Predictors of Nursing Care Quality Outcomes Related to Pain Relief

By

Daniel S. Laferriere

A Master's Research Project

Presented to
Oregon Health Sciences University
School of Nursing
in partial fulfillment of
the requirements for the degree of
Master of Science

May 24, 1999

Approved:

[redacted]

Christine A. Tanner, PhD, R.N., FAAN, Research Advisor

[redacted]

Barbara G. Valanis, DrPH, R.N., FAAN, Committee Member

[redacted]

Marilee I. Donovan, PhD, R.N., FAAN, Committee Member

[redacted]

Beverly Hoeffer, R.N., D.N.Sc., FAAN Associate Dean for Academic Affairs

Abstract

TITLE: Predictors of Nursing Care Quality Outcomes Related to Pain Relief

AUTHOR: Daniel S. Laferriere

APPROVED: Christine A. Tanner, PhD, RN, FAAN

The relationships between selected structural characteristics, processes of care and outcomes of care-related pain relief in hospitalized patients were explored. Data were gathered from a sample of 40, of 65 eligible, nurses and a sample of 109 of the 328 patients they cared for during the study period. Methods used included written surveys, interviews, review of the patient records, and queries of two hospital databases to describe three interconnected dimensions of care; structures of care, nursing care processes and outcomes of care. *Structural variables* included: nurse characteristics of knowledge and attitudes related to pain management, and the nurses' typical pain management approach; patient characteristics of functional status, engagement in care, and psychosocial status, measured on admission to the hospital. *Processes of care* included assessment and treatment of pain. Data were gathered on use of both pharmacological and non-pharmacological pain treatment(s). *Outcomes of care* included adequacy of pain relief reported by the patient during hospitalization and pain relief experiences reported by the patient after discharge. Several statistically significant correlations were found: The structure variable of nurses knowledge of pain management was positively correlated with the outcome of patients' rating treatment choices as acceptable. The process variable of the difference between a patient's worst pain and best pain relief correlated positively with a positive response to the outcome of patients' rating treatment choices as acceptable. The larger difference between worst and best pain was

and best pain was created by a statistically significant difference in best pain relief scores. Additionally, patients having had a surgical procedure were more likely to have pain documented using the 0 to 10 pain scale and to have medication efficacy evaluation documented by the nurse. The patients' pain experiences in this study are consistent with other reports including best pain relief, worst pain, and pain at interview except for a lower number of patients receiving maximum amount of pain medication allowed. Implications for clinical practice include; the need to improve use of the 0-10 scale in documentation, documentation of medication efficacy, use of the 0-10 pain intensity scale to rate several dimensions of pain, and annual education in pain management.

Table of Contents

List of Tables

List of Figures

Predictors of Nursing Care Quality Outcomes Related to Pain Relief

Background and Significance

Quality of care has long been a concern in health care. Donabedian's (Donabedian, 1980) framework of structure, process, and outcome was a major influence in this work. In the 1970s much of the work in nursing quality assurance was devoted to development and use of process monitors. Examples include Phaneuf's Nursing Audit, Wandelt's Quality Patient Care Scale, Goldstone's Monitor (Sparrow & Robinson, 1992). More recently quality assurance and assessment have emphasized outcomes, (Donabedian, 1992; Rubenstein, Chang, Keeler, & Kahn, 1992) following the lead of accrediting agencies such as Joint Commission on Accreditation of Health Organizations (JCAHO), and National Committee for Quality Assurance (NCQA) through the Health Plan Employer Data and Information (HEDIS).

The cost of health care has come under increasing scrutiny in recent years as it consumes more of the gross national product. Payers, both public and private, have demanded and created cost control systems as evidenced by such strategies as diagnosis related group payment in the early 80's and the rise of managed care in the last decade. This has lead to many changes in health care delivery. Decreasing length of stay (LOS) for patients and restructuring of nursing services to use less costly health care workers are two strategies being used by hospitals to cope with the pressures of cost control.

In an effort to decrease costs, hospitals have been changing nursing skill mix to include more Certified Nursing Assistants (CNA) and Licensed Practice Nurses (LPN). Decreases in staffing levels are also occurring. As a result of the decreasing LOS and moving more care to outpatient settings only the sickest patients remain in acute care

settings. Nurses are feeling the increased workload and are expressing concern and dissatisfaction with the quality of care they are now able to give. The decreasing LOS and changes in staffing are believed to be affecting the nurse's ability to care for patients(Shindul-Rothschild & Long-Middleton, 1996). The Institute of Medicine (IOM) summary report on nursing staff (Wunderlich, Sloan, & Davis, 1996, p105) completed an in-depth investigation on nurse staff and concluded:

> "…the committee was unable to find evidence of a decline in the quality of hospital care because of any changes in staffing. Lacking reliable measures and data, no one is in a position to draw valid conclusions. The amount of testimony provided, however, and the depth of concern cited, was sufficient to lead the committee to believe that this is an area that requires on-going monitoring and research in order to ensure that the responsibility for providing safe, effective, quality and cost effective care is fulfilled within a health care system."

Recent research has demonstrated a relationship between nursing hours per day and several patient outcomes that should be sensitive to professional nursing care. The findings included differences, attributable to hours of professional nursing care, in the rate of pneumonia, urinary tract infection, venous thrombosis, pulmonary congestion and other pulmonary related problems following major surgery. (Kovner & Gergen, 1998)

The American Nurses Association (ANA) has responded to this concern by creating a set of quality indicators (American Nurses Association, 1995). The structure-process-outcome framework is used to organize recommended care indicators. Pain

management is included as a Process of Care indictor and patient and family satisfaction with nursing care as an outcome indicator. Survey research by the Picker Institute has shown that pain management is an important dimension of patient satisfaction. (Edgman-Levitan, 1998)

Purpose of the Study

The long-term goal of this project is to examine the relationship among professional nurse staffing levels and other structural variables, nursing care processes, and outcomes of care for hospitalized patients specifically focusing on pain management. Figure 1 displays the conceptual model for the larger project. The conceptual connections between dimensions are represented by the over-lapping ovals. Care related structures in this model include organizational variables, nurse characteristics, and patient characteristics. Measures of nursing care are included in the process dimension. Finally, outcomes of care include the patient reported experience related to pain relief. Individual measures related to each major construct are listed in figure 1.

The specific aims of this study are:

1. To examine the relationships among nursing characteristics including knowledge and pain management practice patterns, process variables of nursing care , including pain assessment and management, and outcomes of patient reported experiences with pain relief.
2. To examine relationships among selected patient characteristics on admission, processes of care and outcomes of pain relief.

See figure 2 for a graphical representation of these dimensions and variables.

Review of the literature

As this study seeks to examine relationships among pain related structures, processes, and outcomes of care, the literature related to each concept will be explored.

The role of nursing in pain management

The expectation that nurses will provide comfort and relief from pain is a long held societal belief (Davis, 1998). Assessment of the quality of pain management is accepted by the American Nurses Association as one appropriate measure of nursing care quality (American Nurses Association, 1995, p. 63). Cleary et al., (1991) using focus group methodology identified physical comfort as one of seven dimensions important to patients. Timely response to requests for medication, hospital staff doing everything they could to help control pain, and receiving enough medication are part of this care dimension.

The prevalence of pain in the elderly is two fold higher than those under 60. Among the institutionalized elderly, the prevalence of pain including acute and chronic may be as high as eighty percent. Many of the elderly undergo medical procedures resulting in pain, including treatment for orthopedic conditions and cancer. Medical conditions such as herpes zoster and peripheral vascular disease contribute to their pain. Chronic pain from arthritis is prevalent in this age group (Acute Pain Management Guideline Panel, 1992). In summary, society, the professional nursing organization, research with patients, and medical science all support the importance of pain management as a nursing care quality indicator.

Factors influencing pain management

The relationship of a variety of patient and nurse characteristics to pain and its management have been studied. A review of the literature shows that nurses make judgements about patients' pain which may not be accurate (Allcock, 1996). Some evidence exists showing that the practice of nursing desensitizes nurses to patient's pain, although a more liberal attitude and more current knowledge has been found in nurses regularly providing care to cancer patients (O'Brien, Dalton, Konsler, & Carlson 1996). Personal experience with pain or having a family relationship with the person in pain are factors which increase nurses' sensitivity to patients' pain (McCaffery & Ferrell, 1997). Practicing from a current knowledge base is expected. Pierce has reported on numerous nursing interventions, such as improving nurses' knowledge, and could not find linkages to improved outcomes (Pierce, 1997). An example is the work of Barnason, Merboth, Pozehl, & Tietjen, (1998) which reported improved nursing knowledge of pain management following the development of a standard of care and pain management educational program. The lack of baseline patient data in this report prevents the measurement of care improvement.

Staff knowledge and/or values related to pain management have been studied by several researchers. Researchers in North Carolina studied knowledge and attitudes of oncology nurses in that state (O'Brien et al., 1996). Using a modified form of the Wisconsin Cancer Pain Initiative survey, among their findings were that nurses regularly working with cancer patients had more knowledge about pain management and more liberal attitudes about medication use. Barriers to effective pain management as perceived by the nurses were patients' reluctance to report pain and inadequate

nursing assessment of patients' pain. McCaffery and Ferrell (1997) explored the influence of personal vs. professional role in pain assessment and treatment with opioids. A vignette describing a patient and the same vignette with the patient identified as a sibling was used to assess personal vs. professional role. The survey findings suggest a family relationship increases the nurse's sensitivity to the patient's pain, increasing the belief in the patient's rating of pain, but also increasing concern for respiratory side effects of opioid medications.

In studies of the quality of pain management several researchers have reported problems with patient recruitment due to nurses' failure to identify patients in pain. This further supports the findings of lack nurses' identification of patient pain (Ferrell, Whedon, & Rollins, 1995; Ward & Gordon, 1994).

An important structural aspect of this investigators larger project relates to nursing resource allocation. Susan Pierce discusses the lack of research linking these areas (Pierce, 1997). She concludes that even when accurate measurement of a nursing intervention is described through a study and a positive impact on a patient outcome is validated, the study rarely includes a description of the nursing delivery structural components needed to consistently provide the intervention.

> "There is ongoing evidence in the clinical research literature that counting the number and types of nurses and describing how they are deployed (.i.e., structural indicators) may not be the key correlate to quality outcomes. Rather, the literature implies that what a nurse actually does plays a key role in both health outcomes and client satisfaction." (Pierce, 1997, p. 63)

She suggests integrating clinical studies with studies of nursing care delivery systems in a multifaceted, longitudinal examination as the next important step.

Nursing Processes

As pain is multidimensional, and for many an ongoing part of patients' disease, systematic communication of patient assessment and response to intervention(s) is fundamental to high quality pain management. Use of standardized assessment scales by nurses is the standard of care (Acute Pain Management Guideline Panel, 1992; American Pain Society Quality of Care Committee, 1995; Ward & Gordon, 1994). The ability to trend patient responses to treatments over time is also fundamental (American Pain Society Quality of Care Committee, 1995).

The Agency for Health Care Policy and Research standards of care for pain assessment include use of patient self-report and documentation of pain using a valid and reliable scale. Self-report is used as it is the single most reliable indicator of the presence of pain and it's intensity (Acute Pain Management Guideline Panel, 1992). Use of the patient preferred pain assessment tool is recommended, though the need to provide organizational standards which ensure consistent access to assessment information is recognized. Problems with use of "as needed" medication administration have lead to the recommendation of regularly scheduled administration of analgesics in selected patient populations.

Outcomes of Care

An outcome measure monitored by JCAHO and NCQA that is included in the ANA report card of recommended monitors is patient satisfaction with care. This dimension has been problem prone and difficult to measure (Lin, 1996). Cleary et al.

(1991) in a report on patients' rating of their care, discusses some of the problems related to measurement of patient satisfaction and report on a tool which seems to address these issues. The use of Picker Commonwealth Survey, the tool developed by Cleary et al., has been supported by the American Hospital Association and many state hospital associations (Picker Institute, 1996).

Methods

Study Design

Data were gathered from a sample of 40 nurses of 65 eligible nurses working on the study unit and a sample of 109 of the 328 patients they cared for during the study period. Multiple sources and methods were used including surveys, interviews, review of the patient record, and queries of two hospital databases to describe three interconnected dimensions of care; the structure of care, nursing care processes and outcomes of care, see figure 2. *Structural variables* included: nurse characteristics of knowledge and attitudes related to pain management, measured by a survey, and the nurses' typical pain management approach, a calculation of a ratio of pain medication doses administered by nurses to hours worked; patient characteristics of functional status, engagement in care, and psychosocial status, measured by a 15 item assessment completed on admission to the hospital. *Processes of care* included assessment and treatment of pain. Assessment and treatment of pain was measured by patient report and chart audit. Data were gathered on use of both pharmacological and non-pharmacological pain treatment(s). Patient-reported processes were gathered by interview. Nurse reported processes were gathered from chart audits. Medication administration data was gathered by chart audit. *Outcomes of care* included adequacy of

pain relief reported by the patient on unit during hospitalization and pain relief experiences reported by the patient after discharge, collected by a written, mailed survey. Measures of association include Chi Square, Pearson Product Moment correlation coefficient, Kendall's tua-b, Fisher's exact t test. A p value of .05 was set as the value for statistically significance.

