Original Article

Changing Acute Pain Management to Improve Patient Outcomes: An Educational Approach

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Abstract
The United States Agency for Health Care Policy and Research (AHCPR) Acute Pain Management Guidelines were written to provide a scientific basis for practice. Educational programs designed to promote use of the guidelines may change practice in community hospitals. This article describes the development and implementation of an education program for nurses, physicians, and pharmacists in six community hospitals. Program content addressing the use of continuous quality improvement (CQI) teams, detailed pain histories, application of algorithms and dose calculation is described; direct and indirect outcome measures are reviewed. Six months after the program, all three experimental sites reported use of the AHCPR Guidelines in practice. Nurses reported that assessment and documentation of patients’ duration of pain were perceived to be the most important caregiver behaviors providing benefit to patients: Across all respondents’ reports of regularly performed activities, the activity performed by the largest proportion was assessing and documenting pain using a 0–10 rating scale. J. Pain Symptom Manage 1999;17:277–287. © U.S. Cancer Pain Relief Committee, 1999.

Key Words
Postoperative pain, professional education, outcome measures

Introduction
“Pain is an unpleasant sensory and emotional experience arising from actual or potential tissue damage or described in terms of such damage.”¹ Thus defined, postoperative pain may be viewed as a multidimensional phenomenon that evokes highly variable responses across individuals and situations. Its multidimension-
In an effort to change the practice of acute pain management, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) mandated in 1991 that pain be routinely assessed and outcomes of care routinely documented for terminally ill patients, but not for other patient populations experiencing acute or chronic pain. Subsequently the Agency for Health Care Policy and Research (AHCPR)\(^7\) published guidelines designed to minimize the incidence and severity of acute pain.

The AHCPR Guidelines are designed to provide patients, families, and professionals with a scientific basis for practice and to decrease confusion about what practice should look like. However, publication of the acute pain guidelines has prompted many individuals and many institutions to ask, “Will the guidelines make a difference?” and “How should they be applied in our practice?” Review of the guidelines suggests that they are somewhat global, are designed to assist with problem-solving, do not contain all of the detail necessary for change to occur, may be subject to the biases of those persons interpreting the information presented, and thus are best used as a foundation for the development of a variety of treatment programs that can be scientifically tested. Although the guidelines were published and distributed in 1992, evidence suggests that suitable pain management programs have yet to be developed.\(^8\) Such programs should include multidimensional approaches that prepare providers to treat pain problems individually. Programs should include direction and discussion regarding specific assessments and clear prescriptions to guide clinical decisions.

This paper describes the content, scope, and evaluation of an educational program, designed to assist caregivers in community hospitals to use the AHCPR guidelines to improve the quality of postoperative pain management. Results of the intervention—to increase skill in performing assessment of attitudes and beliefs about pain, assessment of pain severity, surgery-specific interventions, and quality assurance checks that would result in more appropriate treatment of acute postoperative pain—will be reported in a follow-up paper.

**Implementing the Program: Phase I**

Phase I of the study was conducted at University of North Carolina Hospitals using a Delphi method to refine and evaluate the content and feasibility of the educational program. Phase I was unique in three ways: it focused on the development of a hospital-specific quality improvement process, it assessed biobehavioral factors modulating pain behavior, and it included discussion of algorithms as a guideline of treatment for abdominal, thoracic, and orthopedic surgery. Staff on one hospital unit that admitted patients for surgical procedures for gastrointestinal or gynecological problems was the Delphi panel for the first round; staff on a second hospital unit participated in a post-process check on the program and materials recommended from the first Delphi round. Round one of the Delphi process started with a presentation to the unit’s staff of the first version of the educational program. At the conclusion of the program, a questionnaire was given to the staff asking questions about different parts of the program. Participants made content and process recommendations, including allowing for more discussion of how to encourage staff to do detailed assessments and to use more nonpharmacologic interventions. Participants, primarily registered nurses, also encouraged using case studies for problem-solving. The principal investigators collated the responses and made modifications to the program based on the responses from the first round. A second presentation was then made to the staff of the second hospital unit, and responses were gathered again. Recommendations included a need for more discussion on the use of nonsteroidal anti-inflammatory drugs (NSAIDs) and adjuvant therapy, opioid weaning, and continued emphasis on problem-solving. Participants recommended more time for discussion.

