

THE NURSING MANAGEMENT OF POST-OPERATIVE PAIN

THE IMPACT OF AN EDUCATIONAL PROGRAM
ON THE NURSING MANAGEMENT
OF
POST-OPERATIVE PAIN

By

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A Project

Submitted to the School of Graduate Studies

in Partial Fulfilment of the Requirements

for the Degree

Master of Science (Teaching)

McMaster University

August, 1986

MASTER OF SCIENCE (TEACHING)
(Health Care Practice)

McMASTER UNIVERSITY
Hamilton, Ontario

TITLE: The Impact of an Educational Program on the Nursing
Management of Post-operative Pain

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NUMBER OF PAGES: viii, 106

ABSTRACT

This study examines the influence of an educational program on the nursing assessment and management of post-operative pain. A problem-based retrospective audit was implemented to initially determine the nursing assessment and management of post-operative pain. Based on the results of the audit, educational strategies were implemented and a re-audit was carried out to evaluate the changes in nursing practice.

There was evidence in the study to support the notion that nurses do not assess or manage post-operative pain effectively. The study suggested that an educational program based on the results of the problem-based audit may improve the frequency and accuracy of documentation of the assessment of pain and the documentation of the utilization of a variety of alternate approaches to relieve post-operative pain. However, the results also indicated that an educational program may not increase the frequency and dosage of analgesic administration and that nurses' perception of their nursing practice may be inconsistent with their actual practice. The study also indicated that nurses will attend educational programs if given the opportunity to participate in the development of these programs.

Further studies should be carried out to examine the

relationship between written documentation of assessment and management of pain and the actual assessment and management of pain by nurses, between nurses' perceptions of their clinical practice and their actual practice, and among variables environment which may affect nurses' clinical performance. Further studies should also be undertaken to determine if practice-based education programs can influence nurses' clinical practice.

ACKNOWLEDGEMENTS

My sincere thanks are extended to my project advisor, Dr. S.M. Najm, who provided expert advice and consultation during my course work and during the preparation of this project. My thanks is also extended to J. Crook for her expertise in pain management and her assistance with the project.

I would also like to thank the administration and nursing staff of Chedoke-McMaster Hospitals, Chedoke Hospital Division for their co-operation and interest in my participation in this study. A special thank you is extended to S.Hishon, P.Jardine, M.Brown, P.Maskell, R.Baynham, and J.Doyle, the members of the Medical-Surgical Audit Group for their diligence, co-operation and perserverance. This project would not have been possible without their assistance and friendship.

And finally, I would like to thank my husband, John, for his patience, encouragement and expert help in the editing of the project on the microcomputer, and all the other members of my family for their patience and encouragement throughout the past several months.

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CHAPTER I

1.0 INTRODUCTION

1.1 General Problem

This study examines whether an educational program based on the specific needs established by a quality assurance audit, had an influence on nursing management of post-operative pain during the immediate 24-36 hours following surgery. It was undertaken for three reasons. First, I wished to review the research on post-operative pain management. Second, I wished to assess whether the most effective methods or techniques of pain management were being implemented by nurses. Third, I wished to evaluate the effectiveness of a practice-based educational program which was developed from the findings of a survey of staff need. These findings reflected my interest in a better understanding of post-operative pain management, the impact of a specific planned change on staff practice, and more generally my interest in improving quality of nursing care through planned change which is based on research.

1.2 Importance of the Problem

The general problem expresses a need to determine the influence of a practice-based education program on nurses' assessment and management of post-operative pain. The need for investigating this problem is seen in a number of contexts: historical, educational, and professional.

Historical Context: This study is important historically because it begins to answer two persistent questions in the nursing literature: "Can an educational program change the clinical behaviour of nurses?", and "Can an educational program affect patient care?". These questions are important because the nursing literature suggests that providers of continuing education for nurses continue to expend considerable time and effort in the design of purposeful professional development programs. The purposes of staff development are to improve the knowledge and performance of nurses and, therefore, to improve outcomes for patients. Numerous studies seem to suggest that formal educational programs do increase knowledge. However, critics of continuing education often object to professional development activities because these activities fail to influence nursing practice or outcomes for patients (Berg, 1979).

Educational Context: Teachers of nursing should benefit from this study in several ways. First, the study indicates that staff development programs can change nursing performance and improve nursing care when learning activities are organized on the basis of

sound educational principles. Second, the study indicates that a theory-based approach is not adequate without clinical application and reinforcement of new knowledge and skills in the clinical area. Third, the study implies that evaluation of the effectiveness of staff development programs on patient outcomes is necessary , especially for ongoing planning of more programs.

Professional Context: This study is of value to the profession of nursing because of the current interest in post-operative pain management, in the improvement of care through the process of quality assurance, and in the current issues around the scope of nursing practice in Ontario. The study utilizes the latest pain research data in order to identify the standards for the audit and to establish an educational strategy to change staff practice and improve patient care. Currently, there is a surge of interest in pain management as demonstrated by numerous journal articles, increased numbers of workshops and seminars on this topic, and the establishment of specialized clinics for patients. The results of the first phase of this study support the literature in that it was found that the management of post-operative pain is inadequate. The results of the final phase will contribute to the on-going development of the profession because they establish that planned practice- based educational strategies can have a positive influence on care of patients.

By utilizing a problem-based quality assurance audit as the mechanism for collecting the data on the management of post-

operative pain , concrete evidence was collected to plan changes in staff practice through educational strategies. This form of auditing provides a mechanism for the clinician to respond to problems that he or she identifies in clinical practice, and can be referred to as "education oriented auditing" since education is a major objective (Baynham,1985). This approach led me to believe that this form of audit based on problems in clinical practice is superior to the traditional form of audit which is based on enforcing a set of standards, and which is usually imposed by superiors onto subordinates. This latter process has been seen by those subordinates as providing little or no benefit either to themselves or to the patients receiving care. In contrast, the problem-based audit mechanism attempts to shift the emphasis away from enforcement, and towards objectives that include the provision of opportunities for continuing clinical education and improvement in the quality of the care of patients (Baynham, 1985).

The scope of nursing practice in Ontario is set in the Standards of Nursing Practice by The College of Nurses of Ontario. Even though nurses are most likely in agreement with these standards, implementation of them in practice is difficult to ensure (Buzzell, 1984). The standards are expressed as follows:

a) "Nursing is a discipline concerned with the promotion of well-being of the individual in society. Inherent in nursing is respect for the dignity, worth, autonomy and individuality of each human being. Nursing contributes a preventive, educational, restorative, and supportive service which assists individuals,

families, and groups in the promotion and maintenance of health or, when life can no longer be sustained to a peaceful dignified death."

b) "Nursing reflects and is influenced by the personal, professional, and ethical standards that guide the attitudes and actions of the individual practitioners."

c) "Nursing is a dynamic process which is responsive to the changing needs of society and evolves through the application of study and research in nursing and in other social and health sciences."

d) "Nursing care is provided through the application of the nursing process. The components of this process are:

- . Assessing the health status of individuals
- . Planning
- . Implementing and
- . Evaluating nursing care

e) Nursing care is individualized. The individual/family has a right to be involved in each component of the nursing process."

(Buzzell, 1984)

By showing that nursing management of post-operative pain can be improved by assessment of that care and the implementation of planned strategies, this study demonstrates a mechanism which nursing staff, nurse managers, and nurse teachers can utilize in order to meet these standards, specifically standards c) and d). This study also supports the belief that the implementation of the standards can be realized if a concerted effort is made by a total team approach.

Experiential Context: From my own experiential point of view this study serves four purposes: suggests possible explanations for the mismanagement of post-operative pain, suggests further studies which would clarify the mismanagement of pain after surgery, clarifies the historical roots of theories of pain and consequently the management of pain, demonstrates a mechanism to identify gaps in staff practice and to plan and implement educational strategies to improve the care of patients, and offers suggestions regarding curriculum changes which should be implemented to improve undergraduate nursing programs.

2.0 REVIEW OF THE LITERATURE

In the review of the literature, I have tried to accomplish three objectives. First, the nursing literature is reviewed to determine the "state of the art" in post-operative pain management. Second, selected literature is reviewed to determine criteria for assessing the reporting and management of post-operative pain. And third, selected literature is reviewed to determine a method for assessing the impact of an educational program on changing the nursing care of patients.

2.1 Quality of Post-Operative Pain Management

Johnson (1977) states that "although patients in hospitals initially seek pain relief from doctors, it is the professional nurse who assumes responsibility for assessing pain, diagnosing the type and the intensity of the pain, instituting dependent and

independent nursing care measures for pain relief, and evaluating the effectiveness of these interventions." Administration of analgesics by nurses is determined by the orders of the physician, and therefore is known as a dependent nursing action. Physicians usually order centrally acting, narcotic analgesics alone, or in combination with peripherally acting non-narcotic analgesics, on a P.R.N. basis, to handle acute post-operative pain. Heidrich and Perry (1982) state "that analgesics are most effective if they are given before a patient's pain experience becomes severe." This results in patients requiring lower doses of analgesics, suffering less, and feeling less anxious, and more in control of their discomfort. McCaffrey (1979) also supports the preventative approach to acute pain management. She states that "analgesics should be administered at predetermined intervals established on the basis of the duration of action of analgesia for that individual. Thus, administration of analgesics is contingent upon time, not the occurrence of pain." She goes on to say that "the P.R.N. approach may be interpreted as a preventative approach to pain. However, most systematic, preventative approaches to pain avoid the use of the P.R.N. order since it is so often associated with allowing significant pain to occur before analgesics are administered."

Several authors support the use of a variety of independent nursing actions to relieve post-operative pain (McCaffrey, 1979). These measures include reassuring the patient with the nurse's presence; application of heat and cold; repositioning the patient; offering the bedpan; altering the environment of the patient's room;

back massage and other basic nursing measures to comfort the patient; and teaching regarding the sort of pain to expect, how long it is likely to last, and how the patient can help to relieve it. Patients in pain should be relieved of discomfort in every possible way utilizing some or all of the above techniques along with appropriate use of analgesics.

Despite the support in the literature for techniques which can relieve post-operative pain, there is abundant evidence to show that post-operative pain continues to be mismanaged, i.e. that many post-operative patients suffer pain unnecessarily. Streltzer and Wade (1981) report that all participants in a study analyzing the variance in postcholecystectomy narcotic analgesic requirements were notably undertreated for pain, despite their cultural group. This study is a replication of a study by Marks and Sacher (1973) which found similar results. Other studies support the notion that staff are overly conservative in their administration of analgesic medication to patients in pain, even when patients are terminally ill (Cohen, 1980). In a survey carried out by Weis et al. (1983), 41% of the patients monitored post-operatively were judged by the authors to have ineffective pain relief (i.e. moderate to severe pain at the peak of analgesia).

The literature provides many reasons why post-operative pain is mis-managed. McCaffrey (1979) reports two research studies dealing with pain management in hospitals which demonstrate that "a major reason for the high percentage of patients with poor relief from acute pain is the inadequate use of narcotic analgesics." This

takes two forms: a) the physician under-prescribes analgesics for these patients, and b) nurses administer, routinely, less than half the analgesics ordered. The reasons for the undertreatment of pain are varied. Fagerhaugh & Strauss (1977) identify nurses' lack of responsibility for pain relief. Several investigators have found that lack of knowledge about pharmacology and addiction contributes to the undertreatment of pain with narcotics (Marks and Sachar, 1973; Hackett, 1971; Cohen, 1980). Weis et al. (1983) found "that 39% of the physicians and 48% of the nurses believed that the chances were more than 15% that the patient would become an addict with regularly administered doses of narcotics." McCaffrey (1979) further reports that "fear of causing respiratory depression" is another major reason for undertreatment. This is in contrast, however, to the findings of Weis et al. (1983) which show that such a concern would scarcely be a reason for undertreatment.

McCaffrey (1979) identifies two key problems in pain assessment which result in mismanagement of pain. One problem focuses on the patient's belief that the Health Care Team knows all about his pain, without having to tell them. The other problem centers on the Health Care Team's belief that if the patient has pain, he will tell them. McCaffrey (1980) states that clinical studies indicate that patients tend, for various reasons, not to report or to minimize their pain experiences. Heidrich and Perry (1982) state that if nurses do not know how to assess pain, or use only the patient's verbal behaviour as an indicator of pain, the nurse ends up treating the pain according to her judgment of how

much the patient should hurt rather than how much he really hurts. McCaffrey (1980) reports that "generally, we (Health Care Team members) infer less pain than the patient experiences." Jacox (1979) reports the results of a study which surveyed the patients' point of view. 70% of the patients responded to pain by trying to ignore it or conceal it from others. Pain is viewed by many people as a private experience. Weis et al.(1983), as discussed previously, found that 41% of patients studied experienced moderate to severe pain post-operatively. Of these only 18% indicate that pain relief was inadequate, which shows that some patients find it acceptable to have suffered pain post-operatively. This suggests that for whatever reasons, perhaps cultural or psycho-social (McMahon & Miller, 1978), many patients will not verbally report that they are in pain until it is very severe, and some may not verbally report it at all. This means that the process of pain assessment requires active effort on the part of the nurse.

Johnson (1977) outlines four components in effective pain assessment. These components are supported in the nursing literature by other authors (Jacox,1979; McCaffrey,1979). For each episode of pain, the nurse should assess and document the:

1. characteristics of the pain (location, intensity, quality and chronology of the pain experience);
2. patient's physiological, behavioral, and affective responses to the pain experience;
3. meaning associated with the pain;

4. coping mechanisms, or alleviating factors, utilized to deal with the pain.

Two recent studies which review the problems encountered in measuring clinical pain, conclude that the McGill Pain Questionnaire is a multi-dimensional tool with good reliability and validity in measuring immediate pain (Graham, 1980; McGuire, 1984).

In conclusion, the literature review shows that nurses do not assess or report their patients' post-operative pain effectively. For this reason, I decided to develop and test a mechanism for improving the assessing and reporting of post-operative pain by nurses. In order to develop the mechanism, standards for assessing the reporting and management of post-operative pain had to be developed. The next section of the literature review provides the evidence for the standards which can be used to assess the reporting and management of patients' post-operative pain by nurses.