Setting

The study was conducted on a 36 bed adult medical unit which is part of an approximately 200 bed medical center. The medical center is located near Portland, Oregon. The unit provides services to a general medical population and the specialty populations of patients with chronic renal failure and patients with HIV infection. Additionally, some general surgery patients are cared for on the unit. The unit daily census averages about 30 patients. The unit is staffed with RNs, CNAs, unit secretaries, and a combined CNA/ unit secretary role. Day shift nurses' assignments average four to five patients. Evening shift assignments average five to six patients. Night shift assignments average eight to ten patients. Each shift has a charge nurse who carries a patient assignment in addition to facilitating unit flow. The nursing skill mix is nearly 70 % RN.

Sample

Patient Participants

The investigator recruited patients on 37 days during two study periods. Recruiting started September 21st though November 30th, 1998, resumed January 4th and ended January 30th, 1999. This resulted in 50 and 53 patients, respectively, being recruited, interviewed, and mailed surveys at discharge in each period. The patient

selection process started with the investigator identifying recently admitted patients from a copy of the unit daily census. Initial selection criteria included admission to the unit from the clinic or emergency room, English speaking, cognitively intact as judged by the nurse assigned to give care, expected discharge not within one day. The investigator met patients meeting these criteria introduced himself, explained the study and obtained consent.

A total of 109 patients were included in the study, 328 patients were admitted during the 37 days the investigator recruited patients. Seventy-three patients (22 percent) were not available when the investigator could recruit them. Of the 255 available patients 24 percent were not eligible. The principal reason for exclusion was confusion, followed by an expectation of discharge in less than one day, and two were non-English speaking. A total of 165 patients (89 percent of those eligible) agreed to be interviewed. Of the 11 percent declining to participate, about two-thirds declined when recruited, the remainder declined when approached for the interview. Most eligible patients not interviewed were discharged before the investigator could complete their interview. A few were transferred to other units.

To determine if there were systematic differences between those who agreed to participate and those who declined to participate, the groups were compared on age, gender and hospital length of stay (LOS). Table 1 shows age in years, LOS in days, and percentage of female patients participating and not participating in the study. Patients declining to participate were, on average, eleven years older than those agreeing to participate. No statistically significant difference existed for LOS. Fifty-six percent of the participants were female. No gender-related statistically significant difference

between patient participants and non-participants was present (χ^2 0.813, df = 1, p = 0.397).

Table 1.

Comparison of patient age, LOS and gender between study participants and non-participants.

	Study participant	N	Mean	Standard Deviation	P value
Age in years	No Yes	24 109	70.96 59.62	17.96 18.89	.000
Length of stay	No Yes	24 109	4.62 4.52	5.12 3.67	.398
Percent female	No Yes	24 109	45% 56%		.397

Nurse study participants

Nurse study participants were recruited from the regular unit staff and float pool staff in a series of eight sessions over a ten day period in mid September, 1998. A total of 65 nurses were invited to participate. Of these, 40 nurses participated. There were 33 eligible regular staff, of whom seventy-five percent completed surveys during the initial recruitment (n= 25). An additional six regular staff were recruited later for a total of 31 or 93 percent of the regular staff. Twenty-two percent of the 29 float staff completed surveys during the initial recruiting (n= 7). Two additional float staff were recruited raising this group's participation to 31 percent.

To recruit nurses, invitational posters were prominently displayed in staff break and communication areas. Individual invitational letters were sent to each nurse explaining the purpose of the study, the roles of nursing staff and research team members in data gathering, how they could participate and what was expected of them. The recruitment sessions included an explanation of the study and the opportunity to

complete the informed consent for nurse participants. Individual recruitment of a few nurses not working during the recruitment sessions also occurred. The explanation during group sessions and with individuals included a description of the study and measures planned to protect the clinical staff from the potential for increased practice scrutiny created by the researcher also being the unit manager. In addition, staff completed a self-learning module on one of the measures, the Revised-Health Status Outcome Dimension (R-HSOD). Those who consented to participate signed consents and completed nurse demographic forms. Consents and demographic information were gathered during the recruitment sessions after answering all questions. The Nurse Knowledge and Attitudes Survey Regarding Pain (NKASRP) was distributed and agreements about returning the tool were reached. NKASRP identification (ID) codes were recorded on the survey in the space provided. Numbers were assigned corresponding to ID codes printed on the nurse demographic form. Nurse reasons for not participating were not explored due to the investigator's supervisory relationship with staff.

To determine if there were systematic differences between nurses who agreed and those who declined to participate, the groups were compared on level of nursing education, years of nursing and unit experience. Float staff participants and non-participants were compared on number of scheduled hours. The distribution of educational level among nurse participants and non-participants is shown in table 2. No statistically significant difference was found ($\chi^2 = 4.315$, df = 3, p = .229). Nurse participants were compared with non-participants on years of nursing experience and years of unit experience. Differences between the mean years for both measures is

significant as noted in Table 3. Proportionally more float staff with scheduled hours participated than those without regularly scheduled hours($\chi^2 = 10.343$, df = 3, p = 0.016). This difference probably relates to differences in recruiting availability between the groups of float staff. Differences could also be related to the lack of value for participating created by the infrequency with which non-participant float staff work on the study unit.

Table 2.

Comparison of nursing education level between participants and non-participants.

Participated in study	ADN	BSN	Diploma	MSN	Total
No	12	7	5	1	25
Yes	26	11	3		40
Total	38	18	8	1	65

Table 3.

Comparison of nursing experience between participants and non-participants.

	Participated in study	N	Mean	Standard Deviation	P value
Years of nursing experience	Yes	38	9.13	9.27	.024
	No	25	14.36	7.88	
Years of unit experience	Yes	38	2.71	4.01	.001
	No	25	6.52	4.99	

Instruments

Structural variables include nurse or patient characteristics that each brings to the process of care. Processes of care are those variables representing methods of care. Outcomes are the results the interactions between structures and processes of care.

Structural variables

Patient characteristics. To identify if variations among patients accounted for differences in pain management processes or outcomes of pain treatment the R-HSOD instrument was used as the patient predictor variable. As the R-HSOD measures the

patients' health status at a point in time it could be considered a patient variable (Crawford, Talyor, Seipert & Lush, 1996). The R-HSOD tool was developed by Mary Lush, RN PhD, to monitor changes in patient health status over time (Lush, 1997). It is a 15 item instrument used by professional staff to assess patients and their families. Each item has four categories numbered one to four, except ambulation which has a fifth category. The categories describe the performance of the patient or patient's family on that item. Numerical values are assigned to each category with a lower number representing less function. The instrument has three patient related subscales: functional status, engagement in care, and psychosocial status. Internal consistency using Cronbach's alpha for the subscales is .91, .83, and .75 respectively. The fifteen items on this instrument total to a maximum 61 points. Each sub-scale total produces a maximum score for each dimension. Maximum score for functional status, knowledge/degree of engagement and psychosocial well-being are 29, eight, and 24, respectively. Higher scores show more optimal health. Interrater reliability using percent agreement ranged between 89.6 and 100 percent (Outcomes Taskforce, n. d.). As pain management was of major importance to this study a pain symptom status item was added to the instrument, modeled after the symptom status item, see appendix A. Considering this change the tool was titled Modified Revised-Health Status Outcome Dimension (MR-HSOD).

Nurse characteristics. Nursing practice is based on a body of knowledge. Measurement of nurses knowledge and attitudes regarding pain is important to understanding their use of pain related processes and treatments. The NKASRP was used to measure nurses' knowledge and attitudes about pain and its management

The NKASRP is a paper and pencil survey consisting of 22 true/false questions, 13 multiple choice questions and two case studies with two questions each for a total of 39 questions. Ferrell et al. (1995) report on the use of NKARPS, a general knowledge and attitude survey related to pain, as part of a larger institutional assessment of pain management quality assessment and improvement. This survey provides a numeric score. Higher scores represent knowledge and attitudes consistent with current pain management standards. The tool has demonstrated discriminant and construct validity. Content validity is rated at 90% for most of the 23 survey items (Ferrell, McGuire, & Donovan, 1993).

Nurses typical pain management practice pattern is influenced by their knowledge, experience, and the patient population(s) they serve. Overtime this typical practice pattern should be reflected in the amount of medication they dispense and would be modified by how much they practice. Doses per hour worked (DPHW) is a measure that should capture this practice pattern.

The calculation of DPHW was derived from two hospital databases, the automated medication dispensing system and the nurse staffing database. Nurses were excluded if they had not worked at least 40 hours during each half of November. The 40 hour minimum ensured that the nurses included in the measure had worked at least half time. Recognizing that differences in the number of patients assigned to each nurse would affect this variable, an attempt was made to adjust the variable for number of patients assigned to each nurse. Retrospectively, total the number of assigned patients was counted for each nurse working the study unit during November. Due to missing assignment record information (25 to 33%) a reliable total could not be generated.

Therefore the attempt to adjust DPHW for variation in patient assignment volume was abandoned. The reason assignment information was missing was that documentation of this information was a new requirement to the unit staff.

Process of Care

Two processes of care were evaluated, assessment of pain and treatment of pain. These processes were evaluated using both patient report via interview and nurses' report via chart audit.

Assessment. Assessment data were gathered using both a patient interview questionnaire (Appendix C) and a chart audit tool (Appendix D). These were developed after a review of the literature (American Nurses Association, 1995; Acute Pain Management Guideline Panel, 1992; Sindhu, 1996) and a review of several published interview tools (Ferrell et al., 1995; Ward & Gordon, 1994). Findings from these studies guided choice of non-pharmacological items; heat, cold, position change, relaxation, imagery, massage and provision of information. The patient interview tool, requiring less than 5 minutes to complete, included patient demographic information, and in the 13 items; kind of pain, adequacy of pain management measures, and perceived frequency of assessment. The chart audit tool included the same patient demographic information, plus medical diagnoses, assessment frequency, and use of the 0-10 pain intensity scale. The interview and chart audit tools focused on care provided in the 24 hours preceding the interview.

Treatment. Pain treatment questions and chart audit data were gathered using the same tools used for assessment information. This included patient reported non-pharmacological treatments offered by the nurse and usual non-pharmacological

treatments for pain used by the patient. These were gathered during interview. Chart audits were used to gather data related to pain medications ordered and administered, and non-pharmacological pain treatments documented by the nurse.

The amount of medication given was converted to the variable percent maximum dose given (PMDG). Data were gathered on the first three drugs with current orders for the 24 hour period under study resulting in PMDG 1, 2 and 3. PMDG was calculated by summing the total dose given in the 24 hours proceeding the interview. This was used for the numerator. The denominator was calculated by multiplying the dosage ordered by the maximum number of allowed doses. When orders included dosage ranges, the highest dose was used. Where frequency ranges were present the shortest frequency was used. This ratio into a percentage. The drug with the highest percentage was placed in the PMDG1 variable, the drug with the next largest percent was placed in PMDG2, and for patients with three drugs ordered the last drug was placed in PMDG3. The data were exported from the Pendragon Forms® Access® tables into Excel® for sorting and completion of the calculations.

Outcomes of Care

Patient Reported Outcomes During Hospitalization

Several patient interview questions focused on outcomes of care. Adequacy of pain relief was measured by asking the patient to rate their worst pain, best pain relief for the preceding 24 hours, and to rate their pain at interview. The 0-10 pain intensity scale was used. Additionally, on the same scale, patients were asked to identify the level of pain, with which they could continue to enjoy their usual activities. A final question,

asked at interview, was if the pain treatments offered by the staff were acceptable? The response choices were yes or no.

Patient Reported Outcomes by Post-Discharge Survey

Patient's satisfaction with pain management is an important measure of nursing care. As pain is a uniquely personal experience patient reports of pain are the best measures of this outcome. Use of satisfaction as a response set in pain management research and quality assurance has proven problematic (Ferrell et al., 1995). Reported experience on questions related to patient perceptions of care has shown promise in overcoming limitations of satisfaction measurement (Cleary et al., 1991). The pain problem score was used to evaluate patients experiences related to pain management. This is part of the Picker/Commonwealth survey dimension of physical comfort. Problem scores are calculated by dividing patient responses rated as problems by the total responses for a question or set of questions. This is reported as a percentage.