**Implementing the Program: Phase II**

**Hospital Recruitment and Instruction**

At the time the program was initiated, there were 148 hospitals in North Carolina with a total bed capacity of 100–500; none of the hospitals had an acute pain service. In comparison, there were 17 hospitals in North Carolina with a total bed capacity of greater than 500; many of these were affiliated with or housed major medical centers. Patients admitted to the 100–500 bed hospitals were reasonably representative of the population of North Carolina (6,628,637), of whom 75.5% are Caucasian,
21.3% are African American, 1.2% are Native American, 1.2% are Hispanic, and 0.8% are Asian; 58.5% of the population are female and 41.5% are male (proportions reasonably reflective of the total U.S. population).

Thus, the program on the management of acute postoperative pain was viewed as one that could provide a model that could be used nationally.

To explore interest in the educational program, the principal investigator wrote the Directors of Nursing at all North Carolina hospitals with 100–500 beds. The purpose of the program and the general plan for evaluation were described to the director, who was asked to indicate whether or not the hospital would be interested in participating in the program. Program directors also were asked to provide the principal investigator (PI) with information regarding the hospital's case mix and average length of stay, if that information were available. Fourteen hospitals responded in the affirmative. The PI then visited each of the 14 hospitals to explain the program in more detail and to answer questions presented by representatives of nursing, surgery, and pharmacy. The PI also explained that six hospitals would be selected using a random process. All 14 hospitals continued to express interest in participating in the program.

Using a random selection process, six hospitals (Table 1) that expressed interest were selected to participate in the program and were asked to identify an individual on the hospital staff who would be responsible for coordinating arrangements for the program with educational team staff and setting up interview and chart audit data collection. By chance, the six hospitals selected to participate in the educational program were geographically located across the central, piedmont, and eastern sections of the state because change in practice is more likely to affect positive patient outcomes if multiple caregivers—physicians, nurses, and pharmacists—are involved in educational programs. Sites were selected to reflect the case mix and average length of stay of each site. The purpose of these characteristics was to provide a model that could be used nationally.