2.2 Standards for Assessing the Reporting and Management of Post-operative Pain

In this part I have reviewed selected research on post-operative pain management. My purpose is to determine the standards which should be used to assess and manage the post-operative pain of patients. The first standard is that analgesics should be received within the prescribed time after discharge from the Recovery Room to the patient's room. The inclusion of this standard is supported by McCaffery (1979). Nurses on surgical wards need to consider if an analgesic was given in the Recovery Room, what was given, how it was

given, and when it was administered in order to determine when next the patient can receive analgesics. The second and third standards are that analgesics should be received the maximum number of times in 24 hours and that the dose of analgesics should equal the maximum ordered within the first 24 hours. The inclusion of these standards is supported by Heidrich & Perry (1982) and McCaffery (1979). The literature suggests that the most effective way to manage acute pain is to administer the analgesics at pre-determined intervals established on the basis of duration of action of the analgesics. The physician states the frequency of analgesic administration (e.g. q.3-4 hours) in his written drug order. The "dose levels ordered" refer to the minimum dosage of medication at the minimum frequency (e.g. 75-100 mg. q.3-4 hours equals a range of 450-800 mg). Any patient receiving 450 mg. or more would meet the standard. Therefore, the patient should receive the dosage ordered based on these time intervals.

The fourth standard for assessing and managing post-operative pain is that the documentation of analgesic effect should occur within one hour after each administered dose. The inclusion of this standard is supported by Govoni and Hayes (1971), Heidrich and Perry (1982), and McCaffrey (1980). The literature very clearly shows that it is the nurse's responsibility to assess the effectiveness of analgesics in relieving the patient's pain. The usual routes of analgesic administration on surgical wards are intramuscular, subcutaneous and oral. The peak action of the analgesic varies with its routes of administration, but generally occurs in the range of

15-20 minutes by the intramuscular route, and up to one hour by the oral route.

The fifth standard is that when the patient has had the maximum dose of analgesics, but remains in pain, the physician is notified. The inclusion of this standard is supported by Heidrich and Perry (1982), Johnson (1977), McCaffery (1979) and Sweeney (1977). If the analgesic has been administered as ordered and is ineffective in producing adequate pain relief, the nurse must notify the doctor so that the analgesic component of pain management can be re-evaluated.

The sixth standard is that for each episode of pain, the following factors must be documented: character of the pain, location, onset, duration, precipitating/aggravating factors and alleviating factors. The inclusion of this standard is supported by numerous authors including Heidrich and Perry (1982), Johnson (1977), McCaffery (1979), and Sweeney (1977). Detailed information regarding the nature of pain is essential for accurate diagnosis and treatment.

In reviewing the literature, certain situations were noted that would prohibit nurses from meeting these standards. These exceptions were taken into consideration when conducting the study. The first exception would prohibit nurses from meeting standards one, two and three. This exception involves any physical changes in the patient that would suggest the patient is going into shock such as: elevated pulse and respiration as blood pressure falls; a narrowing of pulse pressure; and a continued decline in blood

pressure over two consecutive readings. The literature supports the fact that narcotic analgesics, especially by the intramuscular or subcutaneous routes, should not be given if the patient is in hemovolemic shock. The drug is stored in the muscle or subcutaneous fat until adequate blood pressure is returned. The deposited drug would then be absorbed quickly by the blood and toxic effects would occur (Billings & Stokes, 1982; McCaffery, 1979; Patras et al, 1984; Siskind, 1984).

The second exception would prohibit nurses from meeting standards one, two, and three as well. The literature supports my belief that narcotic analgesics should not be administered to patients whose respirations register at 12 per minute or below. This is justified because narcotic analgesics produce respiratory depression as a toxic effect. Therefore, narcotics should not be administered to adult patients whose respirations are below the normal adult range (Govoni and Hayes, 1971).

The third exception which would prevent nurses from meeting the standards outlined as desirable in the management of post-operative pain has to do with the patient's own right to have control over his treatment. There may be many reasons why analgesics and other measures to control pain may be refused by the patient, or for other reasons may not be given to a patient. It is the nurse's responsibility to document these reasons in the patient's record (Heidrich & Perry, 1982; Johnson, 1977; McCaffery, 1980; Sweeney, 1977).

2.3 Method for Assessing the Impact of an Educational Program on Changing Practice of Care

The purpose of this part of the literature review is to determine a method for assessing the impact of an educational program on changing the practice of the care of patients. It is evident that there are several studies in which the effectiveness of educational programs on practice has been assessed. The nursing literature is abundant but does not analyze the topic very rigorously, so I had to assess the medical literature for the purposes of this study. The medical literature shows that educational programs do not change practice, unless they are based on the specific practice needs of physicians. There is evidence to show also that problem-based quality assurance audits have many elements which can contribute to effective change. The traditional framework used to justify post-professional educational programs is that they expose physicians and nurses to new medical information, increase knowledge, change behaviour, and favourably alter outcomes for patients. The literature is quite clear on one point. The ultimate question in evaluating these programs is whether the outcomes for patients can be improved. In other words, has the program affected the care of patients (Haynes, 1984; Berg, 1979; Stein, 1981; Heick, 1981)?

Several articles evaluate the effectiveness of educational programs on medical practice. Post-professional programs have been widely criticized as ineffective (Stein, 1981). Considerable evidence exists that the physician's knowledge can be increased, but

there is very little evidence to show an impact on patient outcomes (Berg, 1979). However, the best study which I have found and which critically appraises the efficacy of educational programs is written by Haynes, Davis, Mckibbon & Tugwell of McMaster University (1984). In this study, the authors collected 248 research articles describing studies of educational interventions. These articles were reviewed for applicability and scientific credibility by applying preset methodological standards. The authors report that 13% of all articles describe randomized controlled trials. Well-conducted randomized controlled trials, with adequate numbers of patients, blinding of therapists, patients, and researchers, and standardized methods of measurement and analysis, are the best evidence for a cause-and-effect relationship (Fletcher and Fletcher, 1982). Only 7% of all articles and 20% of the trials assessed the impact of educational programs on the care of patients. Seven (7) articles provide convincing evidence that educational programs can improve physician behaviour. Only three of these methodologically sound studies assessed the outcomes for patients, and only one demonstrated any improvement in outcomes (Haynes et al, 1984). It is interesting to note that in all three studies a combination of printed self-study packages, audio-visual materials and feed-back from a preceptor were used. However, in the study which demonstrated an improvement in the performance of physicians and the outcomes for patients an audit was initially carried out to determine learning needs in order to plan the educational program. In the other studies, there is partial self-selection of topics with

the remaining content being "laid on" the participants. This point interests me in light of the present project. Are there certain characteristics of post-professional educational programs which will promote change in practice and ultimately an improvement in the care of patients?

The literature serves to identify certain basic assumptions which are critical in planning and implementing programs. Scott (1976) suggests that conditions which are necessary to encourage learning are the following: the student must be adequately motivated to change his behaviour; he must be aware of the inadequacy of his present behaviour (and the superiority of the behaviour he is required to adopt); he must have a clear picture of the new behaviour; he must have opportunities to practice the new behaviour; he must get continuing reinforcement of the new behaviour. Heick (1981) agrees with Scott when she describes essential criteria in the selection of post-professional education programs in nursing which will have an impact on the problems or situations for which the training experience was originally designed. These basic assumptions include the following:

1. Learning needs and/or program goals have been identified and/or validated by the service organization and potential enrollees.
2. The potential enrollees are a homogeneous group with similar practice goals, learning readiness levels, etc.
3. Potential variables and/or limitations identified as possible reinforcements and/or deterrents to clinical application of goals are a planned aspect of the program discussion sessions.

4. Program outcomes are dependent upon the soundness of the identification of learning needs. The educational offering should be designed to meet the needs and the motivation of learners. Support within the service organizations including reinforcement of the improved clinical change is necessary.

5. The ultimate judgment of success of any given post-professional education program is directly correlated with its effect on clinical practice.

6. Evaluation is essential to determine new deterrents to the application of knowledge within the clinical area and to assess future program needs.

Both of these authors stress the importance of identifying learner needs, planning of program goals, and reinforcement of the new knowledge and behaviour learned in the setting. Modern learning theory which incorporates principles and technologies from various theories supports this view of educational programs (Knowles, 1978; Dickinson, 1979). Knowles states that "the andragogical teacher (facilitator, consultant, change agent) prepares in advance a set of procedures in a process involving these elements: 1) establishing a climate conducive to learning 2) creating a mechanism for mutual planning 3) diagnosing what the learner needs to know 4) formulating program objectives that will satisfy these needs 5) designing a pattern of learning experiences 6) conducting these learning experiences with suitable techniques and materials; and 7) evaluating the learning outcomes and rediagnosing learning needs."

There is a great deal of literature available on the value of quality assurance programs in evaluating and improving patient care (Hegyvary & Hausmann, 1975; Smeltzer, 1983; Laing & Nish, 1981; Larson, 1983). However, the traditional emphasis of audit has been to enforce a set of standards. Usually imposed from superiors to subordinates, it has stressed accountability and has been seen by those subordinates as providing little or no benefit either to themselves or the patients receiving care (Baynham, 1985).

Problem-based auditing provides an alternative method for assessing quality of care. This audit mechanism attempts to shift the emphasis away from enforcement and towards objectives that include the provision of opportunities for continuing clinical education and improvement of the quality of the care of patients. It also provides a mechanism for the clinician to respond to problems that he or she identifies in clinical practice and it has education as a major objective (Baynham, 1985). In searching for a mechanism to assist me to identify the learning needs of nurses in relation to post-operative pain, the problem-based audit seemed to be a very effective way of assessing needs which are specific to the nurses on the units being studied, and also would assist me to plan program goals in relation to the findings of the audit.

The steps in the problem-based audit are as follows:
Topic selection, setting objectives, setting criteria, abstraction of data, analysis and review of results, identification of strengths, weaknesses and deficiencies, recommendations and actions and re-audit (Baynham, 1985). The selection of a topic for audit is

a subjective decision. Nurses should be constantly appraising their practice for topics with the following question in mind: Will a study conducted on this topic help clinical staff improve the care of patients? One of the fundamental strategies of problem-based auditing is to provide a feedback loop described as "re-audit." The re-audit is the monitoring mechanism that tells the group whether they are continuing to meet the criteria they have set or whether they have improved in areas identified as deficient. The format of problem-based clinical auditing is to have clinicians work on topics in groups or as individuals, and it should be noted that it is the clinicians who decide what aspects of their practice to study, in order to find answers to questions which are relevant to them.

In conclusion, the literature review shows that nurses do not assess or manage patients' post-operative pain effectively. It also shows that there are six criteria for evaluating the assessment and management of post-operative pain, and that an educational program based on the results of a quality assurance problem based audit should improve the assessment and management of post operative pain.

3.0 PROPOSED STUDY

In view of the readings on audit and with the support of two recent studies which found an improvement in post-operative pain assessment (Sofaer, 1983) and in the administration of analgesics during the first 24 hours post-operatively (Foglesong, 1983) after the implementation of educational strategies, I was enthusiastic about a study which would measure the influence of educational

strategies on the nursing management of post-operative pain. I decided to participate with a hospital committee in a problem-based audit approach initially to assess the management of post-operative pain and to evaluate educational strategies implemented to improve the deficiencies identified by the audit. This study was selected for several reasons. First, the audit is addressing the pain management of surgical patients in the first 24 hours post-operatively. Second, the audit committee is comprised of nursing personnel from the surgical units, clinical instructors, and quality assurance experts within the hospital system which provided me with the opportunity of working with staff and administration in the setting. Thus, I had a better chance to be viewed as an integral member of the team rather than "an outsider." Third, the problem-based audit gave me the opportunity to assess and compare this process with the process of "action research" described by Greenwood (1984) as "the method most appropriate for nursing research." Fourth, the study enabled me to initiate educational strategies based on specific staff need and to evaluate whether these strategies have a positive effect on staff practice.

The following research questions were formulated:

- 1) What are the beliefs, values and knowledge of nursing staff about post-operative pain and its relief?
- 2) Is it possible for nursing staff on surgical wards to participate in a ward-based educational program on pain and post-operative pain management?

- 3) Are differences to be found in pain assessment and type and frequency of pain management techniques before and after the introduction of the educational strategies?
- 4) Will the nursing team be willing and able to implement a pain assessment tool and if so will its use be accompanied by improved pain relief?
- 5) What are the nurses' perceptions of their management of pain after the introduction of the educational strategies and before the final re-audit results?

First, a retrospective problem-based audit was carried out on two (2) surgical units to determine the post-operative pain management interventions utilized by nurses. The improvement in management and reporting of post-operative pain was assessed by utilizing a criteria instrument to evaluate the patient charts before and after the educational program. Second, the results of this audit were analyzed and conclusions and recommendations were discussed with nursing administration and staff. Third, strategies to improve the overall pain care of patients post-operatively were determined. Fourth, educational strategies were implemented on both units. In the final phase, a post-audit was conducted to determine whether nurses' management and reporting of post-operative pain have improved.

In summary, this study evolved from an interest in reviewing the changes in pain management over the past few years, and in exploring how to improve staff practice by incorporating research findings into daily nursing care. The study is based on findings in

the nursing, medical, and educational literature; focuses on the impact of an educational program on staff performance; suggests that practice-based education programs based on specific staff need may be one factor contributing to overall change in staff practice, and suggests that the results reflect a need for further research into the relationship between strategies to improve quality of care and the measured improvement of that care.

