to create an institutional library. Sources useful in identifying reference materials include: City of Hope Pain/Palliative Care Resource Center Web site (www.cityofhope.org/prc) and Department of Pain Medicine and Palliative Care at Beth Israel Medical Center Web site (www.stoppain.org). In addition, conferences, professional society meetings, research symposia, and educational seminars are often great sources of new or “cutting edge” infor-

Figure 1. Dynamics of Systems Thinking in Relation to the Health Care Organization



(22) This figure illustrates how an organization's strategies, patients, staff, and processes affect its culture and leaders. Reprinted with permission from Labovitz G, Rosansky V. *The Power of Alignment: How Great Companies Stay Centered and Accomplish Extraordinary Things*. Copyright © 1997 John Wiley & Sons, Inc. This material is used by permission of John Wiley & Sons, Inc.

mation. They also provide the opportunity for staff to gain new skills, network with other organizations, and meet recognized experts in the field.

Participating in research as a test site can be an excellent opportunity for organizations. Benefits may include access to newly developed technology, data collection strategies, education, and support services as well as aggregate comparative information. To learn about research opportunities, check with academic institutions, professional societies, and government agencies (e.g., the Agency for Healthcare Research and Quality [formerly known as the Agency for Health Care Policy and Research]). It is important that healthcare institutions support research through funding, active participation and dissemination of research findings at profes-

sional and scientific meetings. These activities are critical to creating and maintaining exemplary practice in clinical services across all types of settings.

C. Institutionalizing Pain Management

The process of integrating good pain management practices into an organization's everyday life requires a comprehensive approach that includes—and goes beyond—performance improvement to overcome barriers and to achieve fundamental system changes. Researchers and pain management experts have identified a core set of activities characterized by the use of an interdisciplinary approach to facilitate these system

Eight Steps to Develop an Institutional Pain Management Program

- Develop an interdisciplinary work group.
- Analyze current pain management in your care setting.
- Articulate and implement a standard of practice.
- Establish accountability for pain management.
- Provide information about pharmacologic and nonpharmacologic interventions to clinicians to facilitate order writing and interpretation and implementation of orders.
- Promise individuals a quick response to their reports of pain.
- Provide education for staff.
- Continually evaluate and work to improve the quality of pain management.

(26) Gordon DB, Dahl JL, Stevenson KK, eds. *Building an Institutional Commitment to Pain Management. The Wisconsin Resource Manual*. 2nd ed. Madison, WI: The Resource Center of the American Alliance of Cancer Pain Initiatives; 2000. Used with permission.

changes.^{18,26,27} Collectively, this interdisciplinary approach and the related activities have been referred to as “institutionalizing pain management.” These strategies provide a foundation for system change and effective performance improvement activities. An example of the steps associated with institutionalizing pain management is provided in the text box above.

Three books that provide extensive information on institutionalizing pain management include *Building an Institutional Commitment to Pain Management: The Wisconsin Resource Manual*,²⁶ *Pain Clinical Manual*,²⁷ and *Pain Assessment and Management: An Organizational Approach*.³⁰ Organizational experiences and successful efforts to institutionalize pain management are also reported in journal articles.^{28,32-34,117}

Among the suggested steps to institutionalize pain management are activities common to modern quality improvement meth-

ods. These include forming a multidisciplinary committee of key stakeholders, analyzing current pain management practice performance, and improvement through continuously evaluating performance. Although many steps are common to a quality improvement initiative, they may differ in scope. For example, the multidisciplinary committee charged with integrating quality pain management throughout the organization will often be addressing mission and policy statements, standards of care, accountability, and overall practice issues. By contrast, a quality improvement work group generally has responsibility for a focused improvement activity (see Section IV.A [Establishing the Project Team]). The multidisciplinary committee may be established as a formal body first, or in some organizations may evolve from a quality improvement project team.³⁵ Depending on the size of the organization and available resources, the committee may fulfill both roles.

D. Understanding Current Pain Management Practices in Your Organization

One of the first priorities is to complete a comprehensive evaluation of the organization’s structures, processes, and people, referencing key criteria for quality pain management practices. This organizational assessment may involve multiple data collection activities including review of organizational resources, documents, and medical records; completion of a self-assessment tool; and assessment of staff knowledge and attitudes. These measurement approaches, including references for organizational self-assessment instruments, are further described in Section V (Measuring What You Need to Know).

Understanding patient (or client) factors is essential to completing the picture of current management practices. No pain initiative can succeed if patient needs are not carefully evaluated and addressed. A common starting point is an examination of the answers given by patients and families to the questions on satis-

faction surveys. It is important to note that researchers find that satisfaction survey results, though important, often indicate a high level of satisfaction even though pain intensity ratings show that individuals may be experiencing significant degrees of pain.³⁶⁻⁴² Satisfaction surveys also fail to capture significant patient-specific issues critical to successful pain management in that they generally do not assess patient knowledge and beliefs. It is essential that patients know how and to whom to report pain as well as understand their treatment regimen. Measurement of patients' knowledge, attitudes, and beliefs through the use of assessment instruments is discussed further in Section V.C.3 (Test Knowledge and Attitudes). This information is important to developing needs-based education and recognizing patient barriers (see Section VIII.A [Factors That Influence Change]). Other patient-related considerations that may figure significantly in designing a pain management improvement activity include:

- Specific special-risk groups such as the elderly, children, and the cognitively impaired.
- Special pain relief needs related to cancer or chronic/acute illness.
- Unique demographic characteristics (e.g., ethnic/cultural, language, educational level).
- Information obtained about current pain intensity levels derived from patient-reported ratings.

Obtaining objective data related to these patient and institutional factors will result in a better evaluation of organizational performance. A thorough understanding of your organization's current practices will provide a solid foundation for making recommendations, gaining needed support, and designing successful improvement interventions.

E. Understanding Quality Improvement Principles

The past decade has been marked by an evolution in health care toward the use of modern quality improvement methodologies.²⁹ Though several different

frameworks exist, virtually all include defined steps that function as an operational model for implementing improvement processes. **Figure 2** presents the widely used PDSA (Plan, Do, Study, Act) framework developed by Langley et al.²¹ A worksheet of key questions associated with this cycle is provided in Appendix B.

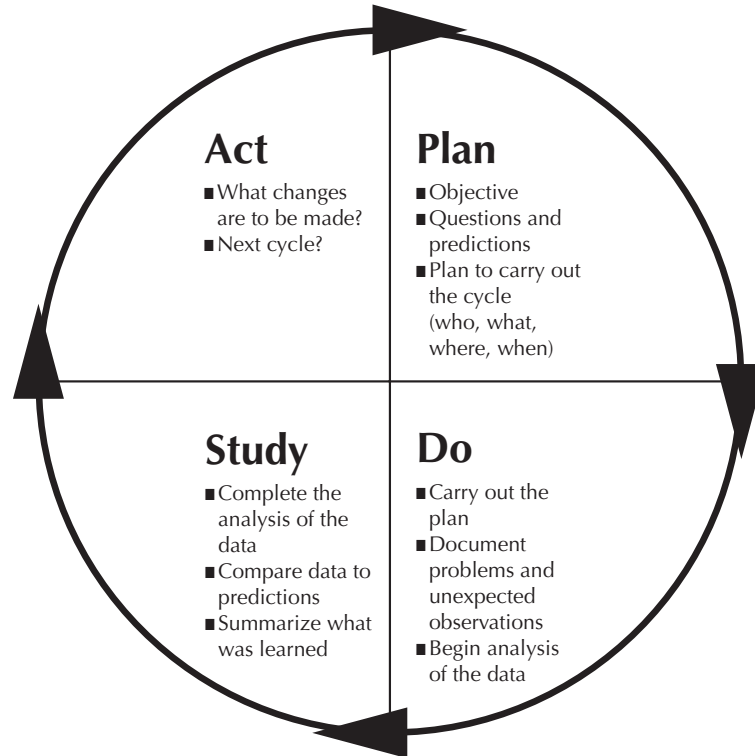
1. The Cycle for Improving Performance

This monograph has adopted JCAHO's *Framework for Improving Performance*, which includes a cycle similar to the PDSA cycle.⁴⁴ The JCAHO Cycle for Improving Performance describes critical activities common to many improvement approaches and provides for systematic, scientifically oriented action (**Figure 3**). The cycle is one component of the framework that also recognizes factors in the external and internal environment that influence organizational performance.

As shown in **Figure 3**, the cycle is a continuous process with four major activities: design, measure, assess, and improve. All four activities are important and must be addressed to achieve a balanced, effective approach. In the *design* phase, a function or process is created; in the *measure* phase, data are gathered about the process to create an internal database for evaluating performance; in the *assess* phase data are analyzed to identify areas for improvement or to assess changes; and in the *improve* phase changes required to improve upon the original function or process are implemented. This highly flexible cycle allows health care organizations to begin at any phase, and apply it to a single activity or an organization-wide function.

2. Repeating the Cycle at Different Phases of the Project

Whether one selects the PDSA cycle, the Framework for Improving Performance, or a different approach, most improvement initiatives will require repeating the cycle for different phases of the project. For example, if the quality management staff has identified

Figure 2. The PDSA Cycle

From: Langley GJ, Nolan KM, Nolan TW. The foundation of improvement. *Quality Progress*. June 1994;81-86.
 Reprinted in Joint Commission on Accreditation of Healthcare Organizations. *Using Performance Improvement Tools in a Health Care Setting*. Rev ed. Oakbrook Terrace, IL: Joint Commission on Accreditation of Healthcare Organizations; 1996.

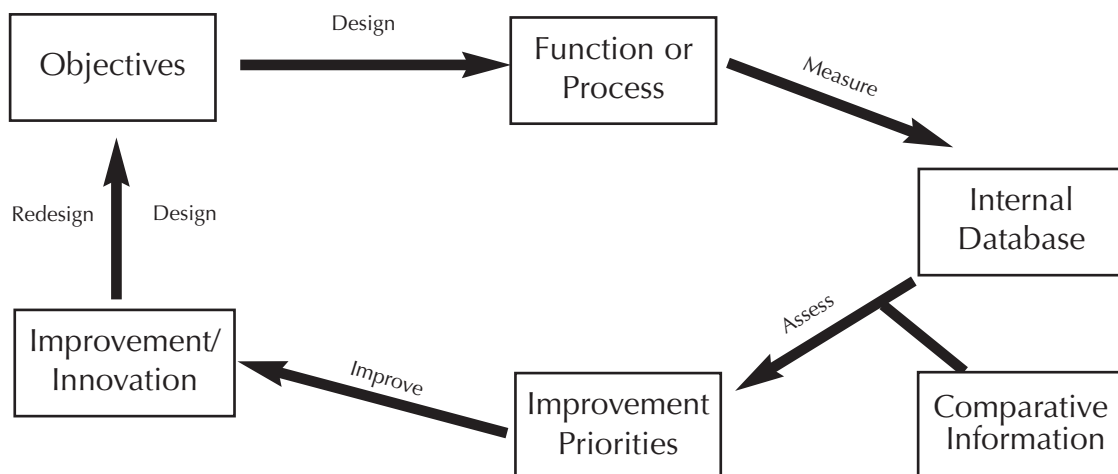
infrequent patient reassessment as a problem, they may take steps to organize a team to determine an overall goal for improving reassessment practices (design/plan); use self-assessment tools and medical record audits to measure the extent of the problem across the organization (measure/do); collect and analyze data on reassessment in representative patient care units (assess/study); and prioritize potential improvement options and implement interventions (improve/act).

After agreement among quality management staff members that a multifaceted educational intervention for nurses is needed, the cycle would repeat. The education would

be planned across shifts (design/plan), the education would be implemented as a pilot test on a single unit by having staff complete a pretest examination before the education (measure/do), the education would be conducted (improve/act), and a posttest examination would be completed and the change in scores would be analyzed (assess/study). At that point, the education would be modified as needed and incorporated into orientation and other required education activities.

Table 3 provides examples of some different activities associated with the cycle for each stage of the improvement initiative.

Figure 3. Cycle for Improving Performance



From: Joint Commission on Accreditation of Healthcare Organizations. Framework for Improving Performance: From Principle to Practice. Oakbrook Terrace, IL: Joint Commission on Accreditation of Healthcare Organizations; 1994.

Table 3. Examples of Tasks Associated with Each Stage of the Improvement Cycle

Phase of Quality Improvement Initiative	Design/Plan	Measure/Do	Assess/Study	Improve/Act
Understanding the problem	<ul style="list-style-type: none"> Organize team Set overall project goals Integrate with organizational priorities 	<ul style="list-style-type: none"> Collect baseline data 	<ul style="list-style-type: none"> Compare to established norms Identify opportunities for improvement 	<ul style="list-style-type: none"> Identify potential actions Prioritize actions
Implementing the improvement/intervention	<ul style="list-style-type: none"> Set target goals, desired levels of performance Plan intervention schedule Obtain resources, approvals 	<ul style="list-style-type: none"> Pilot-test intervention Collect pilot data Collect data to evaluate effectiveness of intervention 	<ul style="list-style-type: none"> Assess effectiveness of pilot (redesign if necessary) Analyze data on intervention effectiveness Compare results to goals 	<ul style="list-style-type: none"> Implement full intervention
Continuous monitoring	<ul style="list-style-type: none"> Determine who, when and how monitoring will be done 	<ul style="list-style-type: none"> Remeasure at regular intervals 	<ul style="list-style-type: none"> Reanalyze periodically Disseminate findings 	<ul style="list-style-type: none"> Modify intervention if needed Identify new opportunities for improvement

3. *Integrating With Internal Quality Improvement Activities*

Ideally, pain initiatives should be integrated into existing improvement functions. Taking advantage of established institutional improvement structures will help ensure support of key leadership and involvement of staff with quality improvement expertise and dedicated resources. Look for ways to emphasize pain management improvement within the context of overall organizational improvement goals.

It is useful to examine previous successful performance improvement initiatives at your organization to identify the factors that lead to success. Studying successful pain improvement initiatives completed by other organizations also can be valuable. This can be done by:

- Networking through professional societies

- Using Web-based communications such as the list-serv
- Attending educational conferences
- Participating in learning networks and organizational performance improvement workshops such as those offered by the Institute for Healthcare Improvement (www.ihl.org) or Joint Commission Resources, Inc. (www.jcrinc.com)

To learn from organizations that have received special recognition for quality improvement practices, examine the initiatives of winners of national quality awards such as the Malcolm Baldrige award (administered by the U. S. Department of Commerce) or the Ernest Codman award (Ernest A. Codman Award Program, JCAHO, www.jcaho.org).

SECTION IV:

Designing Your Pain Management Improvement Initiative

A. Establishing the Project Team

The composition of the project team is extremely important to the success of the improvement project. As with any health care issue, it will be important to include key stakeholders, including people with the necessary knowledge and skill in care processes, “change champions” (motivated individuals who reinforce effective pain management behaviors and influence peers), and those individuals with the authority to support change (administrators). Improving pain management will require the participation of multiple groups within an organization, and the team should reflect the interdisciplinary nature of the process. As major decision makers, physicians should be engaged early in the planning stages, or efforts to change care are likely to fail.⁴⁵ Some suggestions for engaging physicians in quality improvement activities are presented in the box on page 22. Because the pain management process could potentially involve many individuals, it may be practical to develop a core group and enlist additional members who participate as necessary on specific issues.³⁵ Be sure to keep all members informed, especially if they do not attend all meetings, through communications proven to be most effective in your organization such as minutes, e-mail, phone, or newsletters.

Once the team is identified, define and assign roles and responsibilities. For example, in one hospital’s initiative to increase evidence-based pain management practice, roles were specifically defined for pain team members during the 3-year project (see **Table 4**).⁴⁶

Another approach used by some organizations utilizes a “contract,” or written statement of responsibilities and commitment for team members.

Several additional factors important to successful implementation of quality improvement teams are shown in the box on page 23.

B. Selecting Objectives and Target Goals

Once the team is in place, the next step is to define objectives for the organization’s measurement efforts. As previously noted, criteria such as those described in Section II (Getting Started on Measurement to Improve Pain Management) provide valuable evidence-based principles and processes for evaluating pain management. In particular, the American Pain Society quality improvement guidelines often are used to establish improvement goals and objectives.¹⁸ Improvement opportunities may be identified by comparing your organization’s current practice (using objective assessment data) with criteria.

If multiple opportunities are identified, objectives need to be prioritized, with one or two eventually selected. Objectives should be manageable and measurable, and should reflect expectations that are meaningful to patients as well as to health care professionals. The following statements are examples of objectives:

- A pain assessment will be completed upon admission.
- A patient-identified acceptable pain level will be noted on the chart.
- Staff that manages specialized pain therapy techniques will have successfully completed competency testing.
- Patient-reported pain intensity scores will be recorded in their chart.

Some organizations may further define the objective by adding a target performance goal. For example, the first objective could have an assigned target goal of 90%. The target goal describes a desired level of performance and serves as a “ruler” for measuring

Getting Physicians Involved in the Quality Improvement Process

Eight questions to ask:

- Do physicians in your organization feel excluded from the team at the outset?
- Are incentives poorly defined and identified?
- Is the team too rigid in laying out its tasks?
- Are goals and objectives vague or unrealistic?
- Are there too few data, or is there misuse of data?
- Is there a solid connection between the problem and its relevance to patient care?
- Does the approach emphasize scientific methods?
- Does the team have the needed expertise in continuous quality improvement techniques, skill measurement, and data analysis (i.e., a data analyst or statistician)?

Eight solutions to consider:

- Choose an important project with clear goals.
- Include physicians on the ground floor. Ask what quality improvement issues they would like to see measured and monitored.
- Focus on data that are readily available, timely, and valid.
- Adjust outcomes data appropriately to avoid misuse.
- Recognize physician bias. Physicians care more about clinical outcomes and less about quality improvement processes. Clearly identify benefits of quality improvement to physicians and their patients.
- Use physician time wisely: avoid meetings during office hours, and use fax, phone, teleconferencing, and e-mail as alternatives to face-to-face meetings.
- Avoid engaging physicians in activities that require long training sessions and excessive use of quality improvement terminology.
- Strive to involve a few physicians who are opinion leaders.

Adapted from reference 45.

improvement. At the same time, setting incremental goals may provide positive incentives as success is achieved in a defined way. One example of using target goals to develop an internal “report card” for selected measures of pain management performance is described by Starck et al.⁴⁸ A modified American Pain Society Patient Outcome Questionnaire and a second instrument to assess consistency of the hospital’s processes with the AHCPR guideline were used to collect data and to develop a pain management report card. The report card established desired target goals against which actual performance was compared.

C. Establishing the Scope of Measurement

Once the team determines what to measure (setting the objectives), it needs to decide the scope of measurement. Measurement options can be defined in a number of ways:

- Discipline-specific measurement focuses on a particular discipline (e.g., nursing, medicine, pharmacy) and probably is most applicable when the intervention is exclusive to the measured group and discipline-specific knowledge and skills can be assessed.
- Service or unit-specific measurement may be useful when the improvement activity is limited to a specific area such

Table 4. Examples of Roles and Behaviors for Pain Project Team Members

Team Member	Role/Behavior
Clinical nurse specialist	Lead and coordinate implementation strategies in each patient care population; pain program faculty member for pain assessment, complementary therapy, and case study sections
Clinical pharmacist	Lead and coordinate implementation strategies that involve pharmacologic strategies; especially helpful in physician order changes; pain program faculty member for opioid, nonsteroidal anti-inflammatory drug, and case study sections
Physician	Develop, advise, and deliver physician education; lead opioid order revision; pain program faculty member for physiology
Researcher	Develop project plan and proposal; obtain funding; coordinate implementation, data collection, analysis, and outcome dissemination; provide overall leadership for project; pain program faculty member for project processes and outcomes
Program director	Develop educational material, obtain funding, assimilate project literature and materials, and garner institutional support

Source: Miller EH, Belgrade MJ, Cook M, et al. Institutionwide pain management improvement through the use of evidence-based content, strategies, resources, and outcomes. *Quality Management in Health Care*. 1999;7(2):33. Used with permission.

as a postoperative recovery or hospice unit.

- Population-specific measurement based on diagnoses or symptoms targets a defined patient group—possibly across more than one unit—such as sickle cell or chronic pain patients.
- Organization-wide measurement deals with all patients and service areas and is useful when implementing process changes such as use of a specific pain assessment tool.
- Health system-wide measurement looks at organizations within the same administrative management system and is used when assessing activities across multiple sites. For example, the Veterans Health Administration adopted a national monitoring strategy for pain management which is described in Section IX.

Finally, the scope of measurement should be aligned with stated measurement objectives and target goals. For example, it would be insufficient to measure a single unit for an organization-wide objective.

Common Characteristics of Successful Quality Improvement Teams

- Clear goals and a written charter
- Clarity of each member's role
- A standard process for team meetings and the team's work
- Trained and oriented team members
- External support and recognition
- Effective leadership and facilitation
- Collaborative problem solving and decision making
- Presence of leadership with the resources to implement proposed solutions
- Time for team meetings and assigned team work

Adapted from reference 47.

D. Identifying Resources and Project Timeline

The final steps of the planning process include determining necessary resources and a timeline. Resources will be needed to support the quality improvement team's work as well as to implement improvement interventions. Improvement interventions may involve patient-care related equipment (e.g., patient-controlled analgesia pumps), written materials (e.g., educational booklets, surveys, instructions, assessment instruments), and media (e.g., teaching videos). Project-related resources may include equipment (e.g., computers, printers), supplies (e.g., paper, flip charts, poster-boards,) and staff time (e.g., for data collection, analysis, meetings, attendance at educational programs).

Whenever possible, adapt and adopt from existing reference materials to save precious staff time and benefit from previous research. Fortunately, there is a rich foundation of materials developed and published by pain researchers to address organizational, clinician, and patient assessment as well as institutional policy statements and standards.

Examples of some of these materials are referenced in Section V (Measuring What You Need to Know). Additional publications include:

- *Pain Clinical Manual*²⁷
- *Building Institutional Commitment to Pain Management. The Wisconsin Resource Manual*²⁶
- *Pain Assessment and Management: An Organizational Approach*³⁰
- *Examples of Compliance: Pain Assessment and Management*.⁴⁹

Finally, the team must develop a timeline based on realistic estimates for each step of the project; underestimating the amount of time required is a common pitfall. Important project steps include the baseline performance assessment, pilot testing, redesign (if indicated), retesting, and full-scale implementation. The timeline can be as short as a few weeks for simpler improvement efforts or as long as several years, which may be required to complete comprehensive quality improvement projects.³²

SECTION V:

Measuring What You Need to Know

In the design/planning phase, specific objectives and the scope of measurement for the improvement activity are identified. Careful planning to select project objectives that are measurable will help your organization prepare for the next step: data collection. Data collection is used throughout the improvement project, beginning with the assessment of current performance and continuing during and after interventions to document change. Deciding *how* to collect the data (i.e., the measurement approach) is an important decision. Several considerations when selecting an approach are discussed in this section, and several measurement approaches are presented.

A. Consider Your Measurement Approach

Measurement involves the collection of specified values or facts. The data selected for collection should support analysis of the goals and objectives identified for the project. The method used in data collection, together with the identified data source(s), constitutes the measurement approach. In some instances the approach includes well-defined data elements and collection processes such as those required for the Minimum Data Set (MDS) by the Center for Medicare and Medicaid Services (formerly the Health Care Financing Administration) or for participation in a performance measurement system. In other approaches, the organization-specific data elements, sources, and collection process will have to be identified.

Many options exist for measuring performance. In Section V.C (Selecting a Measurement Approach), the following measurement approaches are described and an organizational example specific to pain

management is provided for each:

- Conduct organizational self-assessment
- Review medical records
- Test knowledge and attitudes
- Directly observe the care
- Conduct a point prevalence study
- Assess patient status and outcome over time
- Collect indicator data
- Utilize an externally developed performance measurement system.

Regardless of the method or measurement approach selected, there are some common data collection issues to consider. Obtaining quality data that can support performance assessment is critical to a successful improvement initiative. The following provides an overview of the issues of data quality, data quantity, and use of data collection instruments.

1. Data Quality

Ensuring data quality is an essential component of the measurement initiative. High-quality data are needed to establish the validity of the measurement and improvement initiative (e.g., the extent to which the concept being assessed is accurately measured and that the improvement is a true improvement).⁵⁰

There are several issues to consider relative to data quality. Some issues apply at the data element level, while others apply after data elements have been aggregated (e.g., indicator rates). Data quality issues can be described by using the concepts of accuracy, completeness, and consistency.

a. Accuracy

The accuracy of information at the data element level is a function of the definitions (e.g., clarity and thoroughness), categorizations (e.g., whether categories are appropriate, comprehensive, and mutually exclusive), and the overall clarity and readability of the instructions and documentation (e.g., inclusion and exclusion criteria). Often, it is necessary to describe a preferred source of data, because even simple items like patient age can be recorded differently and in more than one place (e.g., on the chart versus in the admission database). When aggregating mul-

multiple data elements to arrive at calculated values (e.g., rates), the number and complexity of steps can affect the accuracy of the information.

b. Completeness

Completeness refers to the extent of missing data. The more data elements needed, the greater the opportunity for missing data.

c. Consistency

Consistency is often referred to as reliability. Reliability is the extent to which the measure or data collection tool, when repeatedly applied to the same population, yields the same results a high proportion of the time. Three categories of reliability assessment include: internal consistency (used for scores created from multiple items), interrater (used for medical record abstraction), and test-retest (used for survey measures).⁵⁰ To enhance consistency, one may want to consider these questions: Are different departments using different pain scales or assessment tools? Are all patients being instructed consistently in how to use the tool? Will data collection be completed by a few individuals, or many staff members? How will consistency between data collectors (interrater reliability) be ensured?