The Picker/Commonwealth survey is a sixty-item questionnaire. The items combine into sub-scales or dimensions of care, and include: respect for patient preferences, coordination of care, information and education, physical comfort, emotional support, involvement of family and friends, and continuity and transition. The dimensions are designed to measure different aspects of care, therefore a traditional measure of internal consistency for the total instrument would be low. The six item satisfaction scale has a Cronbach's alpha of 0.90 (personal communication, Dr. Michael Massagli April 9, 1998). Validity for several areas of the questionnaire have been reported. Discriminate validity has been demonstrated by the range of scores between hospitals and the relationship of these scores with other objective measures of quality.

Face, construct and content validity have been assured through pilot testing with patients and review of the tool by advisory boards including health care professionals and the lay public (Cleary et al., 1991). Patient's experience with pain management was measured using six of the pain related questions in physical comfort sub-scale of the Picker/Commonwealth questionnaire. The sub-scale questions are framed to report the patients' experiences. No response to each question is also reported. Pain-related questions and responses are listed in Table 4. The symbol ρ identifies patient responses used to calculate a problem score and is discussed later under patient experiences with pain.

Table 4.

Picker/Commonwealth Pain Related Questions

Question	Response set
31. Were you ever in any pain?	Yes No(Go to question 38)
32. When you had pain, was it usually;	Severe Moderate Mild
34. Did you ever request pain medicine?	Yes No(Go to question 36)
35. How many minutes after you requested pain medicine did it usually take before you got it.	0 minutes/right away 1-5 minutes 6-10 minutes 11-15 minutes ρ16-30 minutes ρMore than 30 minutes ρNever
36 Do you think that the hospital staff did everything they could to help control your pain?	Yes ρNo
37 Overall, how much pain medicine did you get?	ρNot enough Too much Right amount

Concepts being researched are listed in table 5. The instrument used to gather data for each measure is listed in the second column. Measures included in the variable

Table 5.

Study concepts and measures.

Concept	Instrument	Measurement	Level
Structure of Care			
Patient characteristics	MR-HSOD	Individual functional status	Interval
	MR-HSOD	Individual psychosocial status	Interval
	MR-HSOD	Individual engagement	Interval
	MR-HSOD	Pain status	Ordinal
	Patient interview	Acute vs. chronic pain	Nominal
Nurse characteristics	NKARPS	Average NKARPS	Interval
	Calculated from hospital databases	Doses per hour worked	Interval
Processes of care			
Assessment	Patient interview	Patient reported assessment frequency	Ordinal
Assessment	Patient interview	Patient reported assessment after treatment	Nominal
Assessment	Patient interview	Worst pain in past 24 hours	
Assessment	Patient interview	Best pain relief in past 24 hours	Ordinal
Assessment	Patient interview	Pain at interview	Ordinal
Assessment	Patient interview	Level of pain patient could live with and do usual activities	Ordinal
Assessment	Chart audit	Nurse report assessment frequency	Nominal
Assessment	Chart audit	Nurse report medication evaluation	Nominal
Assessment	Chart audit	Pain assessment by nurse recorded using 0-10 scale	Nominal

table continued

Concept	Instrument	Measurement	Level
Treatment	Patient interview	Patient report non-pharmacological treatment	Nominal
Treatment	Chart audit	Percent maximum dose given, drug one	Ratio
Treatment	Chart audit	Percent maximum dose given, drug two	Ratio
Treatment	Chart audit	Percent maximum dose given, drug three	Ratio
Outcomes of pain management			
Adequacy of pain management	Patient interview	Worst pain in past 24 hours	Ordinal
Adequacy of pain management	Patient interview	Best pain relief in past 24 hours	Ordinal
Adequacy of pain management	Patient interview	Pain at interview	Ordinal
Adequacy of pain management	Calculated	Pain Control Ratio (average of worst, best, and now pain divided by pain could live with)	Ratio
Adequacy of pain management	Calculated	Difference between worst pain and best pain relief	Ratio
Patient report experiences	Patient interview	Treatment choices acceptable	Nominal
Patient report experiences	Picker-Commonwealth	Picker survey pain problem score	Interval

are listed in the third column, measurement. The level of each measure on the nominal, ordinal, interval or ratio scale is indicated in the column labeled, level.

The psychometric characteristics. The R-HSOD instrument has strong discriminate validity with good interrater reliability (Cronbach's alpha of 0.91, 0.83, and 0.75 for the three patient dimensions functional status, engagement in care, psychosocial status, respectively; Lush, 1997). The NKASRP has a strong discriminate, content and construct validity (Ferrell et al., 1993). Picker-Commonwealth questionnaire has strong content, construct and discriminate validity. The Picker-Commonwealth overall satisfaction scale has a Cronbach's alpha of 0.90 (Cleary et al., 1991). Validity and reliability of the patient interview and chart audit tools were unknown.

Procedures

Recruitment

Beginning with the steps outlined under sample patient participant, the recruitment procedures continued. Patients' expressed preferences about an interview time were noted. Most patients were interviewed the following day, though some were interviewed several days later. The delay usually was due to other time commitments of the investigator. In a few cases the delay was at the patient's request. Later, prior to interviewing the patient, demographic information was entered into the PalmPilot® Personal Digital Assistant (PDA) on the Pendragon Forms® main pain study form. The investigator then reintroduced himself and allowed the patient to decline or confirmed their willingness to participate in the study. For those patients agreeing to proceed informed consent was obtained, the consent signed, and interview completed. Following

the interview the chart audit review tool was initiated. A copy of the patient's face sheet was made and attached to the signed informed consent. The investigator monitored the patient's hospital stay and within a day of discharge each patient was sent a Picker Commonwealth survey. Surveys were mailed to the address listed on the face sheet. A follow up survey was mailed to patients not responding to the initial mailing within two to three weeks. Chart audits were completed by two nurses, both unit staff members. Both nurses were on modified duty for the duration of the study and therefore were not simultaneously providing care and auditing care provided . Both nurses had been instructed in use of the audit tools on the PDA. The investigator provided ongoing support in the use of the PDA, including consultation about interpretation of nurse documentation when gathering the needed chart information, and technical troubleshooting for the PDA. Use of the record sort function and instruction on entering new records were the most frequent help needed by auditors. Once during the study the PDA was dropped, resulting in the loss of data entered that day and the need to send it out for repair. During the time required for repair, approximately ten days, the data collection forms were installed on a second PDA. Data was loaded onto the forms, allowing chart auditing to continue for patients with existing records and addition of new patient records.

Missing data

Cases with missing data in the patient characteristics measures were excluded casewise from analysis of the specific measure, as recommended by the tool's author (Lush, 1997).

Given that patients were interviewed without consideration of whether their assigned nurses were also study participants, missing NKARPS values for the three shifts were expected. It was recommended that patients' who did not have at least two NKARPS scores from which to calculate an average NKARPS be excluded from analysis involving this variable (personal communication Jonathon Fields, February 24, 1999). Initial analysis revealed that about 40 percent of the patient sample would be excluded based on this recommendation. Review of the assigned nurse data showed that if six additional nurses could be recruited, a large number of patients would meet the recommended minimum NKARPS score count. Additionally, many more patients' average scores would include all three assigned nurses. I was able to recruit five of the six identified nurses to be study participants. This resulted in 96 patients (88 percent) with usable data. All of the nurses reported that they had intended to participate by completing the NKARPS during the initial recruiting period, but for various reasons had not completed the survey. The sixth nurse was not available to be recruited.

Two nursing care process measures had missing data, nurse reported assessment frequency and nurse reported non-pharmacological treatment. Patients without these data were excluded from analysis of the individual measure.

The high percentage of missing values for the Picker survey pain problem score has two causes. Forty-eight percent of the patients did not return surveys or the returned survey was unusable, a rate consistent with mailed surveys (Picker Institute, 1997 p. 7). Patients who deny having pain during their hospital stay are directed by the survey not to answer the pain-related questions. Twenty-nine percent of the patients returning

surveys reported no pain. This resulted in being able to calculate a pain problem score for only 36 percent of study participants.

Analysis procedures

Data were imported into SPSS for Windows, version 7.5.1 from several Access® tables. Three data sets were created, nurse demographic data, patient demographic data and patient study data. Chi square with 2-tailed significance, and Fisher's exact t test were used to test demographic data for statistically significant differences between participants and non-participants. Pearson Correlation Coefficient was used to calculate correlations between interval level variables and Kendall's tau-b was used to calculate correlations between ordinal level variables in patient study data. Statistical significance was set at $p = .05$. Correlation matrices were generated comparing variables. Scatter plots of the correlated variables were generated and reviewed for outliers and curvilinear relationships. Cronbach's alpha was used to compute internal consistency for the MR-HSOD.

Results

Descriptive Findings

Structural Findings

Patient characteristics. Patient pain was categorized by type and cause. Type of pain was differentiated into two mutually exclusive categories, acute or chronic. Cause of pain was classified into three exclusive categories, related to reason for admission, related to a procedure performed in hospital, or neither. Seventy-three percent of patients interviewed reported having pain ($n = 80$). Acute pain of less than six weeks in duration accounted for 69 percent of pain in the 80 patients, with the remainder having

chronic pain. Pain related to the reason for the patient being admitted accounted for 68 percent of the 80 patients with pain, 22 percent had pain related to a procedure. The remaining 10 percent attributed their pain to other reasons, all of which were chronic.

Patient average NKARPS scores ranged from 60 percent to 91 percent with a mean of 77.7, a Standard Deviation of 7.13, and skew of –0.397.

The patient characteristics as measured by the MR-HSOD are displayed in table 6. The patient scores found in this study were on average higher for the dimensions of functional status and psychosocial status than reported by the instruments developer, though both are within one standard deviation. The mean for the dimension engagement in care is 1.76 points lower than that reported during development and this difference is greater than the standard deviation.

Table 6.

MR-HSOD Statistics and internal consistency.

Dimension	Mean	Median	Std. Deviation	Skew	Chronbach's alpha
Functional Status	21.09	23.00	3.69	-1.258	.81
Engagement in Care	7.05	7.00	1.96	-.438	.62
Psychosocial Status	10.84	11.00	1.35	-1.43	.60

Nurse characteristics. The nurse scores on the NKARPS ranged from 51 percent to 95 percent with a mean of 77.2%, a Standard Deviation of 10.29, and skew of -0.667. Cross-tab tables were developed comparing NKARPS scores with years of unit or nursing experience, personal experience with pain, and educational level. No statistically significant associations were found using χ^2. T tests were performed within the categories of years on unit or nursing experience, personal experience with pain, and educational level. One statistically significant relationship was identified. Nurses who reported attendance at more than three pain related classes in the past three years

averaged 82.9 percent on the NKARPS compared to those attending 3 or less who scored an average of 76.24 percent($t = 1.484$, df 38, $p = .033$). The clinical significance of a 6.5 percent difference is unknown.

The doses per hour worked (DPHW) variable was calculated from drug dispensing data and hours worked providing patient care. The drug dispensing data was exported from a Sure-Med® database in a daily report, text format. These reports were converted into two Excel® spreadsheets, one with data from November 1st through the 15th and the second containing daily reports from the 16th to the 30th. These spreadsheets were then imported into Access®. This resulted in a data base with approximately 25MB of data. Queries were developed that reported the count of pain medications dispensed by nurse for each period. A count of wasted medications by nurse was developed. From these counts the net doses administered per nurse was calculated. This number was divided by the hours worked by each nurse for the respective periods as reported in the hospital staffing computer, ANSOS® resulting in the variable, DPHW. As a test of reliability, the correlation between the half month periods was calculated and found to be $r = 0.201$. Total DPHW per nurse was calculated by totaling doses given and hours worked for each half of the month. Total doses was divided by total hours worked. No relationship was found between NKARPS scores and total DPHW. Because of low stability reliability this variable was excluded from further analysis.

Processes of Care

Patient reported assessment. Most patients reported frequent pain assessment by hospital staff for the 24 hours preceding the interview. Forty-one percent of patients reported being asked about their pain at least every two hours, twenty percent reported

being asked every four hours, eighteen percent reported being asked about their pain every eight hours. Four percent of patients reported being assessed daily for pain and sixteen percent reported never being asked about pain. Patients without pain were less likely to be assessed for pain, although more than half of the patients who reported no assessment by hospital staff did report pain at interview (see Table 7). Eighty percent of patients reported being asked about their pain after treatment. Of the patients who reported being asked about their pain, 94% said their RN asked about their pain, 51% reported the CNA asking about pain, and 45% reported the doctor asking about their pain.

Table 7.

Comparison of patients with and without pain and their reported assessment frequency.