CHAPTER II

DESCRIPTION OF RESEARCH STUDY

1.0 THE SPECIFIC PROBLEMS

The specific problems investigated in this study are associated with the beliefs, attitudes, and knowledge of nurses about pain and its relief post-operatively. The specific problems are also associated with the assessment of post-operative pain, the utilization of pain management strategies and the documentation of assessment and nursing interventions before and after the introduction of educational strategies initiated to improve performance. The categories of problems, and the questions associated with each category are:

A: Assessment of Post-operative Pain

During the first 24 hours post-operatively, will nurses assess pain and document the assessment of pain more accurately after the introduction of educational strategies? This question further divides into two sub-questions:

- 1) During the first 24 hours post-operatively, will nurses assess the location, character, onset, duration, precipitating factors and alleviating factors more accurately after the introduction of educational strategies?

2) During the first 24 hours post-operatively, will nurses document the assessment of location, character, onset, duration, precipitating factors and alleviating factors more accurately after the introduction of educational programs?

B: Management of Post-operative Pain

During the first 24 hours post-operatively, will nurses utilize more variety of interventions after the introduction of educational strategies? This question further divides into three sub-questions:

1) During the first 24 hours post-operatively, will nurses administer analgesics more appropriately after the introduction of educational strategies?

2) During the first 24 hours post-operatively, will nurses utilize more variety of alternate approaches to relieving pain after the educational programs?

3) During the first 24 hours post-operatively, will nurses document interventions more accurately after the educational programs?

C: Educational Strategies

Will practice-based educational strategies change nurses performance on surgical units? This question further divides into three sub-questions?

1) Will educational strategies based directly on the learning needs of staff improve nursing practice of post-operative pain management?

2) Will nurses on surgical wards participate in educational programs on pain and post-operative pain management?

3) Will nurses perceive a change in their nursing management of pain after the introduction of educational strategies and before the final re-audit results?

1.1 The Specific Hypotheses

The categories of specific hypotheses and the specific hypotheses associated with each category are:

A: Assessment of Post-operative Pain

During the first 24 hours post-operatively, nurses will assess pain and document the assessment of pain more accurately after the introduction of educational strategies. This hypothesis further divides into two sub-hypotheses:

1) During the first 24 hours post-operatively, nurses will assess the location, character, onset, duration, precipitating factors and alleviating factors more accurately after the introduction of educational strategies.

2) During the first 24 hours post-operatively, nurses will document the assessment of location, character, onset, duration, precipitating factors and alleviating factors more accurately after the introduction of educational programs.

B: Management of Post-operative Pain

During the first 24 hours post-operatively, nurses will utilize more variety of interventions after the introduction of educational strategies. This hypothesis further divides into three sub-hypotheses:

- 1) During the first 24 hours post-operatively, nurses will administer analgesics more appropriately after the introduction of educational strategies.
- 2) During the first 24 hours post-operatively, nurses will utilize more variety of alternate approaches to relieve pain after the educational programs.
- 3) During the first 24 hours post-operatively, nurses will document interventions more accurately after the educational programs.

C: Educational Strategies

Practice-based educational strategies will change nurses' performance on surgical units. This hypothesis further divides into two sub-hypotheses.

- 1) Educational strategies based directly on the learning needs of nurses will improve nursing practice of post-operative pain management.
- 2) Nurses on surgical wards will participate in educational programs on pain and post-operative pain management.
- 3) Nurses will perceive a change in their nursing management of pain after the introduction of educational strategies and before the final re-audit results.

2.0 DESCRIPTION OF TERMS

Nurse: Nurse is operationally defined as the registered nurse on the surgical units.

Nurse Educator: Nurse educator is operationally defined as a nurse who is employed by a college or university to teach nursing.

Pain: Pain is operationally defined as what the patient says it is, existing when he says it does (McCaffrey, 1979).

Post-operative Pain: Post-operative pain is operationally defined as the pain experienced in the first 24 hours following surgery.

Pain Management: Pain management is operationally defined as the methods and techniques which nurses might use to provide comfort to patients in pain.

Patient Care Problem: A difficulty or concern experienced by patients or the nurses caring for them that is amenable to nursing intervention ; a patient care situation in which there is a discrepancy between what is desirable and what currently exists.

Quality Assurance: Quality assurance is operationally defined as a process in which what is happening is monitored and compared to what should be happening. When what is happening is less than what should be happening, corrective action is taken (Sinclair, 1984).

Problem Based Auditing: Problem based auditing is operationally defined as an audit procedure for the clinician to respond to problems that he or she identifies in clinical practice. This

process may also be called education oriented auditing since education is a major objective in order to improve the quality of patient care.

Retrospective Audit: Retrospective audit is operationally defined as measuring the actual care delivered with a retrospective or backward looking perspective, i.e. care that has already been delivered is assessed. Once collected, the actual level of care is compared against the criteria that describe the desired level of care. Any discrepancies are analyzed and, where appropriate, interventions that correct for important deficiencies are developed and implemented. A second assessment of care is then necessary in order to determine whether or not the deficiency has been corrected by the intervention. If it has not, then it becomes necessary to alter the intervention and repeat the process (Baynham, 1985).

Criteria: Criteria are operationally defined as acceptable standards or attributes of clinical practice against which actual practice can be judged.

Planned Change: Planned change is operationally defined as a purposeful, designed effort to bring about improvement in a system, with the assistance of a change agent (Spradley, 1980).

Innovation: Innovation is operationally defined as a change in nursing practice that is perceived as new by those adopting it and that represents a significant alteration in the status quo.

Practice-Based Education: Practice-based education is operationally defined as educational strategies aimed specifically at improving nursing practice resulting in improved patient care. These strategies are developed on the basis of the assessment and analysis of nurses' learning needs, and the application of knowledge and attitudes to clinical practice.

3.0 METHOD OF STUDY

A medical-surgical audit committee was established in order to plan, organize and implement the post-operative pain audit. The committee was comprised of the co-ordinator of quality assurance for the hospital, the head nurses from the surgical units involved in the study, two hospital clinical instructors, and a medical records librarian. I joined the committee as a graduate student when the committee was initially formed. At the outset I discussed and clarified my role on the committee. Previously I had been assigned to teach student nurses from Mohawk College on both the units in the study, and I knew it was important for the committee and the hospital staff to see me as a member of the audit group working on this hospital-based study rather than a teacher in the Department of Nursing at Mohawk College.

Throughout the study, the committee worked as a team with tasks being assigned to committee members. I played an active role on the committee in establishing the objectives for the audit, the audit criteria, and the development of the data abstraction tool. I worked with the quality assurance expert in meeting with the staff initially to discuss the purposes and methodology of the audit in small group meetings. I wrote the audit results and the analysis of those results with a committee member. After discussions about the results with the nurses on the units and nursing administration, recommendations were made to improve nurses' performance. I was responsible for the planning and implementation of the educational strategies. I wrote the analysis of the re-audit results with another committee member.

3.1 Audit Design

This study is a retrospective look at patients who had surgery and were admitted directly to two surgical wards for at least 48 hours post-operatively. The objectives for the audit were formulated by the committee in consultation with the nurses on the surgical units, and they read as follows:

1. To measure the extent to which the administration of analgesics by nurses, for the relief of acute post-operative pain within the first 24 hours, meets established pain management criteria.
2. To identify educational and/or administrative interventions needed to change nursing behaviour where pain management criteria are not met.

Once the objectives for the audit were established by the committee ,the process of this form of problem-based auditing was set up in four stages. These are:

- setting criteria that describe quality care
- assessment of care (audit)
- educational intervention to assure that actual care conforms with the criteria
- second assessment of care (re-audit)

The starting point of the retrospective audit is the setting of criteria which describe ideal standards in the care of patients with post-operative pain (Appendix A). The criteria developed are based on the findings in the literature review which describe measurable quality care standards (see pp.12-16). This is followed by measuring the actual care delivered with a retrospective or backward looking perspective. Care that was already delivered was assessed. Once collected, the actual level of care is compared against the criteria that describe the desired level of care. Any discrepancies are analyzed and, where appropriate, interventions that correct for important deficiencies are developed and implemented. A second assessment of care is then done in order to determine whether or not the deficiency was corrected by the intervention.

3.2 Population

The target population in this study is all surgical patients who experienced pain in the first 24 hours after surgery and were admitted to two surgical wards for at least 48 hours post-operatively. Although this target population is likely representative of a broader population, any generalizations to a broader population would require larger samples, different sampling techniques, a different research design, and more sophisticated statistical analysis procedures.

Twenty-five (25) consecutive patients who had surgery and were admitted directly to either Ward A or B for at least 48 hours post-operatively prior to October 29, 1984 were sampled for the initial audit. Demographic descriptors, e.g. sex and age, were not included as the audit took place on an adult ward so that patients of any age or sex were included as long as they met the above criteria of inclusion.

The target population was composed of post-operative patients from two surgical wards in one of the general hospitals in the region of Hamilton-Wentworth, specifically in the city of Hamilton. This hospital was chosen because of the interest of the nursing administration in improving the nursing management of post-operative pain, the establishment of an audit committee for this purpose, and the support the nursing administration gave me while working with audit committee members as well as with nursing staff on this project.

At the time of this study, the region of Hamilton-Wentworth was a predominately middle class community of 420,000 people, and contained commercial, residential and heavy manufacturing areas. Its residents represented a cross section of economic, cultural, and occupational groups. The hospital selected for this study has approximately 400 beds and it specializes primarily in orthopedics, rehabilitation and chronic care, although it provides general surgical services as well. It is actively involved in teaching and research as well as providing health care.

3.3 Sample Size

In a formal research investigation attention to sample size is necessary if the analysis is intended to be "statistically significant". In a problem-based audit, useful and clinically relevant information can usually be obtained with a sample size in the range of 25-50 (Baynham, 1985 ; Doughty, 1977). Consecutive charts rather than a random sample were selected as recommended by Doughty (1977). Since the goal was to find an accurate reflection of current care , fifty-six (56) patients were sampled for the audit from Wards A and B. Several patients were excluded, resulting in a sample of 35 (n=35). The reasons for exclusion from this study were:

- charts rejected because surgery was felt to be too minor (n=15).
- surgery cancelled for patients originally included on the list (n=4).

- patients transferred to a ward other than Wards 21 or 31 (n=1).
- patients for whom no medication profile could be found (n=1).

The final sample of thirty-five (35) charts abstracted were distributed between Wards A (n=16) and B (n=19). Two patients (n=2) refused medication, making the total number of patients receiving medication thirty-three (33). Other exceptions noted in the criteria were not identified for any patient.

3.4 Time Period

Any methodology must include a decision as to what time period will be studied. Care must be taken that the results of the audit are not biased with respect to time (Baynham, 1985). Examples of time biases include:

- a) Time of Day - The audit should attempt to examine the level of care delivered at all times unless an objective is to look at a specific time period. The audit carried out in this study complies with this criterion and no time bias was noted.
- b) Seasonal Variations - Seasonal variations in patient populations and types of surgical procedures may account for differences in the care given. The audit and the re-audit were carried out during the months of September and October to account for this bias, however this decision did not eliminate the bias.

3.5 Instrumentation

- a) Validity - When carrying out an audit, it is important to consider the validity of the audit tool. In practice, seldom is

there any formalized testing of an audit tool's validity (Baynham, 1985). Instead, clinicians exercise judgement about whether or not the audit tool can measure actual practice. A technique of checking for validity is to use the audit tool to review a number of cases, where it is known with certainty that the criteria have or have not been met. If a discrepancy between the actual care and the measurement of care abstracted by the audit tool proves to be unacceptable, it might be necessary to modify the tool and repeat the process. Otherwise, the tool can be considered valid. In the audit in this study, the clinicians developed the audit tool based specifically on the criteria and followed the above procedure to check for validity. The tool was modified based on this informal testing process (Appendix B). Therefore the tool has "face" validity and content validity rather than statistical validity.

b) Reliability - Any measurement tool is reliable to the extent that repeated measurements give consistent results. Reliability testing of an audit tool gives confidence to the clinician that the data which are collected are true and reliable. It is achieved by having both the abstractor and a clinician independently complete data collection for a sample of charts or observations. All responses where agreement exists are noted and divided by the total number of possible responses. If agreement exists in at least 90% or more of the responses , then the tool is considered reliable (Baynham, 1985).

Inter-rater reliability comparisons were carried out in this study. Reliability testing of this tool was done by three audit

members and the Medical Records Librarian. Once 90% or more agreement was reached on three consecutive charts abstracted by two of these individuals, the abstraction was turned over to the Medical Records Librarian. Formal statistical testing of reliability estimates was not undertaken.

c) Other Audit Tool Considerations - The following considerations were also discussed and implemented during the construction of the audit tool.

1) Follow Up - In order to enable the audit group to return to the data source for additional follow-up, the data abstraction should include the necessary client identification key . The patient's hospital identification number was used for this purpose.

2) Abstraction - The author and an audit committee member trained the Medical Records Librarian before the data abstraction began. Specific directions were given and problems discussed.

3) Feasibility - An effort was made to develop a tool that could be completed in a reasonable length of time. A completion time of 20 - 30 minutes was required for this tool and was considered reasonable by the committee. This prevented the abstraction process from becoming tedious.

4) Justifiable Questions - The committee submitted detailed rationales, which provide the justification for each question contained in the abstraction tool in Appendix A . This provided a useful technique for assuring that only questions relevant to the realization of the group's objectives were used and could provide educational update at the approval stage.

3.6 Rationale for Design

The factors considered when designing the retrospective problem-based audit include the research design and the elimination of extraneous variables. I initially had to decide whether a research study or a quality assurance study would meet the objectives of the project. There are aspects of quality assurance and research which overlap (Larson, 1983). They are both methods which require systematic inquiry, and they are both concerned with the improvement of the care of patients. They both require similar, unbiased methods of data collection. However, since the focus of the study is to solve immediate problems; since the intended audience is within the institution and there is no intention to generalize beyond the study population; since the intent of the project is to change staff practice immediately; and since there is no attempt to contribute to theory development, the design most appropriate to achieve these objectives is the problem-based retrospective audit (Larson, 1983). The decision as to which type of audit to use depends on the circumstances and the objectives of the group. The tasks of the audit committee include collecting the data necessary to assess the actual care given and collecting the data as objectively as possible. The retrospective audit involves abstracting the data from patient charts utilizing a chart abstraction tool. This method was favoured over a direct observation technique because it was feasible considering the manpower constraints and it would reduce the risk of the observed

clinician changing his clinical behaviour because of the presence of an observer.