No data source or data collection process is perfect; there are always trade-offs to consider. For example, data from automated sources may be more reliable than data that are manually abstracted, but the information in automated sources (e.g., administrative) may be less clinically robust. Using scannable forms can decrease errors associated with data entry, but may limit the types of responses that can be entered. In general, as more people become engaged in data collection, the reliability of the process decreases. However, limiting responsibility for data collection to one or two people risks the possibility that staff turnover, illness, or reassignments can substantially derail your project. This potential problem can be mitigated somewhat by cross-training people to perform different functions.

Data quality can be greatly enhanced by formal training and testing of data collection procedures. These steps may initially require extra time and resources, but will result in

Examples of Approaches to Assessing Data Quality

Automated edit checks. The use of data collection software allows for built-in edits to promote data integrity. This is a benefit of using an automated approach to collect data because some errors can be found and corrected at the point of data entry. Also, missing data can be minimized by software prompts alerting the user of needed responses.

Periodic reabstraction by a person other than the usual data collector for a sample group of patient records. This approach is commonly used for manually abstracted data on a monthly or quarterly basis. A certain number or percentage of patient records are pulled at random, and someone reabstracts the same data by using the same data collection tool as the original data collector to determine an error rate. This method is referred to as “interrater or interobserver reliability.” Frequently occurring errors are investigated to determine possible causes, and actions are taken to prevent the errors from recurring.

Duplicate data entry. Companies that specialize in survey research often require all or a subset of data to be entered twice (by two people or one) to assess and ensure accuracy in data entry.

Run aggregate frequencies and means on individual data elements and rates. The first step in data analysis is most useful to identify data quality problems. Typically, one uses database software (such as Microsoft Excel or Microsoft Access [Microsoft Corporation, Redmond, WA]) to identify cases with missing values as well as outlier values (e.g., ages over 200 years, excessive lengths of stay). One then needs to follow up with original data sources to confirm or correct inaccurate information.

Adapted from reference 47.

enhanced credibility of results and buy-in from stakeholders in the long run.

Early in the process, it is important to determine how you will monitor the quality of your data. Remember that monitoring data quality needs to be done at regular intervals, determined by the length of the project. Examples of different approaches are provided in the box on the previous page.

2. Data Quantity

A second consideration is the quantity (amount) of data you will need. Quantity is affected by both the total amount of data needed and the frequency with which data are collected. The amount of data needed depends on the type of analysis you plan to do and the level of confidence you want to have in your results. If you plan to use sophisticated statistical analyses and/or intend to generalize your findings from a sample to the population, you may want to use a power analysis formula to calculate the necessary sample size. See Scheaffer et al.⁵¹ and Fowler⁵² for more information on sample size issues. Statisticians frequently recommend a minimum of 30 cases in each group for analysis. It is always wise to consult with the experts on sample size issues.

If you cannot collect data on all patients in the population of interest, you can use sampling techniques to reduce the data collection effort. One example of a simple method for selecting a systematic random sample is provided in *Managing Performance Measurement Data in Health Care*.⁴⁷ The steps are as follows: 1) obtain a list of patients in the order in which they were treated, 2) count the number of patients on the list, and 3) divide by the number needed for the sample size. The resulting number will be the interval between one patient on the list and the next patient on the list who is to be selected for the sample. In other words, if the list has 300 patients and the needed sample size is 50 cases, every sixth ($300/50 = 6$) patient record would be selected for data collection. To make sure each patient has an equal chance of being selected, it is helpful to pick the starting point ran-

Examples of Approaches for Selecting Samples

Simple random sampling is a process in which a predetermined number of cases from a population as a whole are selected for review. It is predicated on the idea that each case in the population has an equal probability of being included in the sample.

Systematic random sampling is a process in which one case is selected randomly, and the next cases are selected according to a fixed interval (for example, every fifth patient who undergoes a certain procedure).

Stratified sampling is a two-step process. First, the population is stratified into groups (e.g., male/female); second, a simple random sample is taken from each group.

Cluster sampling is a process in which the population is divided into groups; then some of the groups are selected to be sampled.

Judgment sampling is a process in which experts in the subject matter select certain cases to be sampled. Unlike the previously mentioned “probability” sampling techniques, this form of sampling is considered a “nonprobability sample.” It is likely that the sample group will not represent the population’s characteristics. However, the experts selecting the cases may be trying to change a particular process.

Adapted from reference 47.

domly (using a random numbers table or a die). Some commercial software programs such as Microsoft Excel include a random sampling procedure. Selected approaches to sampling are shown in the box above.

B. Collecting Data With Established Assessment Instruments

Organizations should use structured data collection tools, which can be paper forms and/or electronic data entry screens. They may choose to develop these forms or programs themselves, or adopt or adapt one developed by others. The result is a wide array of materials ranging from a simple chart abstraction form to a sophisticated clinical assessment product. The following definitions are provided to differentiate between various types of tools.

Data collection tool: A user-friendly composite of indicators, trigger questions, or statements aimed at eliciting performance data about specific issues of concern.⁵³ Two examples of this type of tool are the Medical Record Audit Form⁵⁴ and the Pain Audit Tool.³¹

Quality improvement tools (performance improvement tools): A collection of tested activities and nonstatistical and statistical methods designed to facilitate the process of improvement. An example of one of these tools is the cause-and-effect diagram, also called a fishbone or Ishikawa diagram. Quality improvement tools are further described in Section VI (Assessing and Analyzing Your Processes and Results).

Patient assessment instruments: Tested data collection tools designed to obtain structured information about patient health status and levels of functioning. Examples of clinical assessment instruments include the McGill Pain Questionnaire,⁵⁵ The Brief Pain Inventory,^{56,57} and the SF-36 Health Survey.^{57a} The widely used SF-36, which can be self-administered by persons over age 14 years or by using trained interviewers, measures the following eight health concepts:

- Limitations in physical activities because of health problems
- Limitations in usual role activities because of physical health problems
- Bodily pain
- General health perceptions
- Vitality (energy and fatigue)
- Limitations in social activities because of physical or emotional problems

- Limitations in usual role activities because of emotional problems
- Mental health (psychological distress and well-being).

Permission to use the SF-36 Health Survey can be obtained from the Medical Outcomes Trust at www.outcomes-trust.org.

It is useful to consider several issues when selecting clinical assessment instruments developed by others. The Medical Outcomes Trust has identified eight attributes for evaluating existing health status instruments (**Table 5**).⁵⁸ These attributes could be useful when considering the selection and use of pain assessment instruments developed by others.

One should determine whether and how the instrument has been evaluated for these attributes. Do the results indicate the instrument can be applied successfully to your organization's patient population? Learning about the development and testing of an instrument will help ensure that it will support collection of data that are meaningful and meet your performance improvement goals.

1. Pain-Specific Instruments

Specific instruments have been developed by researchers to assess for the presence of pain, the intensity of pain being experienced, and the impact of pain on the individual's activities of daily living. In general, these instruments may be grouped into those that measure a single dimension (e.g., pain intensity) and those that measure multiple dimensions (e.g., pain intensity, duration, frequency, history, and impact on activities of daily living). Some examples of common unidimensional and multidimensional instruments are presented in **Table 6**. Additional information also is available in the companion monograph, *Pain: Current Understanding of Assessment, Management, and Treatments*, Section II, Assessment of Pain,⁹ and later in this section within specific measurement approach descriptions.

2. Choosing Pain Instruments

Considerations when selecting instruments for measuring pain include:

- The type of pain to be evaluated.

Table 5. Scientific Review Criteria for Health Status Instruments

Criterion	Description
Conceptual and measurement model	A conceptual model is a rationale for and description of the concept(s) that the measure is intended to assess and the relationship between those concepts. A measurement model is defined as an instrument's scale and subscale structure and the procedures followed to create scale and subscale scores.
Reliability	The principal definition of test reliability is the degree to which an instrument is free from random error. A second definition of reliability is reproducibility or stability of an instrument over time (test-retest) and interrater agreement at one point in time.
Validity	The validity of an instrument is defined as the degree to which the instrument measures what it purports to measure. There are three ways of accumulating evidence for the validity of an instrument: 1) content-related: evidence that the content domain of an instrument is appropriate relative to its intended use; 2) construct-related: evidence that supports a proposed interpretation of scores on the instrument based on theoretical implications associated with the constructs; and 3) criterion-related: evidence that shows the extent to which scores of the instrument are related to a criterion measure.
Responsiveness	Sometimes referred to as sensitivity to change, responsiveness is viewed as an important part of the construct validation process. Responsiveness refers to an instrument's ability to detect change, often defined as the minimal change considered to be important by the persons with the health condition, their significant others, or their providers.
Interpretability	Interpretability is defined as the degree to which one can assign qualitative meaning to an instrument's quantitative scores. Interpretability of a measure is facilitated by information that translates a quantitative score or change in scores to a qualitative category that has clinical or commonly understood meaning.
Respondent and administrative burden	Respondent burden is defined as the time, energy, and other demands placed on those to whom the instrument is administered. Administrative burden is defined as the demands placed on those who administer the instrument.
Alternative forms	Alternative forms of an instrument include all modes of administration other than the original source instrument. Depending on the nature of the original source instrument, alternative forms can include self-administered self-report, interviewer-administered self-report, trained observer rating, computer-assisted self-report, computer-assisted interviewer-administered report, and performance-based measures.
Cultural and language adaptations	The cross-cultural adaptation of an instrument involves two primary steps: 1) assessment of conceptual and linguistic equivalence and 2) evaluation of measurement properties.

Source: Lohr KN, Aaronson NK, Alonso J, et al. Evaluating quality-of-life and health status instruments: development of scientific review criteria. *Clinical Therapeutics* 1996;18:979-986. Used with permission.

- The measurement goals. Are you assessing multidimensional aspects of pain?
- Characteristics of the patient population (e.g., language, cognition, age, cultural factors).
- Resources required/ease of use. Consider the comfort of staff members with using the tool, the ability of patients to use the tool, the time needed to administer the tool, appropriateness and interpretability.^{27,47}
- Reliability. A pain rating scale should be reliable, meaning that it consistently measures pain intensity from one time to the next.²⁷
- Validity. There are a number of different

Table 6. Examples of Unidimensional and Multidimensional Pain-Specific Instruments

Name	Type	Description
Numeric rating scale	Unidimensional	A scaling procedure where subjects use numbers from 0 (no pain) to 10 (worst possible pain) to describe their pain; numbers may be presented on a vertical or horizontal line, may include words and numbers, or may be administered verbally ²⁷
Visual analog scale	Unidimensional	A scaling procedure used to measure a variety of clinical symptoms (e.g., pain, fatigue) by having subjects indicate on a straight line (usually 10 cm in length) the intensity of the attribute being measured ⁵⁹
Faces scales	Unidimensional	A scale depicting a series of faces with expressions representing increasing levels of discomfort; examples include the Oucher, ⁶⁰ and the Wong-Baker Faces Scale. ^{61,62}
Brief Pain Inventory (BPI)	Multidimensional	A series of questions covering the intensity and location of pain plus the history, impact on activities of daily living, and treatments ⁵⁶
Initial Pain Assessment Tool	Multidimensional	A tool for the clinician to use in conducting a pain assessment; areas covered include location, intensity, quality of pain, onset, duration, variations and rhythms, manner of expressing pain, what causes and relieves pain, the effects of pain, and other comments ²⁷
McGill Pain Questionnaire (MPQ)	Multidimensional	An assessment of pain from three dimensions: sensory, affective, and evaluative ⁵⁵

Sources: Adapted from references 27, 55, 56, and 59-63.

types of validity (e.g., construct and criterion). The validity of assessment instruments has been defined as the degree to which the instrument measures what it purports to measure.⁵⁸ A valid pain rating scale has been described by McCaffery and Pasero as “one that accurately measures pain intensity.”²⁷

- Sensitivity to small fluctuations in what is being scaled.⁶⁴

Each instrument has advantages and disadvantages that should be understood and considered. Tables 17 and 18 in the companion monograph, *Pain: Current Understanding of Assessment, Management, and Treatment*, highlight some of the advantages and disadvantages associated with each tool.⁹

Psychometric properties for selected instruments have been described in the literature. For example, Serlin et al.⁶⁵ explored the relationship between numerical ratings of pain

severity and ratings of the pain’s interference with functional activities (activity, mood, and sleep) for patients with cancer pain. Using a 0 to 10 scale, they found three distinct levels of pain severity. Specifically, they determined that pain ratings of 1-4 corresponded with mild pain, 5-6 indicated moderate pain, and 7-10 signaled severe pain in the cancer patients surveyed.

One organization empirically evaluated three pain scales in an effort to select a scale for use in their improvement initiative.⁶⁶ Three research questions were posed: 1) Is one of the scales easier for most patients to use? 2) Is the choice of scales influenced by nursing unit, age, education, race, socioeconomic status, diagnosis, or type of pain experienced? 3) Do patients perceive that a rating scale helps them describe their pain more effectively? Three scales (a visual analog scale, a numeric rating scale, and a faces

scale) were presented to patients in the study, who then completed survey questions about using the scales. The results revealed that the faces scale was most often selected by patients, followed by the numeric rating scale and then the visual analog scale.

C. Selecting a Measurement Approach

When considering which measurement approach to use, there are certain questions to keep in mind. These include:

- Does the method match/support the measurement objective? For example, use of a point prevalence study to measure events or processes undergoing rapid change and with great variability may not yield sufficient or meaningful data.
- Which approach will provide the most reliable and highest quality data and the least bias and subjectivity; which will minimize missing data?
- What are the available data sources? One should assess for data availability, but do not let data alone determine your measurement goals.⁶⁷ In many organizations—especially large ones—data may be collected but kept within individual departments and therefore cannot be routinely shared with others, or data may be collected in more than one place. For example, data regarding pain medication administration may be documented in an automated pharmacy information system as well as in the individual medical record.
- What is the most economical option that fulfills measurement requirements? Consider the data collection burden (e.g., time to collect the data, the staff needed, access to/use of automated information systems) against the benefits derived. For example, could data retrieved from an automated administrative database (e.g., pharmacy ordering) be used to collect indicator data, or is medical record review required?
- Will the measurement strategies selected be sensitive enough to capture changes that occur as a result of the intervention,

and support assessment of the impact of the intervention?⁴⁴

The following sections outline common measurement approaches used in health care. However, these approaches are not the only options available. A description of the method, suggested applications, and resource considerations are provided for each method discussed.

1. Conduct an Organizational Self-assessment

a. Definition /description of method

This method is used to determine an organization's status in relationship to targeted areas of performance. It involves the collection of organizational data using a comprehensive structured instrument that captures key structural and process elements associated with performance across the organization. These include information about the structures that support quality pain management such as written mission and policy statements, staff qualifications/credentials, staffing patterns, forms for documentation, capital resources, information management systems, and organizational management style.

b. Applications

Organizational self-assessment is critical in establishing a baseline of the organization's performance in pain management and identifying potential opportunities for improvement based on objective data. It also can be used over time to conduct ongoing evaluations of the organization's performance.

c. Resource considerations

Conducting an organizational assessment will require staff time and use of a developed tool. It is beneficial to involve multiple people in the process to obtain input from several perspectives.

Two examples of organizational assessment tools specific to pain management are the Institutional Needs Assessment Tool⁶⁸ and a checklist to assess institutional structures that will support efforts of improved pain relief.³¹ There are also organizational self-assessment tools and worksheets designed to help focus quality improvement activities.

Organizational Example

Conduct Organizational Self-assessment

Completion of an organizational self-assessment was an important part of the pain improvement initiative at Memorial Hospital of Sheridan County in Sheridan, Wyoming. Members of a team assembled to evaluate pain management practice and identify opportunities for improvement, utilized the Institutional Needs Assessment data collection tool⁶⁸ to complete this important assessment. Input from many people was included to obtain a complete and accurate picture based on information and responses from across the organization. The assessment provided a frame of reference for initiating organizational pain management improvement efforts; and over time, it has served a blueprint for identifying and selecting opportunities for improvement. For additional information on the improvement activities in this hospital see Section IX, Examples of Organizations Implementing Pain Management-Related Measurement and Improvement Initiatives.

Examples of such tools in JCAHO's *A Guide to Performance Measurement for Hospitals*⁵³ include Assessment of Stakeholders Outcomes, Data/Information Needs, Assessing Organization Commitment to Performance Measurement and Improvement, and Determining Areas for Organization Improvement.

2. Review Medical Records

a. Definition/description of method

Medical record review (also known as an audit) is the process of ensuring that medical records properly document patient care. The process can take place either while care is being provided (referred to as open or concur-

rent review) or after the patient has been discharged from the health care organization (referred to as closed or retrospective review).⁶⁹

Medical records are reviewed with a structured review tool for completeness and timeliness of information, and the presence of specific data is authenticated. In relation to pain management, a record audit can capture critical pieces of information about pain care such as:

- The documentation of pain assessments and pain intensity ratings.
- The timing and types of interventions provided.
- Patient reassessment and response to interventions.
- Patient education for symptom management.
- Evidence of discharge planning, which includes pain management instructions.

This review often is completed on a representative sample of records (as discussed in Section V.A.2 [Data Quantity]).⁶⁹

b. Applications

The medical record review can be useful at several stages of the improvement initiative, including determination of current practices at your organization, identification of areas for focused review and improvement opportunities, measurement of baseline performance before implementing an intervention, and measurement of performance change against the baseline.

c. Resource considerations

Medical record review generally involves staff time and requires the use of a defined data collection tool. Hard copy records will require manual review by a staff member. When the medical record is computerized, this can be an automated process.

A few examples of medical record audit tools specific to pain management are the Medical Record Pain Management Audit,²⁷ the Pain Management Audit Tool,⁷⁰ the Patient Record Pain Assessment Tool,⁷¹ and the Patient Record Pain Management Assessment Tool.⁷²

3. Test Knowledge and Attitudes

a. Definition/description of method

This method uses a standardized instrument to assess knowledge, attitudes, behaviors, or perceptions of a targeted group. An instrument is administered before an intervention to determine learning needs and after an intervention to assess change in knowledge, attitudes, or behaviors (pretesting/posttesting).

b. Applications

This method is very useful as part of initial and ongoing assessment of organizational performance in pain management. It is important to assess knowledge, attitudes, and

perceptions of patients as well as staff.

c. Resource considerations

The primary resource required for this method is time for administration of the assessment or testing instrument. A few examples of knowledge and attitude assessment instruments specific to pain are RN Needs Assessment: Pain Management,⁷³ the Pain Knowledge and Attitude Survey,²⁷ the Pain Management Patient Questionnaire,²⁷ and the Patient Outcome Questionnaire.¹⁸

4. Directly Observe the Care

a. Definition/description of method

This method involves watching and not-

Organizational Example

Review Medical Records

The review of medical records has been a staple in the assessment of pain management practice at Advocate Christ Medical Center in Oak Lawn, Illinois. Multiple aspects of pain-related care processes and outcomes are tracked through chart review for general and specialty populations (e.g., sickle cell patients, orthopedic patients). Early in 2002, a clinical nurse specialist for pain management and the hospital-wide Pain Management Committee pondered the issue of how well physicians were documenting pain information on admission assessments. They decided to obtain baseline data and enact measures to heighten physician awareness and improve documentation practices.

Developing a tool for data abstraction was the first step. Initially, the tool was designed to capture only the existence of pain assessment documentation by the physician on admission or within the first 24 hours. However, after pilot-testing, it was revised to determine the documentation of pain characteristics (e.g., intensity, duration, location) and use of a numeric pain scale. A third and final change to the tool was the addition of the numeric pain rating, recorded in the nurse's admission pain assessment.

Chart review for baseline data began in March 2002. Data from 25 to 30 charts in three selected units are abstracted monthly by the clinical nurse specialist for pain management and two other clinical nurse specialists. Currently, charts are being selected from the medical, surgical, and orthopedic units. Over time, the review will be rotated to other units. In June 2002, a new intervention was added to the ongoing medical staff education activities. A "business card" on bright yellow paper was inserted in a plastic holder on the front of each patient chart. It displays the "no pain" sign and poses the following questions:

- Do you know the score (0-10)?
- Did you document it?

To assess the impact of the card reminder system, data from charts reviewed after implementation will be compared with data from charts reviewed at baseline. Through continued record review, the committee hopes to see a trend toward increased documentation of initial pain assessment information and use of pain scales by physicians.

ing the behavior of and/or interactions between caregivers and patients/customers.²⁹ Typically, a process of care performed by a clinician is observed by a specially trained third party, who objectively notes each activity using structured methods of observation and documentation.

b. Applications

Observational measurement can be useful for circumstances where the subject is unaware, unable, and/or hesitant to report, or lacks awareness of the events and activities that are wanted. For example, it can be used for observing professionals in the course of performing routine care processes such as

pain assessment and medication administration. It is best used when the observer is unobtrusive and events being observed are routine and familiar. It is not considered a good choice for unpredictable events/behaviors and events that are of long duration.⁷⁵

c. Resource considerations

This method will require observers with appropriate training and qualifications. It is time intensive and therefore costly. Also, the subject of the observation may alter his or her behavior due to the presence of the observer.⁷⁶ However, this method offers unique advantages over other approaches in that it allows researchers to assess the quality

Organizational Example

Test Knowledge and Attitudes

When Swedish Medical Center in Seattle, Washington, began to develop organization-wide interventions to improve pain management, testing staff knowledge and attitudes was a key activity. They selected an established instrument, developed by McCaffery and Ferrell,⁷⁴ and obtained permission for use. It was distributed to all nursing staff, and 497 completed surveys were returned (pretest). Survey responses were anonymous, but department identification was collected. The results were reviewed carefully, and seven questions were selected as focus areas for improvement activities. Over the next year and a half, multiple interventions were conducted in these focus areas. These interventions ranged from patient and staff education to the development of a care protocol and documentation tool (see *Examples of Compliance: Pain Assessment and Management*⁴⁹). As part of the organization's educational plan, a 1-hour staff in-service entitled the "Hour of Pain" was developed. It took about 1 year to schedule all staff to attend.

The knowledge and attitude survey was administered a second time after all staff had completed the educational program. A total of 430 surveys were returned (posttest). To measure change, aggregate results were compared with those from the first survey. Answers revealed improvement in six of the seven focus areas targeted in the educational program, with significant improvement for the question "Who is the most accurate judge of the patient's pain?"

Testing for knowledge and attitudes also has been done by individual units to assess special needs and customize interventions. Most units have approximately 80 nurses, and a return rate of at least 38% (30 out of 80 surveys) is targeted. The surveys are used to determine the top five questions answered incorrectly, which become the focus of further scrutiny and possibly improvement interventions.

The manager of the Swedish Pain Center noted that measuring knowledge and attitudes has been an effective tool for changing behavior. Following the guiding principle of "keeping it as simple as possible" has led to results that are understandable and have effectively supported improvements in pain management practice.

of interactions and qualitative factors that can not be captured in documentation.⁷⁵

Examples of applications of the observation approach related to pain management include observation of clinicians conducting pain assessments and observation of delivery of nonpharmacologic therapies.

5. Conduct a Point Prevalence Study

a. Definition/description of method

Point prevalence is a static measure of a rate for an event of interest at a designated point in time, or a census-type measure.^{78,79} A point prevalence study involves use of a scientific approach to collect data for calculating a point prevalence rate. Data are col-

lected at designated intervals (e.g., quarterly or annually) on the occurrence of a specific event or outcome of interest for a defined period of time such as 1 week or 1 month.

b. Applications

This method has wide applicability and can be helpful in reducing the burden of data collection, especially when the cost of continuous data collection exceeds the benefit. Alternatively, when targeted goals of performance have been achieved, it can be used for ongoing monitoring to ensure that performance is not deteriorating. For example, if a performance improvement team has demonstrated 100% compliance with an improvement initiative to document an ini-

Organizational Example

Directly Observe the Care

The Orthopedic Department of Mercy Medical Center–North Iowa, Mason City, Iowa, has incorporated direct observation of care into annual competency assessment related to pain management. Clinical staff and managers worked together to develop a standardized observation tool that reflects important components from the hospital's pain management policy, the pain management flow sheet, and the University of Iowa guideline on acute pain management in the elderly.⁷⁷ The tool focuses on pain assessment and the planning, implementation, and evaluation of interventions. The tool is further refined for different staff positions (e.g., registered nurse, licensed practical nurse, nursing assistant).

Observers use cognitive, technical, and interpersonal skills to assess competency in pain management. These observers are fellow co-workers who have undergone additional training related to pain management, how to conduct an observation, and how to use the documentation tool. These individuals are recognized for their skills and knowledge related to orthopedic surgical pain, their ability to teach, and their nonthreatening approach. The pain management competency observation is conducted before the staff member's annual review and is documented on his or her evaluation.

As part of the direct observation process, the observer and staff member review the written tool before the observed patient interaction. They introduce themselves to the patient, and the observer quietly observes as care is provided. Special actions taken by the clinician to address age- or patient-specific needs are noted in a section of the observation tool concerned with special patient considerations. Staff performance in measured competencies is checked as acceptable or unacceptable, and individualized comments are added. If areas for improvement are identified, the observer and clinician identify an action plan and target date for reassessment. The rich complexity of each patient situation provides a great environment for learning, and the observation process supports the underlying goal of providing an individualized educational experience that is positive rather than punitive.

tial pain assessment for each patient, the team may decide to monitor performance using a sample of charts at regular intervals (e.g., 1 day per month) rather than reviewing all charts.

c. Resource considerations

Data collection may be automated or require manual review depending on the data source. These considerations, as in all methods, will determine the type of resources necessary. A sound method for determining the interval and time frame for data collection should be used to ensure that measurement objectives are met.