Assessment Frequency	Every 2 hours	Every 4 hours	Every 8 hours	Daily	Never	Total Number	
Had pain in the last 24 hours?							
No	7	3	9	2	8	29	χ^2= 12.229
Yes	38	19	11	2	10	80	P value = 0.016
Total	45	22	20	4	18	109	
Percentage	41	20	18	4	16	100	

Nurse reported assessment. Ninety-one percent of the patient records reflected pain assessment frequency meeting the applicable standard of care. Twelve percent of the patients records reflected an evaluation of medication effectiveness. The 0-10 scale was used to record the report of pain for 8.3 percent of the patients. Chart audits reveal a marked discrepancy in assessment documentation when compared to patient reports of after treatment evaluation in that 80 percent of patients reported assessment after treatment while nurses on the study unit documented findings from this assessment on 12 percent of the patients.

Treatments

Patient reported. Thirty-two percent of patients reported using non-pharmacological treatments for pain. The specific non-pharmacological treatments and frequency of use are shown in table 8. Ten percent of patients reported that nurses offered them non-pharmacological treatments.

Table 8.

Patient reported non-pharmacological treatments.

Non-pharmacological treatment	Percentage of patients receiving treatment
Position change	12.0
Heat	6.7
Relaxation	5.3
Cold	4.0
Imagery	1.3
Information	1.3
Massage	1.3

Nurse reported medication administration. The amount of pain medication given during the 24 hours preceding the interview was gathered during the chart audit. The audit tool had space for three medication orders and three 24 hour totals. Only one patient had more than three medications ordered for pain. Twenty percent (n= 21) of the patients interviewed received no medication for the 24 hours preceding the interview. Six of these patients (28 percent) reported having pain. Of the patients reporting pain in past 24 hours half received one–third or less of the maximum prescribed dose for their primary medication. Only 5.8 percent received the maximum 24 hour dose. The mean for PMDG1 was 39.5, with a standard deviation of 41.38. Ten of the 25 patients reporting no pain during the past 24 hours received pain medication. Fifty-nine of the patients reporting pain had a second pain medication ordered. Forty-six percent of the patients with second drugs ordered did not receive a dose during the 24 hours before the

interview. The mean for PMDG2 was 10.2, standard deviation of 14.21. Sixteen patients had a third medication ordered. Half of the patients reporting pain, who had a third medication ordered, had received at least one dose. The mean for PMDG3 is 16.5, standard deviation of 27.39. The wide range in amount of medication given may be related to variation in patient needs or variation in nursing practice.

Nurse report non-pharmacological treatment. Nurses documented the efficacy of non-pharmacological pain treatment on 2.7 percent of the study patients (n=2). One of these patients reported receiving a non-pharmacological treatment and one did not.

Outcomes

Adequacy of Pain Management

The patients' average best level of pain relief for the past 24 hours was 2.4 on a 0 to 10 scale, with a standard deviation of 2.2, and a range of 0.0 to 8.0. The average reported worst pain was 7.4, standard deviation of 2.3, and a range of 1.0 to 10.0. This finding is consistent with other reports. Pain at the time of the interview averaged 2.8, standard deviation of 2.3, and a range of 0.0 to 10.0. This is lower than other reports (Ward & Gordon, 1994; Acute Pain Management Guideline Panel, 1992). The difference between worst and least pain reported by Ward & Gordon (1994, p. 301) averaged 4.7, standard deviation 2.55 and is similar to the finding of this study, mean 5.0 with standard deviation, 2.45. The average level of pain that patients' believed they could live with and still enjoy their usual activities was 3.7 (standard deviation of 2.5). An interesting finding (see table 9) was that the distribution of best pain relief scores was skewed to the right (0.911) and distribution of worst pain scores was skewed to the left (-0.679).

Table 9.

Distribution of patient reported pain scores

	Mean	Minimum	Maximum	Standard Deviation	Skew
Best pain relief in 24 hour	2.46	0	8.00	2.22	0.911
Worst pain in 24 hour	7.47	1.00	10.00	2.30	-0.679
Pain at interview	2.88	0	10.00	2.55	0.703
Level of pain you could live with and do your usual activities	3.75	1.00	9.00	1.68	0.567
Pain control ratio (PCR)	1.29	0.17	4.00	0.765	1.470
Difference of best relief and worst	5.01	0	10.00	2.45	-0.110

Correlations between the four factors contributing to the Pain Control Ratio (PCR) are shown in table 10. All are moderately strong correlations and are statistically significant.

Table 10.

Pearson Product Moment Correlation Coefficients between Factors Contributing to Pain Control Ratio.

Pearson r (level of significance)	Worst pain in 24 hour	Pain at interview	Level of pain you could live with and do your usual activities
Best pain relief in 24 hour	.415 (.000)	.476 (.000)	.476 (.000)
Worst pain in 24 hour		.477 (.000)	.382 (.000)
Pain at interview			.375 (.001)

Patient Experiences with Pain

Of the patients reporting pain during the 24 hours before the interview (n=80) 88 percent said the treatments offered for pain were acceptable. The Picker survey pain problem score was calculated by summing a count of each patient's problem responses for questions 35-37, and dividing the sum by the count of questions 35-37 that were answered by each patient. Problem responses are identified in Table 4 by the symbol ρ. Most patient's survey responses did not generate a problem score. Table 11 shows the

distribution and percentage of problem scores. Of interest is finding that half of the patients who denied pain during the interview, reported pain during their hospital stay on the survey (n= 18). The study design could clearly create this discrepancy as the Picker survey asks patients to report on their hospital experience, while the study interview focused on one day during that stay. Of importance is that eleven percent of patients who reported pain during the 24 hours preceding their interview denied being in pain during their hospitalization on the discharge survey. This is important as it reflects on a limitation of using patient reported pain experiences to measure outcomes of care.

Table 11.

Frequency of pain problem scores.

Pain Problem Score	Frequency	Percent
0	31	81.6
33	5	13.2
50	1	2.6
67	1	2.6
Total	38	100
Missing	71	

Relationships Among Variables

Structural variables include nurse or patient characteristics that each brings to the process of care. Processes of care are those variables representing methods of care. Outcomes are the results the interactions between structures and processes of care. One relationship between a structure of care and a process of care, one structure to outcome, and a few process of care with outcome relationships were found to have statistically significant correlations. There was a statistically significant relationship between nurses' scores on the NKASRP and the outcome variable, treatment(s) for pain were

acceptable, (see table 12). Scatter plots of other variables were reviewed, no curvilinear relationships were identified.

Table 12.

Statistically significant study correlations.

Dimensions of care	Variables	Correlation	p value	Correlation measure
Structure with outcome	Average NKASRP score vs. treatment(s) for pain acceptable	0.248	0.012	Kendall's tau-b
Process to outcome	PMDG2 vs. best pain relief	-0.305	0.018	Pearson
	Evaluation of medication effectiveness vs. pain at interview	0.224	0.047	Kendall's tau-b
	Difference between worst and best pain vs. treatment choices were acceptable	0.405	>0.000	Kendall's tau-b
	Pain Control Ratio vs. treatment choices acceptable	0.232	.032	Kendall's tau-b

The nurses on the study unit tended to record patient self-assessment using the 0-10 scale more often for surgical patients more than medical patients, $\chi^2 = 5.894$, df = 1, p = .015. The rate of use in surgical patients was 23.5% (N=17), compared to the rate in medical patients of 5.6% (N= 89). Patients' who reported problems with pain management on the Picker questionnaire tended to have the 0-10 scale used in documenting their pain. This finding approaches statistically significance with a correlation of 0.295, and p = 0.067. These findings could be accounted for by assuming that nurses practiced at a higher standard for patients with pain problem scores. Some evidence from this study supports this assumption. Patients whose nurses have documented the efficacy of their medications reported an average pain at interview of 4.25, standard deviation of 2.49, compared to patients whose nurses had not documented medication efficacy, who had a mean of 2.65, standard deviation of 2.52, a statistically significant difference, t = -2.016, df =77, p = 0.047.

The amount of the second medication given as measured by PMDG2 shows a negative correlation to best pain relief in 24 hours, $r = -0.305$ i.e., more was given to patients who subsequently achieved better pain relief. Another interesting related correlation is that of PMDG1 with PMGD2 at $r = 0.437$, $p > 0.000$. The correlation between documentation of medication effectiveness by the nurse and pain at interview was $r = 0.204$. The final correlation identified was between treatment choices being acceptable and the difference in score between worst pain and best pain relief ($r = .333$), the bigger the difference, the more likely the treatment choice was acceptable.

Discussion

The study has a number of limitations which could account for some of the findings. First was that some measures were either unreliable or failed to capture the construct of interest. The variables PMDG1 though 3 did not consider the potency of the patients' ordered medications when placing them in order of use. The internal consistency of investigator's modified R-HSOD tool was significantly lower than the original instrument. The DPHW variable was unstable and failed to capture the construct of interest. Infrequent use of two nursing process variables impacted their correlation to other variables. In addition to these issues is instrumentation, generalizability is also limited. The significantly greater years of experience on the unit and in nursing among non-participant nurses could confound the findings from the NKARPS correlations. The effect of the sample bias related to years of unit and nursing experience is unknown. If the more experienced non-participating nurses are significantly more or less skilled in pain management as measured by the NKARPS

then adding their scores into the patient's average NKARPS would strengthen the relationships found in the study. Each of these is discussed in further detail below. In addition the study findings raise interesting theoretical issues

Structure

Limitations of the DPHW may have influenced the findings of a lack of relationship with NKARPS. When developing the DPHW, many factors were unknown. The effect of the range of patient medication needs, and the effect of the volume range of patients assigned to nurses were considered, but efforts to account for the later were unsuccessful. The 40 hour minimum, set to assure exclusion of nurses not working at least half time, assured an assignment of 20 to 36 patient days. This could equal as few as four to eight patients, depending on the nurse's assigned shift and the patient's LOS. However, the lack of reliability, as measured by the spilt half correlation, could well be explained by differences in patient needs.

The addition of the pain status item to the R-HSOD significantly decreased the internal consistency of the tool for the subscales of engagement in care and psychosocial status. Cronbach's alpha for functional status was .89, engagement in care was .62, and psychosocial status was.60. The failure of this study to find correlations between the latter two variables and patients' pain experience could be a result of the lower internal consistency of the modified instrument.

A second issue is one of selection bias. Among the nurses a bias exists in that non-participant nurses were more experienced. The differences in years of experience between nurse participants and non-participants could have several causes. Less experience would argue for more recent education, with more current knowledge related

to pain management, and/or possibly more value for research. The investigator's relationship with unit staff may have influenced nurse choices. Nurses with less experience are more likely to have been hired by the investigator or have more of their work experience under the supervision of the investigator and therefore have a more positive regard for the investigator. The positive regard would dispose less experienced nurses to support the study being conducted by this investigator. This level of inexperience among nurse study participants may have influenced the study findings. An argument for more effective care related to pain management by more experienced nurses could also be made. More experienced staff may be less sensitive to patient pain, resulting in less treatment or they may be more expert in giving medication or offering other treatment choices resulting in better pain relief.

Processes of Care

Another limitation of this study was analysis of PMDG variables without regard for the kind of medication. The PMDG1 was the drug with the largest percentage given for that patient, PMDG2 was the next largest percentage, followed by PMDG3. More potent medications may have been used less frequently and could account the statistically significant correlation of PMDG2 with best pain relief.

A third issue is the poor documentation. Considering the low rate that nurses on the study unit use the 0-10 scale to document patient's reported pain (8.3%) and the low rate of medication efficacy documentation (12.1%) the correlations involving these two variables may be much stronger than is evident by the reported values, r = 0.236 and 0.224, respectively. Nunnally(1994, p. 136) describes the impact of low proportions on correlations. Considering his discussion, This investigator would estimate the maximum

possible correlation to be a little more than 0.50 for these dichotomous variables. This puts the two values near mid-range in correlations, a much stronger position than is evident in the absolute values.

Patient's pain experience. Since the patients declining to participate were older, generalizing results of this study to the very elderly should be done with caution. In this study, the patient's pain experiences are similar to other reports of worst, best (least), and pain at interview. The level of best pain relief is poorer than reported by Ward & Gordon (1994), an average of 1.93, standard deviation 1.88, compared to this study's result of 2.4, standard deviation 2.2. Two relationships were identified with a higher average NKASRP of the patient's assigned nurses, treatment choices being acceptable to the patient and a larger difference between worst and best pain score.

Patients reported pain at a rate consistent with other reports in the literature. As the source of pain was a forced choice, the comparison of acute to chronic pain may not represent medical patients usual state of pain, or all reasons for pain. For this reason and as this study was conducted on hospitalized patients the primary cause of pain may be skewed toward acute pain.