3.7 Internal Validity of Design

Age and sex of patients, types of surgical procedures, and time period of data selection are the major extraneous variables to be controlled in this study. All adult patients regardless of age and sex who met the inclusion criteria were included so that these variables were not controlled. Since the results are not generalizable and since pain is a subjective phenomenon which is experienced by post-operative patients regardless of age or sex, it was decided not to stratify for these factors.

There is some control over the types of surgical procedures included in this study. The study includes patients with orthopedic, abdominal and genitourinary surgery who had been admitted to the wards for at least 48 hours post-operatively.

Time period was discussed in section 3.4 of this chapter. In order to minimize the risk of the results of the audit being biased with respect to time, the audit attempts to examine the level of care delivered at all times of the day during the months when the data abstraction took place.

3.8 External Validity of Design

External validity of the design is not considered relevant since the results of a quality assurance audit are not generalizable.

3.9 Method of Analysis

The purpose of analysis is to determine whether actual care differs from the desired standard. When it does, the analysis must determine the direction of this difference (i.e. is actual care above or below the standard?) as well as its magnitude (i.e. by how much do they differ?). Analysis was completed on the audit to determine if analgesics were received within the prescribed time after Recovery Room discharge, if analgesics were received the maximum number of times in the first 24 hours, if the dose of analgesic equals the maximum ordered within the first 24 hours, if documentation of analgesic effect occurred within one hour after each administered dose, if the physician was notified when the patient had the maximum dose of analgesic but remained in pain, and if for each episode of pain character, location, onset, duration, precipitating/aggravating factors and alleviating factors were documented. After the results of the audit were interpreted, strategies were implemented to improve the deficiencies identified in the audit.

Frequency distributions and proportions were chosen for each of the analyses. These basic statistical tools are among those used most frequently in audits (Baynham, 1985).

4.0 METHOD OF DATA COLLECTION

4.1 Training Procedures

The audit committee met on three occasions before the audit in order to pre-test the audit tool and to discuss and clarify the terminology in the tool. The Medical Records Librarian who would complete the data abstraction attended these sessions. In order for the committee to be sure of the correct abstraction of clinically relevant data, it was necessary to inform the Medical Records Librarian of what specifically should be looked for and recorded.

4.2 Method of Data Collection

The abstraction of data from the sample of 35 charts in the audit took place in October 1984. After the audit results were analyzed and the educational strategies were implemented, a staff questionnaire was circulated to all nurses on the wards to assess their perception of change in practice since the audit.

4.3 Limitations of the Study

There are five limitations to this study:

1. A quality assurance audit was utilized to collect the data for this study. The focus of a problem-based audit is to identify and solve immediate problems in one particular situation. Therefore, the results of this study may not be generalizable beyond the institution where the project took place. However, the findings may apply to other situations which are similar.

2. The sample charts were selected for the study in the fall. This may have biased the study. Since there may be certain surgical procedures which are performed more or less frequently at this time, this variable may have affected the amount and severity of pain which patients experienced.

3. This study assumes that data collected from patient charts reflect the actual care given to patients. There is an assumption in the nursing profession that "if it isn't charted it isn't done." This assumption is questionable because it takes a giant leap of faith to support the notion that written documentation of nursing care or lack of it reflects the care actually given or not given to patients.

4. This study assumes that the results of the post-audit are directly related to educational strategies implemented as a result of the initial audit. But there may be other variables which affected staff performance, such as their awareness of the project, administrative pressure, and staffing changes.

5. The conclusions of this study should be interpreted with caution since the numerical calculations on which the conclusions are based carry less power than statistical analysis.

5.0 ANALYSIS AND RESULTS

5.1 Audit Results

The results of the audit were measured according to the standards (criteria) established and are summarized in Appendix C.

Standard #1

Analgesics received within the prescribed time after Recovery Room discharge.

Results (Appendix C-Table 1)

Fifty-eight percent (58%) of the patients received analgesics within the prescribed time. Figure 1 (Appendix D) shows the degree of deviation, in hours, from the established standards for those 14 patients (42%) who did not receive analgesics within the prescribed time from Recovery Room discharge. For example, five (5) patients out of fourteen (14) were ordered analgesics q2h (every 2 hours). Figure 1 shows that one (1) patient waited three (3) hours to receive medication after Recovery Room discharge; one (1) patient waited four (4) hours; two (2) patients waited five (5) hours, and one (1) patient waited six (6) hours. A similar analysis can be made for patients with medications ordered q3h, q4h, and q3-4h.

Standard #2

Analgesics received the maximum number of times in the first 24 hours.

Results

Three percent (3%) of the patients received analgesics for the maximum number of times in the first 24 hours post-operatively. Medications were ordered on both units either at set time intervals (e.g. q4h or six (6) times in twenty-four (24) hours), or as a range (e.g. q3-4h, or 8-6 times in 24 hours). In the cases where a range had been ordered, the criterion was met if the number of times

analgesics were administered was at least equal to the minimum of the range (e.g. standards met if administered six or more times when ordered six to eight times). The results (Appendix E-Figure 2) indicate that the majority of patients who were to receive the medications six times (q4h) actually received the medication one, two or three times. One patient out of 19 met this criterion. Similarly, four (4) of seven (7) patients who were to receive the medication eight times, received it either zero or three times. No patients met this standard. All patients who were to receive the medication twelve times, received the medication five or less times.

Standard #3

This standard states that the dose of analgesic equals the maximum ordered within the first 24 hours.

Results

The "dose levels ordered" refer to the minimum dosage of medication at the minimum frequency (i.e. 75-100 mg. q 3-4h, equals a range of 450 - 800 mg). Any patient receiving 450 mg or more would meet the standard. These dose levels are shown along the bottom axis of Figure 3 (Appendix F). As shown in Figure 3, only two patients met this standard out of 33 patients (2/33, or 6%). The graph in Figure 3 is designed to plot the actual dosage administered compared with the dosage ordered. For example, there were 12 instances where patients should have received 450 mg. of medication, and in fact, only one patient received the appropriate amount. The remaining patients fall into a range of 75 - 300 mg.

Standard # 4a

Documentation of analgesic effect to occur within one hour after each administered dose.

Results

The documentation of analgesic effect was charted 18 out of 84 (21%) times for injectable medications, and 3/31 (10%) times for oral medications within one hour after each administered dose, over a 24 hour period. These results indicate that nurses are not consistently charting the effect of analgesics administered. Any documentation which was remotely indicative of "effect", was accepted (e.g. "sedated with effect"). Of the 18 notations for injectable medications, eight were entered at the end of the shift, and two were entered at the same time as the medication was administered.

Standard #4b

When the patient has had the maximum dose of analgesic, but remains in pain, the physician is notified.

Results

The peak action of the analgesic generally occurs in the range of 15 to 20 minutes by the intramuscular route, and up to one hour by the oral route. (Appendix A - Justification 4a). The audit evaluated whether there was documentation of pain within one-half to one and three-quarter hours ($1/2 - 1 \frac{3}{4}$ hours) after medication was administered. It was noted that in ten ($n=10$) cases where analgesics were administered, patients were still in pain one-half

to one and three-quarter hours (1/2 - 1 3/4 hours) later, and that in these ten (10) cases the physician was not notified, nor were any other specific measures taken/ documented to relieve the pain.

Standard # 5

For each episode of pain, the following must be documented:

character, location, onset, duration, precipitating/aggravating factors, and alleviating factors.

Results

The data for this criterion were collected in a chart format by a "yes or no" checklist. If any of the data were mentioned in the chart, the "yes" box was checked off. A summary of the results is found in Appendix C (Table 1). In almost half (46%) of the charts audited, nursing staff had charted location of the patient's pain. They charted character on almost one-fifth (19%) of the charts. Onset, duration, and precipitating factors were each mentioned on only one or two percent (2%) of the total charts audited. These results demonstrate that nursing staff are not charting the expected descriptive details of patient pain. Further, in nine (9) cases, or 25% of the sample, there was no documented pain at all, so it is difficult to know whether these patients had pain, or were "pain free."

Nursing Responses to Pain

The audit collected information regarding the nursing responses to pain as summarized in Appendix G (Table 2). In 42% of the

observations, no action was noted. Patients were given injectable analgesics in 24% of the observations, and oral analgesics in 14% of the observations. Other responses were noted in 5% or less of the observations, with "other nursing action" recorded at 3%. Since the audit assessed the documented nursing actions, it is difficult to evaluate whether nurses responded to patients' pain, but did not chart their actions, or whether nurses are not meeting the comfort needs of post-operative patients adequately.

In conclusion, these results provide the following information for consideration:

- a) 58% of the patients received medication within the ordered time following Recovery Room discharge.
- b) Patients do not receive medications the maximum number of times ordered in the first 24 hours post-operatively.
- c) Patients do not receive the ordered dosage of medication within the first 24 hours (minimum dosage at minimum frequency).
- d) Nurses very infrequently chart the effect of analgesic administration within one hour after each administered dose.
- e) For those patients who continue to have documented pain after analgesic was given, no further documented nursing action was taken.
- f) The specific assessment for each pain episode is not being recorded. For each episode of pain, the assessment criteria were not documented, with the exception of character and location.

5.2 Staff Responses to Audit Results

Two members of the audit committee (including myself) met twice with the nursing staff on the units studied to discuss the results of the post-operative pain management audit, and to seek nursing staff input related to improving the nursing management of pain. Doughty and Mash (1977) state that staff feedback is probably the most valuable source for determining the cause of the problem, because staff perception of the problem is a problem - whether or not it is the only problem. We also believed that the goal of the study was to improve the quality of care given to patients, which would require the implementation of a planned change on the clinical units. A basic requirement of any planned change is effective communication about new ideas to all who are concerned with the intended change. The Curn Project (1983) supports this belief and goes on to state that "early efforts to foster awareness of the need for change are essential to establishing a receptive climate." Several factors influence people's ability to maintain interest and motivation for change across time: perceived need for the change, length of time required for bringing about the change, awareness of progress of the change effort over time, feedback about their participation, and reinforcement or reward for their ongoing participation. We planned our information sharing session with the nurses to discuss these issues and to gain their input on planned strategies that should be taken.

The nurses initially were disappointed at the results of the audit. Some expressed surprise as they felt that they managed their

patients' pain very closely to the standards set for the study. Some expressed frustration and anger stating that the results didn't reflect their nursing care, and some were positive stating that they realized that improvements probably need to be made. Despite the initial reactions to the audit results, all nurses contributed to the discussion and identified several problems that interfere with pain management. These were:

- decreased communication about patients' pain among members of the nursing team;
- distractions (e.g. phone, visitor requests, patient requests, etc.) that often result in "forgetting" to transmit, or act on requests for pain relief;
- staff need for refresher content on the assessment of pain and appropriate pain management
- lack of staff commitment to the accurate documentation of nursing assessment and actions (e.g. who has time to chart?)
- inability of nurses to manage the assigned workload within the time allotted
- need to examine the medication distribution system

The following remedial actions were recommended as a result of the audit and the staff input:

- 1) Provide an educational program on post-operative pain management to the staff on both units during the month of May, 1985.
- 2) Assess current charting styles (i.e., the advantages and

disadvantages), with the intent of assessing the suitability of flow sheets to collect data.

Given that routine medications are distributed with very few documented errors of omission or lateness, the committee decided that our first effort at change in behaviour should be at updating the staff's knowledge about post-operative pain management. We also decided to develop and use, on a trial basis, a post-operative pain management flow sheet for the first 24 hours post-operatively, as requested by staff. Nursing administration also agreed that the following suggested remedial actions could be assessed for feasibility at a later time:

- assessment of the need for ratio changes of RNA to RN staff for evening and night shifts in order to facilitate the administration of medications to post-operative patients
- assessment of the feasibility of changing the ward clerk hours to cover part of the evening shift and of increasing ward clerk responsibilities so that nurses can spend more time with the patients.
- alteration of the medication distribution system to allow for all medications to be poured, administered , and signed for at the bedside.

5.3 Procedures for Determining Educational Strategies

Based on the findings of the audit, I planned and implemented a 1 1/2 hour educational session in conjunction with nursing instructors in the Nursing Research and Development Department (Educational Program: Post-Operative Pain: Concepts in Nursing Management-Appendix H). All RN and RNA staff were expected to attend one session. The Head Nurses booked the staff into the planned educational sessions and provided an additional person to cover the unit, so that staff booked to work those shifts could attend. Utilizing adult learning principles a variety of teaching and learning strategies was made available to the staff. Journal articles relating to pain management were distributed to the units for staff use. The educational package and an audio-tape prepared during one of the staff educational sessions was left in each unit for staff use. A total of nine educational sessions were offered in the months of May/June 1985. Thirty-two (32) staff out of a total complement of 40 participated in the sessions. Twenty-one (21) of this total were RN staff and the remaining eleven (11) were RNA staff. The 1 1/2 hour educational session was divided into three parts. The initial 45 minutes was spent with the participants completing a "Post-Operative Pain Pre-test" (Appendix I) on attitudes and beliefs related to pain and pain management. The 10 minute pre-test was self-scored by the participants and then each item was discussed in the total group. The discussion clarified for the participants and myself the level of knowledge and attitudes of the group, and also set an informal, open tone to the session. The

next 30 minutes were spent following up on the pre-test. I presented the current theories of post-operative pain with discussion on the biophysiological and cognitive/affective responses to pain, and the current nursing management of post-operative pain. The last 15 minutes of the presentation emphasized the importance of documentation of the assessment and nursing management of post-operative pain with the utilization of sample chart forms and pain assessment flow sheets. Documentation was stressed as important from a legal, medical, nursing and patient point of view. If time remained in the session, I answered questions and clarified any concerns the staff had about implementation of the educational program. During the presentation I utilized printed materials, charts and an over-head projector, and encouraged the participants (approximately 5 per session) to sit in a circle to facilitate discussion.