6. Assess Patient Status and Outcome Over Time

a. Definition/description of method

This method involves the repeated measurement of strategic patient factors and characteristics with established assessment instruments in an effort to demonstrate change over time.

b. Applications

This essential but underutilized approach provides critical information about various aspects of patient status and outcomes. Measurement for pain management can focus on areas of patient functioning and experience such as pain intensity, satisfaction, functional status, treatment response, and knowledge and attitudes.

i. Pain intensity/severity

It has been suggested that measuring pain severity is one of the most important indicators of pain management.⁸⁰ This outcome usually is measured with pain assessment instruments. These include the pain rating scales and pain assessment instruments previously discussed in Section V.B.1 (Pain-Specific Instruments). Additional information about pain intensity may be available from treatment administration records (pharmacologic and nonpharmacologic) and patient surveys.

ii. Patient satisfaction

This information can provide valuable insight into the quality of care as viewed

Organizational Example

Conduct a Point Prevalence Study

Since 1971, the Office of Statewide Health Planning and Development in California has collected and disseminated important financial and clinical data from licensed health facilities (see www.oshpd.ca.gov). Staff at the University of California Medical Center in San Diego have expanded the mandated data collection effort to include data obtained from pain assessment interviews and chart audits conducted on a single day each quarter. Working in pairs, members of the Nursing Quality Council gather information about all available patients on each designated unit through concurrent patient interview and chart abstraction.

Although these data are maintained for internal use, the organization has built onto an existing data collection mechanism to provide quarterly performance information that can be used to discern trends and track the effectiveness of quality improvement actions regarding pain management over time. For example, in two data collection efforts, the charts of 433 patients were reviewed. It was found that one organization-specified documentation standard was met in only 39% of charts. In their discussion of results, the Nurse Practice Council identified a structural barrier related to the forms used in certain units, which could easily be corrected to improve this score. Of the 217 patients interviewed during the two collection periods, 92% reported that a pain relief action was taken within 20 minutes of their report of pain. Communicating this result to staff provided positive feedback on their responsiveness to patient reports of pain, which was rewarding and satisfying.

Organizational Example

Assess Patient Status and Outcome Over Time

Since 1995, the Kaiser Permanente Northwest Pain Management Program has worked to change attitudes and beliefs about pain while effectively treating plan members who are suffering. The program is built around four components: 1) a multidisciplinary Pain Board to set policy and oversee the program; 2) Multidisciplinary Pain Group visits that support primary care practitioners by providing assessment information, patient education, and therapeutic options and recommendations in the primary care setting; 3) a Multidisciplinary Pain Clinic for tertiary care and complex interventions; and 4) communication systems that offer peer consultation and mentoring via the electronic medical record and telephone.

Together with program development, the Pain Board designed a structured evaluation of the program's effectiveness based on measuring patient status and outcomes over time. Originally they tracked three pain variables (pain now, least pain in past week, worst pain in past week); seven functional variables (interference with general activity, work, walking, mood, sleep, relationships with others, enjoyment of life); two satisfaction variables (satisfaction with efforts of your caregivers to relieve your pain and satisfaction with the outcomes of treatment); and six utilization variables (mental health visits, other outpatient visits, inpatient days, prescriptions filled, laboratory tests, imaging studies).

The pain, function, and satisfaction data were collected by a mail survey conducted 6 months after each series of patient visits. The utilization data were routinely recorded by the electronic medical record and were analyzed annually for the 12 months before and the 12 months after the series of visits by the Pain Group. Analysis of data for the first 5 years indicated that 5 of the original variables were the most sensitive indicators: pain now, interference with sleep, satisfaction with efforts and effects, utilization of outpatient visits, and prescriptions filled.

Through the evaluation, Kaiser Permanente Northwest was able to document statistically significant decreases in the percentage of patients with self-reported pain scores greater than 5 (on a scale of 1 to 10), interference-with-activity scores greater than 5, and interference-with-mood scores greater than 5. Interestingly, they also found that as patients became more knowledgeable about pain management, satisfaction at baseline decreased over time (which is consistent with reports in the literature) and satisfaction after involvement in the program increased over time. The data also showed that baseline pain levels among patients referred to the program decreased over 5 years, providing evidence that the educational benefits of the program have extended beyond those patients in the program and have led to improvements in primary care practice. The number of different clinicians referring to the program has risen to include 75% of all primary care physicians. Finally, utilization statistics show specific cost savings related to fewer hospitalizations among patients with chronic pain. After the Multidisciplinary Pain Group visits, 16% of treated patients were admitted to hospital in the subsequent year, compared with the admission rate of 47% to 55% reported in literature^{83,84}; and the number of prescriptions for pain medicine and other drugs decreased 30%, in contrast to a national increase of 33%.⁸⁵

by the recipient or family caregiver and may identify opportunities for improvement. It is important to remember that satisfaction and pain relief are *not* synonymous. Patient satisfaction with pain management often is high, even in the presence of moderate to severe pain. The measurement of satisfaction is complicated by several factors that can influence satisfaction ratings. It has been hypothesized that as patients' expectations for pain relief are raised, their satisfaction levels initially may decrease.⁸¹ Dawson et al.⁴¹ explored the paradox of patients who are in pain yet express satisfaction with their pain management. Some factors found to be predictive of satisfaction included the patient's satisfaction with overall pain management, if their pain over the last year went down and stayed down, and if the primary provider told the patient that treating pain was an important goal. These researchers also found that the patients' expectations about pain and pain relief were significantly related to their level of satisfaction. Thus, it is important to view satisfaction ratings in conjunction with other organizational and patient variables. Sources include proprietary tools from companies specializing in patient satisfaction measurement.

iii. Functional status

Functional status refers to the evaluation of the ability of an individual to perform activities of daily living such as walking, bathing, and dressing. Sometimes these elements are incorporated into pain-related assessment instruments, or there are specific functional assessment instruments.

iv. Multiple dimensions of functioning

These instruments incorporate pain assessment into tools designed to obtain an overall assessment of health status. Examples of such tools include the Resident Assessment Instrument used in the MDS, which is administered to patients in long-term care facilities, and the Outcome and Assessment Information Set (OASIS), which is administered to Medicare patients receiving home care. A recent study found that a scale based

on the MDS (version 2.0) pain items was highly predictive of scores measured by the "gold standard" visual analog scale.⁸²

v. Knowledge and attitudes related to pain management

Testing the knowledge and attitudes of patients can provide significant insight into behavior and potential barriers to pain management. More details about the instruments designed to measure knowledge or attitudes about pain management among patients are provided in Section V.C.3 (Test Knowledge and Attitudes).

c. Resource considerations

Resources often will be determined by the complexity of the instruments used. Analysis of changes in outcome data over time may require statistical support.

7. Collect Indicator Data

a. Definition/description of method

An indicator (also known as a performance measure) is a quantitative tool that provides an indication of performance in relation to a specified process or outcome.⁵³

Table 7 presents examples of some indicators that have been developed by various organizations to measure aspects of pain management. A recent collaborative effort between the Joint Commission, the American Medical Association and the National Center for Quality Assurance to develop pain-related performance measures began in September 2001.

Developing a clinical measure can be a complex and difficult task.⁵⁰ Indicators, like guidelines and instruments, should reflect certain attributes to make them credible and effective. Characteristics or attributes of good indicators have been defined by multiple organizations experienced in health care measurement.⁶⁷ See **Table 8** for some suggested desirable attributes against which indicators should be reviewed.

In general, a good indicator should raise important questions about the processes and outcomes of pain management such as assessment, documentation, and treatment selec-

(continued on page 43)

Table 7. Examples Of Indicator Development for Pain Management^a

Topic Area	Indicator Focus	Application	Developer/Reference
Prevention/Screening	Initial patient evaluation	<i>Population:</i> Vulnerable Elders (defined as individuals 65 and older meeting project specified criteria)	Assessing the Care of Vulnerable Elders (ACOVE) Project. Rand Health, Santa Monica, California Chodosh J, Ferrell BA, Shekelle PG, et al. Quality indicators for pain management in vulnerable elders. <i>Ann Intern Med.</i> 2001; 135 (8pt2):641-758, 731-738 www.annals.org/issues/V135n8/full/200110161-00004.html
Prevention/Screening	Screening for chronic pain	<i>Population:</i> Ibid	Ibid
Prevention/Screening	Nursing home residents experiencing a change in condition	<i>Population:</i> Ibid	Ibid
Prevention/Screening	Screening for pain	<i>Population:</i> Ibid	Ibid
Prevention/Screening	Initial evaluation of cognitively impaired patients	<i>Population:</i> Ibid	Ibid
Diagnosis	Evaluation for depression in patients with significant chronic pain	<i>Population:</i> Ibid	Ibid
Diagnosis	Evaluating changes in pain patterns	<i>Population:</i> Ibid	Ibid
Diagnosis	Diagnostic evaluation of patients with significant chronic pain conditions	<i>Population:</i> Ibid	Ibid
Diagnosis	Therapy for underlying conditions responsible for significant chronic pain	<i>Population:</i> Ibid	Ibid
Diagnosis	Quantitative pain assessment using standard pain scales in patients with chronic pain	<i>Population:</i> Ibid	Ibid
Treatment/management	Assessment of pain in hospitalized patients with significant chronic pain syndrome	<i>Population:</i> Ibid	Ibid
Treatment/management	Patient education for patients with significant chronic pain syndrome	<i>Population:</i> Ibid	Ibid
Treatment/management	NSAID therapy for the treatment of chronic pain	<i>Population:</i> Ibid	Ibid
Treatment/ management	Monitoring of patients on NSAID therapy for the treatment of chronic pain	<i>Population:</i> Ibid	Ibid

Table 7. Examples Of Indicator Development for Pain Management^a (continued)

Topic Area	Indicator Focus	Application	Developer/Reference
Treatment/ management	Route of administration for pain medication regimens	<i>Population:</i> Ibid	Ibid
Treatment/management	Bowel management for patients with chronic pain and treated with opioids	<i>Population:</i> Ibid	Ibid
Postoperative care	Intramuscular route <i>not</i> used	<i>Population:</i> Patients having one of the following surgical procedures: hysterectomy, partial excision of the large intestines, cholecystectomy, coronary artery bypass, and hip replacement.	MetaStar, Inc 2090 Landmark Place Madison, WI 53713 www.metastar.com <i>Source: MetaStar, Inc., Used with permission</i>
Postoperative care	Meperidine <i>not</i> used	<i>Population:</i> Ibid	Ibid
Postoperative care	Use of self-administered or regularly scheduled dosing	<i>Population:</i> Ibid	Ibid
Postoperative care	Frequency of pain assessment	<i>Population:</i> Ibid	Ibid
Postoperative care	Use of self-report pain scales	<i>Population:</i> Ibid	Ibid
Postoperative care	Use of nonpharmacologic pain control	<i>Population:</i> Ibid	Ibid
Preoperative care	Preoperative pain history	<i>Population:</i> Patients age 65 and older who have had non-cardiac thoracic,* upper abdominal,* lower abdominal,* or hip or orthopedic extremity* surgery and who are not drug or substance abusers, currently receiving narcotics for chronic pain, or currently under treatment for schizoaffective disorders * Specific ICD-9-CM codes	Center for Clinical Quality Evaluation (formerly American Medical Review Research Center [AMRRC]) Prepared for Agency for Health Care Policy and Research AMRRC-AHCPR Guideline Criteria Project: Develop, Apply, And Evaluate Medical Review Criteria and Educational Outreach Based Upon Practice Guidelines October 1995 AHCPR Publication No. 95-N01
Preoperative care	Preoperative psychosocial history	<i>Population:</i> Ibid	Ibid
Preoperative care	Preoperative pain plan	<i>Population:</i> Ibid	Ibid
Intra-operative care	Intra-operative pain management	<i>Population:</i> Ibid	Ibid
Postoperative care	MU agonists in first 24 hours after surgery for surgical pain	<i>Population:</i> Ibid	Ibid
Postoperative care	NSAIDs in first 24 hours after surgery for surgical pain	<i>Population:</i> Ibid	Ibid

Table 7. Examples Of Indicator Development for Pain Management^a (continued)

Topic Area	Indicator Focus	Application	Developer/Reference
Postoperative care	NSAIDs after first 24 hours after surgery for surgical pain	<i>Population:</i> Ibid	Ibid
Postoperative care	Meperidine not routinely given for surgical pain	<i>Population:</i> Ibid	Ibid
Postoperative care	Analgesics not given intramuscularly except ketorolac	<i>Population:</i> Ibid	Ibid
Postoperative care	Supervision of regional medication for surgical pain	<i>Population:</i> Ibid	Ibid
Postoperative care	Medication dose & route documented for control of surgical pain	<i>Population:</i> Ibid	Ibid
Postoperative care	Behavioral methods to reduce surgical pain	<i>Population:</i> Ibid	Ibid
Postoperative care	Self-assessment tool used to measure surgical pain	<i>Population:</i> Ibid	Ibid
Postoperative care	Surgical pain monitoring	<i>Population:</i> Ibid	Ibid
Postoperative care	Sedation monitoring for post-surgical patients	<i>Population:</i> Ibid	Ibid
Postoperative care	Respiration monitoring for post-surgical patients	<i>Population:</i> Ibid	Ibid
Postoperative care	Catheter site monitoring for post-surgical patients	<i>Population:</i> Ibid	Ibid
Postoperative care	Treatment change for continued post-surgical pain	<i>Population:</i> Ibid	Ibid
Postoperative care	Treatment change for over sedation of post-surgical patients	<i>Population:</i> Ibid	Ibid
Postoperative care	Treatment change for depressed respiration among treated post-surgical patients	<i>Population:</i> Ibid	Ibid
Postoperative care	Treatment change for other complications among post-surgical patients	<i>Population:</i> Ibid	Ibid
Postoperative care (outcome)	Respiratory arrest among medicated post-surgical patients	<i>Population:</i> Ibid	Ibid
Postoperative care (outcome)	Infection at catheter site among medicated post-surgical patients	<i>Population:</i> Ibid	Ibid

Table 7. Examples Of Indicator Development for Pain Management^a (continued)

Topic Area	Indicator Focus	Application	Developer/Reference
Postoperative care (outcome)	Urinary retention among medicated post-surgical patients	<i>Population:</i> Ibid	Ibid
Postoperative care (outcome)	Pneumonia among medicated post-surgical patients	<i>Population:</i> Ibid	Ibid
Postoperative care (outcome)	Deep vein thrombosis among medicated post-surgical patients	<i>Population:</i> Ibid	Ibid
Postoperative care	Discharge instruction regarding pain medication	<i>Population:</i> Ibid	Ibid
Ambulatory care	Appropriate prescription of NSAID	<i>Population:</i> Patients taking a newly prescribed NSAID	Project to Develop and Evaluate Methods to Promote Ambulatory Care Quality (DEMPAQ) records Delmarva Foundation for Medical Care Inc. Final Report to the Health Care Financing Administration: Developing and Evaluating Methods to Promote Ambulatory Care Quality (DEMPAQ). Nov. 15, 1993
Ambulatory care	Appropriate prescription of salicylate	<i>Population:</i> Patients taking a newly prescribed long-term, high-dose salicylate	Ibid
Home care	Improvement in pain interfering with activity	<i>Population:</i> All non-maternity adult (age ≥ 21 years) home care patients, regardless of whether they improved, as long as it was possible for them to improve	The Outcome and Assessment Information Set (OASIS) for use in home health agencies The OASIS is the intellectual property of the Center for Health Services and Policy Research, Denver, Colorado. See www.cms.gov/oasis/
Postoperative care	Pain is treated by route other than IM	<i>Population:</i> Patients who have had a major surgical procedure and were able to complete a survey within 72 hours postoperatively.	Post-Operative Pain Management Quality Improvement Project University of Wisconsin-Madison Medical School Source: J. L. Dahl, Used with permission
Postoperative care	Pain is treated with regularly administered analgesics	<i>Population:</i> Ibid	Ibid
Postoperative care	Pain is treated with non-pharmacologic interventions in addition to analgesics	<i>Population:</i> Ibid	Ibid

Table 7. Examples Of Indicator Development for Pain Management^a (continued)

Topic Area	Indicator Focus	Application	Developer/Reference
Postoperative care	The intensity of pain is assessed and documented with a numeric (e.g., 0-10, 0-5) or verbal descriptive (e.g., mild, moderate, severe) rating scale	<i>Population:</i> Ibid	Ibid
Postoperative care	Pain intensity is documented at frequent intervals	<i>Population:</i> Ibid	Ibid
Postoperative care	A balanced approach is used to treat pain (e.g., regional techniques, opioid and nonopioid analgesics)	<i>Population:</i> Ibid	Ibid

IM: intramuscular; NSAID: nonsteroidal anti-inflammatory drug

^aThis table presents a sample of focus areas for which indicators have been developed specific to pain management. For detailed indicator specific specifications, readers are referred to the source and developer information provided. Clinicians should evaluate indicators for accuracy, applicability and continuing relevance to current practice recommendations.

tion and response, as well as identifying opportunities for improvement.⁶⁷ A good indicator also should encourage a search for underlying causes or explanations of collected data.⁴⁴ Toward that end, indicators should focus on pain management processes or outcomes that are within the organization's control; the indicators should be clearly defined, understandable, and able to be reported in a manner that is accurate, easy to interpret, and useful.⁶⁷ An indicator is useful when it reflects concerns of patients, providers, regulators, accreditation bodies, or other stakeholders and is able to discern variation and improvement in performance. Finally, a good indicator includes complete specifications for consistent implementation and application.⁵⁰

b. Types of indicators

Indicators may be calculated in various ways. The most common approach is to state the indicator as a proportion. The indicator is expressed as the number of individuals (or events) in the category of interest divided by the total number of eligible individuals (or events) in the group.⁷⁸ The numerator is therefore a subset of the denominator. This type of indicator often is referred to as *rate-based*.

Example: The denominator is all patients discharged from a postoperative recovery unit, and the numerator is all patients discharged from a postoperative recovery unit with a pain intensity score of less than 5.

In a second type of indicator, the numerator is not a subset of the denominator. When the sources of data are different for the numerator and the denominator, the relationship is more accurately referred to as a *ratio*.⁷⁸

Example: Primary bloodstream infections for patients with central lines per 1000 patient days.

A third type is the *continuous variable* indicator, in which the value of each measurement can fall anywhere along a continuous scale.

Example: Time from patient request for analgesia to administration of medication.

Indicators are useful in evaluating performance longitudinally and can be used to capture various dimensions of performance such as timeliness or efficacy.¹¹ They can be structured to capture desirable or undesirable aspects of performance. For example, an indi-

cator could be used to determine whether patients' discharge directions included pain management instructions and emergency contact information for problems (desirable) versus discharge directions that *did not* include pain management instructions and emergency contact information for problems (undesirable). Process measures focus on specific patient care interventions performed by health care professionals and are distinct from outcome indicators that measure the results of the patient's interaction with health care professionals. Each has advantages and disadvantages, as described in **Table 9**.⁸⁷

c. Applications

Collecting indicator data is useful for the following activities:

- To observe patterns and trends in performance and stability of processes within an organization over time with objective data.
- To capture distinct dimensions of performance.
- To evaluate multiple aspects of performance that are related to the selected improvement, which helps to ensure that attention focused on one aspect of a process does not result in deterioration of other aspects.⁶⁷
- To measure factors in addition to the clinical dimension (e.g., financial aspects of care) or patient satisfaction.

Measuring performance on multiple dimensions simultaneously sometimes is referred to as a "balanced dashboard."⁸⁸⁻⁹⁰

Indicators can be derived from criteria such as guidelines, standards, or consensus statements (if available) and thereby can support the assessment of performance against evidence-based practice recommendations.^{91,92}

d. Resource considerations

If new data elements are required for the indicator, these would need to be collected either through enhanced fields in automated programs or manual data collection. This method usually requires some automated data retrieval and analysis capabilities. The steps associated with aggregating data ele-

ments to calculate indicator rates may need to be programmed. However, indicators can be calculated manually if the volume of data is not too great and the calculation algorithm is not too complex.

8. Utilize an Externally Developed Performance Measurement System

a. Definition/description of method

The Joint Commission defines a performance measurement system as an entity consisting of an automated database that facilitates performance improvement in health care organizations through the collection and dissemination of process and/or outcome measures of performance. Measurement systems must be able to generate internal comparisons of organization performance over time and external comparisons of performance among participating organizations at comparable times (www.jcaho.org). Donabedian described a clinical performance system (also known as a measurement system) as a tool for rational management that supports assessment of performance with an epidemiologic perspective.⁹³ Data are reported at regular intervals (e.g., daily, monthly or quarterly) to a central database at the measurement system, most often in electronic formats. However, submission of hard copy data collection forms also is possible. The performance measurement system analyzes and reports the organization's performance on the indicators and provides comparative data aggregated from other participants using standard or customized reports.

b. Application

Performance measurement systems are useful for the following:

- Internal performance improvement activities for which no established data collection processes exist. For example, a system that measures patient outcomes over time often will provide detailed data collection tools and training manuals.
- Provision of comparative outcome data (comparison with other organizations or against benchmarks). Some systems apply statistical risk-adjustment tech-

- Meeting external demands for data for accountability purposes. For example, home health and long-term care organizations collect pain-related data through measurement systems with OASIS and the MDS, as mandated by the Centers for Medicare and Medicaid Services.

c. Resource considerations

Resource requirements are varied and may range from sophisticated information systems to manual data collection. The benefits and costs should be explored when considering use of a performance measurement system. Some possible benefits of using a performance measurement system include:

- **Data collection.** In some cases, the performance measurement system may function “invisibly” by abstracting data from existing repositories such as administrative/billing data. In other instances, the system may provide hard-copy forms or specific software for direct data entry, or it may allow for the electronic transfer of

data from the organization’s own databases to a central system database.

- **Data analysis.** Some systems are capable of providing sophisticated data analysis techniques that the organization does not have in-house.
- **Data interpretation.** Some systems may provide access to professional staff who can assist in understanding and interpreting the data.
- **Report production.** In addition to standard reports, some systems offer custom, ad hoc reporting options.
- **External comparison.** Systems generally aggregate data from other system participants, providing an opportunity for external comparison.

Some other issues to consider regarding participation in a performance measurement system include:

- **Cost.** There are generally charges associated with participation, although some systems have no specific participation fees (e.g., MDS, OASIS), and there are even a few instances in which the system

Table 8. Desirable Attributes of Measures

Attribute	Definition
1. Importance of topic area addressed by the measure	
1A. High priority for maximizing the health of persons or populations	The measure addresses a process or outcome that is strategically important in maximizing the health of persons or populations. It addresses an important medical condition as defined by high prevalence, incidence, mortality, morbidity, or disability.
1B. Financially important	The measure addresses a clinical condition or area of health care that requires high expenditures on inpatient or outpatient care. A condition may be financially important if it has either high per-person costs or if it affects a large number of people.
1C. Demonstrated variation in care and/or potential for improvement	The measure addresses an aspect of health care for which there is a reasonable expectation of wide variation in care and/or potential for improvement. If the purpose of the measurement is internal quality improvement and professional accountability, then wide variation in care across physicians or hospitals is not necessary.
2. Usefulness in improving patient outcomes	
2A. Based on established clinical recommendations	For process measures, there is good evidence that the process improves health outcomes. For outcome measures, there is good evidence that there are processes or actions that providers can take to improve the outcome.

Table 8. Desirable Attributes of Measures (continued)

Attribute	Definition
2B. Potentially actionable by user	The measure addresses an area of health care that potentially is under the control of the physician, health care organization, or health care system that it assesses.
3. Measure design	
3A. Well-defined specifications	The following aspects of the measure are to be well defined: numerator, denominator, sampling methodology, data sources, allowable values, methods of measurement, and method of reporting.
3B. Documented reliability	<p>The measure will produce the same results when repeated in the same population and setting (low random error)</p> <p>Tests of reliability include:</p> <ul style="list-style-type: none"> a) Test-retest (reproducibility): test-retest reliability is evaluated by repeated administration of the measure in a short time frame and calculation of agreement among the repetitions b) Interrater: agreement between raters is measured and reported using the kappa statistic c) Data accuracy: data are audited for accuracy d) Internal consistency for multi-item measures: analyses are performed to ensure that items are internally consistent.
3C. Documented validity	The measure has face validity: it should appear to a knowledgeable observer to measure what is intended. The measure also should correlate well with other measures of the same aspects of care (construct validity) and capture meaningful aspects of this care (content validity).
3D. Allowance for risk	The degree to which data collected on the measure are risk-adjusted or risk-stratified depends on the purpose of the measure. If the purpose of the measure is for continuous quality improvement and professional accountability, then requirements for risk adjustment or risk stratification are not stringent. If the purpose of the measure is comparison and accountability, then either the measure should not be appreciably affected by any variables that are beyond the user's control (covariates) or, to the extent possible, any extraneous factors should be known and measurable. If case-mix and/or risk adjustment is required, there should be well-described methods for either controlling through risk stratification or for using validated models for calculating and adjusting results that correct for the effects of covariates. ^a
3E. Proven feasibility	The data required for the measure can be obtained by physicians, health care organizations, or health care systems with reasonable effort and within the period allowed for data collection. The cost of data collection and reporting is justified by the potential improvement in care and outcomes that result from the act of measurement. The measure should not be susceptible to cultural or other barriers that might make data collection infeasible.
3F. Confidentiality	The collection of data for the measures should not violate any accepted standards of confidentiality.
3G. Public availability	The measure specifications are publicly available.

From: American Medical Association, Joint Commission on Accreditation of Healthcare Organizations, and National Committee for Quality Assurance. Coordinated Performance Measurement for the Management of Adult Diabetes. Consensus statement. Chicago, IL: AMA; April 2001.⁶⁶

^a In some cases, risk stratification may be preferable to risk adjustment because it will identify quality issues of importance to different subgroups.