The NKASRP scores show a wide range among nurses. The resulting average score for patients has wide range. The mean score of 77% probably does not represent an expert nursing practice group. Although recent pain management education is related to higher scores, the failure of this measure to correlate with more than a few assessment, intervention, or outcome measures could result from many factors, study design being a primary consideration. As this study focused on one 24 hour period during patients' multi-day hospital the influence of the nurses care for the one day under

investigation many not be sufficient to impact patient perceptions. Use of this measure with a more longitudinal study design comparing care given by high scoring nurses to care given by low scoring nurses over several days may demonstrate a difference. The significant relationship of treatment choices being acceptable with the difference between scores of worst pain and best pain, and the nearly significant relationship of the former with average NKASRP score that nurses with more current knowledge and attitudes are able to more effectively relieve their patient's pain. This effect is more significant considering the strong relationship between patients rating of best pain, worst pain, and pain at interview. This relationship among the three pain measures means that patients tend to cluster their pain ratings and that great differences between best pain and worst pain are not likely.

The correlation between PMDG2 and best pain relief would be expected to be negative, as more medication given results in a higher percentage maximum dose. This should lead to a lower best pain relief value. The correlation with PMDG1 and PMDG2 was $r = .437$, $p > .000$. This relationship with PMDG1 and PMDG2 and PMDG2's relationship with best pain relief might be explained by an expected synergy of using more than one medication for pain. The finding that only 5.8 percent of patients on the study unit received the maximum 24 hour dose raises a concern when compared to the 16 percent reported by Barnason et al. (1998) in a pain management improvement project, where the 16 percent maximum dose given was an outcome following the implementation of an educational program and the establishment of standard of practice based on current research. While Barnason et al.'s study does not suggest their reported maximum dose rate be used as a standard for best practice, the difference between the

finding of this study and theirs suggests nearly a three fold improvement should be possible on the study unit.

Recommendations for Further Research

Structural variables. I would propose several recommendations to researchers interested in developing DPHW as a measure. First, considerable desktop computing power will be needed to process the volume of data. As an example, about an hour and half of processing time was required to import each half of the November data from the Excel® spreadsheet into the Access® database on an IBM PC with 80 MB of RAM and a 166mHz Pentium processor. Next, reliable patient assignment information, preferably from an automated source, would be a valuable addition to account for variations in patient medication need. Conceptually the DPHW ratio should link to PMDG. One strength of the DPHW ratio is that the data is available from automated sources in many institutions and therefore it may be more efficiently gathered than audits of paper charts. If the measure were to prove reliable it could be used as a proxy measure for PMDG. It could be trended over time to monitor the effect of pain management education, or other changes such as changes in resource use, or level of professional vs. support staff.

Factor analysis of the NKASRP tool may prove valuable. Some of the questions clearly relate to cognitive knowledge of pharmacology, other questions relate to values about opioid addiction or *appropriate* behavior for patients in pain. If subscales were found these may correlate more strongly with variables studied here than the overall score.

Process variables. Repeating this study in an environment with more consistent documentation of patients' pain using the 0-10 scale and documentation of the efficacy

of medication may demonstrate a relationship between these two variables with the pain problem score and pain at interview, respectively. Although, this relationship may be unique to the nursing practice on the study unit, reflecting a tendency to document more thoroughly for patients with more severe pain management problems, consistent use of these processes without regard for nurse assumption of worse pain should eliminate any correlation. The somewhat more consistent use of these processes with surgical patients by the study staff would support the argument for nurse assumption of worse pain in this group.

Outcome variables. Considering the large number of patients agreeing that their treatment choices were acceptable I believe this measure is similar to satisfaction with treatment of pain, in that it may be impacted by patient expectations. The correlation between this measure and the difference between scores of best and worse pain adds some value to the measure. Converting this question from a yes or no response to a rating of how acceptable treatment choices were on a poor to excellent scale may prove valuable in the search for pain satisfaction measures that correlate with acceptable clinical outcomes.

Clinical Implications

Understanding that moderate correlations exist between worst pain, best pain, pain now, and level of pain the patient could live with and do their usual activities could be used by nurses in clinical practice to better understand the meaning of the 0-10 pain intensity scale for a specific patient. The correlation between the difference of scores on best pain relief and worst pain with treatment choices being acceptable could also be used by clinical staff to judge adequacy of pain management. The finding of a higher

average NKASRP score for the group of nurses who attended more than three pain related classes in the preceding three years could argue for annual education in pain management.

Summary

The lower number of patients receiving the maximum prescribed dose coupled with the low use of the 0-10 scale and documentation of medication efficacy may be related. These findings along with the difference between patient reported assessment after treatment and nurse documentation of this care process leads to the conclusion that care provided on the study unit does not met national standards. Inspite of this apparent deficit the patients' pain experience in this study is very similar to other reports. This study provides some empirical evidence for the assumed linkage between more current nurse knowledge and attitudes about pain management and the outcome of treatments for pain being acceptable to patients.

Reasons for the lower standards of practice are not clear from the study. Unexplored organizational variables could account for the failure of staff to document care they seem to be providing. The mean score of 77% on the NKASRP would seem to show that significant improvements in staff knowledge and attitudes regarding pain treatment are possible.

Figure 1. Research Model for Pain Management Nursing Care Quality

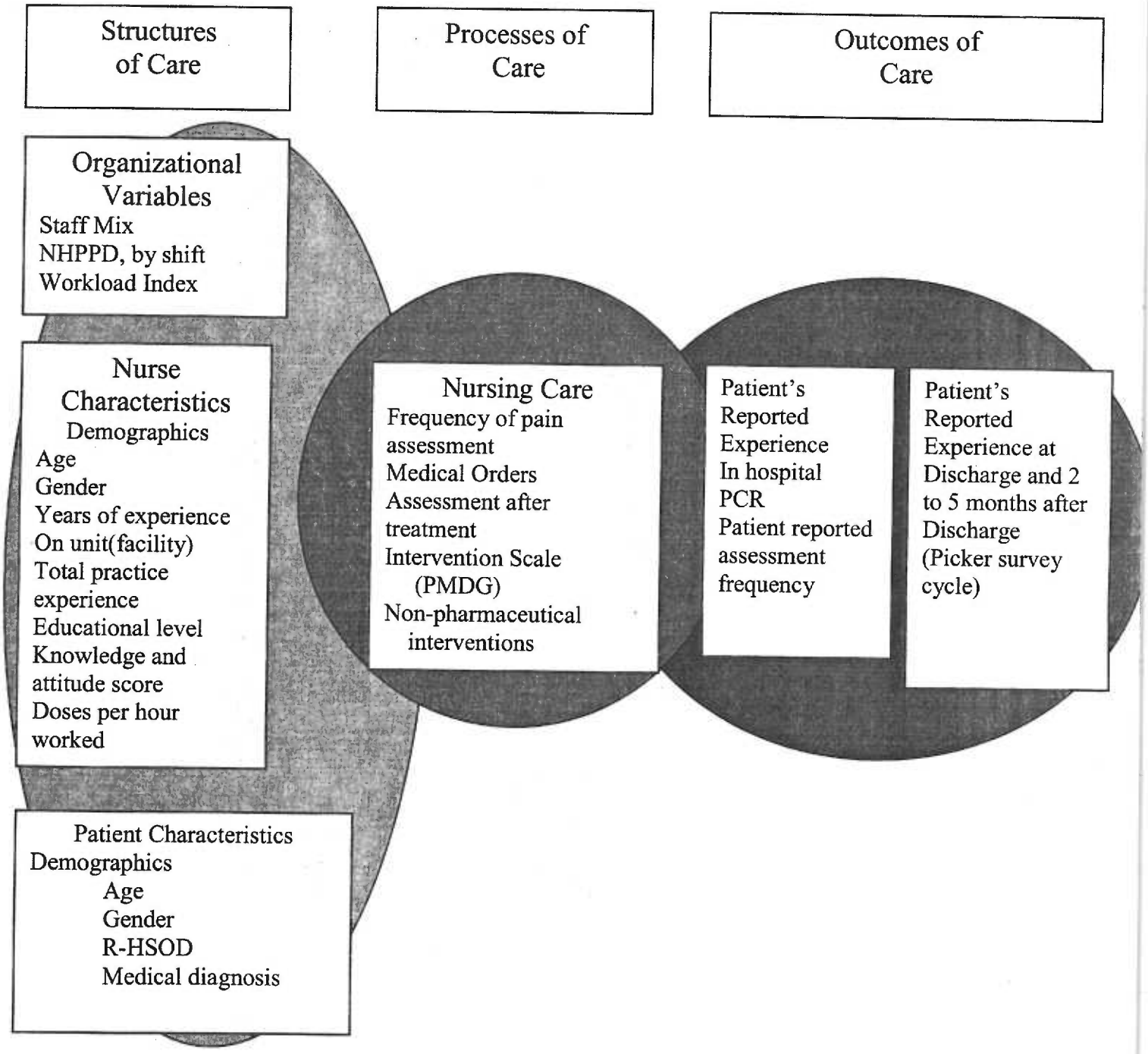
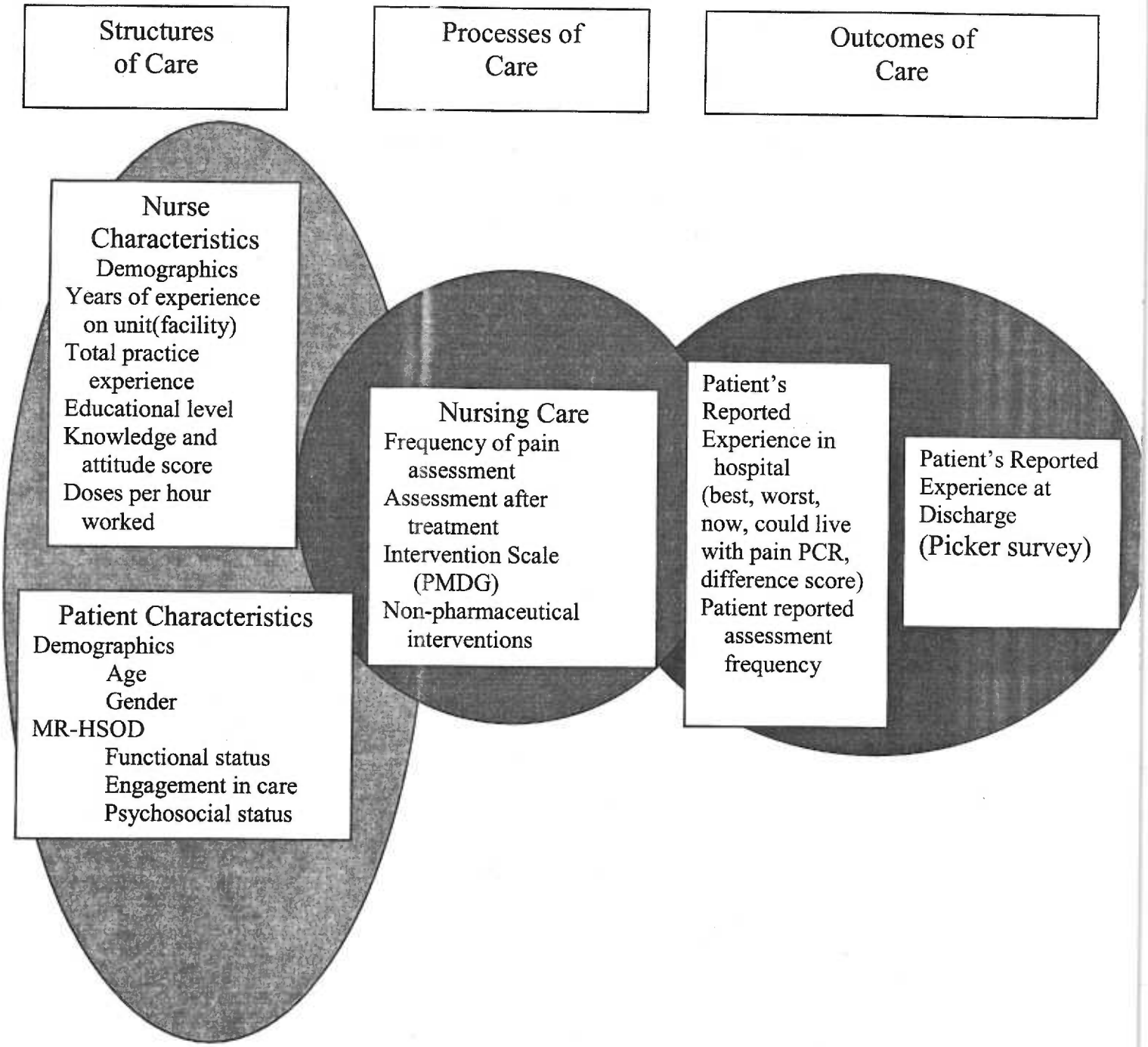


Figure 2. Pain Management Variables Studied.