Three members of the Audit Committee then developed a "Post-Operative Pain Management" flowsheet (Appendix J) to assist staff in completing appropriate documentation about pain management. This tool was approved by the Corporate Forms Committee for trial use, in relation to this audit. Guidelines were developed (Appendix K) to assist the nursing staff to utilize this form and educational sessions were initiated to introduce the form to the nursing staff. These steps were taken to maintain as much consistency as possible in the utilization of the form for assessment and documentation of pain management.

6.0 Re-Audit Design

The design of the re-audit was identical to the original audit as far as population, instrumentation, rationale, method of analysis, and method of data collection. Sample size and time period require some further discussion.

6.1 Sample Size

A total of 55 patients were sampled for the re-audit. Several patients were again excluded for the same reasons as identified in the audit (p. 37). This resulted in a sample size of 30 (n=30). This final sample of 30 charts were distributed between Ward A (n=14) and Ward B (n=16). As in the original audit, the exceptions noted in the Criteria were not identified for any patient.

6.2 Time Period

The re-audit was conducted in October/November 1985 for patients admitted for surgery to Wards A and B in the months of August, September, and October 1985. Analysis of the data was carried out to determine whether the actual care differed from the desired standard, and to compare the direction and magnitude of the direction with the results of the original audit.

7.0 Re-Audit Analysis and Results

The re-audit results were measured according to the standards (criteria) established and include a comparison of the

compliance of the nursing staff with the established criteria for injectable and oral analgesics as summarized in Appendix L (Table 3).

Criteria # 1

Analgesics received within the prescribed time after recovery room discharge.

Results (Appendix L and M)

Eighteen out of 29 or 62% of the patients received analgesics within the prescribed time after Recovery Room discharge. An additional 1 out of the 29 patients, or 3% of the sample, waited 20 minutes over the prescribed time. We included this patient in the group that received analgesics within the prescribed time because a 30 minute time range before or after the "due time" of medication is considered acceptable practice. This brought the total number of patients who met the criteria to 19 out of 29 or 66%. Six of the 29 patients waited from 50 minutes to 3.75 hours before the first dose of analgesic was given. This represents an 8% increase in compliance with the standard from the original audit results of October 1984.

Criteria # 2

Analgesic received the maximum number of times in the first 24 hours.

Results (see Appendix L and N)

Two out of 29 patients or 7% of the sample received the prescribed analgesics the maximum number of times in the re-audit. This represents a 4% increase in performance/compliance from the original audit results. As in the original audit, medications were ordered, on both units, either at set time intervals (q2h, or 12x in 24 hours; q4h or 6 x in 24 hours) or as a range (q3-4 hours or 8 to 6 x in 24 hours). In the cases where a range dosage had been ordered, the criterion was met if the actual frequency of administration was equal to the minimum of the range. For example if the drug was ordered q3-4 hours or 8-6 x in 24 hours, the criterion was met if the patient received the medication 6 times (Appendix L).

Criteria # 3

The dose of analgesic equals the maximum ordered within the first 24 hours.

Results (Appendix L and O)

The "dose levels ordered" referred to the minimum dosage of medication, at the minimum frequency of the range (e.g. 75-100 mg q3-4 hours, equals a range dose of 450 - 800 mg of drug given at a possible frequency of 6-8 times in 24 hours. If 75 mg was given at the minimum prescribed frequency of 6 times or q4 hours, then the criterion was met, and the patient received a dose of 450 mg or more in 24 hours). As shown in Appendix O, only four patients out of 29, or 14% of the sample met this criterion for injectables. This represents an 8% increase in compliance with this criterion from the

original audit results of 6%. There were seven instances where patients should have received 400 mg or more of medication. In fact, only two patients received the appropriate dose. The remaining patients fell within the range of 0-250 mg. This is reflected in the graph in Appendix O. It was interesting to note that in the ten instances where patients should have received 600 mg or more of drugs, not one patient received the minimum/ maximum dosage of the range; but compared with the original audit results, patients generally received higher dosage levels of medications (e.g. in the original audit, 9 patients received dosages ranging from 0-400 mg. In the re-audit, 9 patients received dosages from 75-500 mg, with 5 of these patients receiving 200 mg or more of medication). In 27 patients (n=30) there was an oral medication ordered in conjunction with the injectable medication. Seven (7) out of 27 patients, or 26% of the sample, received the minimum ordered dosage in 24 hours (e.g. 6 out of 12 tablets in the range dosage of Tylenol No. 2 or 3 tabs 1-2 q 3-4 hours prn).

Criteria # 4a

Documentation of analgesic effect to occur within one hour after each administered dose.

Results (see Appendix L)

In the re-audit, 25 out of 30 patients received a total of 85 injectable medications within the first 24 hours post - operatively. The documentation of analgesic effect occurred in 47 of the possible 85 times or in 55% of the cases. In the re-audit, 18 out of 30

patients received oral medications 43 times. The documentation of analgesic effect was charted in 22 of these 43 cases or in 51% of the cases. The criterion was considered to be met only if documentation occurred within one hour of each administered dose over the first 24 hour period. There were a total of 128 doses of oral and injectable medications given in the re-audit.

Documentation of analgesic effect within one hour after each administered dose was noted 69 times or in 54% of all cases. This demonstrates a 36% increase in compliance with the criterion, compared to the original audit result of 18%.

Criteria # 4b

When the patient has had the maximum dose of analgesics but remains in pain, the physician is notified.

Results (see Appendix L)

In the re-audit, there were 24 episodes where nurses documented that the patient continued to be in pain one hour after the analgesic was given. In each of these episodes, there was no documentation indicating that the physician had been notified.

Criteria # 5

For each episode of pain, the following must be documented: character, location, onset, duration, precipitating/ aggravating factors, and alleviating factors.

Results (see Appendix L)

The data for the criterion were collected in a chart format by a "yes" and "no" check list. The "Post - Operative Pain Flowsheet" requesting specific information about location, character, onset, duration, precipitating/aggravating factors, alleviating factors and analgesics given, plus the progress notes, were the source of data in the re-audit. In 63% of the charts examined in the re-audit, the nursing staff had documented the location of the patient's pain. This represents a 17% increase in compliance with this criterion from the 46% achieved in the original audit. The character of the pain was documented in 91% of the cases in the re-audit period. This represents a 72% increase in compliance as compared with the original audit results of 19%.

In the original audit, onset, duration and precipitating factors, were each mentioned on only 1% to 2% of the total charts audited. In the re-audit, "onset" was noted in 38% of the cases; "duration" was noted in 15% of the cases; and "precipitating factors" were noted in 61% of the cases. These results demonstrate that the documentation of the descriptive details of pain had improved. In one case (3%) there was no documentation of pain descriptors compared to 9 cases or 25% in the original audit.

It was interesting to note that in the re-audit results, the nurses documented "alleviating action" taken (e.g. repositioning, elevation, verbal support, toileting, massage, application of heat or cold, blanket for warmth, etc.) in 60% of the episodes of documented pain. This represents a 57% increase in compliance from

the original audit results of 3%. In the re-audit, nurses documented a greater variety of alternative approaches to pain management than in the original audit.

In conclusion, these results provided the following information for consideration:

1. 66% of the patients received medication within the ordered time following Recovery Room discharge. This is an increase from 58% in the original audit.
2. Patients continue not to receive medication the maximum number of times ordered in the first 24 hours post-operatively. Two out of 29 patients or 7% met the criteria in the re-audit versus one out of 33 patients or 3% in the original audit.
3. Patients continue to receive less than the minimum dosage of analgesics ordered in 24 hours. Some improvement was noted from the original audit results (performance for injectables increased from 6% to 14%).
4. There was improvement in nursing documentation of analgesic effects within one hour after each administered dose.
5. For those patients who continued to have pain after the analgesic was given, physicians were still not notified.
6. The documentation of the specific assessment of each pain episode has improved substantially.

8.0 Post-Operative Pain Management Follow-Up Questionnaire

A sample of the questionnaire completed by sixteen nursing staff (R.N.'s=10;R.N.A.'S=7) at the follow-up staff education

session held in October, 1985 is found in Appendix P. The questionnaire was designed to survey staff opinions regarding the management of post-operative pain since the initial pain audit in October 1984. The questionnaire results indicate that 69% of the respondents believed that the patients were being medicated for pain q. 3-4 hr. rather than p.r.n., and that 64% of the respondents are utilizing alternative nursing measures to control post-operative pain. 62% of the respondents indicate that the change in their nursing practice since the initial audit was due to the education program, while 46% indicate that it was due to the pain management flow sheet and 30% indicate that it was due to administrative leadership.

The results of the questionnaire support the re-audit results. The re-audit results demonstrate improved staff performance in all but one criterion (i.e. 4 b) following the implementation of the educational program on post-operative pain and the introduction of the "flowsheet". The questionnaire results indicate that the staff believe their performance has improved and that this is due to the educational program, the introduction of the "flowsheet", and administrative support.

CHAPTER 111

CONCLUSIONS AND RECOMMENDATIONS

1.0 Conclusions

This research project summarized selected information from the nursing, medical, and educational literature, and reported on a study of nurses' performance related to the assessment and the management of post-operative pain before and after the implementation of educational strategies. The study demonstrated that nurses' performance improved in relation to all but one criterion following the implementation of the post-operative pain management educational program, and the introduction of the "flowsheet."

The difference in performance of nurses before and after the introduction of educational strategies was analyzed according to the standards established in the audit tool. Conclusions are related to the specific problems addressed in the study and are outlined below.

1. Nurses documented the assessment of location, character, onset, duration, precipitating factors and alleviating factors more accurately and more often after the introduction of educational programs.

2. There was only minimal improvement in nurses' administration of analgesics after the introduction of educational strategies.
3. Nurses documented an increase in the utilization of a variety of alternate approaches to relieving post-operative pain after the educational programs.
4. Nurses documented interventions more accurately after the implementation of the educational program and the pain flowsheet.
5. Planned educational strategies improved nurses' performance.
6. Nurses participated in educational strategies when planned according to the learning needs identified by the problem-based audit.
7. Nurses' perception of the change in their nursing practice was inconsistent with the results of the re-audit.

1.1 Assessment of Post-Operative Pain

This study showed that during the first 24 hours post-operatively nurses documented the assessment of location, character, onset, duration, precipitating factors and alleviating factors more accurately and more often after the introduction of the educational programs than before. The actual assessment of location, character, onset, duration, precipitating factors and alleviating factors was not observed directly, but was assumed to be improved based on the findings of improved accuracy and frequency of documentation. I concluded from these findings that the assessment and documentation of post-operative pain improved after the introduction of a practice-based educational program and the introduction of the pain

"flowsheet." However, it cannot be assumed that pain assessment improved because this finding was based on the assumption that "if it is documented it must have been done." There was no direct observation of nurses carried out to verify that indeed post-operative pain assessment was being done. It should also be noted that it cannot be concluded that nurses' performance will maintain this improvement 4 months, 6 months, or 1 year after the completion of the study.

I made three observations from these findings. First, by improving the nurses' knowledge of pain assessment and by facilitating the documentation of pain assessment through the development of a flowsheet, nurses may improve their performance in this area. Second, in order to determine whether nurses' actual assessment of post-operative pain has improved, I would have to observe nurses directly doing patient care (i.e. concurrent audit). Third, follow-up studies would have to be carried out in order to determine whether the change in nurses' assessment and documentation of pain is being maintained over time.

1.2 Management of Post - Operative Pain

This study showed that there was only minimal improvement in nurses' administration of analgesics after the introduction of educational strategies. However, the study also showed that nurses documented an increase in the utilization of a variety of alternate approaches to relieving post-operative pain after the educational programs, and that nurses' interventions were documented more

accurately after the implementation of the educational program and the pain flowsheet. The study suggests from the former finding that the educational program was not effective in increasing the dosage and the number of times analgesic was administered to post-operative patients. The study suggests from the latter finding that even though the documentation of alternate approaches had improved after the implementation of the educational program and the "flowsheet", I could not assume that this necessarily meant that alternate approaches were being utilized more frequently. For example, alternate approaches may have been utilized frequently before the study but nurses may not have documented that they were utilizing these approaches. Also, the documentation of the utilization of alternate approaches can only suggest that these approaches are being utilized more frequently while direct observation of nurses in the clinical setting was not done.

These conclusions suggest that the educational program may not have adequately addressed the importance of maximizing the frequency of dosage and times of administration of analgesics to post-operative patients. Assuming the program addressed these factors adequately, it may be that other variables affected the nurses' performance and therefore their compliance with this criterion. Further studies would be required to clarify this point. For example, a comparative study could be carried out to determine which variable has the most influence on nurses' performance.

These conclusions also suggest that educational programs along with the utilization of a charting tool such as a flowsheet

should be considered as methods of improving documentation of nursing interventions.

1.3 Educational Strategies

This study did show that there was an improvement in nurses' performance after the implementation of educational strategies which are based directly on the learning needs of nurses especially in the documentation of assessment of post-operative pain and utilization of alternate approaches to manage post-operative pain. I concluded from this result that direct observation of nurses in the clinical area would be necessary to verify that nurses were practicing what they were documenting. However, the study does suggest that documentation of nursing care may improve with well planned educational strategies. This indicates to nurse educators that staff education should be planned according to the practice needs of nurses, and when measuring changes in nurses' performance direct observation of nurses doing patient care may be necessary.

This study did show that nurses on surgical wards will participate in educational programs on post-operative pain assessment and management. Participation was measured by the attendance at educational sessions. 80% of the nurses on the surgical units participated in the lecture-discussion sessions. This does not include the nurses who took advantage of the audio tapes and independent study packages made available on the clinical units for nurses who were not able to attend the classes. A record was not kept of these numbers. The time, length and content in

these sessions were planned in consultation with the nurses after the results of the initial audit were discussed, so that the sessions met the learning gaps identified by the audit and the interests of the staff. This would allow for maximum participation by the nurses.