Table 9. Comparing Process and Outcomes Indicators**Advantages****Disadvantages***Process Indicators*

1. They can directly measure what was done for an individual or group (e.g., screening mammography for detection of breast cancer).
2. They can assess care within a relatively short time window (e.g., weekly or monthly for run charts, annually for some preventive services, episodes for acute and chronic disease care).
3. They can use relatively small sample sizes for common processes.
4. They can frequently be assessed unobtrusively (e.g., from data stored in administrative or medical records).
5. They can be influenced by clinically appropriate actions taken by the health care organization or clinician.
6. They can be interpreted by clinicians who may need to modify their care delivery.

1. They may have little meaning for patients unless the link to outcomes can be explained.
2. If the process measure is a rate, the “right” rate may not be known (e.g., emergency room use rates, procedure rates).
3. They are often quite specific to a single disease or a single type of medical care, so that process measures across several clinical areas or aspects of service delivery may be required to represent quality for a particular group of patients.

Outcomes Indicators

1. They tend to be more meaningful to some of the potential users of performance measures (e.g., consumers, purchasers).
2. They more clearly represent the goals of the health care system.
3. They can provide a summary measure of the effectiveness of medical care across a variety of conditions, types of care, or processes of care.

1. They tend to be influenced by many factors that are outside the control of the health care organization.
2. They may be insensitive for making health care organization comparisons, particularly if poor outcomes are rare (e.g., mortality rates for children).
3. They may require large sample sizes to detect a statistically significant difference.
4. They may require obtaining data directly from patients.
5. They may take a long period of time to observe.
6. They may be difficult to interpret if the process that produced the outcome occurred far in the past and/or in another health care organization.

Adapted from reference 87.

provides some reimbursement to participants.

- **Predetermined measures.** Participants are sometimes limited to the measures offered within the system.
- **Lack of customization.** To enable comparisons between participants, measures must be standardized and individual cus-

tomization may be limited or unavailable.

- **“Black box” analysis methods.** Some systems may provide risk adjustment where applicable, but will not share specifics of the methodology used with participants for proprietary reasons.

Organizational Example

Collect Indicator Data

The use of indicators in the postanesthesia care unit at Middlesex Hospital in Middletown, Connecticut, began when the nurses wanted to examine patterns of patient pain levels on admission and discharge from the unit. Working with a member of the organization's Pain Management Team and Quality Improvement Department, they reviewed clinical practice guidelines and scientific literature related to postoperative pain control. Initially, the measurement focus was on whether patients needed pain medication on admission, whether they needed pain medication between 1/2 and 1 hour after admission, and whether they reported a pain score greater than 5 (0-10 numeric rating scale) on discharge from the unit.

After review of the initial data, it was determined that collecting the reported pain intensity scores would increase the usefulness of the data. Therefore, the indicators were redefined. The *denominator* was defined as "patients entering the post anesthesia care unit." Three numerators were defined, each of which is concerned with the number of patients reporting pain intensity scores in four categories: none (0), mild (1-3), moderate (4-6), and severe (7-10). *Numerator 1* refers to the number of patients reporting each category on admission. *Numerator 2* refers to the number of patients reporting each category between 1/2 and 1 hour postadmission. *Numerator 3* refers to the number of patients reporting each category on discharge.

To facilitate calculations, a specific data collection tool was created for nursing staff to enter patient-level data. Data elements include date, diagnosis, pain level at three designated intervals, and a comments section for documentation of medication administration, side effects, adverse events, or other pertinent information. Quality improvement staff members then aggregated the patient-level data monthly on all entries with no missing data (range of 46 to 81 patients per month). Results, reported as percentages, were shared with postanesthesia care unit nurses at staff meetings and quarterly with the Quality Improvement Committee, the Pain Management Committee, the Department of Anesthesiology, and the Nursing Quality Council. Results for the first 3 months of 2002 showed an initial downward trend in pain intensity levels on admission and at discharge. In April 2002, use of the indicators was initiated in outpatient surgery and at an off-site surgery center.

Organizational Example

Utilize an Externally Developed Performance Measurement System

Crouse Hospital in Syracuse, New York, began using the Total Quality Pain Management™ (or TQPM) system provided by Abbott Laboratories in January 1998. Crouse made the decision to adopt TQPM as its primary adult postprocedural pain assessment and management tool because it was based on the patient survey first developed by the American Pain Society, and because it provides access to regularly updated national data. It also affords a broad overview of organizational performance over time, as well as access to aggregated national data for use in comparisons and identification of benchmark performance.

Using the system survey tool, the Acute Pain Management Quality Assessment Survey, each unit targets completion of at least 10 forms on a monthly basis. Staff and volunteers collect the surveys, which then are submitted to the Quality Improvement Department for entry into the TQPM software database. After setting desired filters, the quality improvement professionals at Crouse can produce standard graphs and tables. The data also are exported to other programs (e.g., Microsoft Excel, [Microsoft Corporation, Redmond, WA]) for additional analysis and display options. Approximately twice each year, a call for data is issued by TQPM to incorporate the local databases of the participant institutions into an aggregated national database, which is then disseminated to each of the affiliate hospitals.

The results are shared with the Pain Continuous Quality Improvement Committee, who evaluate the data and make recommendations to the unit managers and administration based on their findings. These data have been used by Crouse to identify opportunities for improvement (e.g., perceived wait times for pain medication), as well as track the mean pain levels of the surveyed population over time. Due to the comparative nature of the data with national means, and through the use of control charts with limits set at three standard deviations, Crouse has been able to identify and plot any changes that occur within the system on a hospital-wide as well as a unit-specific basis. Each of the nine indicators tracked (from each major section of the survey) provides an objective measure of the overall effort to maintain control of patient pain and gauge overall patient satisfaction with pain relief methods and medications. Together, they provide a composite picture of the hospital's success in meeting and exceeding pain management expectations. Crouse plans to continue to track its performance, measure change, and document successful improvements in pain management initiated through continued use of the TQPM database.

SECTION VI:

Assessing and Analyzing Your Processes and Results

This section describes the *assessment* phase in the cycle for improving performance. Assessment of data means translating data into information one can use to make judgments and draw conclusions about performance. The assessment phase allows one to compare performance, determine causes, and set priorities for actions/interventions (baseline data assessment), and to evaluate the effect of actions (results of improvement interventions).⁴⁴

Broadly defined, the assessment phase includes the following processes and activities:

- Analysis of the problem
- Analysis of data
- Interpretation of the results of data analysis
- Display of data and results
- Dissemination of information.

Assessment also requires that performance (baseline or follow-up) be compared with some reference point.⁴⁴ Examples of reference points include:

- Historical patterns of performance within the organization.
- Internal policies and procedures.
- Desired performance goals, targets, or specifications.
- The performance of other organizations provided in external reference databases.
- Established practice guidelines, standards, and consensus statements.

Assessment is not a one-time activity. It is usually done at several points in the process such as problem identification, baseline assessment, and reassessment after intervention. In fact, assessment often continues beyond the immediate quality improvement project time frame at regular intervals (e.g., annually or every 6 months) to ensure that desired levels of performance are maintained.

A. Using Quality Improvement Tools

The assessment phase is greatly facilitated by the use of relevant quality improvement tools. The tools provide an essential common structure for the analyses of problems and results and are useful for ensuring that the improvement activity is planned and systematic, based on reliable data and accurate analysis, and carried out with effective teamwork and communication.⁴⁴ It is important to understand the purpose and capability of each tool (see definitions in **Table 10**) so they are used appropriately. Although developed for distinct purposes, the tools may be used in several stages of a project, including planning, identification of the problem, analysis of baseline and follow-up data, planning solutions to the problem, and evaluation of the results.⁹⁵ A grid to help organizations select tools appropriate to the phase of the project is provided in **Figure 4**. Because space constraints do not permit an adequate discussion of the use and value of these tools, readers desiring more information may find the following texts to be helpful: *Using Performance Improvement Tools in a Health Care Setting, Revised Edition*,⁹⁶ *Managing Performance Measurement Data in Health Care*,⁴⁷ and *The Team Handbook*.⁹⁵

Many of these tools were originally developed for use in industrial quality control.^{94,96} The application of industrial quality improvement methodologies to health care was tested successfully by the National Demonstration Project on Quality Improvement in Health Care. This project paired industrial quality experts with teams from 21 health care organizations. The results are reported in *Curing Health Care: New Strategies for Quality Improvement*⁹⁷ and summarized in the text box on page 53.

B. Analysis of Data

Analysis involves sorting, organizing, and summarizing data into a form that enables people to interpret and make sense of the raw data. Understandably, raw data should

Table 10. Quality Improvement Tools: Definition And Use^a

Tool Name	Definition	Phases of Quality Improvement Process
Brainstorming	A structured process for generating a list of ideas about an issue in a short amount of time	Problem identification Data analysis Solution planning Result evaluation
Affinity diagram	A diagram designed to help teams organize large volumes of ideas or issues into major groups	Problem identification Solution planning
Multivoting	A voting process that narrows a broad list of ideas to those that are most important	Problem identification Data analysis Solution planning Result evaluation
Selection grid (prioritization matrices)	A grid designed to help teams select one option out of several possibilities	Problem identification Solution planning
Cause-and-effect diagram	A diagram designed to help teams picture a large number of possible causes of a particular outcome	Problem identification Data analysis
Control chart	A plotting of data on a graph indicating an upper and lower control limit on either side of the average	Problem identification Data analysis Evaluating results
Run chart	A plotting of points on a graph to show levels of performance over time	Problem identification Data analysis Results evaluation
Check sheet	A form designed to record how many times a given event occurs	Data analysis
Flowchart	A diagram illustrating the path a process follows	Problem identification Data analysis Solution planning
Scatter diagram	A plotting of points on a graph to show the relationship between two variables	Data analysis Result evaluation
Pareto chart	A bar graph depicting in descending order (from left to right) the frequency of events being studied	Problem identification Data analysis Result evaluation
Histogram	A bar graph displaying variation in a set of data and distribution of that variation	Data analysis Result evaluation
Adapted from reference 94.		
^a For more information on the use of these tools the following texts may be helpful: Using Quality Improvement Tools in a Health Care Setting, ⁹⁴ Managing Performance Measurement Data in Health Care, ⁴⁷ and The Team Handbook. ⁹⁵		

Figure 4. Selection Grid: Improvement Tools

Tool Selection Grid				
Tool	Phase of Problem-Solving Activity			
	Problem Identification	Data Analysis	Solution Planning	Evaluating Results
Brainstorming	X	X	X	X
Cause-and Effect (Fishbone Diagram)	X	X		
Check Sheet		X		
Control Chart	X	X		X
Flowchart	X	X	X	
Affinity Diagram	X		X	
Histograms		X		X
Multivoting	X	X	X	X
Pareto Analysis	X	X		X
Run Chart	X	X		X
Scatter Diagram		X		X
Selection Grid Prioritization Matrix	X		X	
Task List	X		X	

Adapted from: Joint Commission on Accreditation of Healthcare Organizations. *Using Performance Improvement Tools in Health Care Settings*. Rev ed. Oakbrook Terrace, IL: Joint Commission on Accreditation of Healthcare Organizations; 1996.

not be used to draw conclusions about a process or outcome.⁴⁷

Typically, the data to be analyzed will have been entered (either directly from the data sources or secondarily from paper forms) into an automated database software program such as a spreadsheet (e.g., Lotus 123 [IBM Lotus, Cambridge, MA], Microsoft Excel [Microsoft Corporation, Redmond, WA]) or a database management and analysis software package (e.g., SAS [SAS Institute Inc., Cary, NC]; Epi Info [Centers for Disease Control and Prevention, Atlanta, GA]; SPSS [SPSS Inc., Chicago, IL]).

Data analyses can be done through the use of relatively simple descriptive statistics (e.g., medians, means and standard deviations, frequency distributions, proportions) or more complex, inferential techniques. Analyses can involve single variables, two variables (e.g., bivariate correlations), or multiple variables (e.g. multiple regression analyses).

Analysis of patient outcomes sometimes requires multivariate statistical techniques to

risk-adjust for variables outside the health care organization's control (e.g., intrinsic patient factors) that are related to the outcome of interest. For example, outcomes of decreased pain intensity may be influenced by patient beliefs and attitudes, which often are outside the control of the health care organization. More information on risk-adjustment approaches for performance measurement data can be found in *Risk Adjustment for Measuring Healthcare Outcomes*.⁹⁸

The sophistication of the analyses and ability to draw inferences from a sample using statistical tests depend on many factors, including:

- The design of the study.
- The quality of the data.
- The sample size.
- The level of data collected (e.g., patient, unit, organization).
- The underlying distributions of the variables (e.g., normal/Gaussian versus binomial).

Ten Key Lessons From the National Demonstration Project on Quality Improvement

1. Quality improvement tools can work in health care.
2. Cross-functional teams are valuable in improving health care processes.
3. Data useful for quality improvement abound in health care.
4. Quality improvement methods are fun to use.
5. Costs of poor quality are high, and savings are within reach.
6. Involving doctors is difficult.
7. Training needs arise early.
8. Nonclinical processes draw early attention.
9. Health care organizations may need a broader definition of quality.
10. In health care, as in industry, the fate of quality improvement is first of all in the hands of leaders.

(97) Source: Berwick D, Godfrey AB, Roessner J. *Curing Health Care: New Strategies for Quality Improvement*. San Francisco, CA: Jossey-Bass; 1990. Used with permission.

- The type of data to be analyzed (nominal, ordinal, interval, ratio).
- The availability of statistical analysis programs.
- Familiarity of the analyst with statistics and data analysis techniques.

Individuals without a strong background in data analysis may wish to seek guidance from experts within the organization (e.g., a statistician, data analyst, or other quality improvement professional) or consider use of an outside consultant. Keep in mind that complex analyses are not necessarily better for quality improvement purposes. Often, simple descriptive statistics (means, standard deviations, and proportions) are more revealing and useful for improvement.

One well-known approach to data-driven evaluation of processes is the use of statistical process control. Statistical process control is the application of statistical techniques such as control charts to the analysis of a

process.⁵³ It is used to determine whether the process is functioning within statistical norms (in control). It is particularly useful for distinguishing between random variation in a process (common cause variation) and changes due to specific occurrences (special cause variation).⁹⁹ For more information on this topic, refer to the literature on statistical process control. A few references include Carey and Lloyd,¹⁰⁰ Wheeler and Chambers,¹⁰¹ Grant and Leavenworth,¹⁰² and Sellick.¹⁰³

C. Interpretation of the Results of Data Analysis

This often-overlooked activity is an essential component of translating data into information. Defined simply, “data are numbers, information is what the numbers mean.”⁹⁹

O’Leary reports that data interpretation and dissemination are enhanced when the person(s) involved (i.e., the interpreter) demonstrates certain personal and professional attributes.¹⁰⁴ These include:

- Problem-solving skills.
- Thoroughness.
- Open-mindedness.
- Awareness of one’s own limitations.
- A healthy degree of skepticism.
- The ability to collaborate with other people.
- Strong communication skills.
- Numeracy (the ability to think and express themselves in quantitative terms).
- Computer literacy.

One suggestion for enhancing interpretation involves narrowing the scope of interpretation to a workable amount of focused data (e.g., specific indicator rates or percentages) rather than all available data at once. Another important step in the interpretation process is evaluating the strength of data according to five aspects: 1) their clinical relevance to multiple stakeholders, 2) the range of health care processes and outcomes that they address, 3) the degree of reliability and validity of the methods and findings, 4) the

degree of variation (fluctuation in processes and spread/dispersion around an average value), and 5) how much control providers have over the process or outcome measured by the data.¹⁰⁴

Interpreting the results of multivariate statistical analyses can be complicated; it often is helpful to seek advice from statisticians. For example, when determining the statistical significance of the results, the experts remind us that a p -value of less than 0.05 is not a magical number; p -values can be substantially affected by sample size and variance.^{78,105} In some cases, p -values between 0.05 and 0.10 can signal important findings.

Another important issue is the difference between statistical significance and clinical importance. Clinicians need to judge whether or not the results are clinically significant—a decision that often is independent of the level of statistical significance.⁷⁸ For example, comparing a mean patient-reported pain level score of 6.2 for one large department receiving in-service education on treatment approaches with a mean score of 7.1 in a similar control group may be statistically significant but clinically insignificant and unacceptable relative to the target level of performance.

D. Display of Data and Results

For interpretation and dissemination to be effective, it is essential to convey the findings and key messages as clearly and accurately as possible. Several considerations in selecting data displays include:

- Who is the audience?
- What is the most important message? (Do not drown the audience in data.)
- What do you need to present a complete and accurate representation of your findings? *Be careful to avoid the pitfall of emphasizing only the positive.*
- What graphical display capabilities do you have?

The most commonly used display tools are the pie chart, bar chart, and line graph.

Pie charts are most useful for displaying frequencies (or percentages) of single items

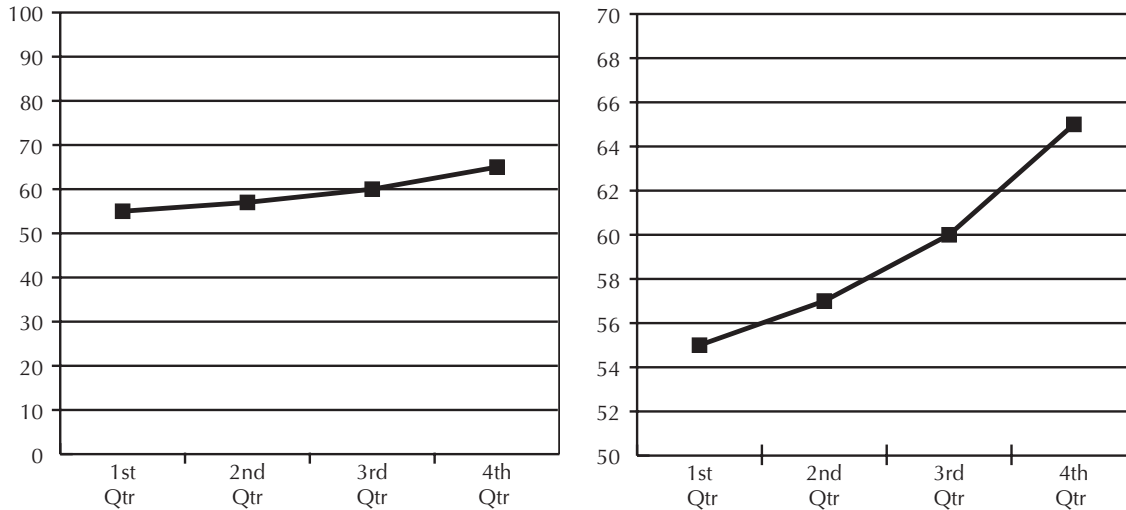
Figure 5.



that add up to the total number (or 100%) (see **Figure 5**). Bar charts are effective when displaying differences between groups (on the horizontal axis) in frequencies or percentages. Line graphs are particularly useful for spotting trends in a process.⁹⁹

Akin to the concept of multivariate analyses, more advanced data display tools are useful for demonstrating multiple findings (e.g., rates, priorities, outcomes) on the same page. Examples of multiple measure display tools include 1) the balanced scorecard, 2) a dashboard display, 3) a performance matrix, 4) a radar chart, and 5) a stratified multivariable display. Additional information on these data display tools can be found in *Tools for Performance Measurement in Health Care: A Quick Reference Guide*.⁹⁹

Displays of data should be as clear and easy to read as possible. For example, use of the three-dimensional option when displaying the bars of a histogram can make it more difficult to determine the y-axis intersection. All legends and axes should be clearly labeled because the audience may not take the time to read accompanying text or they may not grasp the point(s) without subsequent reference to the material. The scale of the horizontal (x) and vertical (y) axes should be appropriate to the range of possible values. For example, depicting a change over time of 10% looks very different (and potentially misleading) on a vertical axis scale

Figure 6. Using Appropriate Scales on Graphs

This figure shows that using different vertical scales can affect the perception of the change in scores.

ranging from 50 to 70 than on a vertical axis scale ranging from 0 to 100 (**Figure 6**).

E. Dissemination of Information

Given that substantial time and resources have been invested to collect and interpret the data, it is important to share the findings as widely as is appropriate. Disseminating the results of the analysis process helps raise awareness in the organization of how it is performing with respect to pain management.

Strategies or formats for dissemination include:

- Verbal representation (e.g., lecture, pre-

sentations at staff meetings, other gatherings).

- Written reports (e.g., published articles, newsletter).
- Visual displays (e.g., posters, story boards).
- Electronic dissemination (e.g., organization-wide Intranet, external Internet using list-serv).

It is important to know your organization and how information is best received. Think of creative ways to communicate your results. Make the learning experience interesting—even fun. When possible, use multiple methods such as a verbal representation and written report. Consider sharing your experiences (both successes and challenges) outside your organization by submitting an article to a journal.

SECTION VII:

Improving Your Performance

This section reviews the steps related to designing and instituting actions or interventions (*design/act*) to achieve desired improvements. Interventions can vary widely from changing structural aspects that support pain management (e.g., vital sign flow sheets) to adding/enhancing care processes (e.g., assessing patient pain). Several examples of pain improvement interventions are discussed.

A. Designing a Pain Improvement Intervention

After the team has completed analysis of data gathered to assess current practice, hypothesized root causes, and prioritized/selected opportunities for improvement, the team can begin to plan interventions. These interventions will comprise specific actions such as implementing an educational program for patients and staff. Careful planning of the intervention will help ensure that it can be accurately evaluated for success. Aspects of implementation to consider include designing the intervention, conducting a pilot test before widespread application, and identifying an approach to measure the impact of the intervention(s) before integration into normal organizational processes.⁹⁹

Designing interventions will involve detailed planning of all aspects of the intervention such as developing or selecting written materials and defining changes to care processes. Other planning considerations include deciding who will be involved in testing, what information they will need, and how will it be communicated. Roles and responsibilities of project team members and other champions of the improvement intervention should be clearly defined. Details of operationalizing the intervention, projected

timetables, and identification of measurable success factors also are important considerations. If target performance goals are established for the intervention, care should be taken that these do not represent levels below established standards of care, regulatory requirements, or other requirements when these are applicable. A target performance goal can serve as a reference point for measuring the success of the intervention. For example, one organization set a goal that 100% of their patients receive information on the importance of pain management.⁴⁸

Assessing the educational needs at your organization is an important part of the evaluation of current practice. Although education alone may not change care, improvements are unlikely to occur without it. Studies examining this area have suggested the need for improved professional education curricula addressing pain management.¹⁰⁶⁻¹¹⁰ When designing educational interventions consider the needs of:

- **Clinicians.** Provide a solid foundation for staff to practice good pain management and continually reinforce these practices through an initial program and regular updates. Tailor programs as necessary based on needs identified through assessments and support staff attendance by providing time. Changing clinician behavior also will require the influence of role models, the application of theory to actual clinical practice situations, and feedback on performance.
- **Patients.** Tailor the extent of information based on needs (e.g., hospice patients probably need more comprehensive information than patients having an outpatient surgical procedure [K. Syrjala, PhD, personal communication, 2001]). Use results of knowledge and attitude assessments to evaluate unique patient needs, including reading and language skills, education, and so on. Use a variety of approaches such as printed materials, video, in-house TV station, and one-on-one teaching.

For example, consider the steps involved in planning an educational program about pain management for staff. Specifics of the

program content must be developed and a method of delivery determined (e.g., lecture, self-directed learning, teleconference). Staff must be identified for participation, the success factors determined (e.g., a minimum test score on a posttest), and a timetable established for staff attendance.

There are many other interventions to consider in developing a comprehensive improvement initiative. A few examples include:

- Developing policies and standards of care.
- Enhancing documentation through revision of forms or redesign of electronic data entry systems.
- Development of pocket cards, analgesic conversion charts, and other clinical tools to assist clinicians.
- Assigning accountability for pain management to specific staff.
- Developing competency evaluation strategies for clinical staff involved in pain therapies.
- Developing or revising standing orders as needed.
- Defining pain assessment protocols and implementing new instruments and reporting scales.
- Defining appropriate utilization of pharmacologic agents.
- Designing effective strategies to communicate pain management information to caregivers, patients and families, and all key stakeholders.
- Providing feedback on performance to effect changes in clinician behavior.^{46,93}

B. Testing and Implementing a Pain Improvement Intervention

After designing all aspects of the intervention, it is helpful to conduct a pilot test before full implementation¹¹¹ to identify problems that could affect the success of the intervention.^{44,67} Results of the pilot test may suggest the need to change aspects of the intervention's design, implementation

process, or evaluation approach. Addressing these issues early before proceeding with large-scale application of the intervention can prevent implementation failures, an unfortunate outcome that is costly in terms of both money and staff morale. It is worth noting again that improving performance is a repetitive process, and results may lead you to redesign the intervention and conduct further testing.⁶⁷ Another benefit of the pilot test is that the results can serve to persuade skeptics and cement support from leadership to expand the improvement intervention.

When proceeding with organization-wide implementation, be sure to include all the stakeholders in the process improvement activity. Involve as many clinicians as possible early in the process to foster ownership.^{45,112} As has been previously discussed, pain management is the responsibility of multiple disciplines, departments, and clinicians as well as patients. Therefore, the success of interventions will be enhanced by securing commitment from key individuals who can serve as champions during implementation in day-to-day practice. Some organizations have found it beneficial to phase improvement interventions in one unit at a time, allowing for learning and adjustment or improvement of the implementation process.⁴⁶ Others have focused first on organizational attitudes and broad system change. Again, knowing your organization well and adjusting your approach to what will work is important. Finally, allowing sufficient time for implementation of changes is critical to success.³²

C. Monitoring for Success

After implementing changes, close monitoring will be required initially to assess whether the intervention is meeting expectations and targeted improvement goals.⁶⁷ The collection and analysis of measurement data will help in evaluating the appropriateness of the project goals. Data may suggest that the goals need to be adjusted. Monitoring also will help determine whether the intervention is being implemented con-

sistently across the organization and will highlight areas needing additional support.