References

Acute Pain Management Guideline Panel. (1992). Acute Pain Management: Operative or Medical procedures and trauma. Clinical Practice guideline. Rockville, MD: Agency for Health Care Policy and Research, Public Health Service, U.S. Department of Health and Human Services.

Allcock, N. (1996). Factors affecting the assessment of postoperative pain: a literature review. Journal of Advanced Nursing., 24(6), 1144-51.

American Nurses Association. (1995). Nursing Report Card for Acute Care. Washington, DC: American Nurses Publishing.

American Pain Society Quality of Care Committee. (1995). Quality improvement guidelines for the treatment of acute pain and cancer pain. Journal of the American Medical Association, 274, 1874-1880.

Barnason, S., Merboth, M., Pozehl, B., & Tietjen, M. J. (1998). Utilizing an outcomes approach to improve pain management by nurses: A pilot study. Clinical Nurse Specialist., 12(1), 28-36.

Cleary, P. D., Edgman-Levitan, S., Roberts, M. Moloney, T.W., McMullen, W., Walker, J.D. & Delbanco, T.L. (1991). Patients evaluate their hospital care: a national survey. Health Affairs., 10(4), 254-67.

Crawford, B. L., Taylor, L.S., Seipert, B.S., & Lush, M. (1996). The imperative of outcomes analysis: an integration of traditional and nontraditional outcomes measures. Journal of Nursing Care Quality., 10(2), 33-40.

Davis, G. C. (1998). Nursing's role in pain management across the health care continuum. Nursing Outlook., 46, 19-23.

Donabedian, A. (1980). The Definition of Quality and Approaches to Its Assessment, Explorations in Quality assessment and monitoring (Vol. 1,). Ann Arbor, MI: Health Administration Press.

Donabedian, A. (1992). The role of outcomes in quality assessment and assurance. QRB. Quality Review Bulletin, 18(11), 356-60.

Edgman-Levitan, S. (1998, November 6-8, 1998). Service and Quality: Through the Patient's Eyes. Paper presented at the Eye on Patients: What Care is Right? Final Retreat, Stevenson, WA.

Ferrell, B., Whedon, M., & Rollins, B. (1995). Pain and quality assessment/improvement. Journal of Nursing Care Quality., 9(3), 69-85.

Ferrell, B. R., McGuire, D.B., & Donovan, M.I. (1993). Knowledge and beliefs regarding pain in a sample of nursing faculty. Journal of Professional Nursing. 9(2):79-88, 9(2), 79-88.

Kovner, C., & Gergen, P.J. (1998). Nurse staffing levels and adverse events following surgery in U.S. hospitals. Image - the Journal of Nursing Scholarship., 30(4), 315-21.

Lin, C. (1996). Patient satisfaction with nursing care as an outcome variable: Dilemmas for nursing evaluation researchers. 207-216. Journal of Professional Nursing., 12(4), 207-216.

Lush, M. T. (1997). The Relationship between Health Status Scores on Hospital admission and the Care Planned by the Nurse. Unpublished Dissertation, University of California, San Francisco.

McCaffery, M. & Ferrell, B.R. (1997). Influence of professional vs. personal role on pain assessment and use of opioids. Journal of Continuing Education in Nursing., 28(2), 69-77.

Nunnally, J. (Ed.). (1994). Psychometric theory. Jum C. Nunnally, Ira H. Bernstein. Third edition. New York.: McGraw-Hill.

O'Brien, S., Dalton, J.A., Konsler, G., & Carlson, J. (1996). The knowledge and attitudes of experience oncology nurses regarding the management of cancer-related pain. Oncology Nursing Forum. 23(3):515-21, 1996, 23(3), 515-21.

Outcomes Taskforce. (n.d.). Interrater Reliability of Revised HSOD Research Study: Final report. Kaiser Permanente Medical Care Program, California Divisional Nursing. Unpublished report.

Picker Institute. (1996). Eye on Patients, 1996:How is the health care system doing, from the point of view of patients? . Available on-line @http://www.amhpi.com/eyeonpatients/secone.html.

Picker Institute. (1997). The picker institute's survey programs for 1997 and 1998. Boston MA: The Picker Institute

Pierce, S. F. (1997). Nurse-sensitive health care outcomes in acute care settings: An integrative analysis of the literature. Journal of Nursing Care Quality, 11(4), 60-72.

Rubenstein, L., Chang, BL., Keeler, EB., & Kahn, KL. (1992). Measuring the quality of nursing surveillance activities for five diseases before and after implementation of the DRG-based prospective payment system IN: Patient outcomes research: examining the effectiveness of nursing practice. Proceedings of the State of the Science Conference sponsored by the National Center for Nursing Research September 11-13,1991.

Rockville, Maryland. United States Department of Health & Human Services Publications Public Health Service., 93-3411, 39-53.

Shindul-Rothschild, J., Berry, D., & Long-Middleton, E. (1996). Where have all the nurses gone? Final results of our patient care survey. American Journal of Nursing, 96(11), 25-39.

Sindhu, F. (1996). Are non-pharmacological nursing interventions for the management of pain effective? -- a meta-analysis. Journal of Advanced Nursing., 24(6), 1152-9.

Sparrow, S., & Robinson, J. (1992). The use and limitations of Phaneuf's nursing audit. Journal of Advanced Nursing, 17, 1479-1488.

Ward, S. E., & Gordon, D. (1994). Application of the American Pain Society quality assurance standards. Pain., 56(3), 299-306.

Wunderlich, G. S., Sloan, F.A., & Davis, C.K. (Ed.). (1996). Nursing Staff in Hospitals and Nursing Homes: Is it adequate. Washington D.C.: National Academy Press.

Appendix A.

MR-HSOD.

Patient Identifier

Modified Revised Health Status Outcome Dimension Instrument (MR-HSOD)
Nurse evaluating ADULT or Adolescent (12th Birthday + One Day →)

Completed by_____
Date_____

#1 **Bathing**
Washing and cleaning the body with soap and water.

4. Full self care
3. Requires use of equipment or device
2. Requires assistance or supervision from another person
1. Dependent/does not participate

☐ Unable To Assess

#2 **Grooming**
Combing hair and attending to cleanliness activities – brushing teeth, shaving, etc.

4. Full self care
3. Requires use of equipment or device
2. Requires assistance or supervision from another person.
1. Dependent/does not participate

☐ Unable To Assess

#3 **Dressing**
Applying or putting on clothes, socks, shoes, etc.

4. Full self care
3. Requires use of equipment or device
2. Requires assistance or supervision from another person
1. Dependent/does not participate

☐ Unable To Assess

#4 **Toileting**
Managing the elimination of urine and stool.

4. Full self care
3. Requires use of equipment or device
2. Requires assistance or supervision from another person
1. Dependent/does not participate

☐ Unable To Assess

#5 **Ambulation**
Walking

5. Ambulates independently
4. Ambulates with assist from a device (e.g. cane, walker, etc.)
3. Ambulates with assist from a person
2. Chairbound (includes wheelchair)
1. Bedfast

☐ Unable To Assess

#6 **Patient's Fear**
Anticipated / perceived danger (frightened of something / someone).
☐ Financial ☐ Family ☐ Health
☐ Social ☐ Living Situation
☐ Other_____

4. None
3. Mild
2. Moderate
1. Severe

☐ Unable To Assess

#7 **Patient's Anxiety**
Nervous or restless behavior (patient cannot provide reason).

4. None
3. Mild – sleeplessness; repeats questions; fidgety
2. Moderate - difficulty concentrating; palpitations; tremors; tachypnea; difficulty adapting/analyzing.
1. Severe - unable to concentrate; hyperventilation; tachycardia; headache 'feeling of impending doom'

☐ Unable To Assess

#8 **Patient's Coping**
Ability to deal with problems / stress.

4. Effective - Able to cope with problems/stress.
3. Partially effective ability to cope with problems/stress.
2. Minimally effective attempts to cope with problems/stress.
1. Unable to cope with problems/stress.

☐ Unable To Assess

#9 **Symptom Status**
Presence of symptoms (physical, cognitive, and mental) (SOB, weakness, pain, confusion, etc) during tasks/activities.

4. Asymptomatic
3. Mild symptoms - during tasks/activities.
2. Moderate symptoms - during tasks/activities.
1. Symptoms present - even at rest.

☐ Unable To Assess

#9p **Pain Status**
Presence of pain during tasks/activities.

4. No Pain
3. Mild pain during tasks/activities.
2. Moderate pain during tasks/activities.
1. Pain present even at rest.

☐ Unable To Assess

#10 **Knowledge**
Learning required to understand and provide/direct own care.

4. Well informed - No learning needs identified.
3. Mild learning needs – minimal reinforcement required.
2. Minimally informed – Training on specifics required. Requires basic instruction in plan of care.
1. Uninformed – Extensive knowledge deficits.

☐ Unable To Assess

#11 **Patient Participation**
Implements acute and preventive healthcare recommendations.

4. Doing very well.
3. Mild encouragement needed.
2. Moderate encouragement needed.
1. Does not follow healthcare recommendations.

☐ Unable To Assess

Comments_____
_____
_____
_____
PCG's Name_____
Relationship_____

#12 **Primary Caregiver's Knowledge**
Learning required to understand and Provide/direct patient's care.

4. Well informed – no learning needs identified.
3. Mild learning needs – minimal reinforcement required.
2. Minimally informed – training on specifics required. Requires basic instruction in plan of care.
1. Uniformed – extensive knowledge deficits.

☐ Unable To Assess
☐ N/A (e.g. patient = self-care, in Board & Care, etc.)

#13 **Primary Caregiver's Burden**
Caregiver's perceived physical/emotional strain as a result of patient's current health.

4. None.
3. Mild.
2. Moderate.
1. Severe.

☐ Unable To Assess
☐ N/A (e.g. patient = self-care, in Board & Care, etc.)

#14 **Family Burden**
Physical or emotional strain on family as a result of patient's current health.

4. None.
3. Mild.
2. Moderate.
1. Severe.

☐ Unable To Assess
☐ N/A (e.g. no family/support system, etc.)

#15 **Family Coping**
Family/support system's ability to deal with problems/stress.

4. Doing very well.
3. Mild difficulty.
2. Moderate difficulty.
1. Severe / Unable to cope.

☐ Unable To Assess
☐ N/A (e.g. no family/support system, etc.)

Appendix B.

NKASRP.

Code # _____

Nurses' Knowledge and Attitudes Survey Regarding Pain

True/False - Circle the correct answer.

T	F	1.	Observable changes in vital signs must be relied upon to verify a patient's statement that he has severe pain.
T	F	2.	Because of an underdeveloped neurological system, children under 2 years of age, have decreased pain sensitivity and limited memory of painful experiences.
T	F	3.	If the patient can be distracted from his pain this usually means that he does NOT have high pain intensity.
T	F	4.	Patients may sleep in spite of severe pain.
T	F	5.	Comparable stimuli in different people produce the same intensity of pain.
T	F	6.	Aspirin and other nonsteroidal anti-inflammatory agents are NOT effective analgesics for bone pain caused by metastases.
T	F	7.	Non- drug interventions (e.g. heat, music, imagery, etc.) are very effective for mild-moderate pain control but are rarely helpful for more severe pain.
T	F	8.	Respiratory depression rarely occurs in patients who have been receiving opioids over a period of months.
T	F	9.	Aspirin 650 mg PO is approximately equal in analgesic effect to meperidine (Demerol) 50 mg PO.
T	F	10.	The World Health Organization (WHO) pain ladder suggests using single analgesic agents rather than combining classes of drugs (e.g. combining an opioid with a non-steroidal agent).
T	F	11.	The usual duration of action of meperidine (Demerol) IM is 4-5 hours.
T	F	12.	Research shows that promethazine (Phenergan) is a reliable potentiator of opioid analgesics.

Code # _____ 2

T F 13. Patients with a history of substance abuse should not be given opioids for pain because they are at high risk for repeated addiction.

T F 14. Beyond a certain dosage of strong opioids (e.g. morphine) increases in dosage will NOT increase pain relief.

T F 15. Elderly patients cannot tolerate strong medications such as opioids for pain.

T F 16. The patient with pain should be encouraged to endure as much pain as possible before resorting to a pain relief measure.

T F 17. Children less than 11 years cannot report pain with reliability and therefore, the nurse should rely on the parents' assessment of the child's pain intensity.

T F 18. Based on one's religious beliefs a patient may think that pain and suffering is necessary.