I concluded that nurses will participate in educational sessions and that contributing factors to this high participation rate may be the initial identification of learning gaps by the problem-based audit, and the active consultation with the nurses regarding the educational strategies. This finding suggests to nurse educators that educational programs may be facilitated by the utilization of a problem-based audit to identify problem areas and consultation with the participants. The Post-operative Pain Management Follow-Up Questionnaire did show that nurses perceived a change in their management of pain after the introduction of the educational sessions. However, even though nurses perceived an improvement in their management of pain (i.e. medicating patients q. 3-4 h. rather than p.r.n.; utilizing alternate approaches to control post-operative pain), the evidence in the study does not indicate very much change in the frequency and the dosage of medications administered. There was an increase in the documentation of the utilization of alternate methods however. I concluded from this finding that nurses' perceptions of change in practice was inconsistent with the results of the re-audit. Another conclusion may be that the tool was not sensitive enough to accurately determine nurses' perceptions.

In summary, this study indicates that nurses do not assess or manage post-operative pain effectively; that an educational program for nurses based on the results of a quality assurance problem based audit may improve the frequency and accuracy of documentation of the assessment of location, character, onset, and duration of post-operative pain; that an educational program for nurses based on the results of a problem-based audit may increase the documentation of the utilization of a variety of alternate approaches to relieving post-operative pain; that an educational program based on the results of a problem-based audit may not increase the frequency and dosage of analgesic administration; that nurses will participate in educational programs if given the opportunity to participate in the development of these programs through ongoing consultation at every phase of program development and that nurses' perception of their nursing practice may be inconsistent with their actual practice.

2.0 Recommendations

Nine recommendations are indicated by this study. The first four should be initiated immediately as a result of this study. Completion of the studies suggested in the remaining five recommendations would refine nurse educators' understanding of the relationship between educational programs and changing nurses' performance, and would explore the relationship between the performance of nursing care and the written documentation of that care.

1. It is recommended that nursing administration use the "Post-Operative Pain Management Flowsheet" in the first 24 hours post-operatively, and that this flowsheet become a permanent document in the patient's health record.
2. It is recommended to physicians that all post-operative analgesic orders in the first 24 hours, be ordered routinely, not on a p.r.n. basis.
3. It is recommended that the nursing administration and the pharmacy assess the feasibility of altering the medication distribution system on the surgical units to allow all medications to be poured, administered, and signed for at the bedside at the time post-operative pain is assessed.
4. It is recommended that schools of nursing ensure that the curriculum include the assessment, management and documentation of post-operative pain according to current pain theories.
5. Problem-based audits are a useful mechanism to assist nurses to respond to problems that are identified in clinical practice (action research) and it is recommended that they be utilized as an alternative to the traditional form of auditing utilized in quality assurance programs.
6. A follow-up study should be carried out to determine if written documentation of assessment and management of post-operative care reflects the actual care administered by nurses (i.e. concurrent audit).

7. Follow-up studies should be carried out to determine other variables in the environment which may cause either an improvement or a deterioration in nurses' clinical performance.
8. Follow-up studies should be carried out to determine the differences between nurses' perceptions of the frequency and dosages of analgesic administration and the actual frequency and dosages of analgesics administered to post-operative patients.
9. Further studies should be undertaken to determine if practice-based education programs can influence nurses' clinical practice.

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APPENDIX A

RATIONALE FOR THE CRITERIA IN THE PROBLEM-BASED AUDIT

Criteria Rationale

1. Analgesic received within the prescribed time after Recovery Room discharge.

Justification - This audit focuses on the nursing management of acute post-operative pain on the surgical wards. Nurses on the surgical wards would need to assess if analgesia was given in Recovery Room, what was given, how it was given, and when it was administered in order to determine when next the patient can receive analgesia.

2. Analgesic received the maximum number of times in 24 hours.

3. Dose of analgesic equals maximum ordered within the first 24 hours.

Justification - The literature suggests that the most effective way to manage acute pain is to administer the analgesia at pre-determined intervals established on the basis of duration of action of the analgesia, by that route. The physician states the frequency of analgesic administration (i.e. q3-4 hours) in his written drug order. Therefore, the patient should receive the maximum dosage ordered based on these time intervals.

4. (a) Documentation of analgesic effect to occur within one hour after each administered dose.

Justification - It is the nurse's responsibility to assess the effectiveness of analgesia in relieving the patient's pain. The usual routes of analgesic administration on surgical wards are intramuscular, subcutaneous and oral. The peak action of the analgesic varies with its routes of administration, but generally occurs in the range of 15 to 20 minutes by the intramuscular route, up to 1 hour by the oral route.

- (b) Where the patient has had the maximum dose of analgesic, but remains in pain, the physician is notified.

Justification - If the analgesia has been administered as ordered and is ineffective in producing adequate pain relief, the nurse must notify the doctors so that the analgesic component of pain management can be re-evaluated.

5. For each episode of pain, the following must be documented:

- (a) character of the pain,
- (b) location,
- (c) onset,
- (d) duration,
- (e) precipitating/aggravating factors,
- (f) alleviating factors.

Justification - Detailed information regarding the nature of pain is essential for accurate diagnosis and treatment.

Exceptions

1. Physical changes suggesting shock that may include:

- (a) Pulse and respiration go up as blood pressure falls.
- (b) A narrowing of pulse pressure.
- (c) The blood pressure continues to decrease over two readings.

Justification - Narcotic analgesia common, especially by the intramuscular or subcutaneous routes, should not be given if the patient is in hemovolemic shock. The drug is stored in the muscle or subcutaneous fat until adequate blood pressure is returned. The deposited drug would then be absorbed quickly by the blood and toxic effects would occur. Shock is indicated by changes in pulse, respiration, blood pressure and pulse pressure.

2. Respiration is 12 or below.

Justification - Narcotic analgesics produce respiratory depression as a toxic effect. Therefore, narcotics should not be administered to adult patients whose respirations are below the normal adult range.

3. Other reason documented (i.e. patient refuses medication, patient asleep, or level of alertness is decreasing).

Justification - Analgesia may not be given to a patient, or may be refused by a patient for a number of reasons. These reasons should be documented in the patient's record.

APPENDIX B

POST-OPERATIVE PAIN AUDIT DATA COLLECTION TOOL

POST-OP PAIN AUDIT

Patient I.D. Number: _____

Date of Procedure; _____

Time of Recovery Room discharge: _____

1. Complete the following for each analgesic ordered.

Analgesics Ordered

Analgesic	Dose	Frequency	Route	Recovery Room		Ward: First 24 hours				Second 24 hours					
				Dose	Time	Time	Route	Dose	Note of effect* (Give time)	Time	Route	Dose	Note of effect (Give time)		

Where the analgesic was noted as not being effective, what was the nursing action?

APPENDIX C

SUMMARY OF AUDIT RESULTS

FALL 1984

TABLE 1
COMPLIANCE WITH THE CRITERIA FOR NURSING STAFF ON WARDS 21 AND 31
FOR THE FIRST 24 HOURS POST-OPERATIVELY (FOR INJECTABLE ANALGESICS ONLY)

<u>CRITERIA</u>	<u>% COMPLIANCE</u>
1. Analgesic received within the prescribed time after Recovery Room discharge - see Figure 1 (n = 33)*	58
2. Analgesic received the maximum number of times in the first 24 hours - see Figure 2 (n = 33)*	3
3. Dose of analgesic equals maximum ordered within the first 24 hours - see Figure 3 (n = 33)*	6
4. (a) Documentation of analgesic effect to occur within 1 hour after each administered dose:	
Documentation for injectable analgesics (n = 84)	21
Documentation for oral analgesic (n = 31)	10
Total (n = 115)	18
(b) Where the patient has had the maximum dose of analgesic, but remains in pain, the physician is notified. (i.e., documentation of pain within 1/2 - 2 hours after receiving either an injectable or an oral analgesic; n = 10)	0
5. For each recurrent or new episode of pain, the following must be documented (documentation of pain: n = 59)**	
(a) Character of pain	19
(b) Location of pain	46
(c) Onset of pain	2
(d) Duration of pain	2
(e) Precipitating/aggravating factors	2
(f) Alleviating factors	7

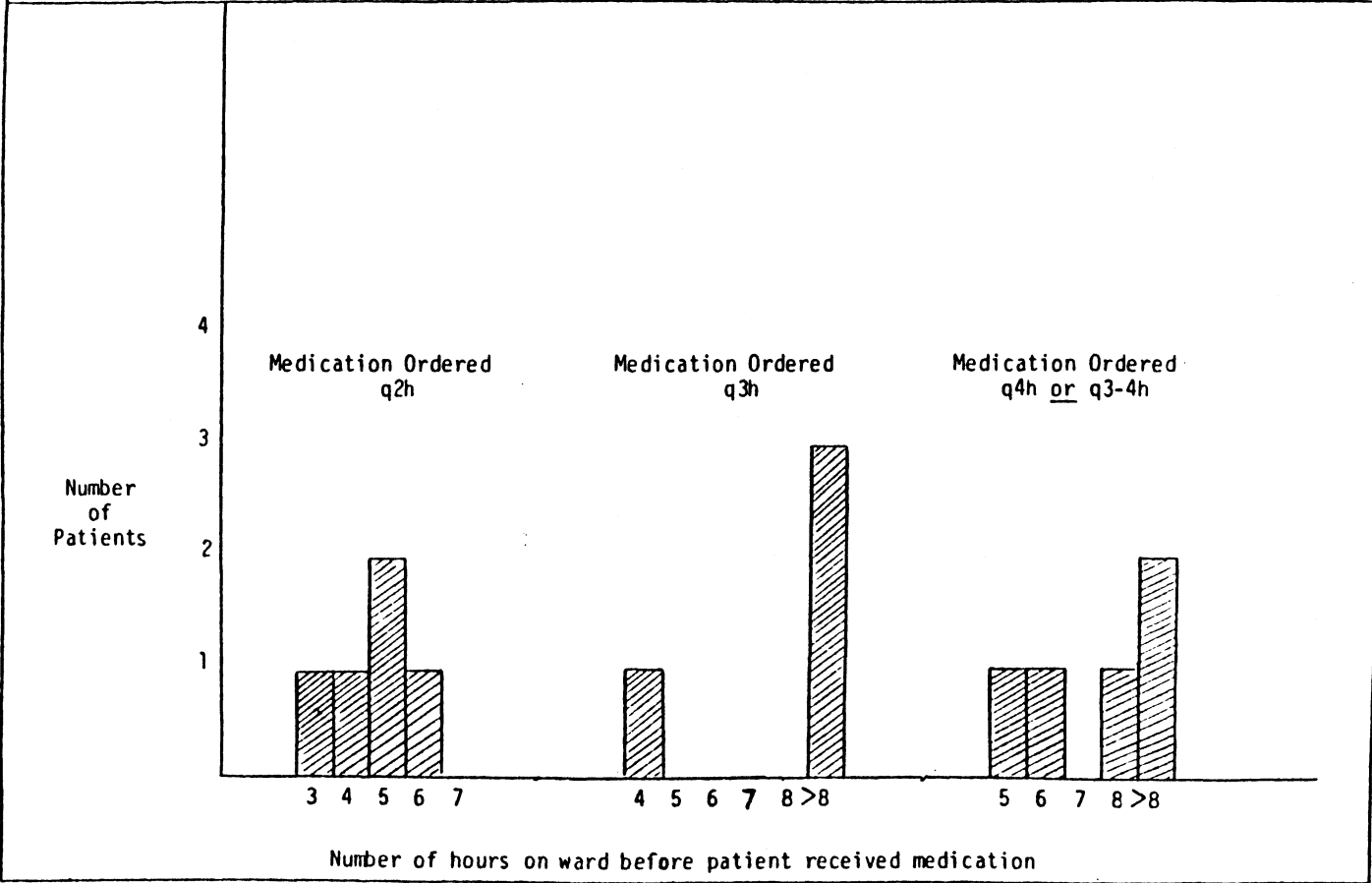
* Note: Two patients refused medication and were excluded; other exceptions (see Criteria and Exceptions, page 3) were not found to be relevant for any patients.

** Note: Of the 33 patients audited, 9 had no documentation of pain.

APPENDIX D

TIME FOLLOWING ADMISSION TO THE WARD BEFORE ANALGESICS
ADMINISTERED (FIGURE 1)

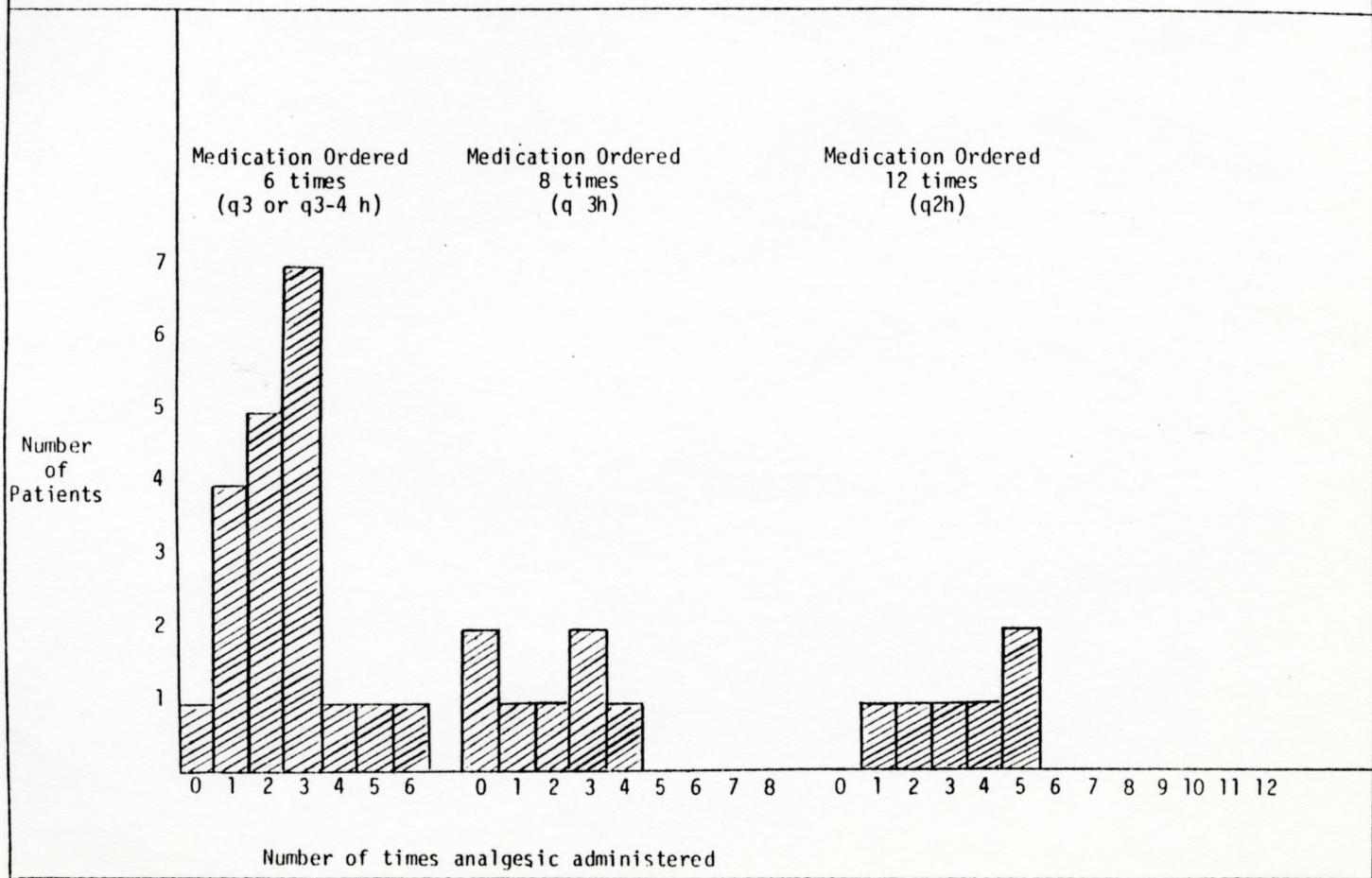
Figure 1: Time following admission to the ward before analgesic administered (for patients not meeting criteria / (i.e., n = 14))



APPENDIX E

NUMBER OF TIMES INJECTABLE ANALGESICS ADMINISTERED
DURING INITIAL 24 HOURS POST-OPERATIVELY (FIGURE 2)

Figure 2: Number of times injectable analgesic administered during initial 24 hours

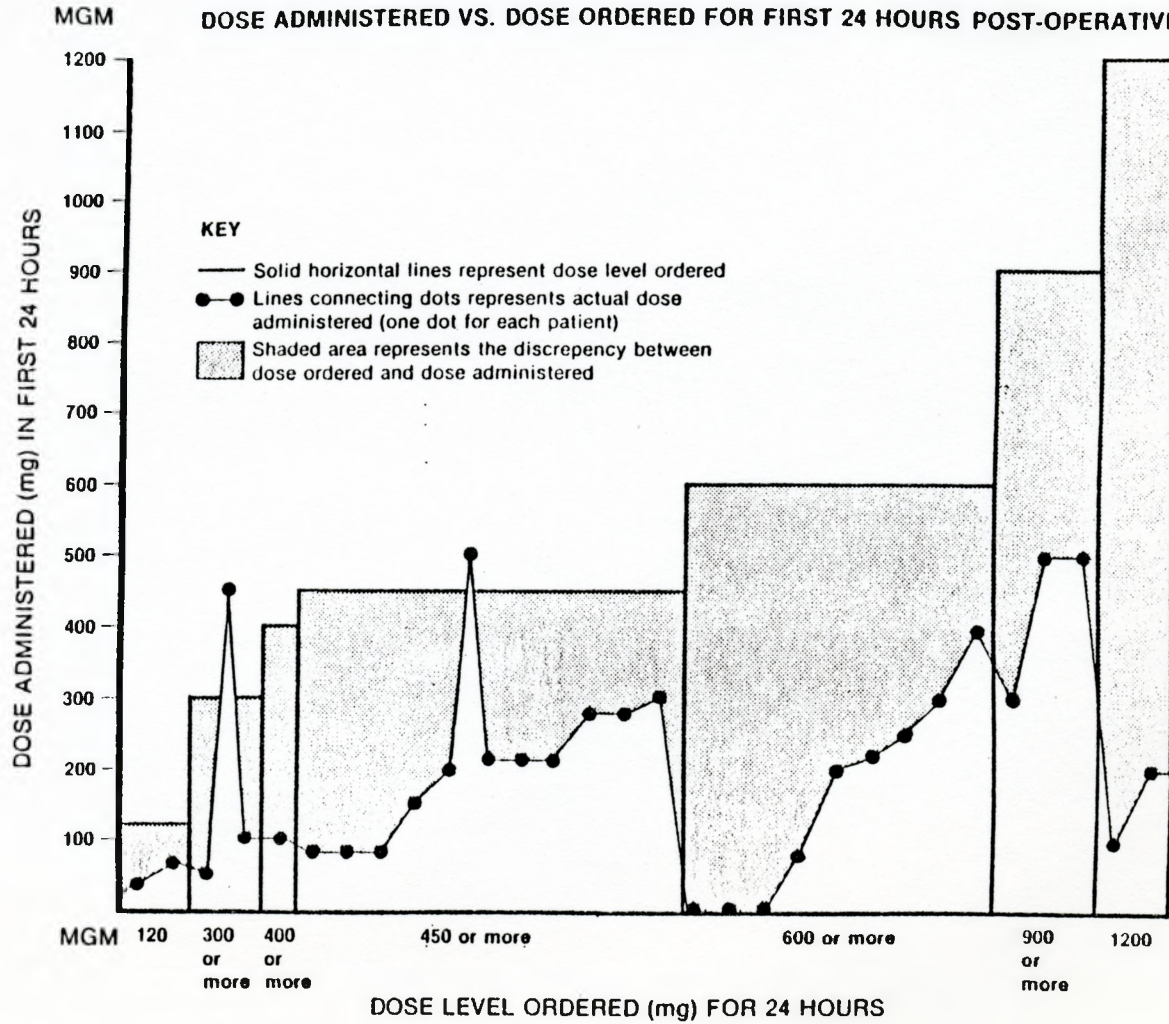


APPENDIX F

DOSE ADMINISTERED VS. DOSE ORDERED FOR INITIAL 24
HOURS POST-OPERATIVELY (FIGURE 3)

FIGURE 3

DOSE ADMINISTERED VS. DOSE ORDERED FOR FIRST 24 HOURS POST-OPERATIVE



APPENDIX G

DOCUMENTED NURSING RESPONSES TO PAIN (TABLE 2)

FALL 1984

TABLE 2

DOCUMENTED NURSING RESPONSES TO PAIN (n = 59)

<u>NURSING RESPONSE</u>	<u>NUMBER OF OBSERVATIONS (AS A %)</u>
Medication	
- Patient given oral analgesic	14
- Patient given injectable analgesic	24
- Patient refused medication	2
- For patients who were given analgesic immediately prior to pain being documented:	
(a) Analgesic later noted as effective	5
(b) No note as to analgesic effect	5
- Too soon after last dose to administer another dose (no other action noted)	5
Other nursing action noted (ice pack)	3
No action noted	<u>42</u>
Total	<u>100</u>

APPENDIX H

PROPOSED EDUCATIONAL PROGRAM -

POST-OPERATIVE PAIN: CONCEPTS AND NURSING MANAGEMENT

SPRING 1985

EDUCATIONAL PROGRAM

Post-Operative Pain: Concepts and Nursing Management

<u>Objectives</u>	<u>Teaching Strategies</u>	<u>Time</u>
Upon completion of this seminar the nurse will:		
1. gain knowledge and understanding of the phenomenon of acute post-operative pain through analysis of bioophysiological and cognitive/affective response.	Journal articles Pre-test Discussion	30 min.
2. seek to recognize his/her own beliefs about patients experiencing pain which interfere with ability to help the person in pain.	Journal articles Pre-test Discussion	
3. recognize the value of effective utilization of medications for relief of post-operative pain during the first 24 hrs. post-op.	Pain Control Charts Journal articles Discussion	10 min.
4. recognize and utilize other available nursing interventions for managing post-operative pain.	Journal articles Discussion	5 min.
5. demonstrate expertise in the documentation of nursing process related to pain, ie. assessment, diagnosis, intervention, evaluation	Seminar Discussion Sample Flow Sheets Case Study Examples	10 min.

Date and Time

The educational program will take place in May, 1985 on wards 31 and 21.

The times to be negotiated with the Head Nurses. It is proposed that a one hour 30 min. seminar be conducted twice on each unit to maximize the number of nursing staff in attendance.

Resources

- *Seminar will be conducted by Rosemary Knechtel.
- *Clinical instructors and Head nurses to attend if possible to assist in discussion.
- *General articles and books (see attached bibliography).

APPENDIX I

POST-OPERATIVE PAIN PRE-TEST

SPRING 1985

POST - OPERATIVE PAIN PRE - TEST

The following quiz is an overview of knowledge, attitudes, and beliefs, related to post-operative pain management. Please answer the items as TRUE or FALSE.

1. Pain is whatever the patient in pain says it is, existing whenever he says it does.
2. Anxiety is most often associated with acute pain, while depression is most often associated with chronic pain.
3. Acute and chronic pain have similar signs and symptoms except for the duration of discomfort.
4. If we know the cause of pain, we can usually predict its duration and severity.
5. Pain is an indication of the rate at which tissue is being damaged.
6. All people have the same capacity for perceiving pain.
7. Pain doesn't vary from day to day in the same person.
8. Although tolerance for pain varies from one patient to another, a patient usually has the same degree of tolerance at all times.
9. Men tolerate more pain than women.
10. My biggest concern about narcotic administration is the possibility of addiction.
11. Complete pain relief post-operatively is not a major nursing goal.
12. An essential part of my job is "weaning" patients from drugs post-operatively.
13. Our culture tends to favour a high tolerance for pain.
14. Many patients respond to pain by trying to ignore it or conceal it from others.
15. At times I advise patients to "wait a little longer if you can" before administering the next dose of analgesia.
16. One of the first indications of addiction is that the patient will request medication more frequently and will begin "watching the clock".
17. The "P.R.N. approach" to analgesic administration is the best approach to pain management.
18. Sleeping patients are usually "pain free".

APPENDIX J

POST-OPERATIVE PAIN MANAGEMENT FLOW SHEET

APPENDIX K

GUIDELINES FOR POST-OPERATIVE PAIN MANAGEMENT FLOW SHEET

GUIDELINES FOR POST-OPERATIVE PAIN MANAGEMENT FLOW SHEET

The purpose of this flow sheet is to:

- (a) increase documentation of pain management
- (b) collect all data pertaining to pain management on one record, ie. pain intensity, pain location, onset, aggravating factors, and relief measures,
- (c) record the pain medication given
- (d) record the effect of pain medication within one hour of administration
(Pain that is not resolved should have the follow-up action taken documented on the progress notes in detail).

How to Use

1. Enter month, year, date, and time as indicated at top of record.
2. Pain Intensity - Record pain intensity with a checkmark () at the level of pain indicated by the patient.
3. Location - If incisional, record with a checkmark. If other, specify pain location, ie. chest, headache; indicate intensity of "other" pain in a separate column.
4. Onset/Time - Ask patient length of time since the onset of this episode of pain, eg. if assessment being done at 1430 hours and the patient states the pain began half an hour ago, enter 1400 hours in this box.
5. Character of Pain - See Pain Character Descriptor box and pick the number(s) of the descriptor most appropriate as stated by the patient. Enter the number of the grouping in this box, eg. patient describes pain as hot, burning, enter #6.
6. Aggravated By - Use checkmark to indicate most appropriate descriptor, eg. if patient has used bedpan, check movement in bed.
7. Relief Measures - Use checkmark to indicate relief measure given.
8. Medication - Enter ordered medication and time given. Enter your initials under the time box when given. When first 24 hours is completed, enter subsequent doses on the General Medication Record. On the Post-op Pain Management Flow Sheet, write "Henceforth see general medication record".
9. R.N.'s - Enter initials, signature and discipline once per page for medication administered.
10. Both R.N.'s and R.N.A.'s are expected to document on this flow sheet. The R.N. is to document the assessment of the pain episode and within one hour, follow-up documentation of the effectiveness of the medication administered. The R.N.A.'s participate in the follow-up documentation of the effectiveness of pain medication administered (within one hour).

APPENDIX L

SUMMARY OF RE-AUDIT RESULTS

FALL 1985

Table 1

COMPLIANCE WITH THE CRITERIA FOR NURSING STAFF ON WARDS 21 AND 31
FOR THE FIRST 24 HOURS POST-OPERATIVELY

Criteria	Compliance Original Audit	Compliance Re-audit
1. Analgesic received within the prescribed time after recovery room discharge	58%	66%
2. Analgesic received the maximum number of times in the first 24 hours.	3%	7%
3. Dose of analgesic equals maximum ordered within the first 24 hours.	6%	14% (Injectables) 26% (Oral)
4.A Documentation of analgesic affect to occur within one hour after each administered dose:		
Documentation for injectable analgesics	21%	55%
Number of injectable analgesics	n = 84	n = 85
Documentation for oral analgesics	10%	51%
Number of oral analgesics	n = 31	n = 43
Total number of doses:	n = 115	n = 128
4.B Where the patient has had the maximum dose of analgesic, but remains in pain, the physician is notified.	0	0
5. For each recurrent or new episode of pain, the following must be documented.		
(a) Character of pain	19%	91%
(b) Location of pain	46%	63%
(c) Onset of pain	2%	38%
(d) Duration of pain	2%	15%
(e) Percipitating/Aggrevating factors	2%	61%
(f) Alleviating factors	7%	60%

APPENDIX M

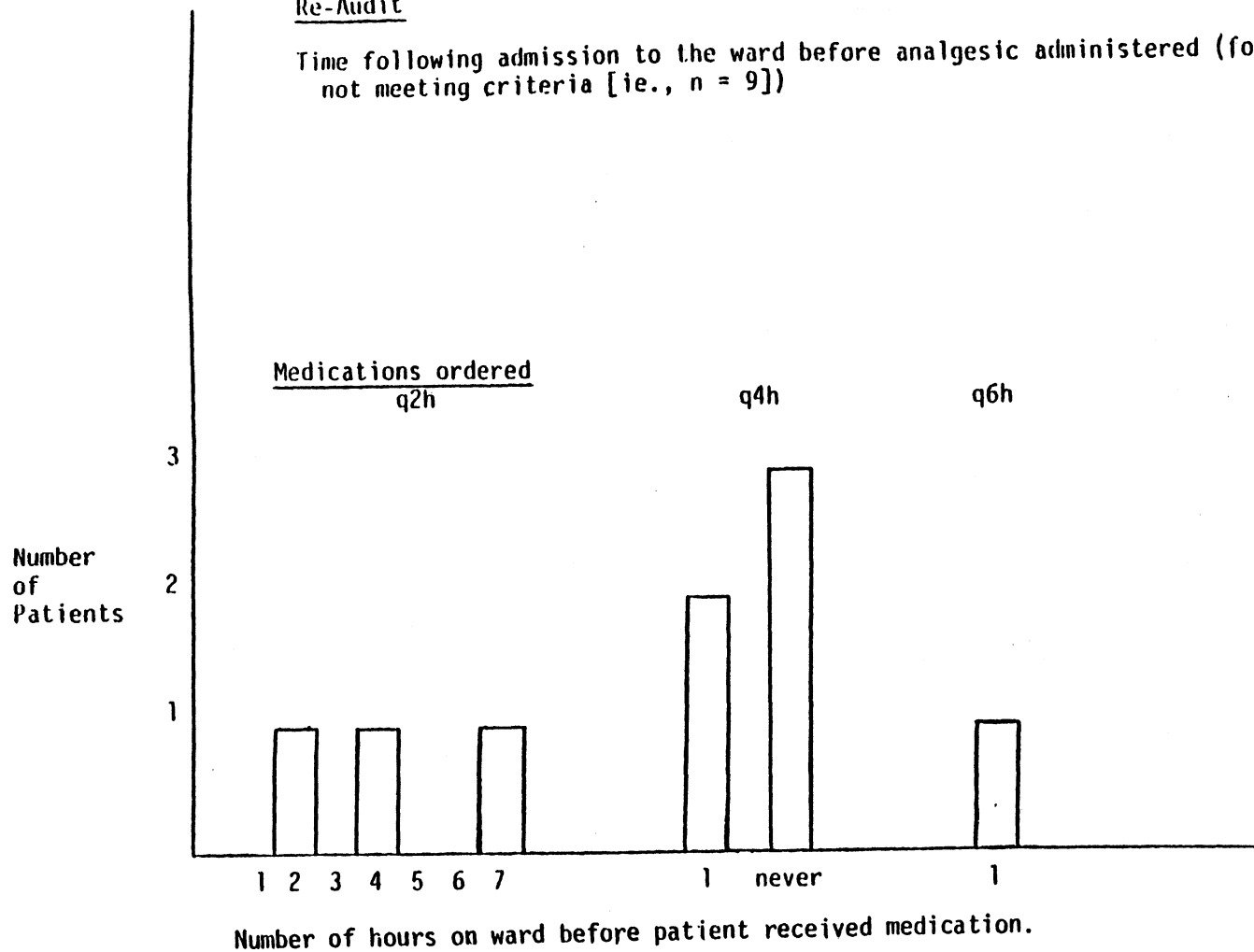
TIME FOLLOWING ADMISSION TO THE WARD BEFORE ANALGESICS

ADMINISTERED (RE-AUDIT- FIGURE 1)

Figure 1

Re-Audit

Time following admission to the ward before analgesic administered (for patients not meeting criteria [ie., n = 9])



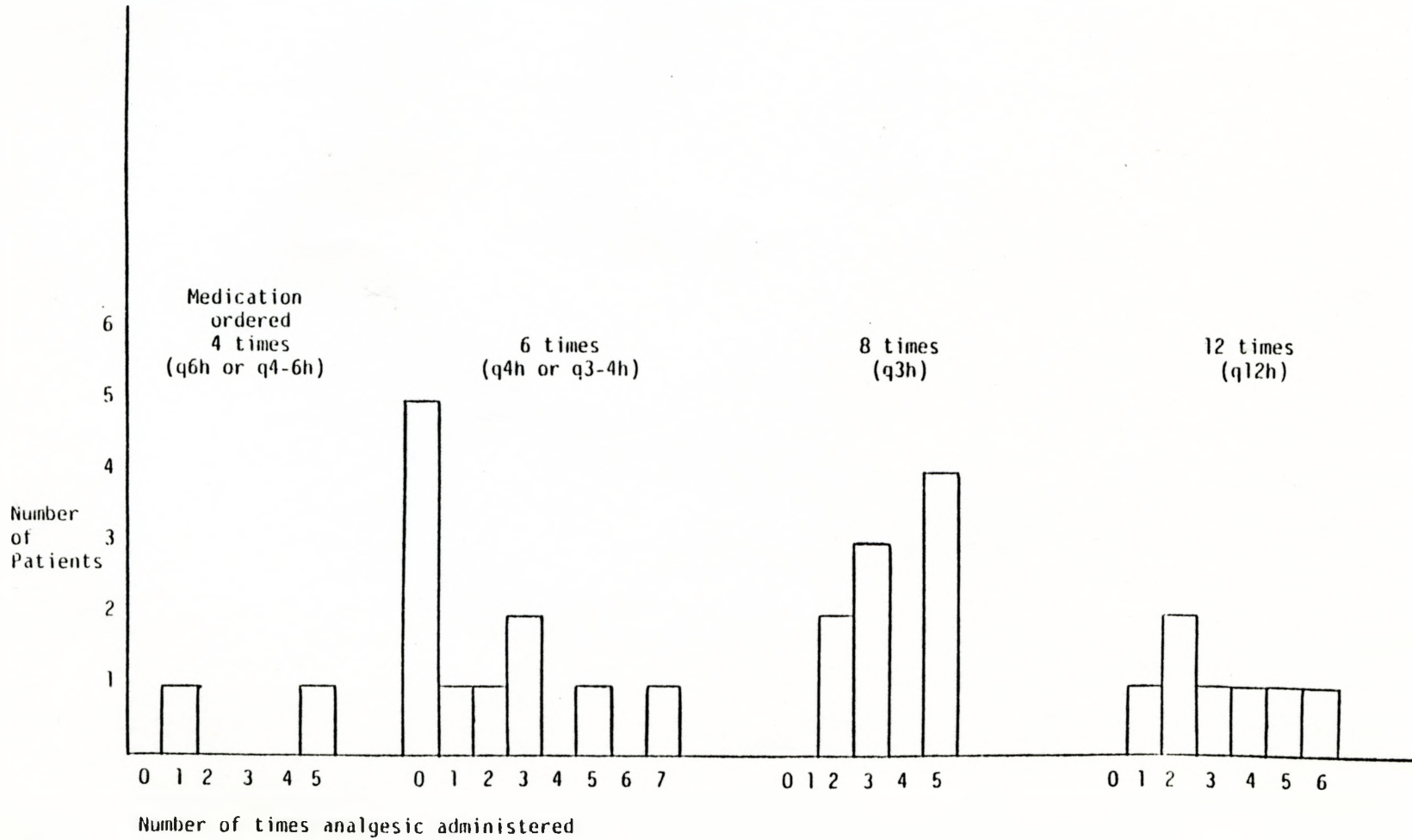
APPENDIX N

NUMBERS OF TIMES INJECTABLE ANALGESICS ADMINISTERED
DURING INITIAL 24 HOURS (RE-AUDIT - FIGURE 2)

Figure 2

Re-Audit

Number of times injectable analgesic administered during initial 24 hours



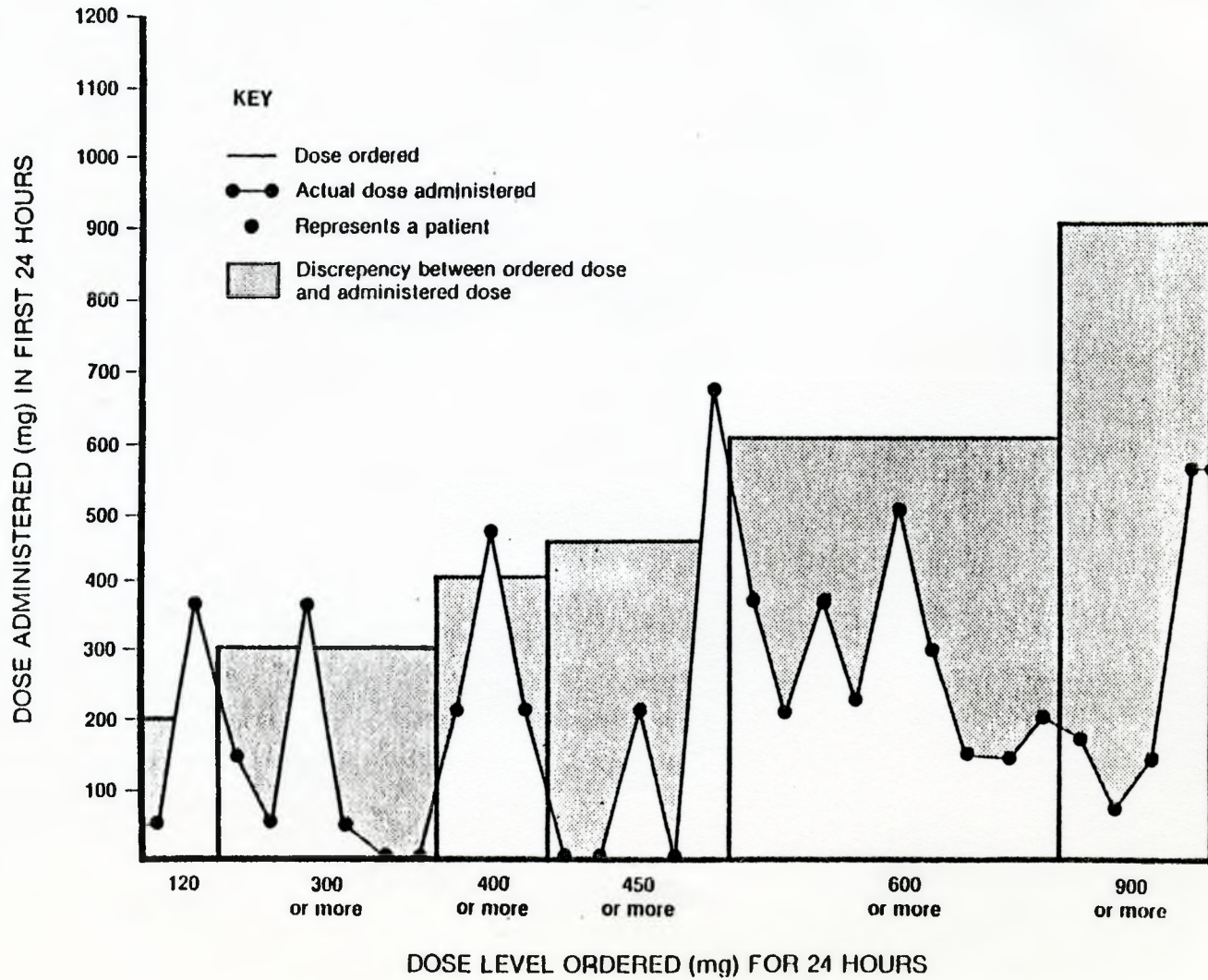
APPENDIX O

DOSE ADMINISTERED VS. DOSE ORDERED FOR FIRST 24 HOURS

POST-OPERATIVELY (FIGURE 3)

Figure 3

DOSE ADMINISTERED VS. DOSE ORDERED FOR FIRST 24 HOURS POST-OPERATIVE



APPENDIX P

POST-OPERATIVE PAIN MANAGEMENT FOLLOW-UP QUESTIONNAIRE

POST-OPERATIVE PAIN MANAGEMENT FOLLOW-UP QUESTIONNAIRE

This follow-up questionnaire is designed to survey staff opinions regarding the management of post-operative pain since the initial pain audit was completed in April, 1985 on wards 21 and 31.

Please circle the appropriate response on the scale provided that most closely reflects your practice.

	never	seldom	sometimes	frequently	always
Are you medicating post-operative patients regularly (q.3-4h.) rather than p.r.n.?	1	2	3	4	5
Are you utilizing other nursing measures to control post-operative pain?	1	2	3	4	5
If so, please specify _____					
Are your post-operative patients pain-free?	1	2	3	4	5
Have you changed your nursing practice by managing pain more effectively since the audit?	1	2	3	4	5
Is the change in your nursing practice due to:					
- the audit results only	1	2	3	4	5
- the education inservice (May/85)	1	2	3	4	5
- administrative leadership	1	2	3	4	5
- peer pressure	1	2	3	4	5
- pain management flow sheet	1	2	3	4	5
- other (please specify) _____					

	never	seldom	sometimes	frequently	always
If you were unable to achieve the goal of making patients as "pain free" as possible, which of the following factors hindered your achieving the goal?					
- unable to attend educational sessions	1	2	3	4	5
- no administrative support	1	2	3	4	5
- no "warm fuzzies" for your effort	1	2	3	4	5
- "cold pricklies" for altering ward routine	1	2	3	4	5
(specify source, i.e. physician, patients, peers, head nurse, etc.) _____					
- factors repeatedly interfering with drug administration	1	2	3	4	5
(specify) _____					
- other _____	1	2	3	4	5

Thank you for your interest and support.

Rosemary Knechtel