Influences external to the implementation process should be considered for possible impact. These include organizational factors such as mergers, ownership/personnel changes, or reorganization as well as other significant environmental changes (e.g., regulatory or reimbursement). Related to that, it is important to regularly review educational materials, documentation tools, guidelines, and standards compliance.¹¹³ Ongoing monitoring of performance improvement literature will alert the organization of the need to make adjustments as pain management and treatment options evolve.

After the success of the intervention has been established, the next priority is to ensure that the improvements are maintained. Again, measurement will be a critical factor in evaluating the intervention over time. Although it is necessary to determine that performance continues to meet desired goals, it may be possible to reduce the intensity (scope and frequency) of the measurement activity. Determining the level of monitoring necessary is part of ensuring sustained success.^{44,67}

D. Sustaining Change

A performance improvement initiative is successful when the improvements become a permanent part of the organization's routine. When an initiative succeeds, temporary changes in practice become operational processes (e.g., clinical pathways).

Be aware that change in practice behavior

and improved outcomes can lag months to years behind improvement efforts.¹¹²

Ongoing assessment of clinician knowledge¹¹⁴ and a series of educational and motivational activities repeated over time are necessary for lasting improvement in pain management practices.⁷⁴

It is important to set goals for ongoing improvement. For example, if initial implementation of the intervention was of a limited scope, it could expand to additional areas in the organization or across the entire organization. Measurement data might suggest other improvement opportunities that could be acted on. Performance goals might need to be raised. How does your organization's performance compare with that described in external references, if available? This is the time to secure a commitment for those resources and approvals necessary to maintain progress.

As performance across health care organizations improves, the "bar is raised" and ongoing attention will help ensure that practices remain current. Also, new advances will lead to new opportunities.

Finally, success should be celebrated. Communicating improvements effectively, and in a timely and ongoing way, will help to reinforce the permanency of the change. Positive reinforcement is a strong motivator. Recognize participants and share accomplishments with others in your organization through formal means (e.g., employee spotlight, staff recognition day, poster displays, newsletters, Intranet) and informal means (personal visit by organizational leaders, special lunch or treats).

SECTION VIII:

Understanding Factors That Affect Organizational Improvement

This section examines the potential of various factors to enable change (i.e., to facilitate improvement) or to be a barrier to change (i.e., to inhibit improvement). Also included is how the principles of total quality management can be applied to improving pain management performance.

A. Factors That Influence Change

Many factors influence an organization's ability to implement change and improve performance (see **Figure 7**). These factors can be grouped into the following four categories:

- Patient factors
- Clinician factors
- Organizational factors
- External/environmental factors

Many of these factors can be either barriers or enablers, or both barriers *and* enablers under some circumstances. A particular factor's degree of influence will likely vary according to the health care setting. For example, patient and family factors that affect compliance with pain treatment protocols are likely to have greater influence in the home health environment than in the hospital setting. In long-term care, some research has suggested barriers include less frequent contact with physicians and increased reliance on health care providers with little training in pain and symptom management, together with the increased incidence of cognitively impaired people who have complex medical problems.¹¹⁵

Maximizing the influence of enablers and minimizing the influence of barriers is key to

an effective improvement initiative. Each organization will have unique challenges that will need to be addressed (such as restructuring or new computer systems). The following sections describe issues that have been identified in the literature.

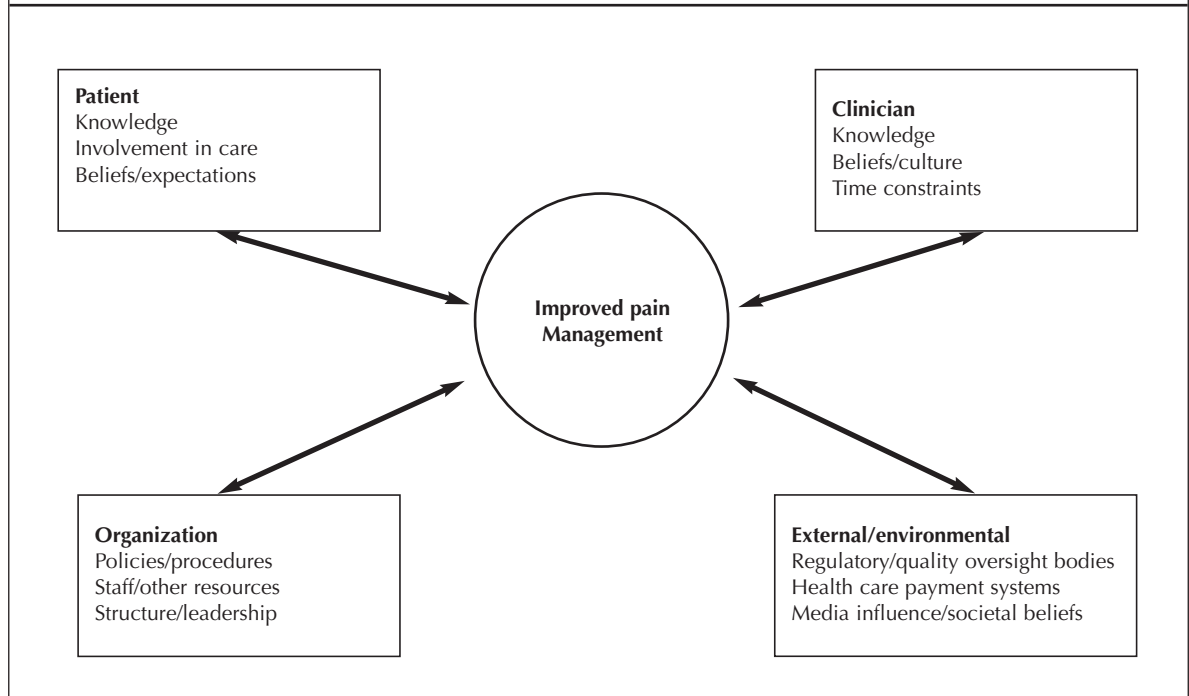
1. Patient Factors

The impact of a patient's pain beliefs and perceptions on his or her response to pain should be considered. In a recent study of chronic pain patients, pain beliefs and cognitions were found to account for a significant amount of variance in general activity, pain interference, and affective distress.¹¹⁶ The experience of pain "is a product not only of physiological mechanisms but also the patient's knowledge and beliefs, emotions, social well-being, as well as system factors, including the multiple caregivers involved with the patient's pain management."¹¹⁷

Tolerance for pain is affected by genetic, cultural, or personal belief systems. Elderly patients may begin with the expectation that they will have pain or that not much can be done.¹¹⁸ Similarly, Warfield and Kahn found that 77% of adults surveyed in 500 U.S. hospitals believed that it is necessary to experience some pain after surgery.¹¹⁹

Patients may be reluctant to report pain³² or unwilling to "bother" staff if they perceive that staff members are too busy.^{27,120} Sometimes patients use self-distraction behaviors that include laughter, reading, visiting, and so forth, which may be effective for a time but are sometimes misconstrued by staff to mean there is no pain.²⁷ Many patients believe that they should be stoic and bear the pain or that asking for pain medication is a sign of weakness. They may wish to disguise their pain so as not to worry family members.

Lack of knowledge or poor understanding about pain and treatment may contribute to fears about taking medication such as fear of addiction. Patients may not adhere to treatment due to unpleasant side effects from the medication.¹²¹ Patients may be uncomfortable assuming responsibility for self-control of pain,¹²² or may hesitate to use newer technologies such as patient-controlled analgesia

Figure 7. Examples of Factors Affecting Pain Management Improvement Initiatives

(PCA) devices. High cost and inadequate insurance coverage for medications can cause patients to use medication sparingly; they may fear that the pain will get worse and they should “save” the medication for later.

On the other hand, patients and their families can be powerful allies and an effective force for change in promoting improvements. Due in part to the increased availability of information from sources such as the Internet, patients have become more equal partners in determining health care choices.⁷⁶ Patients have increased knowledge and expectations specific to their treatment. The prominence of pain-related issues in the media has led to increased public awareness of the issues of pain management. Patient and family involvement in self-help organizations (e.g., the American Chronic Pain Association) also has increased the visibility of these issues.

2. Clinician Factors

Clinicians maintain a pivotal role in changing pain management practice. Clinicians can be defined broadly to include practitioners who are involved in clinical practice or clinical studies as well as clinical leaders in executive positions.

One well-documented clinician barrier is lack of knowledge about current evidence-based treatment.¹⁰⁷⁻¹¹⁰ This lack of knowledge often stems from inadequate education regarding principles of pain management in educational curricula.^{107,108,110} Clinicians’ misconceptions about pain treatments could include an exaggerated fear of addiction resulting from use of opioids;¹⁰⁸ confusion about the differences between addiction, physical dependence, and tolerance; or unwarranted concerns about the potential for the side effect of respiratory depression.¹⁰⁷

Like patients, clinicians are affected by personal beliefs and attitudes. For example, some clinicians may believe that pain is an important diagnostic tool, in spite of evidence that supports the use of analgesia in

instances where it previously was thought to be contraindicated.^{123,124} Others may believe that pain is too difficult to treat or is transitory and poses no harm. Some clinicians believe that a patient who is asking for pain medication regularly or from several doctors is abusing medication. Additionally there may be a mismatch between the clinician's perceived ability to successfully manage pain and his or her actual knowledge of current practice.^{107,110}

Finally, practice also is influenced by professional culture and mindset. Some clinicians believe that the professional is the best judge of the patient's pain and are unable to accept the patient's report.²⁷ For example, if the patient does not display behaviors associated with pain (such as grimacing or crying), the clinician may find it difficult to accept the patient's report of pain. Members of the health care team may disagree on the preferred treatment plan, or there may be lack of consensus between the health care team and patients and their families. In today's strained health care environment, competing demands on professional time and other institutional responsibilities sometimes result in inadequate attention to pain management issues.¹¹⁷

On the positive side, changing pain management care begins at the bedside. Therefore, clinicians are critical forces for improvement. Advances in pain medicine specialty education, new certification programs, and other educational options such as preceptorships have produced a cadre of clinicians with heightened awareness of, and expertise in, pain management.

Numerous professional organizations promote scientific approaches to practice, such as the American Pain Society, the American Academy of Pain Medicine, and the American Society of Pain Management Nurses. Many journals are devoted to pain management, such as the *Journal of Pain and Symptom Management*, *Pain*, *Clinical Journal of Pain*, *Journal of Pain*, *Pain Management Nursing*, and others. There also is a proliferation of clinical texts, guidelines, position statements, and evidence-based practice recommendations.

3. Organization Factors

Organizations can enhance or impede improvement in pain care in ways that may not be obvious, yet are highly influential. Sometimes, well-intended policies and procedures can hinder the process. For example, documentation forms may not have a space for entry of pain assessment findings. Standing orders may be outdated compared with current recommendations.

Clearly, adequate resources are essential for a successful effort. These include, but are not limited to, the dedication of staff and equipment resources for the improvement initiative. The regular availability of appropriate medications, supplies, and equipment needed in daily patient care is important to organizational improvement. For example, insufficient numbers of PCA pumps could lead to delays in initiation of therapy. Conversely, ready availability of some items can be counterproductive. For example, stocking of meperidine on units makes it an easy choice as a first-line agent, which can reinforce established patterns of prescribing, while preferred agents for pain management may not be as readily accessed.

Of course, the most important resource issue is staffing effectiveness, which includes staffing levels, experience, and education of nurses and other direct and indirect care staff. When decreased numbers of professional staff (or increased numbers of nonclinicians) are caring for increased numbers of patients and/or patients who are more severely ill, it can be difficult to give pain management the attention it deserves. Similarly, staff turnover can have a negative effect on educational interventions and continuity of care.

Organizational structure and culture also influence improvement activities. Experts point to lack of accountability for pain management as one of the greatest barriers to improvement.^{26,27,120} Related problems include lack of coordination between departments and pain management teams from different specialties and, in some instances, difficulty in gaining organization-wide acceptance for the work of individual departmental initiatives.¹²⁵

Many of these barriers are readily overcome by key enabling factors associated with the organization. Organizations that have a pain management champion—an individual who acts as a role model and who is highly motivated, energetic, and often charismatic—can be very successful in improving performance.¹²⁶

Similarly, there is a greater likelihood of success when leadership is interested and involved in the initiative.¹²⁷ The literature shows that change is most effective when primary change agents (change champions) provide clinical leadership. Sound management practices play a role as well. For example, recent studies of long-term care organizations have found that certain characteristics of top management such as job tenure, educational experience, and professional involvement appear to affect the adoption of innovative practices.^{115,128} Computerization also can be an effective tool for change by supporting consistent documentation, on-line knowledge, analysis, and timely feedback.

Finally, some organizations have a structure and culture that embraces change. Organizational change has been studied extensively in the organizational management field, and various theories and strategies have been developed.¹²⁹ For example, Zaltman and Duncan¹³⁰ identified the following four strategies for implementing change in organizations: 1) reeducation, which is based on unbiased presentation of fact and assumes that rational people will adjust behavior accordingly; 2) persuasion, which attempts to bring change through bias in structuring and presentation of information (i.e., selling an idea); 3) facilitation, which involves interventions designed to make change easier for individuals who already recognize the problem and agree on a remedy; and 4) power, which involves the use of sanctions or coercion to implement and maintain change. Beyer and Trice¹³¹ identified seven stages that organizations experience during a change process: 1) sensing of unsatisfied demands, 2) search for possible responses, 3) evaluation of alternatives,

4) decision to adopt a course of action, 5) initiation of action within the system, 6) implementation of change, and 7) institutionalization of the change.

4. External Factors

Patients, clinicians, and organizations are subject to influences exerted by the external environment. Compared with other countries, the United States has a pluralistic health care system. This system, which emphasizes freedom of choice, also increases fragmentation of care, thus complicating the effort to provide individual patients with well-coordinated care across settings over time.

Payment mechanisms relating to medications and specialized pain treatments and services are not always designed to optimize pain management.¹³² For example, in a national survey of pain specialists, Carr et al.¹³³ found that two thirds of 223 anesthesiologists reported a trend toward reduced reimbursement for intravenous PCA; and of those, 29% believed this trend would lead to decreased use of this approach.

Sociocultural beliefs and trends also affect processes. An example is cultivation of an antidrug philosophy with campaigns such as “just say no,” which may foster misconceptions or fear. High-profile drug abuse cases related to pain management also influence behavior among patients and clinicians.¹³⁴ These beliefs and values often are manifested in statutes, laws, and regulations that seek to control clinicians’ prescribing practices.

In part, through increased visibility in the media, public opinion and attitudes toward pain relief have begun to change. Recent court cases concerning patients with unrelieved pain have heightened awareness of the need for appropriate pain management.⁷ Scrutiny of clinician practice includes not only the investigation of the overprescription of opioids but increasingly the study of cases of underprescribing.

Another powerful enabler is the fact that regulatory bodies such as state hospital licensing agencies and accrediting organizations have added specific requirements relat-

ed to pain management. A recent example is the announcement by the Secretary of Health and Human Services of the intention to publicly report nursing home comparative performance information specific to pain management and other clinical care issues.¹³⁵ Similarly, the advances in scientific research, as well as the explosion of electronic and written health-related materials for both consumers and professionals, have greatly enhanced the knowledge base about the need for proper pain management.

B. Improving Pain Management Through the Principles of Total Quality Management

Though this monograph has emphasized continuous quality improvement using a structured process, it is worth noting that continuous quality improvement is one element of the overall principle of total quality management.¹³⁶ McCaffery and Pasero, in their landmark publication entitled *Pain Clinical Manual*, have thoughtfully applied the 14 principles of total quality management to improving pain management (see box below).²⁷ The effectiveness of organizational improvement initiatives will be enhanced by application of many of the points contained within these general principles.

The 14 Points of Total Quality Management Applied to Improving Pain Management

1. Create constancy of purpose for improvement of care and service.

Concentrate on a long-term plan based on a patient-focused mission (e.g., providing patients with attentive analgesic care). Consistently model the vision of the organization (e.g., each person is a unique individual with certain rights). Enable staff to continuously improve costs, services, and patient satisfaction through well-designed pain management plans. Invest in a plan for continuing education and a system of rewards to encourage innovation in staff. Treat continuous improvement of pain management as an ongoing obligation to the patient.

2. Adopt the new philosophy.

Quality pain management must become a driving passion of the organization, so that undertreatment of pain in any care setting is immediately recognized as incompatible with the institution's mission and unacceptable to all of its staff and physicians.

3. Avoid dependence on inspection only.

Traditionally, errors and problems are discovered after the fact through a process of quality assurance (inspection). This inspection process must be replaced with an improvement process that prevents errors and problems. Stop endless data collection on unrelieved pain, and establish a pain care committee to analyze and synthesize the data; develop plans to correct current pain problems and prevent the occurrence of new problems.

4. Avoid the practice of awarding business on price alone.

Quality outcomes are possible only when quality materials, supplies, and processes are used. Consider long-term cost and appropriateness of products rather than just their purchase price. Cultivate long-term relationships with vendors, rather than simple short-term purchasing relationships. This requires that the supplier must consistently meet the needs of the organization and com-

The 14 Points of Total Quality Management Applied to Improving Pain Management (continued)

mit to continually improving its product (e.g., equipment and supply manufacturers become partners in providing attentive analgesic care by requesting input on how their product can be improved to help clinicians provide better pain care). For example, manufacturers of PCA pumps often rely on suggestions from clinicians who use the pumps to improve the technology. Many suppliers offer a variety of free consultative services and sponsor educational programs for institutions that are interested in improving pain management. This point has implications for the organization's internal "suppliers" (staff and physicians) as well. Cultivating loyalty and trust provides a secure practice environment and long-term relationships with less staff and physician turnover.

5. Constantly improve every process for planning, implementation, and service.

Improving pain management is not a one-time effort. Teamwork is essential. Approve the establishment of an interdisciplinary pain care committee. Empower front-line staff to contribute to the improvement process (e.g., encourage them to serve as members of the pain care committee), to constantly look for ways to reduce waste and improve quality, and to become accountable for pain management (e.g., become a pain resource nurse).

6. Institute teaching and reteaching.

On-the-job training alone encourages worker-to-worker propagation of practice. Many practices are faulty and outdated (e.g., promoting the idea that there is a high risk of addiction when opioids are taken for pain relief). Teach and reteach (continuing education) front-line staff members the important aspects of pain management, give adequate support for providing effective pain relief, and meas-

ure the effectiveness of the training. Assign new staff members to trained preceptors who will perpetuate quality performance. Remember to encourage, not drive, staff. Adjust the preceptor's workload so that quality training is possible.

7. Ensure qualified leadership for system improvement.

The job of management is to lead. Leading is moving staff toward a vision, managing is helping them do a better job (e.g., ensure that pain care committee members attend meetings, adjust the workload of the PRN to allow time for assisting others with pain problems).

8. Drive out fear.

Many experts consider this the most important of the 14 points because when staff fear failure, embarrassment, or retaliation, they are unwilling to make suggestions and recommendations for change. This results in a lower level of quality. Consider and value all staff suggestions. Appreciate that front-line staff members are "in the trenches" and have invaluable knowledge of how to improve pain management (e.g., extend the concept of the PRN program to all levels of nursing staff).

9. Break down barriers between departments.

The goals of the various departments must complement one another, or quality is jeopardized. Foster teamwork by dismantling systems that stop staff from working together to accomplish a project. Help staff understand the needs of other departments and work together toward the organization's vision. Promote processes that support the vision (e.g., initiate postoperative intravenous PCA in the postanesthesia care

The 14 Points of Total Quality Management Applied to Improving Pain Management (continued)

unit to avoid the dangerous scenario of patients receiving intramuscular opioid injections on the clinical unit while waiting for intravenous PCA to be initiated).

10. Avoid trite slogans, exhortations, and targets.

Avoid using derogatory and ambiguous slogans such as “Just Do It!” These types of slogans provide no direction and may offend and repel some staff and physicians. If slogans and motivational phrases are used, explain them (e.g., “Our slogan is ‘Preventing Pain Is Easier than Treating Pain.’ This means that we remind patients to request analgesia or press their PCA buttons before their pain becomes severe.”). Let staff and physicians know exactly what is being done to make it easier for them to provide better pain management (e.g., post in all clinical areas a list of the names and numbers of supervisors and PRNs available to help with pain problems).

11. Eliminate numeric quotas.

Quotas place a cap on productivity and conflict with the continuous nature of quality improvement. Pain issues and problems are ongoing and unending. Encourage staff to look for more than one problem to solve and more than one way to improve pain management. Allow pain improvement work groups to evolve to a permanent standing interdisciplinary pain care committee.

12. Remove barriers to pride of workmanship.

Delegate authority and responsibility to staff members to foster autonomy while

promoting the philosophy of an interdisciplinary, interdepartmental approach to pain management. Avoid focusing on individual or department performance (e.g., pain management is everyone’s responsibility); support teaching nurses to titrate analgesics, individualize doses, and manage side effects.

13. Institute a vigorous program of staff education and continuing education and self-improvement.

Encourage staff members’ ongoing personal development even in areas not related to their jobs. Continually provide updated pain management information to staff and consider the need for updated pain management technology to improve performance (e.g., evaluate and reevaluate the way pain is being assessed and managed and update approaches on the basis of advances in pain knowledge and technology).

14. Take action to accomplish the transformation.

Put everyone, including top management, to work on sustaining the organization’s new mindset (e.g., discuss the institution’s philosophy of providing attentive analgesic care with all new employees during their orientation and update long-term employees during their annual cardiopulmonary resuscitation and fire prevention recertification classes).

Source: McCaffery M, Pasero C, eds. *Pain Clinical Manual*. 2nd ed. St. Louis, MO: Mosby; 1999:714-715. Used with permission.

SECTION IX:

Examples of Organizations Implementing Pain Management–Related Measurement and Improvement Initiatives

A. Overview

The purpose of describing these initiatives is to provide examples of how quality improvement techniques can effectively support pain management improvement. The examples illustrate how organizations used systematic processes for improvement and how measurement provided important data to support improvement activities.

These are real-world examples, rather than hypothetical ones. They illustrate how people committed to quality improvement in pain management achieved success within their organizations. The particular examples were chosen both to provide a diversity of settings and experiences and to suggest strategies for overcoming obstacles to pain management improvement initiatives. The settings are a home health agency, a rural hospital, an academic medical center, and the hundreds of facilities under the Veterans Health Administration.

Improving pain management in home care, away from the institutional setting where there is greater control over medication delivery and therapeutic options, has its own special challenges. Patient and family social, cultural, and economic factors greatly influence the care received in the home. Staff involved in quality improvement initiatives are geographically dispersed thereby adding to the complexity. The first organiza-

tional example, which describes the experience of the Visiting Nurse Association & Hospice of Western New England, Inc., highlights the coordination of care across settings and demonstrates the continuous nature of the improvement cycle.

Small and rural hospitals sometimes operate under extremely tight resource constraints, which can result in staff serving multiple roles. With an average daily census of 32, Memorial Hospital of Sheridan County, Wyoming, overcame challenges when the Pain Team implemented their “No Pain, Big Gain” campaign. This example demonstrates the benefits of participation in external educational programs and collaborative activities to maximize internal resources. Strong leadership support, creative improvement strategies, and positive recognition are highlights of the initiative.

The pain management improvement efforts conducted within the University of Iowa Hospitals and Clinics (UIHC), an 831-bed teaching facility, highlight the coordination of pain management initiatives within a large, sophisticated, and complex quality improvement organizational structure. This example illustrates how UIHC uses both centralized and decentralized approaches to pain management.

As health care systems increase in complexity, the process of improving pain management also becomes more complicated. Broad-scale initiatives require a substantial investment of time and resources. One key to success is giving organizations within a health care system the option to customize initiatives to suit their particular needs. The fourth example describes the implementation of the National Pain Management Strategy within the Veterans Health Administration (VHA). The example presents strategies for measurement and improvement driven from the Washington, DC office, as well as the experience of two hospitals participating in a VHA-sponsored Institute for Healthcare Improvement “Breakthrough Series” model collaborative.

There are more similarities than differences in these four case examples. They demonstrate that quality measurement and

improvement techniques can be used effectively in organizations of varying size and complexity. Many of the lessons described are consistent with the basic tenets of the quality improvement field, such as ensuring leadership commitment early in the process, using multidisciplinary teams, collecting and disseminating data effectively, sharing success and providing positive feedback to staff, and accepting the fact that change takes time, while understanding that perseverance will pay off in the long run. Of course, each organization—as well as each improvement project—is unique. Readers are encouraged to use these case studies not as blueprints, but as resources to adopt and adapt to their particular needs.

B. Educational Effectiveness in a Home Health Agency: Visiting Nurse Association & Hospice of Western New England, Inc.

Late in 1998, the home and community services division of the Visiting Nurse Association & Hospice of Western New England decided to evaluate pain management practice across its home care and hospice divisions. This agency, originally established in 1907, is now part of the Baystate Health System, which includes three hospitals and an infusion and respiratory services company. The home and community services division has three sites in suburban and rural locations; all three sites offer Visiting Nurse Association (VNA) programs and two offer hospice care. The need to know whether pain was being managed effectively throughout the division, coupled with customer satisfaction opportunities and external factors, led the hospice staff to propose this initiative. In addition, it was one in which the entire division could participate, thus promoting unity and teamwork among staff that includes more than 150 nurses as well as 95 home care aides.

1. Special Challenges

Agency staff recognized that the special challenges of this pain improvement initiative included those that are common to the provision of health care in the home environment (e.g., earlier discharge from acute care settings have resulted in increased acuity of illness among home care patients, while the length of home care service is decreasing) and those specific to this organization (e.g., coordinating activities across multiple offices that are geographically distant and between VNA and Hospice services). Another challenge involved language barriers in the special populations served by this agency, including people of Russian, Spanish, and Vietnamese origin. Also of special concern are the clinically complex patients and those requiring highly technical equipment or procedures. These external and organization-specific factors presented additional dimensions for consideration in designing a successful pain management improvement project.