T F 19. After the initial recommended dose of opioid analgesic, subsequent doses are adjusted in accordance with the individual patient's response.

T F 20. In order to evaluate the effectiveness of non-drug interventions, the patient should be advised to use these techniques alone rather than concurrently with pain medications.

T F 21. Giving patients sterile water by injection (placebo) is a often useful test to determine if the pain is real.

T F 22. In order to be effective, heat and cold should only be applied to the painful area.

Code # _____ 3

Multiple Choice - Place a check by the correct answer.

23. The recommended route of administration of opioid analgesics to patients with prolonged cancer-related pain is

_____ a. intravenous
_____ b. intramuscular
_____ c. subcutaneous
_____ d. oral
_____ e. rectal
_____ f. I don't know

24. The recommended route of administration of opioid analgesics to patients with brief, severe pain of sudden onset, e.g. trauma or postoperative pain, is

_____ a. intravenous
_____ b. intramuscular
_____ c. subcutaneous
_____ d. oral
_____ e. rectal
_____ f. I don't know

25. Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients?

_____ a. Brompton's cocktail
_____ b. codeine
_____ c. morphine
_____ d. meperidine (Demerol)
_____ e. methadone
_____ f. I don't know

26. Which of the following IV doses of morphine would be equivalent to 30 mg of oral morphine?

_____ a. Morphine 5 mg IV
_____ b. Morphine 10 mg IV
_____ c. Morphine 30 mg IV
_____ d. Morphine 60 mg IV

27. Analgesics for post-operative pain should initially be given

_____ a. around the clock on a fixed schedule
_____ b. only when the patient asks for the medication
_____ c. only when the nurse determines that the patient has moderate or greater discomfort

Code # _____ 4

28. A patient with chronic cancer pain has been receiving daily opioid analgesics for 2 months. The doses increased during this time period. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously for 3 hours. The likelihood of the patient developing clinically significant respiratory depression is

_____ a. less than 1%
_____ b. 1-10%
_____ c. 11-20%
_____ d. 21-40%
_____ e. > 41%

29. Analgesia for chronic cancer pain should be given

_____ a. around the clock on a fixed schedule
_____ b. only when the patient asks for the medication
_____ c. Only when the nurse determines that the patient has moderate or greater discomfort

30. The <u>most likely</u> explanation for why a patient with pain would request increased doses of pain medication is

_____ a. The patient is experiencing increased pain.
_____ b. The patient is experiencing increased anxiety or depression.
_____ c. The patient is requesting more staff attention.
_____ d. The patient's requests are related to addiction.

31. Which of the following drugs are useful for treatment of cancer pain?

_____ a. Ibuprophen (Motrin)
_____ b. Hydormorphone (Dilaudid)
_____ c. Amitriptyline (Elavil)
_____ d. All of the above

32. The most accurate judge of the intensity of the patient's pain is

_____ a. the treating physician
_____ b. the patient's primary nurse
_____ c. the patient
_____ d. the pharmacist
_____ e. the patient's spouse or family

Code # _____ 5

33. Which of the following describes the best approach for cultural considerations in caring for patients in pain:

_____ a. Because of the diverse and mixed cultures in the United States, there are no longer cultural influences on the pain experience.

_____ b. Nurses should use knowledge that has defined clearly the influence of pain on culture (e.g. Asian patients are generally stoic, Italians are expressive and exaggerate their pain, etc.

_____ c. Patients should be individually assessed to determine cultural influences on pain.

34. What do you think is the percentage of patients who <u>over report</u> the amount of pain they have? **Circle the correct answer.**

0 10 20 30 40 50 60 70 80 90 100%

35. <u>Narcotic/opioid addiction</u> is defined as psychological dependence accompanied by overwhelming concern with obtaining and using narcotics for psychic effect, not for medical reasons. It may occur with or without the physiological changes of tolerance to analgesia and physical dependence (withdrawal).

Using this definition, how likely is it that opioid addiction will occur as a result if treating pain with opioid analgesics? Circle the number closest to what you consider the correct answer.

< 1% 5% 25% 50% 75% 100%

Code # _____ 6

Case Studies

Two patient case studies are presented. For each patient you are asked to make decisions about pain and medication.

Patient A (Questions 36 and 37)

Andy is 25 years old and this is his second day following abdominal surgery. As you enter his room to check his vital signs, he smiles at you and continues talking and joking with his visitor. Your assessment yields the following information: B/P = 120/80; HR = 80; RR = 18; on a scale of 0 - 5 (0 = no pain/discomfort to 5 = worst pain/discomfort). Andy rates his pain as "4" at the surgical site.

1. On the patient's record you must mark his pain on the scale below. **Circle the number that represents your assessment of Andy's pain.**

0	1	2	3	4	5
No pain/ discomfort					Worst/pain discomfort

2. Your assessment above, is made four hours after Andy received morphine 10 mg IM. During the three hours following the injection, Andy's pain ratings ranged from 3 to 4 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. His physician's order for analgesia is "Morphine IM 5 to 15 mg Q 3 - 4 hours PRN pain relief". **Check the action you will take at this time.**

_____ a. Administer no morphine at this time.

_____ b. Administer morphine 5 mg IM now.

_____ c. Administer morphine 10 mg IM now.

_____ d. Administer morphine 15 mg IM now.

Code # _____ 7

Patient B (Questions 38 and 39)

Bob is 25 years old and this is his second day following abdominal surgery. As you enter his room to check his vital signs, he is lying quietly in bed and grimaces as he turns in bed. Your assessment yields the following information: B/P = 120/80; HR = 80; RR = 18; on a scale of 0 - 5 (0 = no pain/discomfort to 5 = worst pain/discomfort). Bob rates his pain as "4" at the surgical site.

1. On the patient's record you must mark his pain on the scale below. **Circle the number that represents your assessment of Bob's pain.**

0 1 2 3 4 5

No pain/discomfort — Worst/pain discomfort

2. Your assessment above, is made four hours after Bob received morphine 10 mg IM. During the three hours following the injection, Bob's pain ratings ranged from 3 to 4 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. His physician's order for analgesia is "Morphine IM 5 to 15 mg Q 3 - 4 hours PRN pain relief". **Check the action you will take at this time.**

_____ a. Administer no morphine at this time.

_____ b. Administer morphine 5 mg IM now.

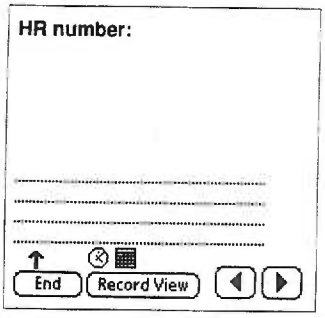
_____ c. Administer morphine 10 mg IM now.

_____ d. Administer morphine 15 mg IM now.

Appendix C.

Form Name: **pain study interview**
Patient interview.

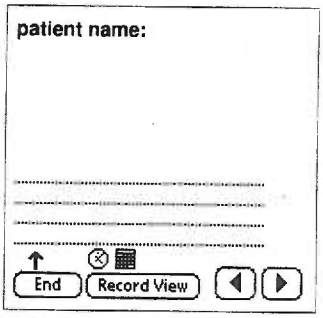
Field: 1



Field Type: **Freeform text**

Parameters:

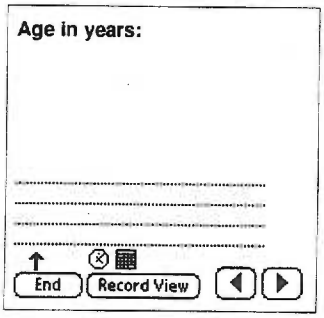
Field: 2



Field Type: **Freeform text**

Parameters:

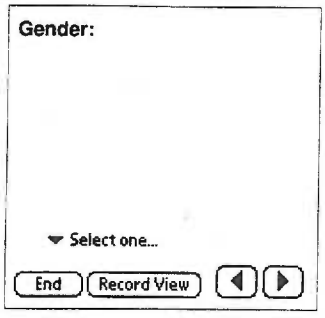
Field: 3



Field Type: **Freeform text**

Parameters:

Field: 4



Field Type: **Popup list**

Parameters: **Male**
Female

Field: 5

Field Type: **Date Only**

Parameters:

Form Name: **pain study interview**

Field: 6

Had pain in last 24 hours?:

Yes | No

End | Record View

Field Type: **Yes or No**

Parameters:

Field: 7

1cause of your pain

Select one...

End | Record View

Field Type: **Popup list**

Parameters:
related to admitting Dx
related to treatment

Field: 8

2cause of your pain

Select one...

End | Record View

Field Type: **Popup list**

Parameters:
acute
chronic

Field: 9

Best pain relief in last 24 hours:

Select one...

End | Record View

Field Type: **Popup list**

Parameters:
0
1
2
3
4
5
6
7
8
9
10

Field: 10

Worst pain you had in last 24 hours

Select one...

End | Record View

Field Type: **Popup list**

Parameters:
0
1
2
3
4
5
6
7
8
9
10

Form Name: **pain study interview**

Field: **11**

What is your pain right now

Select one...

End | Record View

Field Type: **Popup list**

Parameters:

0 1 2 3 4 5 6 7 8 9	10

Field: **12**

What is level of pain you could live better and enjoy normal activities

Select one...

End | Record View

Field Type: **Popup list**

Parameters:

0 1 2 3 4 5 6 7 8 9	10

Field: **13**

How frequently were you asked about your pain in the last 24 hours?

Select one...

End | Record View

Field Type: **Popup list**

Parameters:

never daily about every 8 hours about every 4 hours about every 2 hours	

Field: **14**

Were you asked about your pain after treatment?

Yes | No

End | Record View

Field Type: **Yes or No**

Parameters:

Field: **15**

1Who asked you about your pain?

Select one...

End | Record View

Field Type: **Popup list**

Parameters:

RN CNA MD PT OT none	

Form Name: **pain study interview**

Field: **16**

2Who asked you about your pain?

Select one...

End | Record View

Field Type: **Popup list**

Parameters:

RN CNA MD PT OT none	

Field: **17**

3Who asked you about your pain?

Select one...

End | Record View

Field Type: **Popup list**

Parameters:

RN CNA MD PT OT none	

Field: **18**

1Are you using treatments other than medicines for pain treatment?

Select one...

End | Record View

Field Type: **Popup list**

Parameters:

none Cold Heat position chge TENS unit Imagery Hypnosis Massage Relaxation Music	Information about a procedure

Field: **19**

2Are you using treatments other than medicines for pain treatment?

Select one...

End | Record View

Field Type: **Popup list**

Parameters:

none Cold Heat position chge TENS unit Imagery Hypnosis Massage Relaxation Music	Information about a procedure

Field: **20**

3Are you using treatments other than medicines for pain treatment?

Select one...

End | Record View

Field Type: **Popup list**

Parameters:

none Cold Heat position chge TENS unit Imagery Hypnosis Massage Relaxation Music	Information about a procedure

Form Name: **pain study interview**

Field: **21**

4Are you using treatments other than medicines for pain treatment?

Select one...

End | Record View

Field Type: **Popup list**

Parameters:

none Cold Heat position chge TENS unit Imagery Hypnosis Massage Relaxation Music	Information about a procedure

Field: **22**

1What was offerer by the nurse?

Select one...

End | Record View

Field Type: **Popup list**

Parameters:

none Cold Heat position chge TENS unit Imagery Hypnosis Massage Relaxation Music	Information about a procedure

Field: **23**

2What was offerer by the nurse?

Select one...

End | Record View

Field Type: **Popup list**

Parameters:

none Cold Heat position chge TENS unit Imagery Hypnosis Massage Relaxation Music	Information about a procedure

Field: **24**

3What was offerer by the nurse?

Select one...

End | Record View

Field Type: **Popup list**

Parameters:

none Cold Heat position chge TENS unit Imagery Hypnosis Massage Relaxation Music	Information about a procedure

Field: **25**

Where the treatment choices acceptable?

Yes | No

End | Record View

Field Type: **Yes or No**

Parameters:

Form Name: **pain study interview**

Field:

26

Interview complete

Yes | No

End | Record View

Field Type: **Completion checkbox**

Parameters:

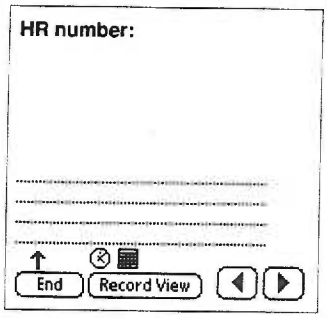
Appendix D.

Form Name: **pain study chart review**

Chart review.