Table 1

<table>
<thead>
<tr>
<th>Procedure categories included in present study</th>
<th>Site 1 (%)</th>
<th>(N = 2882) LOS</th>
<th>Site 2 (%)</th>
<th>(N = 1789) LOS</th>
<th>Site 3 (%)</th>
<th>(N = 1550) LOS</th>
<th>Site 4 (%)</th>
<th>(N = 1996) LOS</th>
<th>Site 5 (%)</th>
<th>(N = 1193) LOS</th>
<th>Site 6 (%)</th>
<th>(N = 2044) LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thoracotomy</td>
<td>1.14</td>
<td>11.3</td>
<td>1.62</td>
<td>11.6</td>
<td>1.57</td>
<td>10.5</td>
<td>1.09</td>
<td>4.9</td>
<td>0.84</td>
<td>6.4</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Abdominal vascular</td>
<td>3.70</td>
<td>8.3</td>
<td>0.0</td>
<td>3.27</td>
<td>9.4</td>
<td>3.1</td>
<td>1.19</td>
<td>12.1</td>
<td>0.0</td>
<td>0.98</td>
<td>5.4</td>
<td>5.4</td>
</tr>
<tr>
<td>Laparotomy</td>
<td>2.94</td>
<td>11.25</td>
<td>2.07</td>
<td>14.0</td>
<td>4.44</td>
<td>11.4</td>
<td>2.19</td>
<td>13.9</td>
<td>1.92</td>
<td>10.35</td>
<td>5.53</td>
<td>10.73</td>
</tr>
<tr>
<td>Renal/Upper abdominal</td>
<td>4.82</td>
<td>6.6</td>
<td>9.45</td>
<td>5.7</td>
<td>6.80</td>
<td>6.80</td>
<td>7.57</td>
<td>5.7</td>
<td>4.45</td>
<td>5.8</td>
<td>16.78</td>
<td>5.6</td>
</tr>
<tr>
<td>Minor abdominal</td>
<td>3.47</td>
<td>3.9</td>
<td>2.46</td>
<td>2.1</td>
<td>0.0</td>
<td>4.93</td>
<td>3.6</td>
<td>19.95</td>
<td>2.98</td>
<td>4.79</td>
<td>4.35</td>
<td>4.35</td>
</tr>
<tr>
<td>Lower abdominal/Pelvic</td>
<td>24.15</td>
<td>23.62</td>
<td>25.82</td>
<td>3.25</td>
<td>15.82</td>
<td>4.33</td>
<td>23.5</td>
<td>23.5</td>
<td>2.25</td>
<td>19.95</td>
<td>6.9</td>
<td>4.35</td>
</tr>
<tr>
<td>Minor ortho</td>
<td>2.41</td>
<td>12.77</td>
<td>10.34</td>
<td>8.56</td>
<td>7.81</td>
<td>7.3</td>
<td>2.37</td>
<td>13.8</td>
<td>2.92</td>
<td>6.4</td>
<td>4.64</td>
<td>6.43</td>
</tr>
<tr>
<td>Disc surgery</td>
<td>8.54</td>
<td>4.5</td>
<td>0.0</td>
<td>0.0</td>
<td>1.57</td>
<td>4.6</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>12.48</td>
<td>3.6</td>
<td>3.6</td>
</tr>
<tr>
<td>Major ortho</td>
<td>7.60</td>
<td>9.95</td>
<td>6.71</td>
<td>12.25</td>
<td>12.94</td>
<td>7.95</td>
<td>12.5</td>
<td>43.3</td>
<td>14.55</td>
<td>4.95</td>
<td>20.79</td>
<td>4.7</td>
</tr>
<tr>
<td>Joint replacement</td>
<td>2.26</td>
<td>11.7</td>
<td>0.0</td>
<td>0.0</td>
<td>8.82</td>
<td>8.5</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>7.14</td>
<td>9.2</td>
</tr>
</tbody>
</table>

*Number of surgical patients admitted per year.

Percent of all procedures. Column percents will not add to 100 since only procedures included in the present study are reported.
educators prior to and 6 months following implementation of the educational program. Hospitals were instructed that system outcomes to be achieved were (1) using AHCPR Guidelines in practice, (2) using standard assessment of pain intensity, (3) establishing a CQI team for pain management, and (4) change in perioperative pain management protocols. Hospitals were randomly assigned to experimental (N = 3) or control status (N = 3).

The entire procedure was then explained to the hospital director’s designee who would be responsible for implementation of the program and designation of participants at the identified site. All designated professional participants, i.e., nurses, pharmacists, and physicians who would be providing care to patients and documenting their activities in patient charts, were asked to sign a consent form agreeing to participate in the program and the data collection process prior to the first day of the program. Participants at the experimental sites were also instructed that prior to the education program, upon completion of the program, and 6 months after the program, 50 patient charts would be audited and a patient satisfaction survey and assessment of function would be completed. They were told that the satisfaction survey asked patients to report the intensity of their first postoperative pain, worst pain, and pain at first ambulation; to describe the frequency of nausea and vomiting; and to record any suggestions for improvement. They also learned that chart data would be monitored for patient treatment and recovery using items such as those found in Tables 2 and 3. Hospitals that were control sites were told that data collection would occur at times concurrent with the experimental data collection.

Data Collection

At the experimental sites, prior to the education program, upon completion of the program, and 6 months after the program, a research assistant approached approximately 50 patients on the day of discharge after undergo-

Table 2
Examples of Chart Audit Items

1. Is the pain intensity documented?
   -Not documented
   -Numerical
   -Ordinal
   -Nominal

2. Is the patient’s pain behavior documented? (choose all that apply).
   -Not documented  -Crying
   -Restless  -Guarding
   -Groaning  -Yelling, screaming, shouting
   -Moaning  -Other
   -Grimacing

3. Are interventions to relieve pain documented?
   -None documented
   -Pharmacologic interventions
   -Nonpharmacologic interventions
   -Nonspecific
   -Pain not relieved
   -Other

4. Are factors that increase pain documented?
   -None documented
   -Position change
   -Movement of extremity
   -Getting out of bed/walking
   -Cough and deep breathe
   -Dressing change
   -Distended bladder/voiding problems
   -Other

5. Is the patient’s activity level documented?
   -Not documented  -Ambulating without human assistance
   -Immobile, paralyzed  -Moved extremity
   -Strict bedrest  -Limited range of movement
   -Bedrest with bathroom privileges  -Moved all extremities
   -Out of bed to chair  -Other
   -Ambulating with human assistance
ing abdominal, thoracic, or orthopedic surgery and asked them to agree to participate in an evaluation of the effectiveness of the hospital’s pain management practices. Patients were told that they were being asked to provide information related to their pain and its treatment as part of an evaluation of not only their own treatment but also the treatment of postoperative pain in general. After the purpose of the evaluation was explained to each patient, she or he was asked to sign a consent to have her or his chart audited.

Patients were required to be at least 18 years of age, not cognitively impaired, English-speaking, and able to sign an informed consent. Patients were reasonably representative of the ethnic and gender diversity of the state. Among study patients, 84.5% were Caucasian, 14.8% were African American, 0.34% were Hispanic, 0.23% were Asian, 69% of patients were female and 31% were male. Patients ranged in age from 18–94 with a median age of 49.

**Content and Scope of the Intervention**

The educational program provided a practical approach to change in the practice of acute postoperative pain management that was expected to promote change in both physiological and psychological patient outcomes. Because previous research demonstrated that asking participants to travel to an educational site takes time and may distract from implementation of the educational program, the program was delivered at individual hospital sites.

The program (Table 4—Objectives; Table 5—Sample Patient Care Algorithm), which was developed by the interdisciplinary education team consisting of a nurse, anesthesiologist, pharmacist, and statistician, provided specific recommendations taken from the AHCPR Guidelines to achieve the following patient outcomes: experience less pain, less interference of pain with sleep, more rapid postoperative recovery, fewer side effects, decreased pain treatment-related costs, a more positive attitude toward the appropriate use of opioids, improved function, and more satisfaction with care. Participants in the program received intense instruction regarding the preoperative and postoperative physical and psychological assessment of patients with pain, the pharmacology of analgesics, routes of administration, equianalgesic conversion of opioid doses, and various measures of quality control such as patient perception of participation and control, satisfaction, and duration of effect—areas of caregiver knowledge found to be deficient in previous research.

The program was presented in three 4½ hour sessions. The first two sessions were presented 2 weeks apart; the third session occurred 6 weeks after the second session. Prior to the Delphi process, it was intended that nurses and pharmacists in each institution participate in lecture/seminar sessions, followed by nurse, pharmacist, and physician participation in case study discussion. The Delphi evaluation recommended that all caregivers participate in all sessions.

The first day of the education program began with a brief overview of the goals of the program and the positive effects of practice change. Participants were then asked to describe aspects of their institutional policies that present obstacles to change. Process and philosophy surrounding the use of CQI teams and the development of specific guidelines for CQI were then discussed with the participants. Participants were asked to follow a seven-step method to establish specific quality improvement objectives (Table 6). The second part of the first session focused on the assessment and documentation of previous experiences with pain, family history of pain, attitudes and beliefs about pain, and postoperative assessment and treatment. Session one was taught by the anesthesiologist and nurse members of the education team.
The second educational session focused on the pharmacology of postoperative pain management, including use of patient-controlled analgesia (PCA) and epidural algorithms for the treatment of abdominal, thoracic, and orthopedic surgical procedures (Table 5). It was taught by the pharmacist and anesthesiologist. In session three, the nurse educator first addressed legal and regulatory issues. Then the entire education team participated in evaluation of quality improvement guidelines developed by the newly formed community hospital CQI teams on pain management, or discussed different pain management problems.

Nurses, physicians, and pharmacists who participated in the educational program were asked to use the pain assessment techniques and pain management activities that were described and discussed; they were instructed regarding the use of a Pain History, Survey of Metabolic Status and Current Pharmacology (Appendix A), Biobehavioral Pain Profile (BPP), and the Initial Pain Assessment Tool. The BPP, used to assess the patient’s beliefs about pain, has been used to establish treatment programs for individuals with chronic pain, but has not been tested for individuals with acute pain. The Initial Pain Assessment Tool requires that patients report their pain on a verbal rating scale of 0–10, includes the use of a pain map, and asks the patient to describe the quality of pain and anything that makes the pain better or worse. All responses can be quantified.

Nurses, physicians, and pharmacists also received instruction regarding physical assessment techniques, application of algorithms, dosage calculations, appropriate selection of various routes of administration, appropriate selection of cognitive–behavioral therapies, documentation of assessments, and interpretation of assessments and interventions. They were expected to become more proficient in (1) recognizing and assisting patients to treat individual pain problems, (2) developing institutional-specific guidelines for CQI, and (3) making legal and ethical decisions. They learned to assess patient satisfaction with pain management and to evaluate current pain management programs. Nurses, physicians, and pharmacists in the community hospital were encouraged to consult with the education team regarding difficult pain management problems by using the hospital consultation service or by contacting the education team directly.

**Table 4**

<table>
<thead>
<tr>
<th>Objectives of Educational Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upon completion of the course, each participant will be able to perform the following tasks:</td>
</tr>
<tr>
<td>1. Assume a pivotal role in the management of acute pain experienced by patients during the perioperative period.</td>
</tr>
<tr>
<td>2. Explain pain patterns and their underlying pathophysiology.</td>
</tr>
<tr>
<td>3. Demonstrate skill in assessing physiological changes associated with a variety of postoperative pain complaints.</td>
</tr>
<tr>
<td>4. Use a variety of pain assessment tools, including those used to evaluate the role of biobehavioral factors in patients’ responses to pain.</td>
</tr>
<tr>
<td>5. Understand the role of family in determining factors potentially influencing patients’ response to pain and pain treatment.</td>
</tr>
<tr>
<td>6. Demonstrate skill in documenting detailed pain assessments and recommendations for treatment, including the care of epidural catheters, continuous intravenous therapy, and nonpharmacologic interventions.</td>
</tr>
<tr>
<td>7. Describe the appropriate use of narcotic and non-narcotic analgesics.</td>
</tr>
<tr>
<td>8. Describe the appropriate use of nonpharmacologic strategies for the management of pain.</td>
</tr>
<tr>
<td>9. Use legal and ethical guidelines to select and administer pharmacologic and nonpharmacologic treatments for pain.</td>
</tr>
<tr>
<td>10. Use the quality improvement process to change perioperative pain management.</td>
</tr>
</tbody>
</table>

Because previous research has demonstrated that measurement of change in the attitude and behavior of patients provides meaningful evidence of the effectiveness of professional educational programs in changing practice, the focus of the program was on change in patient-care and patient-reported outcomes presumed to result from change in caregiver behavior. Change in patient outcomes was expected to provide evidence of change in practice presumed to result from change in the knowledge and attitude of the team of professional care-
givers found in the hospital setting, e.g., specific patient–provider interactions.\textsuperscript{15} Cohorts of patients, interviewed at each site at three time points, were expected to provide data more specific to postoperative care than longitudinal data collected from the same patients over time. Therefore, outcomes of the program were measured by reviewing charts for the presence or absence of documentation describing the patient’s pain history, analgesic use, and epidural versus PCA administration; and for repeated documentation of patient report of pain intensity, descriptions of pain other than ratings, cognitive status, activity/function, social interaction, concurrent symptoms, nonpharmacologic therapy, concerns about addiction, and follow-up evaluation.

Outcomes of the program also were measured using the American Pain Society’s survey of satisfaction to interview patients at the time of discharge in order to evaluate pain management during the postoperative period. Developed in 1989, the original survey was designed for distribution through publication in medical and nursing journals and mailings to hospitals.\textsuperscript{16} No data are found on the validity and re-

\begin{table}[h]
\centering
\caption{Patient Care Algorithm}
\begin{tabular}{|l|l|}
\hline
Are resources appropriate for epidural analgesia? & No \rightarrow Go to IV PCA protocol. \\
Yes & \\
Epidural analgesia indicated? & No \rightarrow Go to IV PCA protocol. \\
Yes & \\
Epidural placed perioperatively. Choose opioid and dosing regimen appropriate to incision and epidural catheter site. & \\
Is pain relief adequate? & Yes \rightarrow Monitor and reassess. \\
No & \\
Assess patient and equipment, modify technique. & \\
Is pain relief adequate? & Yes \rightarrow Monitor and reassess. \\
No & \\
Adjunct pain control techniques. & \\
Is pain relief adequate? & Yes \rightarrow Monitor and reassess. \\
No & \\
Consider discontinuing epidural and initiating IV PCA protocol. & \\
\hline
\end{tabular}
\end{table}
liability of the instrument although its use is documented.\textsuperscript{17,18} Ten questions developed by the implementors of this study were added to the survey (Table 7).

The 0–10 scale was used to measure the following outcomes—intensity of first pain following surgery, worst pain in the last 24 hours, and pain on first ambulation—because verbal rating scales with integers of 0–10 have been demonstrated to be valid and reliable measures of a variety of constructs\textsuperscript{7,19–21} and do not burden patients with complex, energy-consuming requirements. Percent was used to measure interference of pain with sleep and achievement of relief; degree of discomfort due to nausea was measured in frequency. The Katz Activities of Daily Living (ADL) Scale\textsuperscript{22} was used to provide a report of patients’ ability to perform activities

\begin{table}[h]
\centering
\caption{Quality Improvement Objectives}
\begin{tabular}{l}
\hline
At the beginning of the course, participants established the following quality improvement objectives: \\
1. Define the project’s purpose, e.g., to improve pain management. \\
2. Further focus the effort by gathering data about the current status of pain management. \\
3. Identify and verify deep causes, e.g., barriers to good pain management. \\
4. Develop, pilot and implement solutions, e.g., revise pain assessment forms and standard order sheets. \\
5. Implement continuous assessment of change. \\
6. Maintain gains by implementing new pain management standards. \\
7. Anticipate future improvement and preserve lessons learned from the current effort by establishing short-term and long-term goals. \\
\hline
\end{tabular}
\end{table}

\begin{table}[h]
\centering
\caption{Questions Added to Satisfaction Survey}
\begin{tabular}{l}
\hline
4. On a scale of 0–10, how much pain did you experience immediately after surgery? \\
\hspace{1cm}_____Rating \\
5. On a scale of 0–10, how much pain were you experiencing at the time of your first post-op ambulation? \\
\hspace{1cm}_____Rating \\
6. How soon after surgery did you get out of bed to walk? (Answer in hours) \\
\hspace{1cm}_____Hours \\
13. Approximately how many times did you experience nausea and vomiting after surgery? \\
\hspace{1cm}_____# of events \\
14. Approximately what percent of the time did unrelieved pain interfere with your sleep? \\
\hspace{1cm}_____Percent \\
17. Prior to surgery, were you worried about becoming addicted to the medication that would be given to you to treat your pain? \\
\hspace{1cm}_____Yes \\
\hspace{1cm}_____No \\
18. Did you receive written materials about pain management before surgery? \\
\hspace{1cm}_____Yes \\
\hspace{1cm}_____No (Go to Question #21) \\
19. (If the response to Question #18 was “Yes”) How helpful were the written materials given to you before surgery? \\
\hspace{1cm}_____Very helpful \\
\hspace{1cm}_____Somewhat helpful \\
\hspace{1cm}_____Minimally helpful \\
\hspace{1cm}_____Not at all helpful \\
\hspace{1cm}_____No impression \\
20. (If the response to Question #18 was “Yes”) Was the written material given to you before surgery . . . \\
\hspace{1cm}_____Too complicated and/or overwhelming \\
\hspace{1cm}_____A little complicated and/or overwhelming \\
\hspace{1cm}_____Just right \\
\hspace{1cm}_____A little simple \\
\hspace{1cm}_____Much too simple \\
21. During your treatment for pain, were you concerned about becoming addicted to the medicine you were taking for pain? \\
\hspace{1cm}_____Yes \\
\hspace{1cm}_____No \\
\hline
\end{tabular}
\end{table}
of daily living at the time of discharge. Patients also estimated how many hours after surgery they ambulated.

Data providing evidence of these outcomes will be reported in follow-up articles.

**Program Evaluation**

Evaluation of program effectiveness was designated as follows: Given previous conclusive evidence that educating professionals will change their knowledge, knowledge tests were not used to evaluate the effectiveness of the program. Alternatively, data were collected from follow-up questionnaires measuring performance and system change 6 months after the end of the program.

In follow-up questionnaires, nurses who participated in the educational program at the experimental sites provided evaluation of specific pain management behaviors recommended by the program 6 months after its completion. They reported that assessment and documentation of patients’ duration of pain were perceived to be the most important caregiver behaviors providing benefit to patients (Table 8—Selected Results). Assessment and documentation of location of pain and the use of the patient’s pain history also were rated highly for benefit to the patient. The activities perceived to have least benefit to the patient were development of pain assessment forms and obtaining and using family pain history to plan the patient’s care. Across all respondents’ reports of regularly performed activities, the activities performed by the largest proportion were (1) discussing postoperative pain management with another practitioner (21/21; 100%) and (2) assessing and documenting pain using a 0–10 rating scale (18/21; 86%).

Almost all of the respondents reported that their worksite encouraged them to assess and document patient’s pain intensity using a 0–10 scale and to assess and document specific pain behaviors. The activity encouraged least by respondents’ work/system unit was using the patient’s family pain history to plan the patient’s care. However, assessing and documenting the meaning of pain to a patient were encouraged by less than half of the units where the nurses worked. Activities regularly performed and supported by the respondent’s work/system unit closely paralleled activities perceived to be influenced by participation in the educational program. Conversely, activities occurring least often during the 6 months after the educational program, e.g., “using decision-making to reconcile ethical issues related to pain management,” and “using decision-making to resolve legal questions regarding licensure to practice pain management” were not supported by the respondent’s work/system unit.

Six months after the educational program, implementors at the three experimental sites completed follow-up questionnaires reporting system changes in pain management recommended by the program. All experimental sites reported use of the AHCPR Guidelines in practice; two of the three sites had implemented a standard measure of pain intensity and established a CQI team for pain management and change in perioperative pain management protocols. However, all participating hospitals indicated that the greatest barrier to change

<table>
<thead>
<tr>
<th>Item</th>
<th>Rating of importance*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activities believed most beneficial to patient</strong></td>
<td></td>
</tr>
<tr>
<td>Assessment and documentation of duration of pain</td>
<td>4.44 0.73</td>
</tr>
<tr>
<td>Assessment and documentation of location of pain</td>
<td>4.38 0.72</td>
</tr>
<tr>
<td>Use of patient’s pain history to plan care</td>
<td>4.38 0.96</td>
</tr>
<tr>
<td><strong>Activities believed least beneficial to patient</strong></td>
<td></td>
</tr>
<tr>
<td>Development of own pain assessment/management forms</td>
<td>2.27 2.19</td>
</tr>
<tr>
<td>Using family pain history to plan patient’s care</td>
<td>2.50 1.56</td>
</tr>
<tr>
<td>Interview patient for family pain history</td>
<td>2.93 1.44</td>
</tr>
<tr>
<td>Greatest barrier to change in pain management</td>
<td></td>
</tr>
<tr>
<td>Not enough support/encouragement from physicians</td>
<td>2.18 2.04</td>
</tr>
</tbody>
</table>

*0 = not important; 5 = extremely important.
was dependence on “others” for assistance. Respondents also reported a lack of support and encouragement from physicians. In fact, individual nurse respondents reported resistance from physicians to be the greatest barrier to change in pain management (Table 8). Among nurse participants, anecdotal comments indicated that the program “provided the nursing staff with excellent resources and direction,” “was most successful in increasing awareness of the importance of pain relief,” and “made me think more about ways to intervene and manage pain.” In fact, one hospital that converted to computerized charting designed its system so that progression in data collection was contingent upon entry of pain assessment data.

Conclusion

Thus, evaluation of the program has demonstrated the positive impact of providing community hospitals with information regarding interpretation and use of the AHCPR guidelines and CQI. Participants in the study were enthusiastic about the potential for improving pain management in their individual institution, and were anxious to know how their institution performed, even though individual site performance was not a primary goal of the program. Detailed analysis of chart data and patient discharge data is expected to provide insight into patient outcomes, and ultimately the refinement of CQI strategies, that will benefit other hospitals interested in implementing a similar program.

Acknowledgment

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References


Appendix A. Pain History, Survey of Metabolic Status and Current Pharmacology

Pain History

1. What types of pain have you experienced in the past (i.e., surgery, arthritis, dental pain, labor pain)?
2. How many days per week did you experience pain?
3. How many weeks did you experience this pain?
4. What method(s) of treatment (i.e., medication, massage, heat, distraction, etc.) was effective in treating the pain that you experienced in the past?
   Method: ________________________
   Not at all effective
   Completely effective (100%) _________________________

5. What types of pain are you experiencing now (i.e., postoperative pain, arthritis, dental pain)?
6. How many days per week do you experience pain?
7. How many weeks have you experienced this pain?
8. During a typical day, the intensity of pain:
   a. is least in the morning and increases throughout the day.
   b. is greatest in the morning and decreases throughout the day.
   c. is constant throughout the day.
   d. increases and decreases at various times throughout the day.
9. Are you concerned about addiction to drugs?
10. What method(s) of treatment (i.e., medication, massage, heat, distraction, etc.) are effective in treating the pain that you experience now?
   Method: ________________________
   Not at all effective
   Completely effective (100%) _________________________

11. What type(s) of pain have/do members of your family experienced?
12. What method(s) of treatment (i.e., medication, massage, heat, distraction, etc.) are/were effective in treating the pain that your family members experience(d)?
   Method: ________________________
   Not at all effective
   Completely effective (100%) _________________________

13. Are your family members concerned about you becoming addicted to drugs?

Survey of Metabolic Status and Current Pharmacology

Assess:

Previous use of drug _____________________
Route _____________________
Other drugs _____________________
Renal function (BUN, Cr) _____________________
Hepatic function (SGOT, SGPT) _____________________
Nutritional Status _____________________
GI activity/integrity _____________________
Body composition _____________________