2. Choosing a Methodology

The Juran Institute's Performance Improvement methodology was used for this project.¹³⁷ In preliminary meetings, team members received education on the four steps of the Juran process: 1) identification and establishment of the project, 2) determination of the root cause of the problem, 3) implementation of a solution, and 4) holding the gains. To facilitate goals of care coordination across the system and integration with system quality improvement activities, a member of this project team also served on the hospital quality improvement committee. Quarterly reports on the project were provided.

3. Assembling a Team

Members of the pain improvement project team were recruited from volunteers within each program and from each site. Other members included a representative from both the quality assurance and the education departments as well as the clinical supervisor for the infusion and respiratory services company; the team was chaired by the hospice

director. Team members were chosen based on an expressed interest in pain management and a willingness to serve as a resource and change agent at their respective offices. Meetings were held monthly until project completion in December 2000 (see **Table 11**). The medical director received and reviewed minutes, providing input as indicated. Authority for supporting the project-identified changes and allocating resources was provided through the director of risk management and the vice-president of the agency. The team's overall mission was to evaluate, improve, and standardize pain management across the home and community services division.¹³⁸

Table 11. Visiting Nurse Association & Hospice Of Western New England Pain Performance Improvement Time Line

Date	Event
March 1999	First team meeting
December 1999	Pain assessment tool evaluation and revision to create a standard form; Pretest given; Pretest results tabulated
January 2000	Equianalgesic card finalized
March 2000	Project presented at Baystate Health System performance improvement meeting; Home care aides in-service
April 2000	Protocol/procedure review, revision, and creation; In-services conducted for nursing staff
June 2000	Competency testing after in-services; Electronic medical record enhancement
September/October 2000	Focus audit; Distribution of pain newsletter (self-learning model)
December 2000	Competency retest
January/February 2001	Focus audit

Source: C. Rodrigues, Visiting Nurse Association & Hospice of Western New England. Used with permission.

4. Identifying the Problem

The members of the team began by looking at criteria, including guidelines (e.g., those of the World Health Organization and the Agency for Healthcare Research and Quality [formerly the Agency for Healthcare Policy and Research]) and standards (e.g., those of the Joint Commission on Accreditation of Healthcare Organizations). They completed a literature search and used brainstorming to identify potential opportunities for improvement. Among the items identified in the brainstorming process, clinician knowledge was selected for further examination. The team decided to evaluate the knowledge and attitudes of nurses. They also decided to conduct a medical record audit and to review patient and family satisfaction surveys and organizational documents (internal agency policies and procedures) to further pinpoint opportunities for improvement.

a. Test knowledge and attitudes

To assess staff knowledge, the team adopted the survey tool developed previously within the Baystate Health System, but made slight modifications to address home care issues. The survey was completed by approximately 80% of the nursing staff. Results pointed to opportunities for improvement related to conducting pain assessments, equianalgesic dosing, pain management in the elderly, and opioid side effects.

b. Review medical records

Chart audits were conducted to evaluate multiple aspects of pain management. The review highlighted the need to improve the consistency and completeness of documentation related to pain assessments and treatment. For example, the documentation of patient response to treatment in visits following interventions for pain management was inconsistent. It also was noted that pain reports were not always described using discrete ratings.

c. Review organizational documents

Organizational documents addressing issues related to pain management were reviewed. Policies and procedures such as a

patient rights statement and a pain assessment policy were evaluated. Many of these documents had been developed 4 to 5 years earlier and needed updating or revision.

Based on the results of this baseline assessment, some goals for improving pain management across the division were identified. Particular goals included:

- Education of staff, patients, and family regarding good pain management.
- Improvement of availability and timeliness of analgesic medications.
- Enhanced continuity when transitioning from the acute care setting to home care.
- Improved documentation of pain assessments and treatments.
- Improvement or maintenance of high levels of patient satisfaction.
- Increased use of nonpharmacologic approaches.

5. *Implementing Interventions*

a. **Education**

Educational interventions were identified by the team to address staff and patient knowledge deficits, and to enhance the transition from acute care to home care. To address staff needs, a 2-hour curriculum (two sessions of 1 hour each) was designed that had multiple learning formats and offered continuing education credits. Staff attended lectures and participated in small group discussions and role-playing exercises. Content for the sessions included:

- Physical, psychological, and social aspects of pain.
- Misconceptions in assessing pain.
- Evidence-based pain interventions.
- Communicating pain information to physicians.

The pain committee member at each office actively participated in conducting the educational sessions, helping to establish these individuals as mentors and change champions. A laminated trifold pocket card was provided to all staff for quick reference to the World Health Organization analgesic ladder, opioid equianalgesic dosing, and opioid/coanalgesic equivalency tables. Nurses provided one-on-one education for patients

and families, focusing on the importance of recognizing and reporting pain, using a pain scale to describe pain, and understanding their treatment regimen. All patients experiencing pain as a problem received a pain scale for use in reporting their pain. Finally, to address the goal of enhancing the transition from acute care to home care, the agency provided information to the hospital about common problems such as patients discharged with prescriptions that are difficult to fill or that require titration every 4 hours.

b. **Documentation**

Pain assessment documentation was another area addressed by the project team. Combining the best-practice findings from the literature review with previously developed tools, they created a comprehensive but user-friendly tool to capture pain assessment information. Next, the agency's electronic documentation system was reviewed for ways to better capture pain-specific information. Updates were made to include pain as an identified problem. When pain was selected as a problem, the system would trigger specific questions for the clinician to ask at each subsequent visit. Documentation capabilities were further enhanced with the introduction of a completely new electronic medical record system in 2002. The new system offers more detailed care plans, a focus on processes such as reassessment, and the ability to update the central database from any phone line, allowing all staff access to the latest visit information. The central database also will support the analysis of patient-specific data over time to create reports of patterns and trends in care. Finally, organizational pain management policies and procedures as well as the patient's rights statement were updated or revised as necessary.

c. **Treatment interventions**

To improve the availability and timeliness of analgesic medications, the team identified local pharmacies that maintain a 3-day supply of critical medications. Additionally, an arrangement was established with a specialized hospice pharmacy that provides overnight delivery of medications for hospice patients.

Another intervention involved the addition of nonpharmacologic treatments for hospice patients, including massage, aroma therapy, guided imagery, and heat/cold applications. Treatments were provided by a volunteer specialist.

6. Analyzing Processes and Results Leads to Redesign

a. Education

To assess the results of the clinician educational intervention, the annual nursing competency assessment process was used. A medication exam was developed that included four questions specific to pain management. They were designed to test the areas of weakest performance on the initial knowledge and assessment survey. The results showed that across the agency, scores on these questions averaged a disappointing 63%. The pain project team began to examine the educational interventions and processes to understand why scores were not higher. They identified the following problems:

- Only 25% of the staff were able to attend both in-services.
- Timing of the sessions during the summer was complicated by vacations and heavy caseloads.
- New staff had joined the agency and had not received the educational intervention.

The pain team took action to redesign the educational intervention. A self-guided learning approach was developed with the same materials. A series of one-page newsletters was created and distributed weekly to all staff and also incorporated into the new employee orientation. Examples of covered topics include assessment of pain and types of pain, titration and equianalgesic dosing, and side effects of medication related to pain management (**Figure 8** shows a sample newsletter). They also received *Management of Cancer Pain: Adults*¹³⁹ and the pocket cue card. Retesting of all staff was conducted after the second educational intervention, and results showed significant improvement, with a mean score of 94% (**Figure 9**).

Transition and coordination of care

between the acute and home care setting have been improved through educational exchanges between the hospital and home care staff. Pain specialists from the health system pain clinic provide home care staff with special in-services on new technology once or twice each year, as well as consulting on complex treatments or difficult-to-manage pain.

As a result of education, patients and families have become increasingly aware of the importance of reporting and managing pain. In fact, phone messages from patients frequently include specific pain rating scores, noted Hospice Director Carol Rodrigues, RN, MS, CHPN.

b. Documentation

Ongoing quarterly audits, focused on documentation related to assessments, interventions, and reassessments, show a trend toward more consistent and complete information. The team anticipates that the newly introduced electronic record will provide additional analysis capabilities and patient-level data.

7. Sharing the Success and Sustaining Change

Improvements were shared with all staff through their office pain team member/mentor. This pain improvement initiative was selected as one of the Baystate Health System's eight most successful initiatives for 2000. Team representatives did a poster presentation and attended a reception in April 2001. A presentation also was made at the Hospice Federation annual meeting, and information was shared at the Massachusetts meeting of the National Association of Home Care. The agency further shared their experience in an article that was published in the *American Journal of Hospice & Palliative Care*.¹³⁸ The initiative has engendered excitement in staff and served as the springboard for further improvement activities.

Measures are being taken to sustain the improvements in pain management. The new electronic documentation system will continue to enhance pain-related documen-

Figure 8. Second Pain Management Newsletter Distributed by the Visiting Nurse Association & Hospice of Western New England

Pain Newsletter 2: Reasons for Good Pain Assessment and Management

- Improved patient satisfaction and quality of life
- Required by JCAHO for home health as well as hospice
- Supported by evidence-based practice
- May prevent litigation (several cases against RN staff for poor pain management)

What effect does pain have on a person's quality of life?

Physical

- decreased functional ability
- diminished strength, endurance
- nausea, poor appetite
- poor or interrupted sleep, no restorative sleep

Psychological

- diminished leisure, enjoyment
- increased anxiety, fear
- depression, personal distress
- difficulty concentrating
- somatic preoccupation
- loss of control

Social

- diminished social relationships
- decreased sexual functions, affection
- altered appearance
- increased caregiver burden

Spiritual

- increased suffering
- altered meaning
- reevaluation of religious beliefs

There are many *common misconceptions* on pain held by health care providers. Yet we know that:

- The patient and *not* the health care provider is the authority on his/her own pain.
- There are physiologic and behavioral adaptations to pain; the lack of expression does not equal lack of pain.
- Not all causes of pain are identified; no cause does not mean no pain.
- Respiratory tolerance is rapid.
- Sleep is possible with pain.
- Elders experience pain—do not express it as much.
- Addiction is rare: 0.1% to 0.3%.

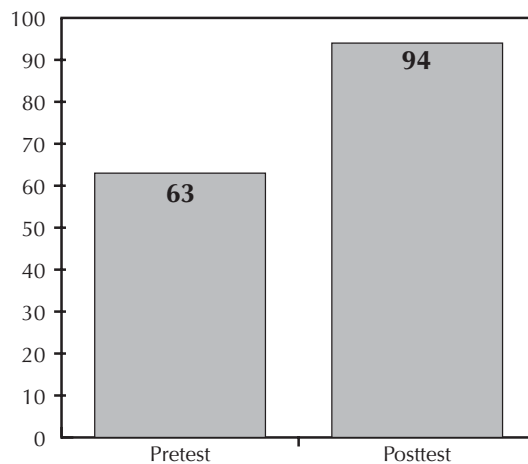
Source: C. Rodrigues, Visiting Nurse Association & Hospice of Western New England. Used with permission.

tation. Medical record review will enable monitoring of gains. Clinicians will be tested annually regarding their knowledge of pain management. Pain education has been integrated into the orientation program for new staff. Family and patient satisfaction will continue to be monitored via questionnaires. To expand expertise within the agency, two new staff members each year will receive spe-

cialized education to serve as pain resource nurses. A new admission booklet is being designed to include important pain-related material along with general agency information. This is part of an ongoing commitment to make pain management a normal part of the organizational culture.

This pain improvement initiative required time, patience, a willingness to redesign

Figure 9. Mean Score on Staff Pain Management Knowledge Survey: Visiting Nurse Association & Hospice of Western New England, Inc.



This histogram shows the mean scores on a staff pain management knowledge survey before and after an educational intervention at the VNA & Hospice of Western New England, Inc. (C. Rodrigues).

interventions, and use of nontraditional approaches. These lessons can be applied to any pain improvement project in any health care setting.

C. Creative Improvement in a Rural Hospital: Memorial Hospital of Sheridan County

Memorial Hospital of Sheridan County, an 80-bed facility nestled beneath the Big Horn Mountains of Wyoming, serves the medical needs of a largely rural county with a population of 26,000 people as well as the surrounding area. The organization's mission, "to provide quality health care services that improve the well-being of our community," is exemplified in their pain management improvement efforts.

1. Doing Some Homework

The first steps toward developing this pain management improvement initiative were

taken in November 1999, when the director of nursing at Memorial Hospital, Micki Bonnette, RNC (home care/hospice), and Pam Hall, RN (radiation oncology), attended a 1-day program entitled "Cancer Pain Role Model Program," conducted by the Wisconsin Pain Initiative. Subsequently, Ms. Bonnette and Ms. Hall applied to and completed the pain nurse preceptorship program at the Medical College of Wisconsin–Milwaukee to further develop their pain management expertise and support development of an institutional program.

Upon return to Memorial Hospital, Ms. Bonnette spearheaded activities to assess current organization-wide practice. The first step was an organizational self-assessment utilizing a structured instrument. Second, a knowledge and attitude survey specific to pain management was distributed to nursing staff. One section of the survey asked the nurses to identify barriers they experienced to providing quality pain management. Lastly, an organization-wide sample of charts was reviewed by using a slightly modified version of the Medical Record Audit Form.⁵⁴

The results of these measures of current performance provided an indication of both the strengths and opportunities for improvement in pain management practice across the organization. Specifically, the chart audits revealed inconsistent documentation of pain assessments and patient-reported pain intensity ratings. In part, this was because there was no specific location to document pain-related information on existing medical record forms. The staff survey results identified the following priority areas for educational interventions: 1) pain assessment and managing pain in specialty populations, 2) pharmacologic management of pain, 3) non-pharmacologic interventions, and 4) psychosocial issues in pain. After compiling these data, Ms. Bonnette and Ms. Hall felt ready to convene a dedicated Pain Team to facilitate a pain improvement initiative.

2. Establishing a Team

A notice calling for interested persons to form a Pain Team was posted in May and

June 2000 on the hospital Intranet. Efforts were made to identify potential members from multiple disciplines and departments. The 12-member team met for the first time in August 2000 and included representatives from pharmacy, nursing (inpatient services and home care/hospice), radiation oncology, and anesthesiology. A nurse who specialized in counseling and chronic pain, and a nurse director of complementary medicine joined the team a year later. The Director of Nursing, also an active team member, provided strong management support and validated pain improvement as an institutional priority. The team first evaluated the results of the current practice assessments, considered the aspects of good pain management practice already in place, and developed a mission statement: “All patients have the right to pain relief.”

Meeting monthly from August through December 2000, the team selected objectives, defined interventions, and proposed a timeline for 2001. Additionally, a library of pain resource information was established, including a selection of key journal articles and guidelines, a copy of *Building An Institutional Commitment to Pain Management*, *The Wisconsin Resource Manual*,²⁶ and 30 copies of McCaffery and Pasero’s *Pain Clinical Manual*²⁷ for distribution on individual units. Two surveys, one for nursing and one for medical staff, were distributed to elicit information on educational needs (content) and preferences for teaching methods as well as scheduling options.

3. Implementing Improvements

The objectives for pain management improvement selected for 2001 (which are described in **Table 12**) fell into three general areas:

- Increasing awareness of pain management
- Staff and patient/family education
- Assessment and documentation (forms).

a. Increased awareness

The planning and initial work of the Pain Team was showcased in a weeklong kick-off in February 2001. The campaign, designated as

No Pain, Big Gain, was launched with numerous fun and educational activities to raise awareness among staff and the community of the organizational commitment to pain management (see the text box on pg. 75).

In March 2001, the patients’ rights statement was posted in all units and departments of the hospital next to the hospital’s mission statement. A pain resource manual was developed and placed on all units and in the physicians’ lounge, along with a copy of *Pain Clinical Manual*.²⁷ Information about the campaign was placed in medical staff mailboxes and the public was alerted through a special news release in the local paper.

b. Education

Multiple educational interventions were conducted during and after the campaign kick-off week. These included a pain symposium, a movie, a self-directed learning exercise, and printed materials. The traveling educational exhibit included a posttest with an optional extra-credit medication conversion problem. All patient-care staff were encouraged to complete the quiz. Special off-site educational interventions were offered for medical staff through collaboration with other community health care organizations. For example, in March 2001 a program was arranged with guest speaker Michael Ashburn, MD, President of the American Pain Society. A newsletter, *Pain News Weekly* was developed to further highlight and reinforce information. Finally, patient education interventions included the provision and review of information about patients’ rights and responsibilities, pain reporting and use of scales, and discharge instructions.

c. Documents and forms

One of the first actions taken by the team was to identify and select a designated pain scale. They combined a numeric rating scale of 0-10 with the Wong-Baker Faces scale⁶² on a laminated card and also selected the FLACC¹⁴⁰ pain intensity scale for preverbal, nonverbal, and cognitively impaired patients. Pocket cards with dosing guidelines for analgesics and equianalgesic charts were prepared for clinicians. Policies and procedures were revised and updated during 2001.

Table 12. Memorial Hospital of Sheridan County Pain Management Improvement Initiative

Objective	Actions	Measurement Approach	Status
Establish organization-wide multidisciplinary team	Invitation placed on Intranet Volunteers identified Team members selected	Not applicable	Full team convened August 2000 Team meets monthly or more frequently, if needed
Develop organizational mission statement and update policy and procedure documents related to pain management	Develop mission statement Revise/develop policies and procedures	Review organizational documents	Completed June 1, 2001 Statement posted in rooms December 2001 Policy and procedures approved and implemented August 2001
Patients receive notification of rights/responsibilities regarding pain management.	Develop rights and responsibilities brochure Provide education during the admission process Document teaching Revise admission form to document patient rights education	Review medical records	Admission process task force evaluates admission forms Brochure completed July 2001 Organization-wide in-service on brochure/education in July 2001 Admission form revision received December 2001; reaudit April 2002
Patients will receive information about pain control methods within first 24 hours	Staff education on objective and process	Assess patients over time	Survey of patients (n = 101) using the American Pain Society Patient Outcomes Survey in June 2001 Resurvey June 2002
Patients on the medical/surgical units will be assessed for pain using new pain documentation tool	Develop new assessment tool Pilot-test tool Educate staff on use of tool	Review medical records	Pain tool template finalized in July 2001 Form delayed at printer; final form received January 2001 Quarterly chart review showed steady improvement (93% compliance by third quarter 2001)
Patients are provided with pain education materials before discharge as applicable	Review discharge process Assess documentation forms Develop new form to document discharge	Review medical records	Previous change in discharge process documentation created a barrier (November 2001) New discharge form development (ongoing)
Provide reference materials and guidelines house-wide	Develop reference manual for each unit and physician lounge Obtain copy of <i>Pain Clinical Manual</i> for each unit Obtain reference materials for new Health Information Center	Not applicable	Pain reference manuals on every unit and in physician lounge in March 2001 <i>Pain Clinical Manual</i> obtained and distributed to each unit in December 2000 Health Information Center supplied with patient education materials
Provide staff education	Develop educational interventions Test for knowledge and attitudes Utilize multiple approaches	Knowledge assessments	Clinician survey for learning needs/preferences <i>Pain News Weekly</i> distributed monthly Posters: myths and tips In-services Off-site physician education Self-directed learning “No Pain, Big Gain” campaign

Source: M. Bonnette, Memorial Hospital of Sheridan County, Wyoming. Used with permission.

No Pain, Big Gain Kick-off Activities in February 2001

- An activity featuring cake and distribution of campaign buttons took place every day for the first week.
- There was a 45-minute in-service program on pain assessment and management, provided through a pharmaceutical company.
- There was a popcorn and movie day, featuring *I Got My Life Back*, a movie about chronic pain patients and pharmacologic management.
- *The Traveling Show* (Lions and Tigers and Pain—Oh NO!), a portable educational exhibit created on a pediatric bed frame, was taken to each unit and left there for at least 24 hours to accommodate all shifts. This exhibit provided key pieces of information about pain management, and introduced selected pain scales and examples of good documentation. Staff could take a quiz after studying the exhibit; 117 individuals did so.
- Laminated pain scales were distributed to all staff.
- Raffles and other rewards generated enthusiasm and provided additional incentives for participation.
- Special materials for physicians were initially placed in their mailboxes and then delivered via fax to their offices.
- A news release was sent to the local paper.
- Information on the campaign was provided to the recently opened Health Information Center. The Center is open to any community resident and provides Internet access (online documents), a library, educational materials (including pain-related materials), and access to health information.

From M. Bonnette, Memorial Hospital of Sheridan County, Wyoming.

A separate forms committee (including some Pain Team members) focused on revising forms to document patient assessments. This committee developed a new multidisciplinary screening and assessment tool that documents pain intensity, patterns and characteristics, psychosocial/cultural/spiritual issues, nutrition, and functional status. They also created a flow sheet to detail care when a patient's reported pain is greater than or equal to 4 in intensity and frequent monitoring is required.

4. Collaborating for Improvement

The Pain Team decided that the identification of clinician mentors or pain champions from the nursing staff on each shift would further reinforce changes in practice. Invitations were extended for interested parties, and three individuals were selected and added to the Pain Team. Shortly after the selection of the clinician mentors, participation in a multi-hospital pain improvement collaborative was approved by hospital leadership. The project presented an excellent opportunity for the mentors to develop their new roles. In April 2001, the three clinical mentors went to Denver, Colorado, for training associated with a collaborative project offered through the Voluntary Hospitals of America. In addition to project specifics, they received education about quality improvement principles and serving as a role model/preceptor. The project also included monthly "coaching calls," on-site visits, three live audio educational interventions, and networking with other organizations. Through participation in this collaborative project, Memorial Hospital received defined data collection tools, data analysis, and comparative feedback. Four indicators were measured at baseline and again 6 months later. They were:

- Receipt upon admission of written evidence of the organization's position on pain management.
- Receipt, prior to discharge, of education/explanation regarding pain and pain management.
- Screening at initial assessment.
- Pain assessment at discharge.

Based on a target sample of 30 records, improvements were seen in two of the indicators (education and assessment prior to discharge; see **Figure 10**). Although initiated in practice, delays in printing the revised admission form resulted in no evidence of improvement on the other two indicators. The team anticipates documentation will improve after implementation of the form in the first quarter of 2002 and will remeasure the indicators later in 2002.

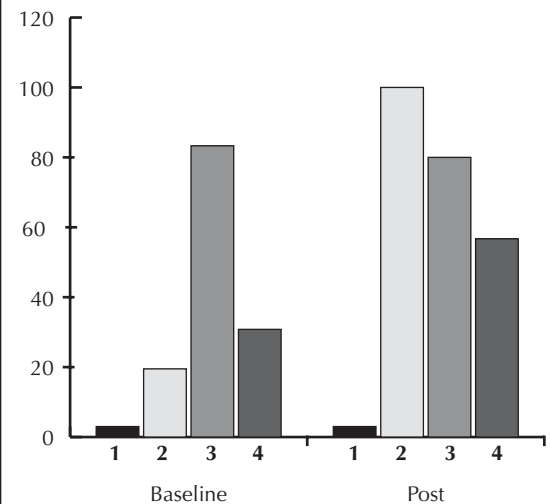
5. Integrating Nonpharmacologic Approaches

One of the most exciting interventions was the addition of nonpharmacologic approaches to pain management. A registered nurse who is a certified massage therapist was chosen to develop a complementary healing program, now known as the Integrated Healthcare Program. To promote awareness and address misconceptions, she made office visits to physicians to share information and discuss the program. She recently completed certification in imagery and has held in-services for staff on relaxation, imagery, and massage techniques. By providing massage therapy and imagery to inpatients, she helps nonpharmacologic approaches gain acceptance. Some physicians have established standing orders for massage therapy for their patients.

6. Sustaining Change

The Pain Team, with administrative support, has made pain an institutional priority. The initiative has been marked by creativity. Efforts were made to make educational activities interesting, fun, and accessible. Information is shared regularly at staff meetings, and desired changes in pain management practice are recognized. For example, team members may randomly check charts for examples of good documentation or look for staff wearing the campaign buttons. Individuals are immediately acknowledged and treated to a special award such as a movie pass or gift certificate. This use of positive reinforcement has marked all aspects of the initiative.

Figure 10. Baseline and Post (6 Months) Indicator Data: Memorial Hospital of Sheridan County Clinical Indicators



Indicators

1. Receipt, upon admission, of written evidence of organization's position on pain management.
2. Receipt, prior to discharge, of education/explanation regarding pain and pain management.
3. Screening at initial assessment.
4. Pain assessment at discharge.

This figure shows change across four indicators from the Memorial Hospital of Sheridan County Wyoming (M. Bonnette).

The No Pain, Big Gain campaign faced challenges such as competing demands for resources from other educational programs and delayed arrival of the revised documentation forms. A major building expansion project requiring unit relocations occurred concurrent with the effort. Despite these challenges, those involved in the campaign continued to believe that the goal of improved pain management was important. They accepted that the process would take a long time and valued the progress they made. The clinical mentors have proven to be a key factor in effecting changes in day-to-day practice, and nurses feel more empowered to advocate for their patients' pain relief needs.

The members of the pain committee are clearly focused on maintaining and continu-

ing the improvement efforts. Annual competency testing has been instituted, and a pain management component has been added to the skills lab and to new employee education. Ongoing medical record audits are being completed to determine trends in important aspects of care. With the arrival of a new pharmacy director in spring 2002, pharmacologic aspects of pain management practice will be studied.

The success of the pain improvement initiative at Memorial Hospital highlights the value of participation in preceptorship programs, collaborative measurement/improvement initiatives, careful assessment of current practice by measuring performance, creative learning experiences, and positive recognition of practice changes. These are valuable insights for organizations of any size or location.

D. Integrating Pain Management Improvement Activities in an Academic Medical Center: University of Iowa Hospitals and Clinics

The University of Iowa Hospitals and Clinics is a comprehensive teaching and health care center serving patients from all counties in Iowa as well as other states and countries. It is one of the largest university-owned teaching hospitals in the country. Established in 1898 as a 50-bed hospital, the current 831-bed facility and clinics serve more than 41,000 patients annually. Located within UIHC, Children's Hospital of Iowa provides family-centered pediatric clinical services. As a major health training resource, UIHC serves students from five health science colleges and provides supervised clinical settings for community college programs in nursing education, surgical technology, and respiratory therapy. A commitment to excellence in research marks another important component of the organization's mission and service.

1. History of Pain Management Activities at UIHC

The management of pain has been a focus in clinical care and research for over a decade in both the health care and the university systems. Multiple pain improvement initiatives have been undertaken by various divisions and clinical departments since the early 1990s. **Table 13** lists examples of some recent departmental activities. Similarly, clinical research has been a significant element of pain management practice development at UIHC. For example, the Department of Nursing has collaborated with the University of Iowa College of Nursing to pursue research in pain management that supports evidence-based practice. The investigation of the effectiveness of a brief distraction educational intervention for parents of preschool children undergoing intravenous catheter insertion,¹⁴¹ the evaluation of application time for effectiveness of local anesthetic gels,¹⁴² and the development of an infant pain rating scale are just a few examples. Translating research evidence into practice, a long-standing commitment for both the College of Nursing and the Department of Nursing, is exemplified in the Iowa Model of Evidence-Based Practice to Improve Quality of Care.^{143,144} It is the focus of a current study examining acute pain management in the elderly, funded by the Agency for Healthcare Research and Quality (grant RO1 HS 10482; principal investigator: M. Titler); this study is being conducted by scientists from UIHC and the University of Iowa Colleges of Nursing, Medicine, Pharmacy, and Public Health.

Patient-related pain management services are comprehensive and include:

- **The Acute Pain Service.** This service actively manages acute postoperative and cancer pain for inpatients and commonly uses advanced pain management treatment modalities.
- **The Pain Medicine Clinic.** The center provides evaluation and treatment for patients with chronic pain, cancer-related pain, and nerve or musculoskeletal injuries.

Currently, a new state-of-the-art facility is

Table 13. Examples of Departmental Pain Improvement Activities: University of Iowa

Department	Activity
Pharmacy	<p>Educational program for pharmacists</p> <p>Case presentations (e.g., chronic, acute, pediatric)</p> <p>Addition of pharmacist with specialty in pain management (June 2001) who also works with the pain team</p> <p>Medication use evaluation: evaluate use of meperidine through chart review with a goal of decreasing the rate of use; Development of criteria and recommendations for use</p> <p>Participate in review and update of policies and procedures as part of the Interdisciplinary Pain Management Subcommittee to evaluate for consistency between nursing and pharmacy (e.g., patient-controlled analgesia, epidural)</p> <p>Review of preprinted order forms for drug-related issues (e.g., abbreviations, doses)</p> <p>Preparation of articles related to pharmaceutical treatments for pain for the <i>P & T News</i>, a publication of the Pharmacy and Therapeutics Subcommittee</p>
Nursing	<p>Development of an analgesic guide (including equianalgesic charts) that was approved by the Pharmacy and Therapeutics Subcommittee of University Hospital Advisory Committee; available as a pocket guide and poster</p> <p>Chart audits by each clinical nursing division to determine documentation practices regarding pain assessment and reassessment</p> <p>Registered nurse knowledge surveys completed within each clinical nursing division</p> <p>Development and implementation of pain standards for ambulatory care</p> <p>Inservices by ambulatory care nurse managers for staff on the ambulatory pain standard</p> <p>Adult pain standard of practice for inpatient pain management presented to clinical staff</p> <p>Standardization of pain intensity scales</p>
Children's Hospital	<p>Development of standards of care</p> <p>Creation of an interdisciplinary task force to look at pain management issues</p> <p>Development of a policy regarding the use of a local anesthetic gel before procedures and research on the effectiveness of two products</p> <p>Identification of a pain intensity scale</p> <p>Research and development of a pain rating system for infants</p> <p>Creation of a Pain Resource Manual for specialty units</p>

Source: M. Titler, University of Iowa Hospitals and Clinics. Used with permission.

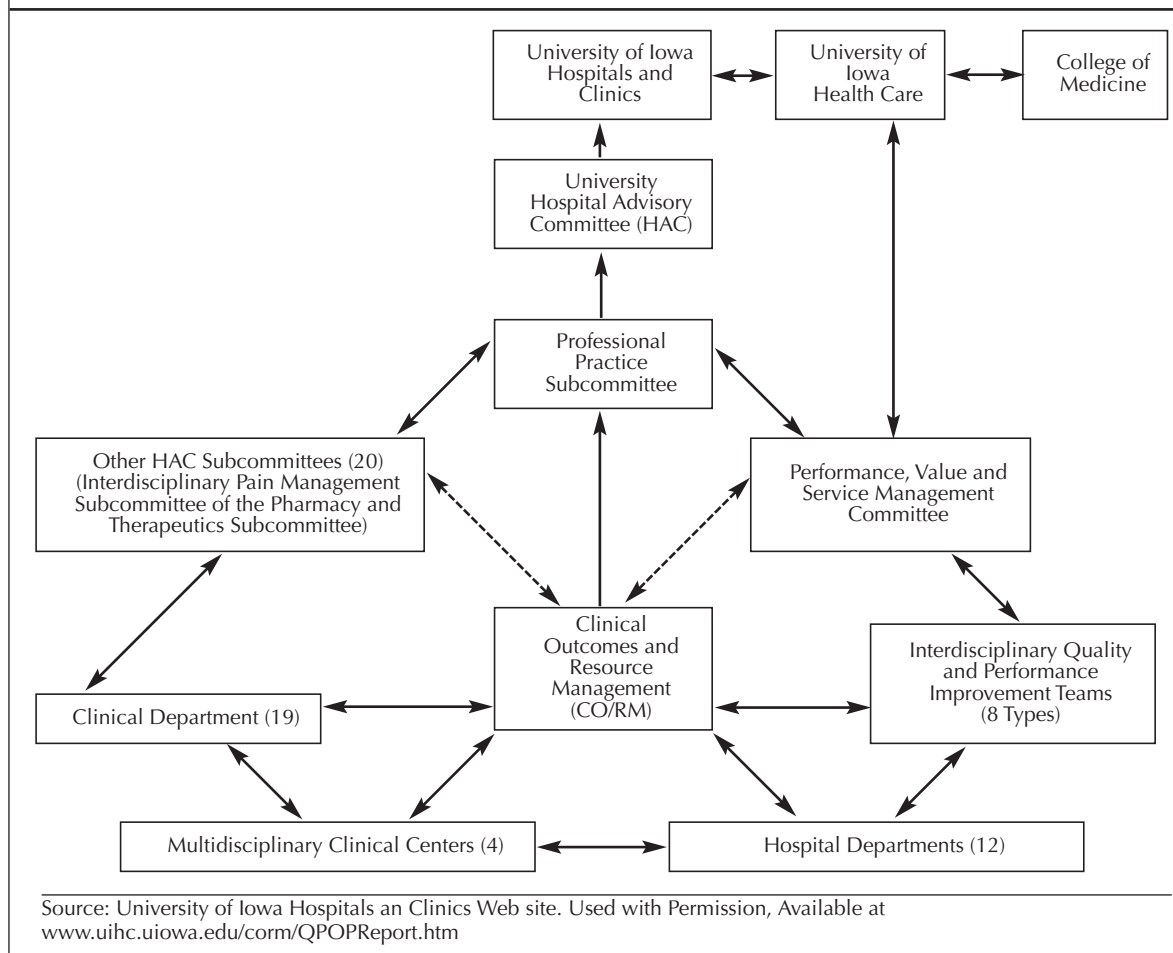
being constructed that will locate both the chronic and acute programs in one suite. The Acute Pain Service area will have direct access to the surgical department, and the Pain Medicine Clinic will have an entrance for outpatients.

2. Forming a Standing Committee

The work completed by a multidisciplinary pain committee in the early 1990s and the successful ongoing efforts within and across departments have built a strong foundation for pain management practice. In early 2000, the administration of UIHC proposed the establishment of a standing committee that

would act as an advisory body to address critical and long-term issues associated with pain management. The Interdisciplinary Pain Management Subcommittee was created under the Pharmacy and Therapeutics Subcommittee of the University Hospital Advisory Committee. Structurally, the committee is part of the Quality and Performance Improvement Program framework (see **Figure 11**). This framework illustrates the reporting lines for communication of centralized and decentralized quality improvement activities conducted by other subcommittees of the University Hospital Advisory Committee (n = 20), 19 clinical

**Figure 11. Quality and Performance Improvement Program Framework
Illustrating the Reporting Lines for Communication: University of Iowa Hospitals and Clinics**



departments, 12 hospital departments, 4 multidisciplinary clinical centers, and multiple interdisciplinary teams. Central within the structure of the Quality and Performance Improvement Program is the Clinical Outcomes and Resource Management office, which supports quality improvement initiatives through use of data management systems and expert staff.

The Interdisciplinary Pain Management Subcommittee is co-chaired by Marita Titler, PhD, RN (Nursing Services and Patient Care), Richard Rosenquist, MD (Anesthesia), and Steve Nelson, MS (Pharmaceutical Care). The other 15 members also are drawn from multiple disciplines. This committee began their work with the

following charges:

- Increase awareness of the need for adequate pain management for all patients who seek care at the UIHC.
- Identify and develop effective pain management strategies for UIHC patients.
- Identify methods for patient referral to appropriate existing clinical consultation services for pain management.
- Identify ways to reduce adverse drug events through the safe and appropriate use of analgesics.
- Coordinate educational initiatives for care providers.
- Coordinate and review data associated with pain management as part of UIHC's quality improvement program.

- Routinely evaluate the hospital's pain management programs and identify/recommend needed changes.

The co-chairs began by identifying multiple data sources within the organization's documentation (automated and nonautomated) and quality improvement systems that could provide information on current practice. When the full committee met for the first time in August 2000, they were able to review the information and begin exploring opportunities for improvement. They used the quality improvement tool of brainstorming and identified 25 possible focus areas.

3. Establishing an Action Plan

The subcommittee members were then asked to rank the top 10 priority areas in order of importance from the initial list of 25. In the month before the next meeting, they solicited input from colleagues and others in the organization. When the full committee met again in September, they were able to identify 10 priority areas that combined most of the items on the original list. They then grouped the priority areas into four work groups:

- Assessment and documentation
- Patient education
- Patient rights and responsibilities
- Clinician education.

Each work group was charged with developing an improvement plan, interventions, and a strategy to measure the impact of the interventions. All work groups reported back to the Interdisciplinary Pain Management Subcommittee on their progress.

4. Fulfilling the Charge: The Assessment and Documentation Work Group

The Assessment and Documentation Work Group included individuals who also sat on departmental pain teams such as the Department of Nursing Pain Management Subcommittee of the Quality Improvement Committee. In this way, the group built on the substantial work related to pain management already completed in decentralized initiatives. In their plan to understand and improve the quality of pain assessment and

documentation across departments and levels of care, the work group posed the following questions:

1. Do nurses use standardized pain assessment techniques for pain assessment (intensity, location, quality, duration) of patients?
2. How frequently is pain assessed and documented in the inpatient and ambulatory care setting?
3. Is a standardized tool used to assess and document pain intensity?
4. What pain treatments do patients receive for management of:
Acute pain?
Cancer pain?
Chronic pain?
5. What mechanisms are used to provide patient and family education regarding rights and responsibilities for management of pain?
6. What are the educational needs of nurses to provide optimal pain assessment and treatment?
7. Are the departmental standards for pain management congruent with current research evidence and American Pain Society Guidelines?
8. What system changes are needed to provide optimal pain management to patients receiving care at UIHC?

The work plan they developed used multiple interventions, including the review and revision of departmental standards for pain management, knowledge assessment of nurses, and education of nurses, patients, and families. The work group obtained baseline and postintervention data through the use of retrospective chart audits, data from the online Nursing Information Documentation System, and knowledge and assessment surveys.

a. Implementing and evaluating interventions

i. Departmental/divisional standards of care for pain management

The following standards were updated and/or revised by the Department of Nursing Pain Management Subcommittee of the Quality Improvement Committee, the

Department of Nursing Policy and Procedure Committee, and the Children’s Hospital of Iowa (for pediatrics):

- Pain Screening in the Ambulatory Setting
- Pain Management for Adults: Inpatient
- Pain Management: Pediatrics.

The Interdisciplinary Pain Management Subcommittee then forwarded these standards for review and approval. A “train the trainer” approach was used to educate nurse managers, assistant managers, and supervisors in the new pain management standards so they, in turn, could teach nursing staff. In addition, materials were incorporated into the annual competency review for staff and are included in both the central and divisional new employee orientation.

ii. Knowledge assessment and education

Knowledge surveys for nurses were customized and distributed by care areas (pediatrics, perinatal, adult medical/surgical and critical care, and perioperative). Based on the survey results, each nursing clinical division devised a plan unique to their educational deficits. For example, the adult medical/surgical, perioperative, and critical care nursing divisions addressed the identified educational needs by:

- Developing and implementing an adult analgesic guide approved by the Pharmacy and Therapeutics Subcommittee of the University Hospital Advisory Committee.
- Purchasing and distributing the American Pain Society’s *Principles of Analgesic Use in the Treatment of Acute Pain and Cancer Pain*, 4th edition,¹⁴⁵ and *Pain Clinical Manual*, 2nd edition,²⁷ for each nursing division.
- Displaying posters on units regarding drug interactions, drug dosing, and pain assessment.
- Providing education regarding the pain standards and use of pain rating scales.

b. Measuring the effectiveness of work group activities

To assess the impact of the interventions to improve the quality of pain assessment and documentation, the work group designed

the Quality Improvement Pain Monitor. This chart audit tool used data from charts and the online documentation system to determine the number of times pain was assessed/reassessed and if the intensity, quality, location, and interventions were noted (quality indicators for pain). As can be seen in **Figure 12**, there was significant improvement in the number of times pain intensity was documented in 24 hours for the units displayed. Additionally, knowledge surveys were repeated to evaluate for improvement in deficit areas. Between September 2000 and September 2001, the work group had accomplished much. They had stated goals, posed important questions, obtained baseline data, designed and implemented interventions, and monitored change. The work group successfully fulfilled their charge and, as part of the subcommittee, helped meet the overall goals of coordinating educational initiatives for care providers and collecting pain management data for use in quality improvement activities.

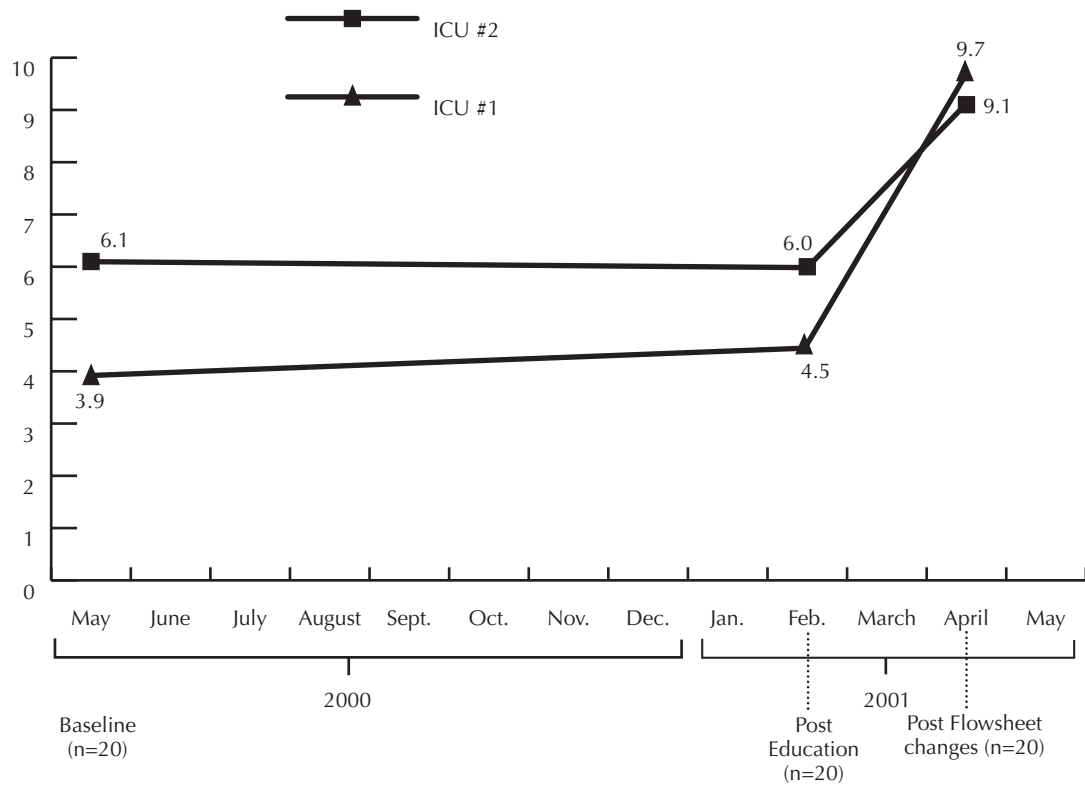
5. Complementing Centralized Pain Improvement Activities: A Division-level Initiative to Manage Circumcision Pain

The Interdisciplinary Pain Management Subcommittee has worked to coalesce pain management activities across the organization through a centralized approach, while supporting the continued development of complementary initiatives to address special populations, types of pain, and unique procedures. The development of a protocol to manage circumcision pain is an example of a pain management initiative completed within one division at UIHC.

a. Identifying an opportunity

Within the Division of Children’s and Women’s Services, multiple units care for infants undergoing a circumcision procedure. A recent American Academy of Pediatrics position statement on circumcision that included the management of pain (see “Circumcision Policy Statement,” Table 2) caught the attention of Janet Geyer, Advanced Practice Nurse. Together with col-

Figure 12. Mean Number of Times Pain Intensity Is Documented Every 24 Hours: Department of Nursing Services and Patient Care Intensive Care Units, University of Iowa Hospitals and Clinics



Source: M. Titler, University of Iowa Hospitals and Clinics. Used with permission.

leagues on other units, she began to explore the issue of how pain was managed during this procedure at UIHC. The first step was to understand current practice by reviewing medical charts. In fall 1999, 51 charts of infants undergoing a circumcision were examined. Results showed that nearly all babies (96%) received a dorsal block. It also was noted that although acetaminophen was ordered in 71% of the charts reviewed, only 59% of the charts indicated that it was administered at least once. Although the results indicated consistent use of blocks, the nurses believed the administration rate for acetaminophen could be improved and overall pain management could be enhanced through the development of a comprehensive pain management protocol for this procedure.

b. Forming a plan

Once the opportunity was identified, the nurses began by forming a committee and enlisting participation from key stakeholders. The resulting team of eight people included nurse representatives from all applicable care units, a neonatologist, and an obstetrician. Additionally, consultations were obtained from a lactation specialist, pharmacist, dentist, urologist, music therapist, and lawyer for specific issues. Initially, the team began by conducting a literature search for evidence-based pain management recommendations specific to infants or this procedure. Staff physicians were solicited to participate in this process and review articles. Over the course of several months, the team began to identify a set of specific care processes such

as the use of buffered lidocaine and a smaller-gauge needle for the block, as well as the use of soft music during the procedure. These processes were incorporated into a comprehensive protocol. Examples of recommended practices are shown in **Table 14**.

c. Implementing the protocol

In planning the implementation of the new protocol, the team worked to ensure that related documents and required services were ready. First, an update to the operative permit was completed to include information on pain management, in addition to procedure-related risks and benefits. Also, educational materials for parents were revised to include similar information. These educational materials are provided to parents during prenatal visits to physician offices and also on admission to UIHC for delivery. The

team also met with pharmacy staff to establish a process that ensured the availability of buffered lidocaine, which must be mixed daily.

By spring 2000, all necessary approvals had been obtained for use of the protocol. The next step involved providing education to all clinicians. For nursing and patient care personnel, a self-learning module was developed. Nurses involved in the team also served as resources for other staff and provided one-on-one training. The protocol has been added to new staff orientation materials. Physician members of the team were key in communicating the protocol to colleagues both individually and through faculty or departmental meetings. All residents were sent information via e-mail and were supervised by the chief resident during the first few procedures. This process is repeated every year when new residents begin their training. The protocol also has been included in the agenda for a special 1-day postgraduate course for pediatric residents to be held in fall 2002.

d. Assessing for success

To measure the success of the project, medical records were reviewed a second time 6 months after implementing the protocol (January 2001). An audit tool was developed (Circumcision Evaluation Tool) to check for compliance with each component of the protocol. The tool also documents the number of doses of analgesia given. Twenty-nine charts were reviewed with findings of full compliance (100%) for use of a dorsal block, acetaminophen ordered, infant swaddled, and sucrose pacifier offered. The rate for administration of at least one dose of acetaminophen rose to 84%. The chart review also revealed that the electronic medical records facilitated documentation of the protocol, whereas manual records did not. Therefore, for those units not using electronic medical records, a special sticker was developed with the protocol steps and a place to check completion.

The success of the project has been shared in several ways, including a poster presentation at a regional pediatric conference, a statewide educational conference, and a

Table 14. Examples of Pain Management Interventions for Circumcision: University of Iowa Hospitals and Clinics (UIHC)

1. Premedicate with acetaminophen 10-15 mg/kg within 1 hour before procedure per physician or nurse practitioner order.
2. Swaddle infant on padded circumcision board and restrain legs (allows infant to put hand to mouth).
3. Assess infant comfort/pain level and provide interventions:
 - a. Shield patient eyes from direct light.
 - b. Provide pacifier dipped in sucrose after discussion with parents/guardian.
 - c. Music therapy may be utilized per standard of practice.
 - d. Ensure patient is kept appropriately warm.
4. Following block, wait 3-5 minutes before proceeding with circumcision.
5. Following procedure, remove infant from circumcision board.
6. Assess infant comfort/pain and provide interventions:
 - a. Swaddle and hold infant.
 - b. Have parent/guardian or nurse provide feeding.
 - c. Provide acetaminophen 10-15 mg/kg as ordered by physician or nurse practitioner 4 hours after initial dose and every 4-6 hours for 24 hours.

Source: J. Geyer, University of Iowa Hospitals and Clinics. Used with permission.

national evidence-based practice conference. Team members also have shared their success in an article detailing the use of evidence as the basis for the protocol.¹⁴⁶ The team noted that some of the keys to the success of the project were involving important stakeholders, engaging physicians in the process, and keeping people informed. They had strong support from nursing leadership, and medical staff was receptive. Finally, conducting chart reviews provided objective measures of performance that validated the successful implementation of the protocol.

E. Improving Care Across Hundreds of Facilities: The Veterans Health Administration's National Pain Management Strategy

We dedicate this section of the monograph to Margaret Berrio, RN, MS who died unexpectedly in July 2002. Ms. Berrio was Quality Management Specialist/Management Information System Nursing Coordinator at the Boston VA Healthcare System and a key member of the VISN 1 Pain Management Quality Improvement Team. She played a pivotal role in helping to improve the pain care of veterans at several facilities and in the development of this section. Most importantly, Ms. Berrio was an inspiration to all who knew her. She was passionate about her work, had an unwavering commitment to and compassion for her patients, and a steadfast faith in the positive nature of the human condition. Her smile, sense of humor, and friendship encouraged us all and will not soon be forgotten. (R. Kerns)

The veterans health care system is the largest fully integrated health care system in the United States. In fiscal year 1999, the VHA provided direct care in more than 1100 different sites to more than 3.6 million persons. Those sites included 172 hospitals, more than 600 ambulatory and community-based clinics, 132 nursing homes, 206 counseling centers, 40 residential care domiciliaries, 73 home health programs,

and numerous contract care programs. In 1999, the VHA staff included 53,000 nursing personnel, 13,000 physicians, more than 3500 pharmacists, and thousands of other health care professionals.¹⁴⁷

In 1995, the VHA, which manages the care, began to reorganize the delivery system into 22 Veterans Integrated Service Networks (VISNs) to enhance the continuum of primary to tertiary care within geographical regions.¹⁴⁷ As in the private sector, there is great variation across VISNs in the demand for care, the resources available, and the priority issues. For example, resources for chronic care are greater in southern states with large elderly populations.

Because of its centralized structure, the VHA is able to mandate certain activities such as use of a nationwide computerized patient record system (CPRS) and a selection of indicators for performance improvement. Although the national leaders in Washington, DC set general priorities for improvement, it is up to each VISN to determine how to implement these priority initiatives. For example, the VHA central office mandated use of the 0-10 scale for initial pain screening across all facilities, but allowed individual facilities to determine the content and format of a tool for comprehensive pain assessment.

The flexibility to customize initiatives within VISNs and facilities (e.g., by adding specific data elements) helps overcome bureaucratic delays that can occur with very large organizations. One potential drawback is that even within the VHA system, facilities may be using different forms for documentation and different approaches for pain assessment, treatment, and follow-up. The following description of the VHA pain management improvement initiative exemplifies this balance and interplay between national planning and VISN/facility-level implementation. After an overview of the national-level pain management initiatives, a description is provided of how two facilities within VISN 1 (VA New England Healthcare System) implemented one component of the national initiative: participation in a collaborative improvement project using the

Institute for Healthcare Improvement (IHI) Breakthrough Series Model for Improvement. The IHI Breakthrough Series model was designed to help organizations make rapid, measurable, and sustainable improvements in the specific focus areas within 9 to 15 months. In addition, this process was intended to help organizations build the capacity to improve beyond the time frame of the collaborative.¹⁴⁸

1. Organizing the National Initiative

In late 1990s, the organization of VHA anesthesiologists conducted a national survey that identified system-wide inconsistencies in the areas of pain assessment, access to treatment, and standards of practice. The group put forth a position paper that recommended development of a national coordinating strategy for pain management–related activities. In late 1998, Dr. Kenneth Kizer, then VA undersecretary for health, announced the vision for a national pain management strategy and established a National Pain Management Coordinating Committee (NPMCC). The NPMCC consisted of a multidisciplinary group of experts from the VHA and was co-chaired by Judith Salerno, MD, MS, and Tony Mitchell, MD. Jane Tollett, PhD, was appointed as program coordinator for the national strategy. The NPMCC was operationalized as several working groups, including pain screening and assessment, clinical guideline development, education, research, and outcome measurement. Each VISN designated a single person as the point of contact to serve as a liaison to the NPMCC and facilitate dissemination and implementation.

2. National Goals and Objectives

The primary goal of the national initiative was to provide a system-wide standard of care for pain management that reduces suffering from preventable pain. Several additional goals were specified:

- Ensure that pain screening is performed in a consistent manner.
- Ensure that pain treatment is prompt and appropriate.

- Include patients and families as active participants in pain management.
- Provide strategies for continual monitoring and improvement in pain management outcomes.
- Provide for an interdisciplinary, multimodal approach to pain management.
- Ensure that VHA clinicians are adequately prepared to assess and manage pain effectively.

3. Implementing Multiple Interventions

In the past 3 years, several major initiatives have been undertaken to improve pain management. Best known is the VHA's decision to consider documentation of pain as "the fifth vital sign." In early 1999, the VHA mandated that every patient in every encounter in every facility should be screened with a 0-10 numeric rating scale for the presence and intensity of pain. At the same time, an initial version of a toolkit "Pain as the 5th Vital Sign" was published to facilitate national implementation of the mandate. Subsequently, a revised version of the toolkit was authorized, which was developed under the leadership of Dr. Robert Kerns (chair of the NPMCC toolkit working group and Chief, Psychology Services, VA Connecticut Healthcare System). The toolkit contains details and resource materials for implementing the mandate, including an introduction to comprehensive pain assessment and an extensive bibliography.¹⁴⁹ The tool kit is accessible at www.vachronicpain.org.

To implement the pain screening mandate, the committee worked with information management staff to incorporate screening scores on the 0-10 scale into the vital signs component of the CPRS. The Outcomes Measurement Work Group is developing a template and reminder system for completing a comprehensive pain assessment (including duration, location, etc.) if the pain screen score was greater than 3 or if there was some other potential or obvious indication for pain treatment.

The Clinical Guideline Work Group, co-chaired by Jack Rosenberg, MD of the Ann

Arbor VAMC and Richard Rosenquist, MD of the Iowa City VAMC, worked together with experts from the Department of Defense to develop clinical practice guidelines for the management of acute postoperative pain. The guidelines were accompanied by extensive toolkits, including posters, videotapes, reminder cards, and key articles, to facilitate implementation. Use of the guidelines and associated protocols was also mandated.

The VHA has dedicated substantial effort and resources to provider education, which represented the largest working group of NPMCC. Two national pain management–related conferences have been held, in conjunction with conferences addressing care at the end of life. Other forms of provider education included satellite broadcasts, Web-based educational programs, pain management list-servs, and extensive reference materials for VISN libraries.

4. Evaluating Effectiveness Through System-wide Measurement

The External Peer Review Program (EPRP) is one of several quality measurement systems for the VHA.¹⁵⁰ The VHA contracts for external review of more than 200,000 records annually. Each month, the central office draws a random sample of records from each facility (inpatient, ambulatory, home health, etc) based on patients who had at least one encounter (visit/admission) in the previous month and an encounter within the past 2 years. Immediately after completing the review, the external reviewers provide patient-specific feedback directly to the clinical staff, usually within days or weeks of the selected encounter, which facilitates rapid improvement on identified opportunities. The data is trended at the VISN level quarterly. The statistically meaningful national sample includes monthly review of all inpatients with diagnoses of acute myocardial infarction, congestive heart failure, and chronic obstructive pulmonary disease and biannual review of 5000 spinal cord injury patients. In the ambulatory setting, the monthly sample

includes 1500 general primary care, 1500 mental health, 1500 diabetes, 1000 previous acute myocardial infarction, 1000 chronic obstructive pulmonary disease, and 1000 congestive heart failure patients (D. Walder, personal communication, August 1, 2002).

The EPRP has been highly successful in stimulating improvement in a wide variety of clinical areas, in part because performance on these indicators (monitors) is directly linked to the medical center director's performance evaluation. With established thresholds for each indicator and regular feedback of EPRP scores to individual facilities, the goal is clear. Therefore, all who render care are aware of the expectation for individual and organizational performance.

In 1999, the following pain management indicator was added for ambulatory primary care facilities and eight specialty clinics: the proportion of patient visits during the time period of interest that showed documentation of pain scores at least once within the last year. Results from October 1999 through September 2001 showed steadily improving performance (see **Figure 13**). Because the most recent scores were over 95%, this indicator was determined by the central office to be less useful for identifying opportunities for improvement. Thus, for fiscal year 2002, three new monitors are in development:

1. Percentage of patients with a documented pain screen on a scale of 0-10 on the most recent visit.
2. Percentage of patients with a pain score greater than 3 for whom an intervention was recorded.
3. Percentage of patients with a pain intervention recorded who had a follow-up assessment.

Since 1994, the VHA has conducted an annual national patient satisfaction survey that is sent to a stratified sample of 175 recently discharged patients and 175 outpatients from each facility.¹⁵¹ The inpatient satisfaction survey, which was modified from instruments developed by the Picker Institute of Boston, includes five questions related to pain management.

1. When you had pain, was it usually severe, moderate, or mild?

2. How many minutes after you asked for pain medicine did it usually take before you got it?
3. Do you think you would have had less pain if the hospital staff had acted faster?
4. Overall, how much pain medicine did you get?
5. Did you experience pain and not report it? If yes, why?

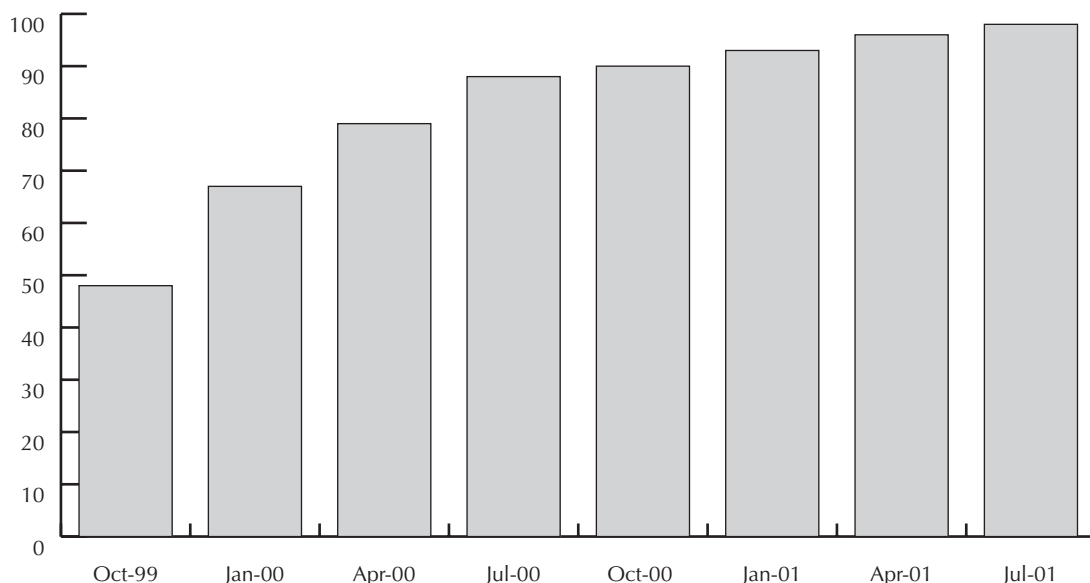
5. VHA-IHI Collaborative

The NPMCC, the IHI, and outside content experts such as Dr. Charles Cleeland, who served as chairman of the initiative, collaboratively planned the content for the program. The VHA provided financial support to allow 70 teams (more than 300 people) from various settings, including long-term care, behavioral health, and home care, to participate in the initiative over a 9-month period.

One of the first priorities of the VHA-IHI collaborative planning group was to develop a set of attributes of a successful pain management system (see **Table 15**). Like other topic areas in the Breakthrough Series initiatives (e.g., see Leape et al.¹⁵² and Wagner et al.¹⁵³), the VA-IHI pain management collaborative was built around the following principles and activities:

- Explicit leadership support and commitment to change.
- Establishment of organization-specific, measurable goals based on the agreed-upon theory for improvement.
- Creation of teams that include persons with system leadership to institute change, persons with technical expertise, persons who can provide day-to-day leadership, and change champions.
- Sharing knowledge and experience through three 2-day in-person learning sessions (an initial meeting, a meeting at 3 months, and a meeting at 9 months),

Figure 13. Percentage of Records With Documented Pain Scores Within The Last Year: Veterans Health Administration, National External Peer Review Program



Source: R. Kerns. Used with permission.

Table 15. Attributes of a Successful Pain Management Program: VHA-IHI Collaborative Planning Group

1. Pain should be assessed in a routine and timely manner.
 - Pain should be documented as the 5th vital sign during every clinical encounter.
2. Patients should have access to an appropriate level of treatment.
 - Multidisciplinary team should be available for specialty consultations as needed.
3. Treatment protocols should be in place and understood by all staff.
 - Protocol should be available for most common conditions.
 - Reminder systems should be used for adherence to protocols.
 - Protocols should contain expectations for the time between assessment of pain and action, and the response time to medication requests.
4. Providers should receive education through a variety of strategies.
 - Criteria for assessing the competency of providers also should be established.
5. A comprehensive plan for patient and family education should be in place.
6. Each organization should have standards of practice, some of which should be organization-wide and some of which may be discipline specific.
7. Each organization should have a plan for performance improvement that includes goals and key outcomes as well as a schedule for progress review.

Source: R. Kerns. Used with permission.
IHI: Institute for Healthcare Improvement; VHA: Veterans Health Administration.

with action periods and frequent exchange between meetings via e-mail groups.

- Testing changes on a small scale before widespread implementation.
- Rigorous but parsimonious measurement of a few key processes or outcomes, often using sampling.
- Objective evaluation of team success by using monthly progress reports and open sharing of data on a secure Web-based bulletin board maintained by IHI.
- Other educational services, including monthly educational conference calls moderated by experts in quality measurement and pain management, as well as

access to Web sites with resource materials.

At a planning group meeting in January 2000, the following improvement goals were specified:

- Pain scores should be reduced by 25% among patients experiencing moderate or severe pain.
- One hundred percent of patients should have pain screening documented in their medical record.
- The number of patients with pain scores of 4 or higher who have a documented plan of care should be increased by at least 20%.
- At least 50% of patients should receive appropriate education.

Each VISN then decided how many and what types of facilities could participate in this initiative, as well as which clinical areas to focus on (e.g., postoperative pain, oncology, chronic pain). Each team was expected to select two or more of these goals for the pilot projects.

6. Implementing the IHI Initiative in Two New England Hospitals

Since 1999, VISN 1 (VA New England Healthcare System) has taken a leadership role in efforts to improve pain management within the VHA. VISN 1 consists of nine VA medical centers (VAMCs) and 40 ambulatory care clinics across six New England states. VISN 1 chose to focus on primary care pain management because the VHA as a whole has shifted emphasis from inpatient care to primary care.

The VISN 1 team selected the Togus, Maine, VAMC and the Providence, Rhode Island, VAMC as pilot sites for the IHI-VHA initiative. These two facilities were selected because their clinical leaders (one physician and one nurse practitioner) were primary care providers with a commitment to and a passion for improving pain management. Importantly, it was felt that these leaders could commit the necessary time to this initiative (i.e., their sites were considered fertile ground in which to sow the seeds of change). Unlike other sites in VISN 1, these

two sites were not distracted by competing initiatives such as organizational restructuring or technology upgrades.

The Togus VAMC, the only VA hospital in Maine, is the oldest facility in the Department of Veterans Affairs, having served veterans for 138 years. It has 67 acute medical, surgical, mental health, and intermediate-care beds, along with a 100-bed nursing home, half of which is devoted to residents with dementia. Togus's primary care program, together with five community-based outpatient centers across the state, serves approximately 25,000 veterans annually. The Providence VAMC provides comprehensive outpatient and inpatient health care to veterans residing in Rhode Island and southeastern Massachusetts. The ambulatory-care program of 32 subspecialty clinics is supported by a general medical and surgical inpatient facility currently operating 66 beds.

The VISN 1 team was composed of the following members by function: chair, VISN 1 pain management subcommittee, Robert Kerns, PhD (VA Connecticut Healthcare System); team leader, Fred Silverblatt, MD (Chief, Primary Care, Providence VAMC, Rhode Island); day-to-day leadership and coordination, Bonnie Lundquist, MS (Nurse Practitioner, Togus VAMC, Maine); reviewer support, Marcia Kelly, RN (Performance Management, Northampton VAMC, Massachusetts); patient education support, Elizabeth Fiscella, RN (Nurse Manager, Northampton VAMC, Massachusetts); clinical and technical expertise, Margaret Berrio, RN, MS (Quality Management/Management Information System Nursing Coordinator, VA Boston Healthcare System, Massachusetts); and management analyst, Genevieve Orejola, MHA, MT, Boston.

Because the VISN 1 initiative involved two sites (unlike most other initiatives, where the teams were drawn from a single site), the team had to modify the IHI model for certain team member functions and implementation strategies. Toward that end, the VISN 1 team undertook the key steps in the IHI initiative. The team developed a comprehensive assessment tool, solicited leadership involvement, and communicated through weekly team

meetings by conference call.

Centralized support for data collection, database development, and analysis at VA Boston Jamaica Plain played an important role. Using the CPRS, Ms. Berrio initially generated weekly facility-specific reports to provide feedback on four rates: 1) the proportion of patients with pain scores noted among all patients seen; 2) the proportion of patients with a comprehensive assessment among all patients who had pain scores greater than 3; 3) the proportion of patients with a treatment plan among all patients who had pain scores greater than 3; and 4) the proportion of patients with documentation of patient education among all patients who had pain scores greater than 3. The results, along with questions and answers, were reported to all team members via a bulletin board list-serv so that members did not need to access the Web site directly.

Both hospitals implemented a variety of interventions to achieve the pilot project goals. These interventions included:

- Simplifying and increasing the font size of the patient comprehensive pain self-assessment tool based on feedback from users (patients and staff).
- Implementing a template that incorporated functional assessment information for clinicians to use when entering comprehensive assessment information in the CPRS.
- Educating patients through distribution of the Channing-Bete booklet, conducting an ongoing lecture series, posting material on clinic bulletin boards, and providing a detailed pain chart in every exam room.
- Educating primary care providers, with a focus on review of pain management guidelines and training in the use of the comprehensive assessment tool through lectures and workshops.

7. Operational Strategies

Despite similar interventions, there were hospital-specific differences in the approaches used to screen and educate patients. For example, the Togus VAMC targeted the primary care clinics run by two providers (one

physician and one nurse practitioner). The support staff for these clinics consisted of a patient care associate, a nurse, and a clerk. After receiving education on use of the pain screening scale, the group recognized the need to allow additional time for patient assessment and education. The clerk creatively designed bright yellow stickers to attach to clinic appointment letters, asking patients in the pilot clinics to arrive 15 minutes early. Upon arrival, the patient care assistant conducted the pain screening. If the pain score was greater than 3, the patient care associate gave the comprehensive self-assessment tool and the educational booklet to the patient and notified the nurse. The nurse completed the comprehensive assessment with the patient and discussed the contents of the booklet. The nurse entered information regarding patient education into the template progress note in the CPRS. To identify which patients had completed the assessment and education, the nurse highlighted a note on top of the chart. The provider developed the pain treatment plan and ordered telephone follow-up by the nurse at 6 weeks to assess the effectiveness of the treatment plan and review patient education. Providers were notified of the results of the calls.

The medical primary care clinic was targeted at the Providence VAMC. The patient care associate conducted the initial pain screening at the time of the visit. If the pain score was greater than 3, the patient care associate gave the educational booklet and comprehensive assessment tool to the patient. The patient completed the comprehensive assessment tool, and the primary care provider reviewed it with the patient during the physical exam. The provider completed the assessment, provided the education, and arranged the telephone follow-up. The approach at the Providence VAMC excluded the role of the nurse as intermediary between patient and provider.

The effectiveness of providing weekly facility-specific feedback is demonstrated in **Figure 14**, which shows evidence of substantial improvement on two indicators within 6 weeks of project initiation. The variation in

performance between the two sites may have been due to the different steps and personnel involved in operationalizing the assessment and the education processes.

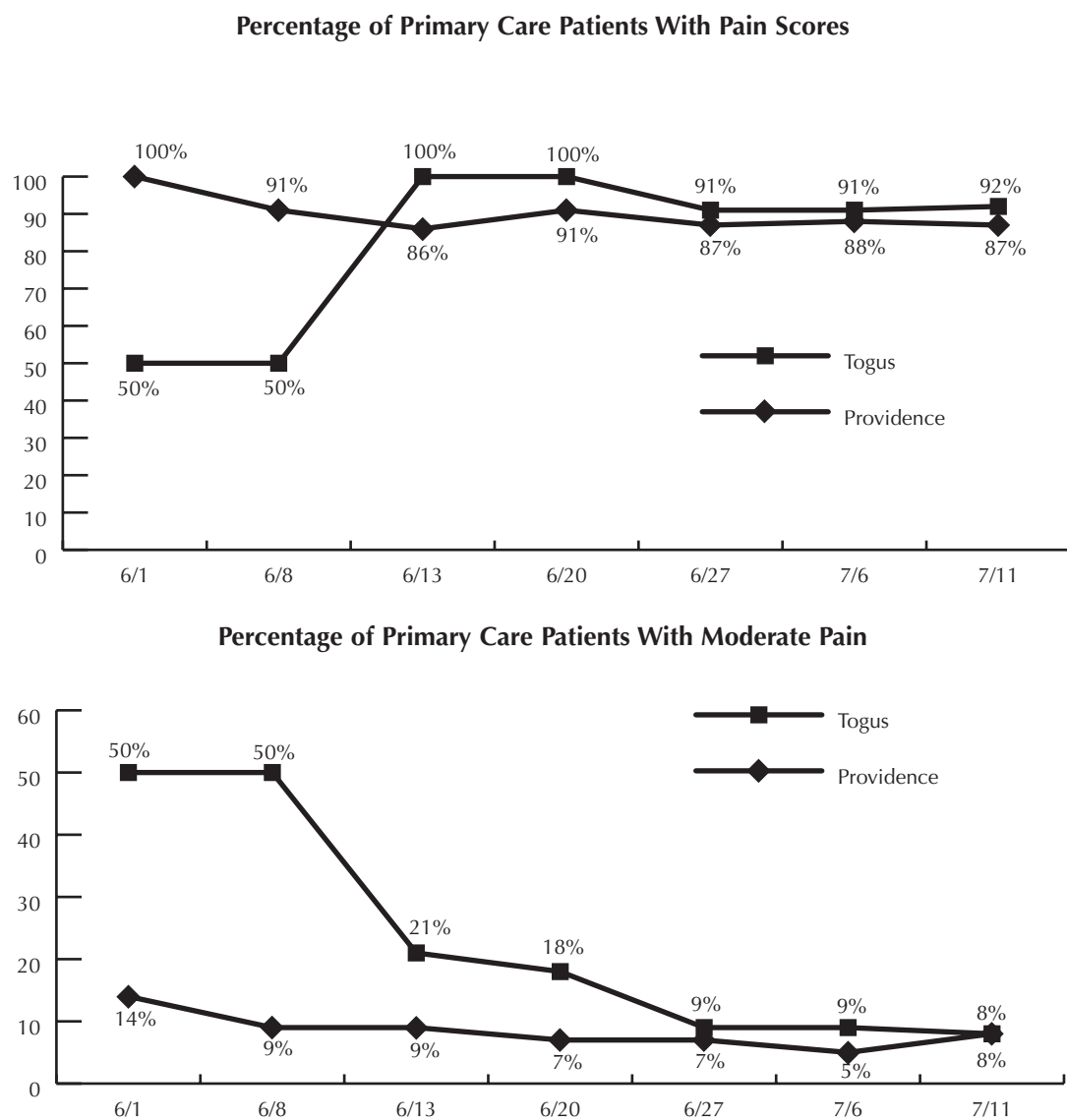
Both medical centers have implemented several other pain management improvement activities not described here. For example, the Togus VAMC has created a full-time pain management coordinator position. After completing the IHI initiative, both hospitals expanded the interventions and data collection activities to include all primary care clinics and community-based outpatient centers, as well as the appropriate medical and geriatric clinics. Other sites within VISN 1 whose staff were part of the team have implemented activities similar to the IHI process in their own facilities. Additional information can be obtained by contacting the team members directly at their respective facilities.

8. *Sharing Success and Next Steps*

Over time, the VHA and several of its facilities have become recognized as a model of excellence in the pain management field. There have been several presentations and symposia led by NPMCC members at American Pain Society, American Geriatric Society, and New England Pain Society annual meetings. Several articles have been published, including those by Kerns¹⁵⁴ and Montrey.¹⁵⁵ A report on the aggregate results of the experience of the 70 VHA teams is forthcoming.¹⁵⁶

Next steps at the national level include the development of new guidelines related to the use of opioids in patients with chronic pain. Additionally, the Outcome Measures Work Group is developing a toolkit of pain management–related measures and resources designed to guide staff in quality improvement efforts. The VHA Health Services Research and Development Service established pain as a priority area for research funding in 2002. The NPMCC Pharmacy Work Group (chaired by Charles Sintek, MS, RPh, Denver VAMC) has implemented a Web-based learning system on opioid use for continuing education credits. Finally, the

Figure 14. Performance on Two Indicators Within 6 Weeks of Initiation of the Veterans Health Administration/Institute for Healthcare Improvement Pain Management Collaborative at the Togus, Maine, and Providence, Rhode Island, Veterans Affairs Medical Centers



Source: M. Berrio, VA Boston Health Care System. Used with permission.

VHA has provided funding for new pain management fellowships in anesthesiology, psychiatry, neurology, and rehabilitation medicine. Additional information about VHA pain management initiatives is available at the Web site www.vachronicpain.org.

9. Summary: Key Lessons

The following lessons learned from participation in the VHA-IHI collaborative should be generally applicable to organizations striving to promote change in existing processes or practices:

- Build the initiative step by step; show success in one small location; plant the seeds and allow them to take root.
- Use facility-based pain champions and role models; work with those who will work with you.
- Involve top administration personnel from the beginning.
- Implement change when you are not likely to be confronted by conflicting priorities such as major reorganization.
- Give regular feedback to all involved; data were critical to making the VHA-IHI initiative a success.
- Make the changes easy for those involved; integrate the changes into daily practice.
- Publicize successes.

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The National Guideline Clearinghouse

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National Headache Foundation

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Pain and Policy Studies Group (PPSG)

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Madison, WI 53711-1068
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www.medsch.wisc.edu/painpolicy

The Resource Center of the American Alliance of Cancer Pain Initiatives

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Madison, WI 53706
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A Plan-Do-Check-Act Worksheet

1. What are we trying to accomplish?

Some questions to consider: (a) What is our aim? (b) What need is tied to that aim? What exactly do we know about that need? (c) What is the process we are working on? (d) What is the link between our aim and this process? Does this process offer us the most leverage for work in support of our aim? (e) What background information do we have available about this improvement—customer, other?

2. How will we know that change is an improvement?

Some questions to consider: (a) Who are the customers? What would constitute improvement in their eyes? (b) What is the output of the process? (c) How does the process work? (d) How does the process currently vary?

3. What changes can we make that we predict will lead to improvement?

Some questions to consider: (a) Reflecting on the process described, are there ideas for improvement that come readily to mind? (b) Would a simple decision matrix help you decide which to work on first? (c) Are all our decision criteria worded to make their scoring in the same direction? (d) For the change we'd like to try, what is our prediction? (e) What questions do we have about the change, the process, and our prediction? What will you need to check? Do these questions help us link to the overall aim and need?

4. How shall we PLAN the pilot?

Some questions to consider: (a) Who is going to do What, by When, Where, and How? (b) Is the “owner” of the process involved? (c) How shall we measure to answer our questions—to confirm or reject our prediction?

5. What are we learning as we DO the pilot?

Some questions to consider: (a) What have we learned from our planned pilot and collection of information? (b) What have we learned from the unplanned information we collected? (c) Was the pilot congruent with the plan?

6. As we CHECK and study what happened, what have we learned?

Some questions to consider: (a) Was our prediction correct? (b) Did the pilot work better for all types of customers—or just some of them? (c) What did we learn about planning the next change?

7. As we ACT to hold the gains or abandon our pilot efforts, what needs to be done?

Some questions to consider: (a) What should be standardized? (b) What training should be considered to provide continuity? (c) How should continued monitoring be undertaken? (d) If the pilot efforts should be abandoned, what has been learned?

8. Looking back over the whole pilot, what have we learned?

Some questions to consider: (a) What was learned that we expected to learn? (b) What unanticipated things did we learn? (c) What did we learn about our predictive ability? (d) Who might be interested in learning what we've learned?

Source: Batalden, PB, Stoltz PK. A framework for the continual improvement of health care: building and applying professional and improvement knowledge to test changes in daily work. Joint Commission Journal on Quality Improvement. 1993;19(10):446-447.⁴³ Worksheet developed with the help of Tom Nolan, PhD, of Associates in Process Improvement. ©1992 HCA Quality Resource Group, June 1993. Used with permission.

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