Page 1
Printed 5/1/99 2:56:46 PM

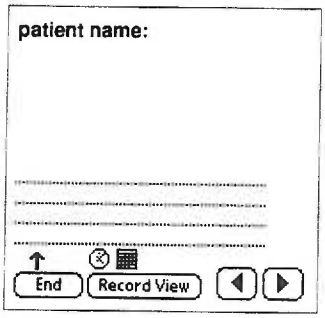
Field: 1



Field Type: **Freeform text**

Parameters:

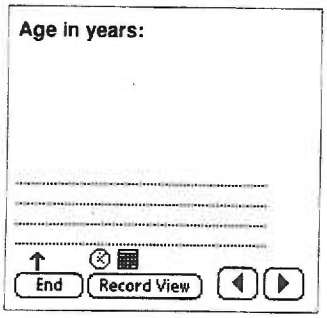
Field: 2



Field Type: **Freeform text**

Parameters:

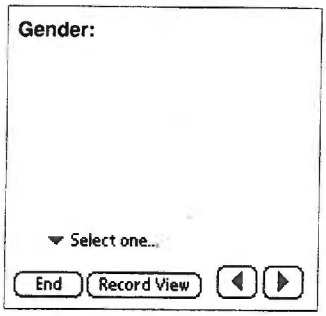
Field: 3



Field Type: **Freeform text**

Parameters:

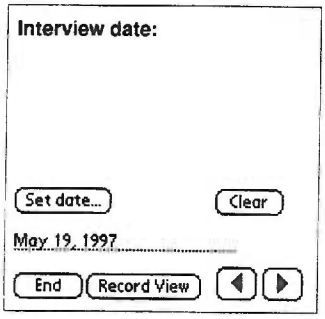
Field: 4



Field Type: **Popup list**

Parameters: **Male**
Female

Field: 5

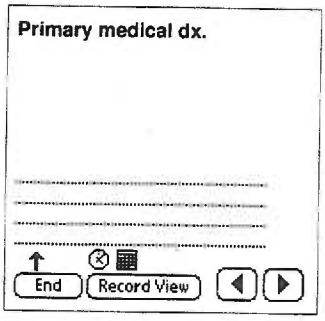


Field Type: **Date Only**

Parameters:

Form Name: **pain study chart review**

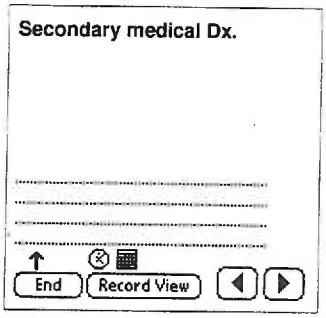
Field: **6**



Field Type: **Freeform text**

Parameters:

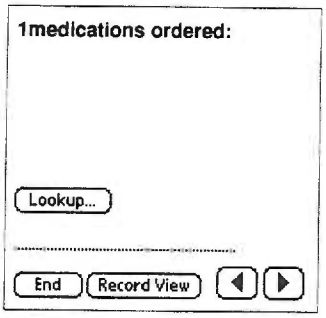
Field: **7**



Field Type: **Freeform text**

Parameters:

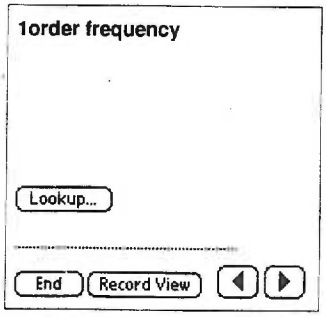
Field: **8**



Field Type: **Lookup list**

Parameters: **drugs**

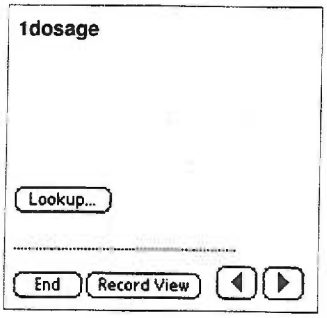
Field: **9**



Field Type: **Lookup list**

Parameters: **order frequency**

Field: **10**

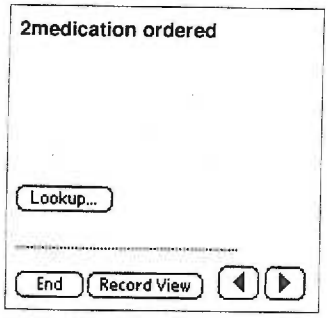


Field Type: **Lookup list**

Parameters: **dosage**

Form Name: **pain study chart review**

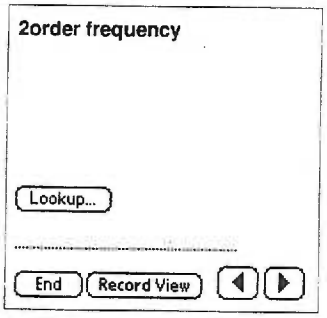
Field: **11**



Field Type: **Lookup list**

Parameters: **drugs**

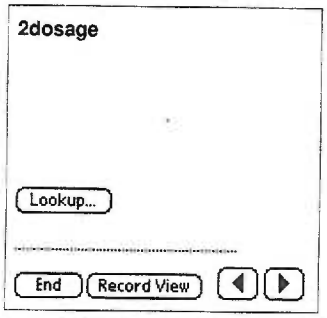
Field: **12**



Field Type: **Lookup list**

Parameters: **order frequency**

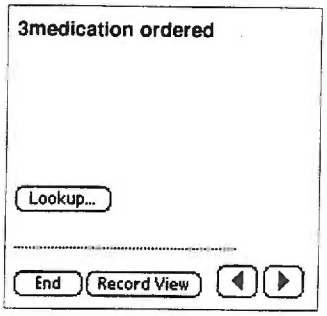
Field: **13**



Field Type: **Lookup list**

Parameters: **dosage**

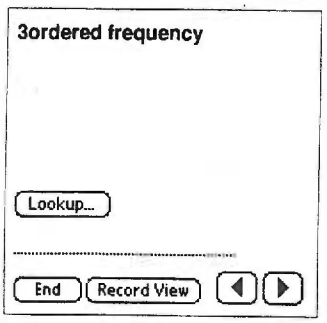
Field: **14**



Field Type: **Lookup list**

Parameters: **drugs**

Field: **15**

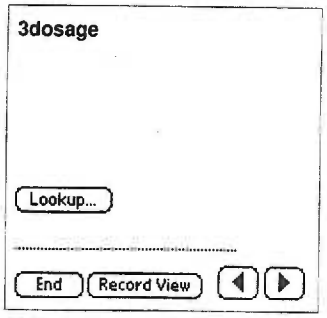


Field Type: **Lookup list**

Parameters: **order frequency**

Form Name: **pain study chart review**

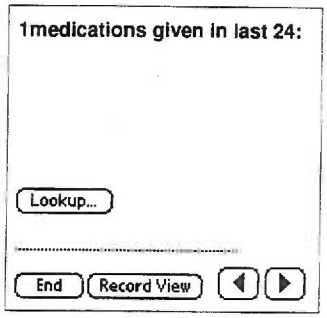
Field: **16**



Field Type: **Lookup list**

Parameters: **dosage**

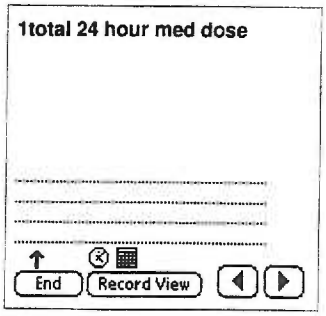
Field: **17**



Field Type: **Lookup list**

Parameters: **drugs**

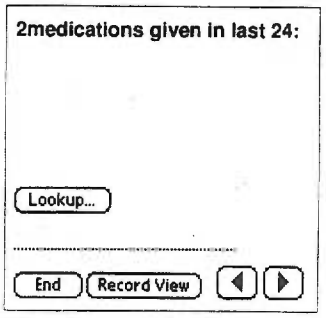
Field: **18**



Field Type: **Freeform text**

Parameters:

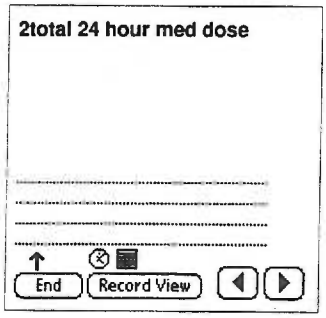
Field: **19**



Field Type: **Lookup list**

Parameters: **drugs**

Field: **20**

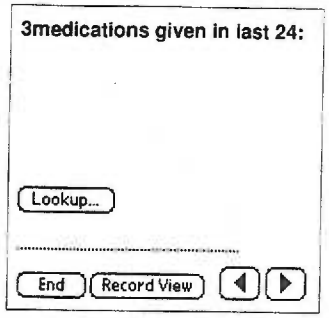


Field Type: **Freeform text**

Parameters:

Form Name: **pain study chart review**

Field: **21**

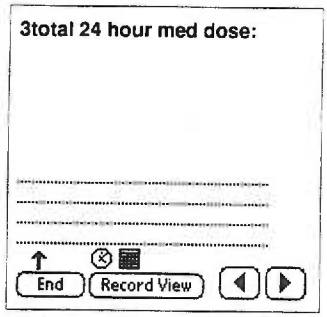


Field Type: **Lookup list**

Parameters:

drugs	

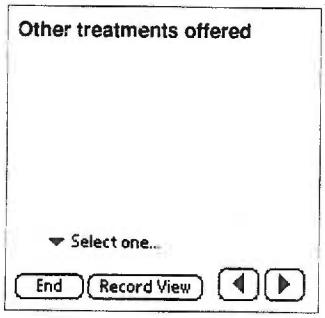
Field: **22**



Field Type: **Freeform text**

Parameters:

Field: **23**

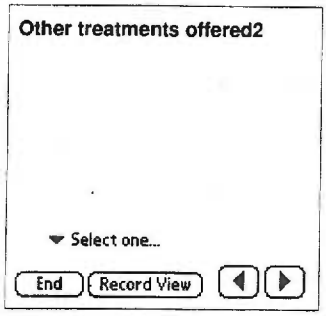


Field Type: **Popup list**

Parameters:

none Cold Heat position chge TENS unit Imagery Hypnosis Massage Relaxation Music	Information about a procedure

Field: **24**

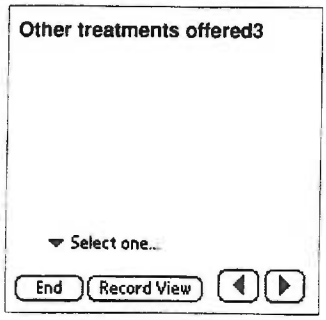


Field Type: **Popup list**

Parameters:

none Cold Heat position chge TENS unit Imagery Hypnosis Massage Relaxation Music	Information about a procedure

Field: **25**



Field Type: **Popup list**

Parameters:

none Cold Heat position chge TENS unit Imagery Hypnosis Massage Relaxation Music	Information about a procedure

Form Name: **pain study chart review**

Field: **26**

Other treatments offered4

Select one...

End | Record View

Field Type: **Popup list**

Parameters:

none Cold Heat position chge TENS unit Imagery Hypnosis Massage Relaxation Music	Information about a procedure

Field: **27**

Pain assessment per care plan

Yes | No

End | Record View

Field Type: **Yes or No**

Parameters:

Field: **28**

Protocol in use:

Select one...

End | Record View

Field Type: **Popup list**

Parameters:

General medical Surgical	

Field: **29**

Assessment used 0-10 scale

Yes | No

End | Record View

Field Type: **Yes or No**

Parameters:

Field: **30**

Assessment frequency per last 24 hours

Select one...

End | Record View

Field Type: **Popup list**

Parameters:

None 1 2 every 8 every 4 every 2	

Form Name: **pain study chart review**

Field: **31**

Evaluation of medication effectiveness

Yes | No

End | Record View

Field Type: **Yes or No**

Parameters:

Field: **32**

Evaluation of other modalities

Yes | No

End | Record View

Field Type: **Yes or No**

Parameters:

Field: **33**

Assigned nurse1

Lookup...

End | Record View

Field Type: **Exclusive lookup list**

Parameters: **Study nurses**

Field: **34**

Assigned nurse 2

Lookup...

End | Record View

Field Type: **Exclusive lookup list**

Parameters: **Study nurses**

Field: **35**

Assigned nurse3

Lookup...

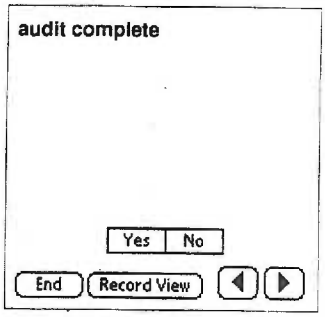
End | Record View

Field Type: **Exclusive lookup list**

Parameters: **Study nurses**

Form Name: **pain study chart review**

Field: **36**



Field Type: **Completion checkbox**

Parameters: