THE EFFECT OF STRUCTURED PREADMISSION PREOPERATIVE TEACHING ON PATIENT OUTCOMES AFTER ABDOMINAL SURGERY

A Thesis

Presented in Partial Fulfillment of the Requirements for the Degree Master of Science in the Graduate School of The Ohio State University

By

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The Ohio State University

1990

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	1990	Thesis/Dissertation

4. TITLE AND SUBTITLE
THE EFFECT OF STRUCTURED PREADMISSION PREOPERATIVE TEACHING ON PATIENT OUTCOMES AFTER ABDOMINAL SURGERY

5. FUNDING NUMBERS

6. AUTHOR(S)
ALICE NADINE COX

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
AFIT Student at: Ohio State University

8. PERFORMING ORGANIZATION REPORT NUMBER
AFIT/CI/CIA - 90-056

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
AFIT/CI
Wright-Ptatterson AFB OH 45433

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for Public Release IAW AFR 190-1
Distribution Unlimited
ERNEST A. HAYGOOD, 1st Lt, USAF
Executive Officer, Civilian Institution Programs

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

14. SUBJECT TERMS

15. NUMBER OF PAGES
159

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED			

THESIS ABSTRACT

THE OHIO STATE UNIVERSITY
GRADUATE SCHOOL

NAME: Alice Nadine Cox QUARTER/YEAR: Spring, 1990

DEPARTMENT: Nursing DEGREE: Master of Science

ADVISER'S NAME: Cornett, Sandra, Ph.D., R.N.

TITLE OF THESIS: The Effect of Structured Preadmission Preoperative Teaching on Patient Outcomes After Abdominal Surgery

An experimental pretest-posttest control group design was used to compare recovery outcomes of subjects receiving preadmission preoperative education planned and presented by the clinical nurse specialist with subjects receiving routine preoperative preparation by clinic staff nurses. Incidence of postoperative complications by record review and changes in pulmonary function tests were assessed on the second postoperative day in the hospital. Postdischarge recovery was measured two weeks after surgery by telephone using a structured interview schedule.

There was a significant difference in return of bowel function ($p < 0.01$), but not in pulmonary complications ($p > 0.57$), inspiratory capacity ($p > 0.17$), vital capacity ($p > 0.25$) or postdischarge recovery ($p > 0.71$, $p > 0.72$).

Sandra Cornett
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ACKNOWLEDGEMENTS

I express my gratitude to Dr. Sandra Cornett for her assistance, guidance, and support. I also thank Dr. Carol A. Baker, committee member, for help in the use and interpretation of the Postdischarge Recovery Measure which she developed.

Judy McDermott was an invaluable support for initiating the study. The nurses and secretaries in the preadmission testing clinic were most helpful in orientation to the area. Janet Washington, Nurse Manager, and her staff facilitated completion of the requirements for this study in a pleasant, collegial environment. Kay Beattie was the key resource person for respiratory equipment and procedures for pulmonary function assessment.

Patients and their family members were most cooperative. Their recovery experiences provided me with unique learning situations which broadened my perception of the recovery process.

I also thank my children, my mother, family and friends who have given me support and encouragement throughout this learning experience.

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CHAPTER 1

Introduction

Surgical patients need preoperative education. This statement is supported by nursing research conducted over the last 30 years. Relevant information, skills training, and psychological support are essential components of the educational intervention (Devine, 1985). Research demonstrates that patients who receive structured preoperative education, compared to patients who do not, have improved outcomes. These outcomes include (a) less patient anxiety, (b) reduced postoperative complications such as atelactasis, pneumonitis and fever, (c) decreased need for analgesics, and (d) more rapid recovery as indicated by earlier discharge and return to work and normal daily activities (Kernaghan, 1985).

Preoperative education programs have been impeded by changes in the health care industry over the last decade. The establishment of prospective payment and other efforts to reduce the length of hospital stay have altered the practice of admitting most patients at least one day before surgery. Surgical patients who

require hospitalization postoperatively are admitted on the day of surgery whenever possible. The impact of this change is that preoperative teaching time in the hospital is no longer available (Merritt, 1989; Johnson, 1988; Worley, 1986).

Another impediment to preoperative education is cost. Divine and Cook (1986) estimated that each patient requires one hour of nursing time for a successful educational intervention. The allocation of hospital resources, including nursing personnel, materials, and space for the intervention requires payment for the educational service to the nusing budget. Compensation for this service has not been established in most hospitals so that patient education may be viewed as a cost to the hospital (Cook, 1985; Devine & Cook, 1983).

Surgical staff nurses are impeded from providing comprehensive preoperative education because they are faced with multiple, simultaneous duties (Devine, O'Connor, Cook, Wenk, Curtin, 1988). Nurses have limited time and resources to adequately educate preoperative patients and their families. When time limits nursing activities, the priority is to provide

safe care based on the physical needs of patients (Johnson, 1988; Devine and Cook, 1986).

These impediments mean that most patients have inadequate preoperative education. Patient education and psychological support are integral components of nursing practice (American Nurses Association, 1973; Devine, and Cook, 1983; Joint Commission on Accreditation of Hospitals, 1989). Patients have a legal and ethical right to education. Nursing must respond by providing programs which positively effect health outcomes for the patient (Smith, 1987).

Several preoperative education programs are documented which target preoperative patients through preadmission procedures (Connaway & Blackledge, 1986; Kempe, 1987; Browne & Peake, 1984; Worley, 1986). One preadmission preoperative program in a large Western hospital includes (a) precertification and financial clearance, (b) nursing assessment and preprocedure teaching, and (c) clinical testing (Whaley, 1989). The hospital is reimbursed for preadmission testing and preoperative education from third party payors.

A cost saving advantage of preadmission preoperative teaching programs is early identificaton

of patient problems which may delay or cancel surgery. Early detection prevents wasted administrative and professional staff efforts related to patient admission and preparation for surgery (Worley, 1986; Connaway & Blackledge, 1986). Other advantages are decreased length of stay, greater patient convenience and satisfaction, fewer postoperative complications, and more rapid return to activity after discharge (Worley, 1986; Connaway, & Blackledge, 1986).

Instituting a patient preoperative education program which includes information, skills training and psychosocial support is challenging. This service is difficult for staff nurses to deliver in the complex milieu of today's health care delivery system. A Masters prepared nurse with advanced practice skills is prepared to plan and institute preadmission preoperative education programs. Improved patient outcomes would document the benefits of a preadmission preoperative education program.

Purpose

This study will compare postoperative recovery outcomes of patients who receive individualized

preadmission preoperative education planned and provided by a surgical clinical nurse specialist (CNS) with postoperative recovery outcomes of patients who receive routine preoperative teaching by preadmission unit staff nurses.

Hypotheses

Hypothesis 1

Subjects who receive individualized preadmission preoperative education planned and provided by a clinical nurse specialist have reduced incidence of postoperative pulmonary, circulatory, and gastrointestinal complications compared to subjects who receive routine preoperative preparation by preadmission unit staff nurses.

Hypothesis 2

Subjects who receive individualized preadmission preoperative education planned and provided by a clinical nurse specialist have less difference in preoperative and postoperative pulmonary function measures compared to subjects who receive routine preoperative preparation by preadmission unit staff nurses.

Hypothesis 3

Subjects who receive individualized preadmission preoperative education planned and provided by a clinical nurse specialist have more rapid postdischarge return to normal compared to subjects who receive routine preoperative preparation by preadmission unit staff nurses.

Operational Definition of Terms

Routine preoperative patient education

No formal program is established. A preoperative education booklet from a large midwestern hospital (Appendix A) guides spontaneous teaching done by staff nurses in the preadmission testing clinic. The teaching includes generic admission procedures for the day of surgery and instructions about physical preparation required for the surgical procedure. The interaction time, which includes a nursing assessment, is approximately twenty minutes.

Individualized preadmission preoperative patient education

A formal structured program planned and conducted by a Clinical Nurse Specialist (CNS). The program

includes relevant patient information about the surgical experience, skills training for postoperative exercises, and psychological support (Appendix B). The program is individualized for patients (and families) based on a learning needs assessment. The interaction time, which includes a nursing assessment, is approximately eighty minutes.

Admission day surgery (ADS) patient

A surgical patient seen as an outpatient one to two weeks before surgery for preadmission testing (laboratory, radiology, electrocardiography). Admission to the hospital occurs on the day of surgery.

Measurements for postoperative outcomes

1. Pulmonary function measurements of inspiratory capacity and vital capacity are obtained during preadmission testing and two days after surgery. The differences are computed based on percent of predicted values for age, sex, and height (Appendix C and D).

2. Surgical complications which may be prevented by psychoeducational intervention (Appendix E) are (a) oral body temperature greater than 100 degrees Farenheit during the postoperative hospitaliztion period (excluding temperature elevation attributed to

confirmed wound infection, urinary tract infection, or other nonrespiratory conditions), (b) pneumonia, pneumonitis, atelectasis as per physician diagnosis recorded in the patient chart and chest x-ray results, (c) slow return of bowel function (48 hours or more after surgery) as assessed by absence of bowel sounds or flatus, and (d) thrombophlebitis as per physician diagnosis recorded in the patient chart.

3. The postdischarge recovery measure (PRM) is a structured guide that is administered by telephone two weeks postoperatively to measure the subject's reported return to recovery (Appendix F). The PRM measures the progress of the subject's return to normal physical, psychological and social well-being (Baker, 1989).

Clinical Nurse Specialist (CNS): Expert advanced practice nurse with Masters preparation.

CHAPTER 2

Literature Review

This study encompasses the perisurgical process from at least two days prior to surgery until two weeks into recovery. The framework for this study consists of educational methods and program content which affect patient recovery from surgery. A preoperative psychoeducational intervention based on a theory of adult education is proposed to positively affect patient recovery. Patient recovery includes physiologic and psychosocial variables.

Theory and Practice of Adult Education

Knowles (1970) believes that there is a distinct theory for adult learning called androgogy. The assumptions about the characteristics of adult learners in the theory of androgogy are based on maturity and include (a) self concept moves from dependency toward self-directedness, (b) each person has a growing reservoir of experiences which are resources for learning, (c) readiness to learn is related to fulfilling social roles, (d) time perspective is directed toward immediacy of application of learning,

and (e) motivation to learn consists of external (job, responsibilities) and internal (quality of life) pressures (Knowles, 1970; Knowles, 1984).

Knowles (1970) identified that the educator creates the learning environment more than any other single event. The educator must have a genuine interest in the learner's success and demonstrate interest by listening to what the learner says. Goals must be congruent between teacher and student. Content needs to be organized based on specific learner needs. Redman (1985) added that motivation should be directed to inspire patients to believe in their own ability to perform necessary activities. The learner must have a sense of progress success and control (Knowles, 1970).

The timing of learning is a key factor in readiness to learn. Adults become ready to learn when they need information and/or skills to cope with real life situations (Knowles, 1984).

Teaching Methods, Content, and Patient Outcomes

A literature review was conducted to examine preoperative education methods and content which contribute to improved patient recovery outcomes.

Group vs individual teaching

Advantages of group or individual teaching have not been adequately researched to confirm the benefit of one method over the other (Rothrock, 1989; Divine & Cook, 1983). However, individual instruction appears to have more favorable affects on postoperative outcomes than group teaching (Hathaway, 1986; Levesque, Grenier, Kerouac, & Reidy, 1984). Over half of the effect sizes in Hathaway's (1986) meta-analysis were greater than even the largest group instruction effect size. Different methods of instruction may account for the differences. Individualized interventions by the nurse focus on specific patient learning needs rather than needs based on medical diagnosis alone (Rothrock, 1989). Inclusion of the family or significant other may improve outcomes of preoperative education (Devine, 1985).

Timing

Timing of the educational intervention is of special concern because the anxiety which preceeds admission for surgery effects learning and retention (Wallace, 1985). Information sent to patients prior to hospitalization or presented to patients before

admission to the hospital is retained (Rothrock, 1989). Outcomes of teaching programs offered during preadmission testing to one group and on the eve of surgery to another group were not significantly different (Levesque, et al., 1984). Most patients (67%) welcome preoperative education and prefer to receive it in the out-patient clinic prior to hospital admission (Wallace, 1985). According to Cook (1985), teaching should occur postoperatively as well as preoperatively to have maximum effect on length of stay and the likelihood of complications.

Content

Desired behaviors and competencies have been extensively researched for preoperative education. Interventions that have reduced length of hospital stay were (a) information about what procedures, pain, and sensation to expect, (b) skills training to teach the patient exercises to promote recovery by preventing complications or reducing anxiety, and (c) psychosocial support to reduce anxiety or to enhance the ability to cope with hospitalization (Mumford, Schlesinger, Glass, 1982; Devine & Cook, 1983, 1986; Hathaway, 1986; Rothrock, 1989). The inclusion of sensory information

with structured preoperative psychoeducational interventions have a favorable effect on pain experiences, ambulation, and rates of recovery (Rothrock, 1989; Johnson, Rice, Fuller, Endress, 1978; Johnson, Christman, Stitt, 1985; and Levesque, et al., 1984).

Most preoperative teaching content has been developed and implemented in terms of what the nurse thinks the patient wants or needs to know (Tilley, 1987; Rothrock, 1989). Wallace (1985) conducted a study to determine surgical patients' preferences for preoperative information. The type of information, timing, and format of interventions were studied. Most (90%) patients desired presurgical preparation especially information about procedures, sensory and temporal experiences, suggestions on how to cope, and directions on the practical aspects of hospital admission.

Educational Resources

Booklets are a usual method of conveying information to patients. They are effective strategies to improve patient knowledge and compliance with perioperative regimens, foster patient satisfaction

with care, decrease anxiety and improve coping behaviors. One significant finding is that patients who received a booklet prior to a teaching session required less time to learn desired behaviors (Rothrock, 1989; Mikulaninec, 1987; Wallace, 1986; Christopherson & Pfeiffer, 1980; and Rice & Johnson, 1984).

Research results concerning audio-visual technologies on patient education have been mixed. Zeimer (1983) used tape recorded messages to study the effects of procedural, sensory, and coping information on postoperative outcomes. Face to face nursing actions were not part of the study. The absence of personal nursing care is reflected in the lack of significant results (Rothrock, 1989).

The use of a video program is becoming common to preoperative patient education programs. However, the only research is with pediatric patients (Rothrock, 1989). Gagliano (1988) reviewed twenty-five studies on a variety of patient education topics to define the efficacy and limitations of video. Conclusions of this review were that video programs consistently increase short-term knowledge; they instruct as well as and

often more effectively than written materials, lectures, or even individual counselors. Long-term knowledge retention and compliance were not affected. Role-modeling seen in video tapes decreased patient anxiety and increased knowledge, cooperation and coping ability (Gagliano, 1988).

The literacy level of reading materials (Streiff, 1986) and video tapes (Gagliano, 1988) is of major concern to educators. Video may be beneficial to low-literacy patients who are unable to understand reading materials (Gagliano, 1988). Strieff (1986) conducted a study to determine whether or not patients in an ambulatory care setting read at a level that allowed them to comprehend the written materials available for patient education. The actual reading level for clients, as measured by the Wide Range Achievement Test, ranged from 1.7 to 13.5. The clients' self-reported grade levels were 3.0 to 18.0. The readability level of 28 different patient education materials for was found to be equal to or exceed sixth grade level.

Other teaching methods include demonstration by the nurse and return demonstration with follow-up

practice by the patient. Redman (1985) identified that performance attainment is the strongest source of motivational information to the patient and observing the performance of others is the second most effective motivator. In addition, verbal persuasion is important to inform patients what they are capable of doing. These methods tie patient education to outcomes that are attuned to the patient's welfare (Redman, 1985).

Educator Characteristics

Patient education has been considered an essential component of nursing care since the times of Florence Nightingale (Bartlett, 1986). Historical review of patient education in the United States identified nurses as the professional group most involved in the actual delivery of patient education programs (Bartlett, 1986). Nurses have effected patient outcomes that are directly related to dischargeability, cost containment measures, and patient welfare (Stanton, 1988).

Miller and Shank (1986) studied the effectiveness of three different methods of presenting the same patient education information in a family practice office. When compared with physicians, nurses

presented the same patient educational material with equal effectiveness in knowledge gain and greater effectiveness in follow-up compliance.

Several problems are related to patient teaching by nurses. Nurses feel they are unprepared to conduct patient education programs. Nurses may have difficulty perceiving themselves as teachers or health promoters when their rewards come primarily from giving care. Nurses with multiple duties and responsibilities are unable to implement a program which provides appropriate patient supervision and evaluation (Ruzicki, 1985). Although nurses perceive patient education as a priority, confusion as to what specific information can be provided and the nurse's role in relation to other health care members is problematic (Stanton, 1988). Because of these obstacles, it is important to employ an advanced practice patient education specialist to plan, conduct and evaluate programs which improve patient outcomes.

Recovery from Abdominal Surgery

Recovery is the return to a premorbid level of health (Wilson-Barnett and Fordham, 1982). Recovery differs from rehabilitation which infers long-term

adjustment to incapacity. Much of the recovery research has studied specific interventions which were meant to reduce some unnecessary morbidity (Wilson-Barnett and Fordham, 1982).

Most recovery research has been conducted before the patient is discharged from the hospital. Postdischarge recovery is a growing concern. Complications of surgery and/or readmission to the hospital after early discharge are quality of care issues which reflect professional practice. Inability to return to normal social and role functioning in a timely manner is also a problem in postdischarge recovery. This study will view recovery from two perspectives: predischarge and postdischarge.

Predischarge Recovery

Predischarge recovery from abdominal surgery is defined in terms of structure and function of the body. Criteria to measure this recovery are objective and based on statistically determined ranges of normality (Wilson-Barnett and Fordham, 1982). The psychoeducational intervention is designed to maintain optimal structure and function of the body during the

predischarge phase. When the intervention is absent or unsuccessful, postoperative complications may occur.

Pulmonary complications constitute the largest cause of morbidity and prolonged hospitalization after major surgical procedures (Felton, Huss, Payne, & Srsic, 1976; Bartlett, Gazzaniga, & Geraghty, 1973; Meyers, Lembeck, O'Kane, & Baue, 1975; All, Welsel, Layug, Kripke, & Hechtman, 1974). The highest rates of pulmonary complications are from procedures involving the chest, upper abdomen and lower abdomen in that order (Latimer, Dickman, Day, Gunn, & Schmitt, 1971; Margand, Brooks, and Hunter, 1981; Shapiro, 1985). Patients educated about breathing exercises and coughing maneuvers can improve pulmonary status postoperatively as demonstrated by pulmonary function measures (Linderman and Van Aernam, 1971; King and Tarsitano, 1981; Shapiro, 1985; Meyers et al., 1975; Bartlett, et al., 1973, Latimer, et al., 1971).

Thrombophlebitis is a circulatory complication that may occur during the postoperative period. Prevention of stasis is the goal of nursing intervention. Early ambulation was introduced circa 1950 to stimulate venous flow and improve respiratory

function. Active contractions of leg muscles aid in moving blood through veins and reducing venous pooling (Felton et al., 1976). However, this complication cannot necessarily be totally prevented by nursing intervention. Evidence shows that the process of thrombosis begins in the small calf veins during the operation (Felton et al., 1976).

Another complication is abnormally slow return of bowel function (48 hours or more). Early ambulation and frequent activity enhance return of bowel function in most patients (Divine and Cook, 1986; Felton, 1976). The time frame in the cited studies was 72 hours for return of bowel function. However, the patients in the present study were assessed at the 48 hour point due to the widespread practice of early patient discharge in this population.

Fever is a symptom which can occur as a result of complications of surgery. The inflammatory phase in wound healing does not produce fever (Latimer et al., 1971) so the source of fever is always investigated. Incidence of fever was one indicator examined as a possible sign of postoperative complications. In the first 48 hours the cause of temperature elevation is

usually pulmonary and is attributed to atelectasis. Rigorous use of the incentive spirometer is the best preventative measure (Bartlett et al., 1973).

Perioperative research indicates that psychoeducational interventions are effective in preventing postoperative complications (Rockroth, 1989; Levesque et al., 1984; Wong & Wong, 1985; King & Tarsitano, 1981; Divine and Cook, 1983; Divine & Cook, 198). No significant results (Felton, et al., 1976, Vallejo, 1987) were found in some studies, but when both objective clinical indexes and physiological measurements are examined, study results are more favorably affected (Hathaway, 1986).

Postdischarge Recovery

Postdischarge recovery is predominantly related to lifestyle and is individual to the patient. Technical success of surgery is insufficient to restore pre-morbid health. The speed of recovery may be related to social, psychological, and physical variations (Wilson-Barnett and Fordham, 1982). Postdischarge recovery in this study is measured by role and activity resumption at two weeks postdischarge. Baker (1985, 1989) identified that by

two weeks postoperatively subjects had left the passive phase of recovery and began to assume preillness activities. For example, Baker (1989) found that 82% (14) of female subjects had begun resuming activities by the end of the second postoperative week.

Johnson, Rice, Fuller, and Endress (1978) observed that patients with sensory information preoperatively left their homes earlier (2.9-3.5 days after discharge) than patients who received procedural information (5.1-10 days). O'Conner (1989) studied postdischarge recovery at a six week time frame and suggested that the two week time frame may more accurately capture differences in outcomes since by six weeks the subjects had resumed activity and differences in timing and degree were lost.

Fortin and Kirouac (1976) examined the length of delay before surgical patients resumed normal activities of life. At each nursing assessment period (2, 10, and 33 days) the preadmission structured education group had a higher percentage of patients free from impairment. Baker (1985, 1989) suggested that anticipatory guidance be individualized to a patient's post-discharge recovery situation. This

guidance should help patients develop realistic expectations for the recovery process.

Anticipatory guidance is an intervention based on a nurse's knowledge of (a) an individual's expectations for recovery, (b) physiological symptoms that will be experienced, (c) pre-illness activities that will be resumed, (d) availability of assistance and social support, and (e) prescriptions and restrictions for a physiologically safe and full recovery (Baker, 1985). A nurse educator could be expected to facilitate patients' return to health through individualized anticipatory guidance which provides patients with personal control over postoperative experiences.

A summary of research about recovery from illness (Wilson-Barnett and Fordham, 1982) examined the problem of how to advise patients about postoperative activity. Individuals who have routine exercise regain their preoperative fitness up to 20 days sooner than the group without routine exercise (Carswell, 1978; Fordham, 1982). One conclusion of the Fordham (1982) study was that teaching should place more emphasis on positive ways to hasten recovery, such as increasing activity after surgery. Lichtenstein, Iterzikoff,

Shore, Jiron, Stuart, and Mizuno (1970) studied the dynamics of wound healing and advocated that patients "walk back to health" after abdominal surgery. Baker (1989) suggested stamina building for improved recovery be a part of postoperative education.

The literature reviewed summarizes nursing and related research on perioperative patient education and outcomes. This study will attempt to replicate past research with an extension of the recovery process to include postdischarge return to normal. The education content of preoperative teaching focused on the acute situation in past research. The psychoeducational interventions in this study (Appendix B) include cues for general postoperative recovery after discharge to hasten the recovery process. The teaching is not specific for rehabilitation needs of special groups.

Conceptual Framework

The conceptual framework proposes relationships between the independent variable, preadmission preoperative psychoeducational intervention, and the dependent variables of acute predischarge morbidity and postdischarge recovery (return to normal). Assumptions for the framework include (a) impending

surgery creates a learning need and a need for psychological support, (b) patients seek knowledge and psychological support from health care professionals who have specialized knowledge, (c) demographic variables and health status affect the patients response to impending surgery, (d) recovery can be measured by physiologic variables in the predischarge phase, (e) recovery can be measured by return to normal social and role function in the postdischarge phase, and (f) people desire optimal recovery.

Most patients enter the health care setting with a knowledge and experience deficit about the impending event. Patient needs for knowledge and psychlogical support preoperatively are addressed by nursing in different ways. The independent variable of preadmission preoperative psycheducational intervention was given to the experimental group. The control group received routine preoperative preparation in the preadmission clinic. The framework schematically represented (Figure 1) depicts that patients who receive the preadmission preoperative psychoeducational intervention will have (a) less acute morbidity two days after surgery, (b) less difference in pulmonary

function measurements two days after surgery, and (c) a greater return to normal two weeks postdischarge compared to patients who receive routine unstructured preoperative preparation in the preadmission testing clinic.

Each patient has unique experiences, learning needs, and learning abilities (Knowles, 1970, 1984). Additionally, the anxiety that accompanies impending surgery creates a need for psychological support (Devine and Cook, 1983, 1986; Johnson, et al., 1978). The proposed intervention is anticipated to reduce the knowledge deficit and meet psychological support needs of Admission Day Surgery patients. The intervention is conducted one to two weeks before the day of surgery when the patient is scheduled for preadmission testing. It is based on a nursing assessment of needs, including learning needs. The patient (and family) will learn about the perioperative routines and sensations in the holding area, operating room, postanesthesia care unit, and the nursing care unit. The patient will learn skills and exercises which can improve recovery. The patient will receive psychological support by addressing concerns and fears about impending surgery

with the nurse. Results of the intervention will be improved predischarge and postdischarge recovery (Johnson, Christman, & Stitt, 1985; Devine and Cook, 1986; Rockroth, 1989).

Figure 1.

Education - Recovery Model

for Patients with Abdominal Surgery

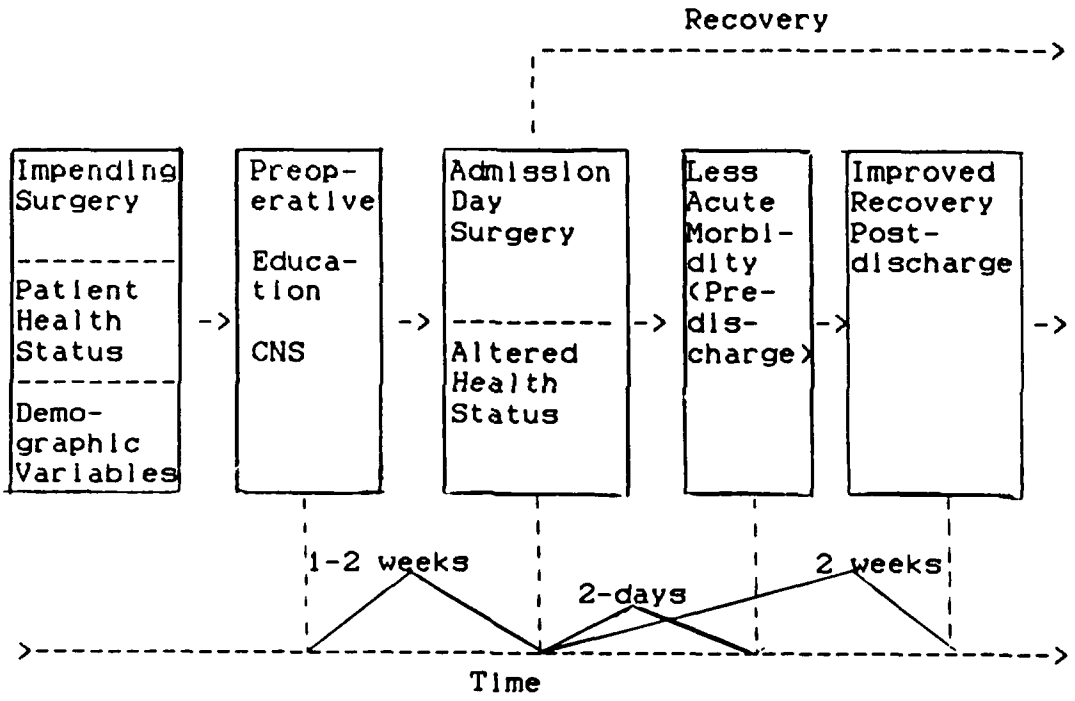

FIGURE 1. Education - Recovery Model for Patients with Abdominal Surgery

CHAPTER 3

Methods

This chapter includes the research design, descriptions of the population, sampling procedures, procedures for data collection, descriptions of instrumentation, limitations and a plan for data analysis.

Research Design

A pretest post-test control group experimental design was used to provide the greatest amount of control (Burns & Grove, 1987). Dependent variables were measured before and after the treatment. The treatment was a planned educational intervention provided by the investigator. The subjects were randomly assigned to either a control or an experimental group.

R O_1 X O_2

R O_1 O_2

Setting of the Study

The intervention took place in the Preadmission Testing (PAT) Clinic of a large Midwestern teaching and research hospital. Postoperative data was collected occurred in the inpatient surgical units in the same hospital. Access to patients was arranged with the Nurse Managers on those units where the patients would be admitted after their surgery. The two week postoperative data was collected by telephone to the patient's home.

Description of the Population

Patients eligible for the study included:

1.) Age 20-65

2.) Men and women having abdominal surgery (cholecystectomy, hysterectomy, gastric surgery, ventral herniorrhaphy, bowel resection without ostomy, laparotomy).

3.) Patients with the following conditions or situations were excluded:

-nonambulatory preoperatively,

-cannot speak English,

-no home telephone,

-co-morbidity of chronic obstructive pulmonary

disease, ischemic heart disease,

-not alert, not oriented to person, place, time.

Sampling Procedures

A convenience sample was used to randomly select 17 surgical patients scheduled for preadmission testing (PAT) who met inclusion criteria and consented to participate. The PAT schedule was reviewed Monday through Friday to identify all eligible patients. Randomization was done using a table of random numbers as per the procedure described by Wilson (1989) (Appendix G).

Description of the Treatment

The treatment consisted of a nursing assessment and a teaching session. The entire interaction took approximately 60-80 minutes. The control group session took approximately 20 minutes.

The nursing assessment was done initially and documented on the nursing data base form (Appendix H). The form includes health related data routinely collected by nurses when patients are admitted to the hospital. Identification of an individual's learning needs is a critical portion of the assessment. The nursing assessment is routinely done by the

preadmission testing clinic nurses because admission day surgery (ADS) patients are not seen by the unit nurses prior to admission for the surgical procedure.

Of particular importance for this study is the assessment of a patient's learning needs and readiness. The hospital's staff guideline for assessing a patient's learning needs and readiness are included in Appendix H and was the standard of practice for the investigator. A copy of the completed assessment form was kept in each patient's study file. Names were deleted from the forms and identification numbers were used.

A 15 minute video tape program of routine preoperative information was used as a teaching aide to supplement the instruction for subjects in the experimental group. Preoperative information was reviewed verbally using discussion and question/answer methods to ensure patient comprehension and clarify misconceptions.

The preoperative teaching booklet, "Information About Your Admission Day Surgery" (Appendix A), contains core information which was given to both control and experimental groups. The subjects in the

experimental group received a complete nursing assessment, routine information about hospital admission, physical preparation for surgery and detailed information given by the investigator about the entire surgical experience as outlined in the structured teaching plan in Appendix B. The booklet was used as a resource to guide the teaching session and for review by the patient and family at home. The subjects in the control group had a 20 minute session with the staff nurse which consisted of a partial nursing assessment and routine information about hospital admission and physical preparation for surgery. The booklet was given to the patients for reveiw by the patient at a later time.

Experimental subjects also received training on the incentive spirometer (Voldyne) which was issued during this preadmission preparation. This allowed subjects to practice and prepare for postoperative exercises during the preoperative phase. Additional training was provided to help patients develop skills in activities of coughing, deep breathing, leg exercises, turning in bed, getting out of bed, and

ambulation. Return demonstration and practice was used to teach and evaluate learning of this material.

Documentation of the teaching for both groups is the standard of nursing practice and was done on the Teaching Learning Flowsheet (see Appendix I). A copy of the completed Teaching Learning Flowsheet was kept with each patient's study file. Names were deleted from the forms and identification numbers were used.

Support to the patient and/or family was provided by the investigator and/or clinic/hospital staff responsible for the safety and well-being of the patient.

Instrumentation

A documentation form for inspiratory capacity and vital capacity (Appendix D) was used to document pre- and postoperative values. The Bourns Ventilation Monitor LS-75 (Appendix J) was used to measure volume of air flow by ultrasonic sensing of flow generated vortices created as subjects inhaled or exhaled air through the monitor flowtube. Reliability of the instrument is ±5% in typical clinical applications (Bournes product literature, Appendix J).

A predictive nomogram for inspiratory capacity (Appendix C) which is distributed with the incentive spirometer (Voldyne) from Sherwood Medical Company was used. The nomogram is based on recommendations of the American Thoracic Society (Polgar and Weng, 1979). Height and age are used to calculate percent of predicted value for analysis. Height was obtained using properly balanced scales in the clinic.

The predictive nomogram for vital capacity (Appendix C) was developed from Morris (1976) and is the standard for practice for the American Thoracic Society and the Pulmonary Functions Laboratory of the hospital. Height, age, and sex were used to calculate percent of predicted value for analysis.

The Director of Respiratory Therapy at the hospital was consulted for methods of pulmonary spirometry measures and access to calibrated equipment. Recommendations and demonstrations were made for use of appropriate equipment (Bournes Ventilation Monitor LS-75), how to obtain accurate measures, how to test for proper equipment function, and infection control measures. The Assistant Director of Respiratory Therapy provided individualized instruction to the

investigator in each of the above recommendations and provided guidelines for accurate measures and written guidelines for equipment use (Appendix J). Of particular concern for patient safety was infection control procedures. The Infection Control Nurse was consulted to approve recommendations (Appendix K).

The raw score for inspiratory capacity was obtained by inspiring the maximum amount of air from the resting lung position through a mouthpiece attached to the Bourns Ventilation Monitor LS-75. This method was selected as an appropriate measure for study because it is a more precise measure of inspiratory capacity than the incentive spirometer. The incentive spirometer was connected to the system to improve patient ventilatory performance. The subject caused a ball in the chamber to rise as a deep breath was taken. By using the same calibrated instrument for each subject, results were more valid and reliable and reflect adequacy of the maneuver to enhance inspiratory capacity.

The raw score for vital capacity was obtained by having the subject take the deepest breath possible and then measuring the maximum amount that can be exhaled.

This maneuver was accomplished slowly since a slow exhalation helps eliminate air trapping. This measure was selected as appropriate for study because significant reduction in vital capacity indicates risk for postoperative complications (Shapiro, 1985). The measure of vital capacity is used as a dependent variable in numerous published nursing and medical studies and is considered a valid measure of pulmonary function (Ali, et al., 1971; Margand, et al., 1975; Linderman and Van Aernam, 1971; King and Tarsitano, 1981; Meyers, et al, 1975; Bartlett, et al., 1973; Shapiro, 1985).

The chart review form and catagories for recording preventable postoperative complications (Appendix E) was constructed by Divine, et al. (1988). Appendix E includes the modified form and a letter from one of the investigators indicating consent to use the forms. There is no reliability or validity documentation available. The literature review reflects the appropriateness in selecting the specific complications as preventable.

The Postdischarge Recovery Measure (PRM) by Baker (1989) consists of three parts. Part I includes

demographic and lifestyle baseline items and the data is collected during preadmission testing. Part II is a return to normal recovery measure for the postdischarge period. Part III of the PRM addresses data about discharge instruction and follow up care. A telephone interview was used to collect postdischarge data. The PRM is in Appendix F.

Baker (1985, 1989) identified that the theme for postdischarge recovery was the return to normal. Return to normal should be measured by "individually defined comparative standards of pre-illness psychological, physiological, and social well-being" (Baker, Mar., 1989). Part II of the PRM elicits a person's expectations for the recovery process, as well as comparing physical alterations, social support, and personal efficacy. Items that asked persons to compare their present physical status to personal standards for normal were discomfort, sleep, energy, elimination, eating, and "others." Social support items included assistance required, interactions with family and friends, and boredom as compared to normal. Personal efficacy items were directly related to self-care, social functioning and role responsibilities identified

in Part I. Part I information was used to individualize items in Part II which measured return to normal work, leisure and community activities.

Questions for Part II used a stepped protocol which refined the responses of "more" or "less" by asking the subjects to further differentiate (such as "a little more" or "a lot more"). The higher the item score, the closer that aspect of recovery was to normal. Scores from selected items (4 - 12 and 15) were summed to obtain a return to normal physical and social functioning score. The range for the physical and social functioning score is 10-31. Scores from items 13, 14, and 16-20 were calculated based on pre-illness descriptions. The category of work had the capacity to become three items depending on the number of pre-illness work roles. Work responses and self-care, community and leisure items were summed to form the efficacy score. The range for the efficacy score is 5-21. The physical and social functioning and efficacy scores were used in the statistical calculations. This study will examine the progress of subjects' recovery two weeks postoperatively as they resume pre-illness activities.

The PMR is considered valid as the instrument was developed from the findings of a qualitative study of postdischarge recovery. Validity of the instrument was supported using a known group technique. The instrument tended to differentiate (p=0.0576) at the two week assessment between two groups expected to have different patterns of recovery. The measure was pilot tested and revised in a study of 17 gastrointestinal patients. Reliability was strengthened in the pilot study "which developed the wording of the items so that the responses were consistent comparisons to the subjects' pre-illness norms" (Baker, 1989).

Procedures for Data Collection

Subjects were selected from the preadmission testing clinic schedule. Subjects in the control and experimental groups were called by the investigator prior to the PAT appointment to discuss inclusion in the study (Appendix L). Prior to giving consent for participation in the study at the preadmission testing appointment, subjects in both groups received a verbal and written summary of the study approved by the Behavioral and Social Sciences Human Subjects Review Committee (Appendix M). Subject signature on the

consent form (Appendix N) was obtained to indicate informed consent and a copy of the signed consent form was given to the subject. There was a witness to the verbal summary and consent session and the witness signed both the consent form and the written summary. The original documentation of consent paperwork was maintained in each subject's file and secured by the investigator.

At preadmission time, a folder was prepared for each patient which contained an inspiratory and vital capacity measurement form, chart review form, and the PRM. Additionally, copies of the nursing data base form and the teaching learning flowsheet were kept in the folder.

Data was collected during the preadmission testing period, 2-14 days prior to surgery, and consisted of Part 1 of the PRM and preoperative inspired and vital capacity measurements. Postoperative data was obtained on the second day after surgery (surgery day = 0) and consisted of identifying postoperative complications which may have been prevented by preoperative teaching, and the postoperative inspiratory and vital capacity. Another set of outcome data was collected two weeks

postoperatively and consisted of a telephone administered questionnaire (Part II and III of the PRM) to assess patients' return to normal physical, social and work activity.

Telephone interviews were tape-recorded to assist in storage and interpretation of verbal responses. The tapes were erased after interpretation of data.

Data Collection Tools

Preadmission

1. Part I of the PRM
2. Inspiratory capacity, vital capacity for baseline (percent of predicted value based on height and age)
3. Nursing data base form
4. Teaching learning flowsheet

Two day postoperative assessment

1. Chart review form for postoperative complications
2. Inspiratory capacity, vital capacity measurement (percent of predicted value for height and age)

Two week postoperative assessment

1. Part II and III of the PRM

Data Analysis Plan

Analysis of variance for an independent measures design was used for statistical analysis of the

parametric between groups ratio level data. The nonparametric Wilcoxan Rank Sums for independent group was used to analyze the ordinal data of the PRM. The alpha value of significance was set at p=0.05. SAS statistical analysis system (SAS Institute Incorporated, Cary, NC) was used for programming and analysis.

CHAPTER 4

Data Analysis and Interpretation

Chapter four includes the sample description according to the demographic data, an analysis of data according to the research hypotheses, and discussion of results.

Sample Description

The randomized convenience sample consisted of seventeen subjects who had abdominal surgery and met the criteria for the study. Data collection for one subject in the experimental group did not include the postdischarge recovery measure because of readmission to the hospital and additional surgery. The data was collected during a ten week interval. Data for the sample are presented in Table 1.

The sample was composed of seventeen women ranging in age from 26-56. Two subjects in the control group were Black and the remaining subjects were White. The mean age in the experimental group was 41.25 years (SD of 8.77). The mean age in the control group was 37.89 years (SD of 6.75). The t-test for independent samples was used to determine that there was no

statistical difference in age between groups (p=0.70).

The majority of subjects (88%) were married. One divorced woman in the experimental group reported living with a significant other who would provide necessary supports after surgery. One single woman in the control group lived alone, but in close proximity to her mother who would provide support in the postdischarge period. All subjects were confident that they had adequate supports for the postdischarge period.

The educational level of the experimental group ranged from 9 to 18 years with a median of 14.5 years. The control group median educational level was 14 and ranged from 11 to 18 years.

The median income range of the experimental group was $35,000-40,000. The control group median range was in the $15,000-$20,000 range. All subjects in the sample had health insurance.

Table 1

Demographic Variables

Variable		Experimental Group (n=8)	Control Group(n=9)
Age (years)			
Range:	26-35	3 (37%)	2 (22%)
	36-45	3 (37%)	6 (67%)
	46-56	2 (25%)	1 (11%)
Education (years)			
Range:	9-11	1 (12%)	2 (22%)
	12-14	3 (37%)	4 (44%)
	15-18	4 (50%)	3 (33%)
Income			
Range:	$10-19,999	3 (37%)	5 (55%)
	$20-34,999	0	0
	$35-44,999	2 (25%)	2 (22%)
	$50-100,000	3 (37%)	2 (22%)
Marital Status			
Single, divorced		1	1
Married		7	8
Number in Household			
Mean		3.5	3.33

The majority of the experimental group (75%) and the control group (78%) were employed with home management responsibilities (Table 2). The majority of subjects claimed sole responsibility for home management (62.5% of the experimental group; 55.5% of the control group). The remainder of the sample shared home management responsibilities with their spouses.

Table 2 Employment

Variable	Experimental Group (n=8)	Control Group (n=9)
Employment		
Full time	5	5
Part time	1	2
Unemployed	2	2
Home management		
Self	5	5
Joint	3	4
Work descriptors		
Employed & home management	6	7
Home management	4	2

The types of surgery experienced by subjects varied. The most frequent surgical category was hysterectomy (Table 3). Fifty per cent of the experimental group had a hysterectomy and included the only patient with cancer in the sample. The subject with cancer had more extensive syrgery as she also underwent lymphadenectomy of the abdominal/pelvic cavity. The majority (67%) of the control group had a hysterectomy. Other gynecological procedures included laparotomy and lysis of adhesions, myomectomy, or excision of a portion of uterine muscle, and cystocele/rectocele repair. Only one patient had cholecystectomy surgery and was in the experimental group.

Table 3 Type of Surgery

Variable	Experimental Group (n=8)	Control Group (n=9)
Surgical procedures		
Hysterectomy	4	6
Lysis adhesions	1	2
Myomectomy	1	1
Cystocele/rectocele	1	0
Cholecystectomy	1	0

The majority of the subjects had had previous abdominal surgery (62.5% in experimental group and 78% in the control group). All subjects had experienced some type of surgery as an adult except one member of the control group who had abdominal surgery at age 11.

There were 11 surgeons managing the care of the patients. The experimental group had six different attending surgeons and the control group had seven different attending surgeons. All patients received care from a team of residents under the direction of an attending surgeon.

The mean length of hospital stay was 5.1 days for each group. Research studies looking at length of hospital stay have demonstrated smaller effects in recent years (Devine and Cook, 1986). Cost containment efforts have decreased the normal length of hospital stay so that effects of patient education are not as apparent as when hospital discharge was based solely on patient recovery from surgery.

Data Analysis

Hypothesis 1

Hypothesis 1 stated that subjects who received a structured, individualized preadmission preoperative

education planned and provided by a Clinical Nurse Specialist (CNS) would have reduced incidence of postoperative pulmonary, circulatory, and gastrointestinal complications as compared to subjects who received routine preoperative preparation by preadmission unit staff nurses.

Table 4 presents the analysis of variance (ANOVA) data for postoperative fever and pulmonary, circulatory and gastrointestinal complications.

The incidence of fever (100 degrees Fahrenheit and over) was examined in four hour increments. ANOVA procedures demonstrated that there was not a significant difference between the experimental and control groups ($p = 0.23$).

Slow return of bowel function occurred four times in the control group only. Analysis of variance demonstrated that there was a significant difference between the experimental and control groups ($p = 0.01$)

There were an equal number of persons from the control and experimental groups who experienced pulmonary complications of pneumonitis and atelectasis and no patients had thrombophlebitis.

Table 4

Analysis of Variance for Postoperative Complications

Variable	p-value	F	df
Temperature 100 degrees or greater	0.23	1.69	1,15
Slow return of bowel function	p<0.01*	8.78	1,15
Atelectasis, and Pneumonitis	1.0		
Thrombophlebitis	1.0		

*p<0.05.

Hypothesis 2

Hypothesis 2 stated that subjects who received a structured, individualized preadmission preoperative education planned and provided by a CNS have less

difference in preoperative and postoperative pulmonary function measures as compared to subjects who received routine preoperative preparation from preadmission unit staff nurses.

Analysis of variance demonstrated that there was not a significant difference in inspiratory capacity between experimental and control groups (p = 0.17) (Table 5). Although these results are not statistically significant, there is a tendency for the experimental group to have less difference between preoperative and postoperative inspiratory capacity than the control group. The mean difference for the experimental group was 16.77 (SD of 17.76). The mean difference in the control group was 27.3 (SD of 17.26).

Analysis of variance demonstrated that there was not a significant difference in vital capacity between experimental and control groups (p = 0.25). The mean difference in vital capacity for the experimental group was 23 (SD of 9.02). The mean difference for the control group wa 28.66 (SD of 16.42).

Table 5

Analysis of Variance for Pulmonary Function Measures

Variable	p-value	F	df
Inspiratory capacity	0.17	2.05	1,15
Vital capacity	0.25	1.41	1,15

Hypothesis 3

Hypothesis 3 stated that subjects who received a structured, individualized preadmission preoperative education planned and provided by a CNS have more rapid postdischarge return to normal as compared to subjects who received routine preparation by preadmission unit staff nurses.

Table 6 presents the Wilcoxan Rank Sums analysis for difference in recovery between experimental and control groups.

Perception of the recovery process was worse than expected for the majority (55%) of the control group and 25% of the experimental group. This variable

examined expectations of the recovery process compared to what is actually experienced. There was not a significant difference in perception of recovery between the experimental and control groups (p = 0.41).

Physical and social recovery was calculated using ten items on the postdischarge recovery measure (PRM) that examined physical alterations and social support as compared to normal. There was not a significant difference between the experimental and control groups (p = 0.71).

The efficacy recovery was calculated using five items on the postdischarge recovery instrument related to self-care, social functioning and role responsibilities identified preoperatively. There was not a significant difference between the experimental and control groups (p = 0.72).

Table 6

Wilcoxan Analysis for Postdischarge Recovery

Variable	p-value	F	df
Perception of Recovery	0.41	1.88	8,6
Social recovery	0.71	1.32	8,6
Efficacy recovery	0.72	1.31	8,6

Discussion

The small sample size in this study does not support meta-analysis results. Reasons for this include the decreased power of small samples to show statistical differences and the increase in sampling error with small sample size (Burns and Grove, 1987).

Ninety-four per cent of the sample were gynecological patients with abdominal surgery below the umbilicus. There were two patients in the experimental group who required abdominal surgery where the incision is in the upper part of the abdomen. Surgeries of the upper abdomen have more compromise to pulmonary function due to pain, abnormal respiratory patterns,

and surgical muscular injury (Ali, et al, 1974; Latimer, et al, 1971). Therefore, the upper abdominal surgical patients in the experimental group could account for decreased differences between groups for pulmonary function and postoperative complication measures.

The sample was atypical because it was all female. Both experimental and control group subjects had characteristics that would make them look similar in the PRM. Most of the sample (76%) were employed full time and had home management responsibilities. Responsibilities as money earners, mothers, wives and home managers prevented these women from lingering for extended periods of time in the sick role (Baker,1985; Baker, 1989). Fifty-nine percent were also involved in community activities, another incentive to return to normal lifestyle as quickly as possible (Baker, 1985).

Another finding about the sample was that all patients had at least one prior experience with surgery. Each subject had experiential knowledge of perioperative procedures, sensory experiences, and recovery expectations.

The variety of surgeons was consistent for each group. No comparisons can be made regarding surgical technique or patient management strategies.

All but two subjects were admitted to the unit where gynecology patients were typically cared for. One subject in the experimental group on the gynecology service was admitted to another surgical unit. The patient developed atelectasis and three episodes of fever over 101 degrees on the evening of the day of surgery. The other patient was a general surgery patient in the experimental group who had a cholecystectomy. The patient was admitted to a general surgery unit and incurred no postoperative complications. Most patients received care in the same unit which adds an element of control to the study.

There are factors which may have improved the control group function, even without the benefit of the treatment psychoeducational program. Each patient had an adequate ability to read and was instructed to read the patient education materials from the preadmission clinic regarding admission day surgery and anesthesia. The lowest education level achieved in the control group was ninth grade. The reading materials given to

each patient were prepared at the sixth grade reading level. Nursing research has demonstrated that patients learn postoperative exercise activities and knowledge about perisurgical activities from self instruction booklets sent to their home or given preoperatively (Rice and Johnson, 1984; Mikulinec, 1987; Wallace, 1986; Christopherson, 1980). Individualized, structured education further improves outcomes.

Each control group patient had a 20 minute (minimum) interview with a registered nurse who provided general guidelines about preparation for surgery, asked the patient to read the education materials, and afforded an opportunity to ask questions. Each patient received some element of preparation from the physician or a delegate. The total effect of all the resources for patient learning may have masked differences in the intervention.

Devine and Cook (1986) noted that the content of usual care in clinical practice make interventions appear less effective because treatments differ less in the care actually given. The positive effects of improved pulmonary function in this study implies that "there is room for improvement and that patients would

benefit from receiving augmented levels of psychoeducational care" (Devine and Cook, 1986, p. 99).

Another variable which may affect patient outcomes is the initiation and degree to which postoperative activities are accomplished depending on the skills, motivation and time constraints of the patients' nurses. This variable was common to patients in both groups and therefore, potentially minimized these effects from staffing. However, more patients who smoked cigarettes were in the experimental group which caused increased pulmonary compromise (Latimer, et al., 1971; Ali, et al., 1974). The patients incurred pulmonary postoperative complications which may have been prevented by vigorous pulmonary toilet during the day of surgery and first postoperative day. Research has demonstrated that nursing interventions and continued teaching must occur in the postoperative period for preoperative teaching to be effective (Cook, 1985). The patients denied receiving encouragement and assistance during this critical postanesthesia phase.

Postoperative Complications

There was a statistically significant difference between groups in return of bowel function. The control group had four patients with slow return of bowel function. The statistical difference between groups may be related to the history of previous surgery and abdominal adhesions in two of these patients. Their activity level in the postoperative period was documented as normal, but they were both readmitted with small bowel obstruction and paralytic ileus. Another patient was inactive which may have contributed to slow return of bowel function as well as pulmonary complications.

Pulmonary Function Tests

The difference in pulmonary function measurements of the experimental and control groups did not meet the statistical alpha level. However, there was less difference in preoperative and postoperative pulmonary function measurements in the experimental group. Ali et al (1974) found that the mean difference in vital capacity for low abdominal surgical patients on the first and third day after surgery was 35% and 27%. In the experimental group, the mean difference on day 2

was 17.6% which exceeds those in the All, et al study and is equal to the mean which occurred for patients at the sixth and seventh postoperative day. In the control group, the mean difference on day 2 was 28.7% which would be consistent with the All, et al. (1974) and Felton, et al. (1976) findings. The experimental group had 2 patients with surgery involving the upper abdomen. All, et al found the mean difference in vital capacity on day 1 and day 3 to be 63% and 49%. The patients in the experimental group in this study with upper abdominal surgery had a mean difference of 29.5% which exceeds the All, et al study and is equal to the mean difference for the sixth and seventh postoperative day.

Return to Normal

There were no significant differences between groups related to postdischarge recovery at the two week assessment. One explanation of this result is that the sample of women began activity early in the postdischarge period to return as quickly as possible to their normal roles and social functioning. Assessment in the activity resumption and stabilization phases later in the recovery process may have

demonstrated some differences related to the intervention of preoperative teaching.

Instrumentation. The PRM has only been piloted: there were some problems encountered in its use. Subjects were unsure of the meaning of question 4: Do you have more or the same awareness of your body? Their answers did not always reflect other descriptions of body function and sensation they were experiencing.

Question 6 has limited possible answers. The question is: Are you sleeping more or the same amount? The answers are limited to choices ranging from the same amount to a lot more sleep, but some patients claim to be sleeping less due to restlessness and altered sleep patterns.

Clinical vs statistical significance. The PRM may not be able to discriminate differences in recovery based on nursing interventions at the alpha level of 0.05 because the standards of care are already established for preparing patients for surgery. Early discharge and noncomparable groups will continue to limit the ability of researchers to find statistical differences with tools used today. Also, many patients are compelled by their own self-care habits to become

knowledgeable about their surgery and recovery for rapid return to normal. Continued use of the PRM or any instrument may help to refine questions and define appropriate levels of clinical significance. Large sample size may be a requirement for instruments to be sensitive to differences between groups.

Discharge Preparation

Discharge preparation data was collected from all subjects (experimental and control) to determine who provided information and what types of information were given. All subjects received discharge instructions. Most (56%) identified the doctor and nurse as providing information (verbal and written). The doctor was credited as the only teacher for 37% of the subjects and the nurse as the only teacher for one (6%) subject. Types of information provided were for activity limitation and progression, medication administration, and follow up care.

The patients in both groups demonstrated understanding of discharge instructions. Those that required physician's attention called and received instruction over the phone, were seen in the office, or were admitted to the hospital. Only one patient tried

to self medicate and manage a medical problem that should have been referred to the physician. Appropriate management of postoperative symptoms and follow up with the physician are important for problem resolution and optimal progression through postdischarge recovery.

Patients' perception that their nurse did not provide discharge instruction is a major concern. Nurses need to be patient advocates and patient educators in the clinical setting. They are the closest contact that patients have to caregivers in the hospital. Nurses are educated and licensed to identify patterns of responses to actual or potential health problems and to provide health education (Ohio Nurse Practice Act, 1988). These nursing activities are essential to the practice and evolution of nursing as well as the well-being of patients.

Analysis of Smokers vs Nonsmokers

A secondary analysis of the smoking population was done. It is notable that two of the three occurrences of atelectasis and the one occurrence of pneumonitis were in patients who smoked cigarettes. Thirty per cent of the experimental group and 22% of the control

group smoked cigarettes. Latimer, et al (1971) reported that smoking predisposed patients to pulmonary complications. Of the five patients who smoked in this study, four (80%) had either fever, atelectasis, or pneumonitis. The fifth patient quit smoking one month before the surgery and did not have complications, but did have a 51% decrease in vital capacity which exceeds expected values for lower abdominal surgery by 20% (Ali, et al, 1974).

Of all the smokers in the study, there was a mean difference of 41.2% in inspiratory capacity compared to the mean difference of nonsmokers in the study which was 15.75%. There was no difference in the means for vital capacity (28% in smoker and nonsmoker groups). In the experimental group, all pulmonary complications (fever, atelectasis, pneumonitis) except one temperature elevation were in the three patients who smoked cigarettes. Those patients reported that they could not recall being turned, coughed, or given the incentive spirometer during the early postoperative period when they were still drowsy from anesthesia. They related that they were encouraged to use the inspirometer and to cough only after they had fever and

the doctor had been called to examine them. According to Cook (1985), research indicates that teaching must occur postoperatively as well as preoperatively to have maximum effects.

Of the two smokers in the control group, one had stopped smoking four weeks prior to surgery and had no postoperative complications. Another control subject who smoked had postoperative fever and also was readmitted for small bowel obstruction.

CHAPTER 5

Implications and Recommendations

This chapter includes a summary of this study, limitations of the study, a discussion of implications for nursing practice, and recommendations for future research.

Summary of the study

An experimental pretest-posttest control group design was used to compare recovery outcomes of subjects receiving preadmission preoperative education planned and presented by the clinical nurse specialist with subjects receiving routine preoperative preparation by clinic staff nurses. Incidence of postoperative complications by record review and changes in pulmonary function tests were assessed on the second postoperative day in the hospital. Postdischarge recovery was measured two weeks after surgery by telephone using a structured interview schedule.

There was a significant difference between control and experimental groups in return of bowel function

(p=0.01), but not in pulmonary complications (p=0.57), inspiratory capacity (p=0.17), vital capacity (p=0.25) or postdischarge recovery (p=0.71, p=0.72).

Limitations of the Study

There were several limitations to the study. Major limitations concern the study sample. Because of the small convenience sample which was all female with 94% on the gynecological service, the study cannot be generalized to larger populations of patients with abdominal surgery.

Sample size was a main limitation. As sample size decreases the standard error increases. The power of statistical tests to find differences between control and experimental groups decreases as the size of the sample decreases (Gravetter and Wallnau, 1988). Small sample size was affected by the limited number of abdominal surgical patients who entered the preadmission testing (PAT) clinic. The PAT was not being used by most general surgeons but was being used by the specialty services. Of those services, the one with abdominal surgery was gynecology; hence the large number of those patients in the study. Attrition also affected sample size. Three patients who received the

intervention did not have the surgery for reasons of pregnancy, change in physician plan for the patient, and delay in timing of surgery. A subject in the experimental group was eliminated from the postdischarge recovery portion of the study after being readmitted for emergency surgery. The experimental group (n=8) was smaller than the control group (n=9). A convenience sample is limiting because selection biases may affect outcomes (Burns and Grove, 1987). Although the sample was randomized, selection bias occurred in several ways. Previous surgery for all the patients in the sample could have changed recovery outcomes regardless of the intervention. Another example of selection bias was that two patients in the experimental group had surgery which involved the upper abdomen and could account for the greater deficits in pulmonary function measures. Selection bias also occurred because only female patients in the preadmission testing fit the sample criteria. Selection bias is a threat to internal validity (Burns and Grove, 1987).

A limitation in design may have introduced the Hawthorne effect which may have caused subjects of both

groups to exert more than usual efforts in the recovery process. One patient in the control group, a postgraduate student, went to the health sciences library to study her surgery and postoperative care. Results may have narrowed differences between groups.

Another limitation is the potential bias of measurement subjectivity by the researcher. The measures of pulmonary function and activities reported to the data collector have a "medium" measurement subjectivity. Physiologic measures not dependent on the patients' efforts (temperature, chest x-rays) and observations of health care workers (patient records) who are blind to the study have "very low" and "low" measurement subjectivity. All of these types of measures are included in the study. "High" measurement subjectivity includes ratings when data collectors are aware of the treatment conditions, as with the PRM (Devine and Cook, 1986).

Time constraints for the study was also a limitation. It was not be possible to conduct multiple interviews over the course of the recovery process as is recommended for the PRM (Baker, 1989).

Implications for Nursing Practice

Implications of the study are made with reservation due to numerous limitations and results that are not statistically significant. However, the clinical significance of some findings have important implications for nursing practice.

The service offered by the hospital for preadmission testing and teaching needs to be marketed to referring physicians so they can realize and utilize the benefits for their patients. Worley (1986) stated that the success of such a program is related to the collaborative effort among departments, keeping down the program's cost, carefully timing and scheduling preoperative efforts, and marketing the service as a convenience to patients and their families. Without the physicians' cooperation as gatekeepers to the patients, the availability of the service to patients is greatly diminished. A central figure is needed to organize a collaborative effort and focus on program development and troubleshooting. This expert should be the surgical CNS.

The CNS has a strong background in clinical practice. Advanced education enables the CNS to

systematically assess the needs of patients, nurses, and physicians in the development of preoperative educational programs. The CNS is uniquely prepared to develop research based programs based on assessed needs and which have the goal of improved outcomes. Results of CNS interventions can improve patient recovery outcomes, facility utilization by patients and health care providers, and financial outcomes for the institution.

Another implication of the study is related to the education booklet. Instructions before hospital admission may be augmented by sending information to the patient at home. This action allows the patient and family to read the materials which may prompt thoughts and questions used at the preadmission testing teaching session. For patients who are unable to attend a teaching session, a telephone interview may provide a solution. A needs assessment and review of the information could be accomplished and individualized over the telephone.

Patient information materials can be individualized as much as possible by preparing procedure specific materials. These materials should

be research based regarding knowledge about the procedure, sensory information, and pre-/postdischarge recovery expectations. These materials should be prepared by surgical clinical nurse specialists in their area of specialty.

Specific outcomes of the program need to be studied to validate worth of the practice and explore new methods. Outcomes need to include short and long term effects of the intervention into the recovery process. This activity would contribute to the development of the knowledge of the recovery process. Outcomes should also address patient satisfaction with the program to incorporate patient identified needs into the program. Cost benefit analysis could be conducted by comparing current outcomes to history of morbidity within the institution, and current morbidity in other institutions in the area, state, and region. This is another activity the CNS is prepared to do.

Patients who smoke should be specifically identified as patients at risk and should be aggressively managed. Rewards (evaluation, promotion, monetary) could be given to specific nurses or units who demonstrate vigorous efforts and decrease

postoperative complications. Evaluation of outcomes through quality assurance projects may be used to document and communicate such efforts.

The staff nurses on the surgical units must develop the knowledge, skill and motivation to initiate patient postoperative care measures which prevent complications. One way of approaching this problem is to demonstrate that providing such care ultimately saves time in managing the complications of fever, atelectasis, pneumonia, and slow return of bowel function.

Another problem is the management of complex cases encountered in PAT. Criteria needs to be established for patients with complex needs for referral to the CNS of the specialty service. The CNS would initiate case management principles to hasten recovery. Daily review of clinical progress and problems, analysis of the patient/family home and community resources, and ongoing communication and coordination with health care providers are elements which enhance recovery. Outcomes for evaluation could include the incidence of complications, length of

hospital stay, frequency of ambulation, and postdischarge return to normal lifestyle.

Recommendations for Future Research

Future research should focus on specific patient populations. Different types of surgery have differences in outcome variables which can mask effects of the treatment. An example of this is in the differences in pulmonary function measurements in patients with upper and lower abdominal incisions. Patients who smoke should be studied separately because of their predisposition for pulmonary complications and their challenge to nurses in the clinical setting. Recovery data obtained from like samples can be used to establish critical paths for recovery from specific surgeries. This information can be used to give anticipatory guidance for recovering patients.

Johnson, et al. (1985) documented differences in patient outcomes as a result of preoperative education content in relation to race. Cognitive and behavioral types of strategies were studied for short term and long term results. The two Black patients in this study were in the control group and both perceived that they had worse than expected recoveries.

A study of the effects of anticipatory guidance by nurses during preoperative and predischarge preparations is needed to examine the importance of that nursing activity to recovery. Knowledge of recovery may enhance the patient's feelings of control and activity during the process. Research based anticipatory guidance for postoperative problems should be studied for effects on postdischarge recovery.

Research using the staff nurse as the provider in clinical settings would yield useful information about clinical practice. Divine, et al. (1988) conducted a study of inpatient staff nurses who participated in an education program for preoperative patient teaching prior to the study. This study could be replicated in the preadmission testing clinic under the direction of the clinical nurse specialist. The nurses' education program should be preceded by an evaluation of how the nurses perceive patient teaching and what they want to know about patient teaching.

Other areas of study should be focused on specific content and methods of patient teaching and how they affect postoperative recovery. One area of content is stamina building in the preoperative phase to enhance

fitness for a faster recovery. Another topic for future research is to examine the method of using a video tape in the preoperative teaching session. No studies have documented this efficacy of this method for adult patients. Future studies should document patient satisfaction with the patient education program and how health care providers can improve this service. Patient desires for specific content or methods should be considered for program development in accordance with Knowles' adult education principles.

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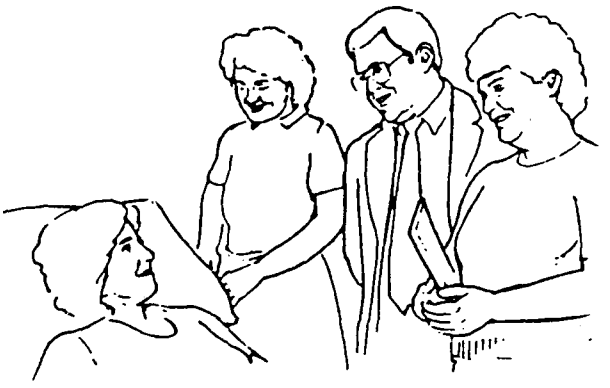
APPENDIX A

Preoperative Education Booklet

Information about Your Admission Day Surgery

OHIO STATE UNIVERSITY HOSPITALS

PATIENT EDUCATION



Information About Your Admission Day Surgery

TABLE OF CONTENTS

Introduction

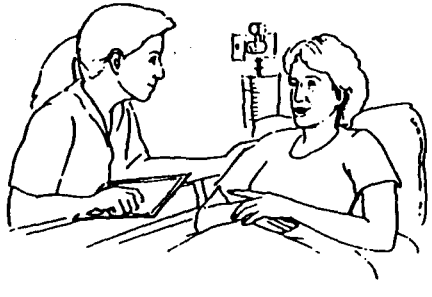
It is normal to have questions about your operation before you come to the hospital for surgery. The purpose of this booklet is to provide information on routine events and procedures you may have before, during, and after your operation. We hope that this booklet will answer many of your questions. Please ask your nurse or doctor for more information.

Before Your Surgery

The nurse from the Ambulatory Surgery Unit (ASU) will call you the day before your surgery. If you have not received a phone call by 2:00 P.M., please call the ASU at 614-293-8795 and ask to speak to a nurse. Hours for calling the ASU are 10:00 AM-5:00 PM, Monday-Friday. The nurse will answer any questions you might have and remind you not to eat or drink anything after midnight. Please bring any medications you are taking to the hospital. Ask your doctor if you should take your medications the morning of surgery.

Day of Your Surgery

You should plan to arrive at the hospital 1-1/2 to 2 hours before the time for your surgery and report to the Admitting Office, Room 129 Doan Hall. From there you will be taken to the Ambulatory Surgery Unit (ASU), 5 Center, Doan Hall where you will be prepared for surgery. During this time in ASU, you may want to ask questions about anything you don't understand or talk about feelings or concerns you might have.



In the ASU you will change into a hospital gown, robe, and slippers. Your clothes will be sent to your hospital room after your surgery. The nurse will take your vital signs (blood pressure, pulse, temperature, and breathing). If needed, blood tests will be done. A needle called an intravenous (IV) may be put in a vein to give you fluid. Nail polish, dentures or partial plates, make-up, jewelry, hair clips, contact lenses, eyeglasses, hearing aids, and any other prosthesis must be removed before going to surgery.

The ASU nurses will also ask you some questions so they can better prepare you for surgery. They will answer any questions you have about what to expect before, during, and after your surgery. When you go to surgery, the nurse will tell your family where to wait while you are in surgery.

Questions to ask your doctor or nurse about getting ready for surgery:

1. Should I take my medications the morning I come to the hospital?
2. What type of anesthesia will I have?
3. What kind of dressing and drainage tubes will I have?
4. Is there any surgical preparation, such as enemas or shaving, that I must do?
5. What are the visiting hours on the unit?
6. Other:_____

_____

_____

_____

_____

Your Anesthesia

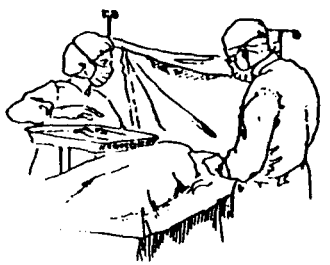
A member of the anesthesiology staff will visit to talk about your anesthesia. They will also answer questions you may have. You may be given some medicine to relax you before going to the operating room. This medicine could make you feel lightheaded, sleepy, or thirsty. Do not try to get up unless a nurse helps you.

awake during the procedure. However, you will feel no pain because the surgical area will be numb. The medicine for a local anesthesia are given by injection into the area where the surgery is to be done. You may also get medicine through your intravenous (IV) to help you relax during the surgery.

If you receive a general anesthetic, you will be asleep and will not feel pain. You will be given a mixture of medicines and anesthetic gases to meet your needs.

During Your Surgery

You will be taken to the operating room either in a wheelchair or on a cart. Your hair will be covered with a paper hat like the operating room staff wear. All the operating room staff will be wearing special scrub clothes, caps, and masks. You will notice that the operating room has bright lights and is quite cool. You may see many pieces of special equipment and tables set up with sterile supplies and instruments in the room. However, not all of this equipment will be used on you.



A registered nurse, called the circulating nurse, will be there to greet you and help you get comfortable on the operating room table. A safety strap will be put over your knees. You will be covered with an extra blanket if you like. Your arms may be tucked in at your sides or one arm may be put on an armboard. The circulating nurse will check your identification (ID) bracelet and ask you about allergies.

You may also notice a registered nurse called the scrub nurse, or an operating room technician in the room. The scrub nurse gets the instruments and supplies ready for your operation. The circulating nurse and anesthesiologist will explain things to you before they are done. Once again, feel free to ask questions.

During your operation, your blood pressure, pulse, and breathing will be checked closely. If you are awake because of local anesthesia you may hear a beeping noise. This noise is your heart beat as the monitor counts the rate. You may also be able to see your heart beat on a monitor screen.

The length of time for your operation is estimated. Your surgery may be longer or shorter than the time you and your family were told. However this does not mean that anything is wrong. The circulating nurse will let your family know how you are doing. When your operation is over, the surgeon or his/her assistant will call or go to the waiting area and talk to your family.

After Your Surgery

After your operation you will be moved to a cart and taken to the Post Anesthesia Care Unit (PACU). There your nurse will watch you closely, and will take your vital signs frequently. There will be other patients and a lot of activity and noise in this area. You will be encouraged to wake up. If you have pain while you are in the PACU, tell your nurse. You will be given pain medicine.

When you are awake and your vital signs are stable, you will be taken to your hospital room. Again, the nurses will check you frequently. Your nurse will check your vital signs, IV fluids, and any drainage tubes and/or dressings you may have. Your family will be allowed to visit you.

Be an active partner in your recovery

After your surgery is over, you will need to take an active part in getting better. General anesthesia slows the work of your lungs. To prevent breathing problems you will be taught to deep breathe and cough every two hours. If you have been told not to cough, you must still deep breathe every two hours. You will also be taught how to improve the circulation of your blood, muscle tone and bowel function. Turning from side to side, arm and leg exercises, and getting out of bed to walk will help you get better.

Remember, how well you do after surgery depends on you taking an active part in your recovery. Instructions on how to deep breathe, cough, and do active body movement exercises are listed below. You may practice them before you come to the hospital so that they will be easier for you to do after your surgery.

Deep breathing

1. Raise the head of your bed up as far as allowed.

2. Have tissues and waste bag close by.

3. If you had surgery on your abdomen (stomach area) or chest, put the palms of your hands together across the incision (stitches). Lace your fingers snugly to support your incision and to help you take deep breaths. You may hold a pillow over the incision instead of your hands.

4. Breathe in deeply through your nose and mouth. Your abdomen will rise as your lungs fill with air.

5. Hold this breath for a few seconds.

6. Purse your lips as if you were going to whistle. Let all the air out through your nose and mouth.

7. Repeat the deep breathing exercise 12 to 15 more times. Cough after each group of five breaths.

Breathing exerciser

1. Sit as upright as possible.

2. Slide the yellow pointer on the left side of the breathing exerciser to the volume level determined by Respiratory Care or your nurse.

3. Keep the breathing exerciser in an upright position. You can hold it or put it on a table.

4. Breathe out normally. Put the mouthpiece in your mouth. Form a tight seal around it with your lips.

5. Breathe in slowly. This raises the piston in the clear chamber of the breathing exerciser.

6. Continue to breathe in. Try to raise the piston to the set volume level. Read the level of the volume at the top of the piston.

7. When you are finished breathing in, take the mouthpiece out of your mouth. Hold your breath as long as you can.

8. Breathe out normally.

9. Let the piston return to the bottom of the chamber. Repeat the exercise 15 times every 1-2 hours.

10. Try to cough up secretions right after you use the breathing exerciser.

Coughing

1. Sit up in bed and lean forward a little.

2. Breathe in and out fully.

3. With mouth open, take a deep breathe in. Then quickly give one or two strong coughs from deep in the lungs. Be sure to support your incision as you cough.

4. Cover your mouth with a tissue as you cough. Collect any mucus that you cough up in the tissue.

In bed exercises

1. Keep the siderails on your bed up. Use them as much as possible to help you move from side to side and up and down in bed.

2. To exercise your lower legs, pull your toes back toward your knees. Then point your toes toward the foot of the bed. Do this five times every two hours.

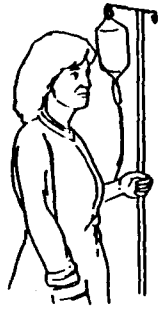
3. Wiggle your toes and fingers. Move your ankles and wrists around in circles. Do this every two hours.

4. To exercise your upper legs, while you are in bed, make your thigh muscles tight and press your knee into the bed. Count to five and then relax. Do this five times every two hours.

Out of bed activity

1. On the evening after surgery, your nurse may help you sit on the side of the bed so you can dangle your legs.

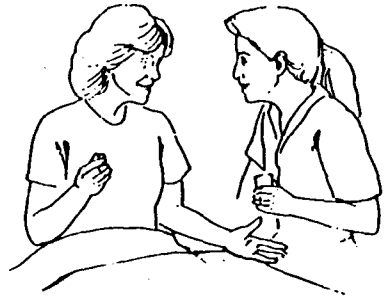
2. The evening or morning after surgery your nurse may help you get out of bed and walk. Make sure you have help the first few times you get up. You should get help because you may feel weak or faint.



3. The number of times you walk and how far you walk should increase every day. Walking helps you get your strength back and helps with healing.

Pain control

It is common for you to have pain after surgery. Your doctor will order medicine to control your pain. Ask your nurse for the medicine before the pain is severe. The pain medication may not result in total pain relief and you may still feel some discomfort. The medicine should help you be comfortable, but not keep you from getting out of bed and deep breathing and coughing.



Your incision (stitches)

You may or may not have an incision depending on your surgery. If you have an incision, it will probably be covered by a dressing. The dressing will be checked and changed as needed by your nurse. Before you go home your nurse will teach you how to clean your incision and change the dressing if necessary. You should watch your incision for signs of infection. The signs of infection include redness, swelling, pain, heat, and drainage.

Diet

If you are not able to take food after surgery you will receive fluids through an IV. Your diet will depend on what type of surgery and anesthesia you had. If you had general anesthesia, you may start with a liquid diet. You will then progress to solid foods as your bowel function returns. If your doctor orders a special diet for you at home, a dietitian will teach you about the diet.

Planning Your Discharge

During your hospital stay, your nurse will plan with you how your health care needs will be met after you go home. If needed, a discharge planning nurse and/or social worker may also help in this planning. In some situations other health care team members such as pharmacists and dietitians may be contacted to be sure that your care continues at home.

After You Go Home

When you go home make sure you get plenty of rest and follow your doctor's discharge instructions. Below is a list of common home going concerns. Ask your nurse or doctor about any of these activities. Write the answers in the spaces provided.

When may I:

Climb stairs _____

_____

Lift _____

_____

Do housework _____

_____

Drive/ride in a car _____

_____

Take a shower/bath _____

_____

Resume sex _____

_____

Go back to work _____

_____

Go shopping _____

_____

Other _____

_____

_____

_____

_____

APPENDIX B

Preoperative Patient Education Program

PREADMISSION PREOPERATIVE EDUCATION PROGRAM

BEHAVIORAL OBJECTIVES	CONTENT OUTLINE	RESOURCE AIDS TEACHING METHODS	EVALUATION
The patient/significant other/family will:			Oral question/answer of teaching content meeting objectives as listed
1. Describe the type of operation, simple anatomy/physiology involved in the surgery (including location of incision)	I. Reinforce physician's explanation A. Type of surgery B. Anticipated length of procedure C. Simple anatomy/physiology involved (include location, length, number and appearance of incision	Review nursing history Review patient medical record and history	
2. Describe effects of surgery on activities of daily living	II. Discuss perceptions about the individual's condition and impending surgery A. Psychological alteration (fear, anxiety) B. Effects on lifestyle	Discuss with patient and family Patient handout on type of surgery	
3. Describe routine perioperative events A. Basic preoperative tests and laboratory work B. Bowel preparation C. Medications prior to surgery D. Skin preparation for surgery	III. Describe routine perioperative events A. Basic preoperative tests and laboratory work 1. Blood and urine specimens help to assess general overall health before surgery 2. EKG (electrocardiogram) helps to assess cardiac status 3. Chest x-ray helps to assess respiratory health 4. Radiological tests and exams (CT, barium enema, liver scan, etc.) B. Bowel preparation 1. Purpose: to clean the bowel of stool and prevent complications	Booklet for preoperative education: Information about your Admission day surgery Handouts for radiological tests and scans Discuss routine events and those specific to the patient	Oral question/answer, discussion of relevant issues to individualize the plan with the patient

PREADMISSION PREOPERATIVE EDUCATION PROGRAM (continued)

BEHAVIORAL OBJECTIVES	CONTENT OUTLINE	RESOURCE AIDS TEACHING METHODS	EVALUATION
E. NPO (nothing by mouth) after midnight before surgery recovery room F. Items to be removed before going to surgery G. Family waiting areas H. Transportation to the operating room I. Activities in the holding area J. Activities in the recovery room	2. Type of enema for bowel evacuation 3. Type of medications a. Antibiotics (Neomycin and Erythromycin kill bacteria in the bowel to prevent infection) b. Laxatives (for bowel evacuation) C. Medications prior to surgery 1. Sleeping pill may be offered the night before surgery to enhance sleep and promote rest 2. Preoperative antibiotics may be given to increase resistance to infection 3. Medications such as narcotics and sedatives may be given to induce relaxation and drowsiness before going to the surgical area a. Siderails on the bed are raised for safety b. Sometimes medication is not given before going to the surgical area so the patient can be alert to talk to the staff in the holding room D. Skin preparation for surgery 1. Shower with antiseptic soap a. Evening before and/or morning of surgery (physician order) b. No makeup or fingernail polish is to be worn so natural color and circulation to hands and feet can be evaluated during and after surgery c. Hospital gown is the only clothing to be worn to surgery (no underwear)	Surgical preparation supplies	Oral question/answer of teaching content meeting objectives as listed Patient completes surgical prep

PREADMISSION PREOPERATIVE EDUCATION PROGRAM (continued)

BEHAVIORAL OBJECTIVES	CONTENT OUTLINE	RESOURCE AIDS TEACHING METHODS	EVALUATION
	2. Skin round the incisional area is shaved and washed, usually when in holding area a. Hair harbors bacteria that can cause wound infection b. Antiseptic wash further reduces bacteria at surgical site		
	E. NPO after midnight before surgery 1. Empty stomach helps prevent vomiting and aspiration during surgery 2. Do not smoke, chew gum, or suck candy or lozenges before abdominal surgery a. These activities stimulate secretion of acidic gastric fluids b. Smoking irritates the lungs and causes build up of secretions which contribute to postoperative pneumonia 3. Brush teeth and use mouthwash the morning of surgery: do not swallow mouthwash		Patient remains NPO
	F. Items removed before going for surgery 1. Eyeglasses, contact lenses, hearing aides 2. Undergarments 3. Jewelry, watches, rings a. Wedding rings should be removed to prevent damage to the finger from swelling in surgery. Tape to the finger for security if patient requests b. Valuables secured according to Medical Center Policy and Procedure.		Patient has complied with all items on the checklist

PREADMISSION PREOPERATIVE EDUCATION PROGRAM (continued)

BEHAVIORAL OBJECTIVES	CONTENT OUTLINE	RESOURCE AIDS TEACHING METHODS	EVALUATION
	4. Dentures, partial plates a. Place in denture cup at bedside b. Label clearly with name 5. Tampax		
	G. Family waiting areas 1. Specify for each doctor 2. Doctor will see or call family after surgery to report patient status 3. Scheduled time of surgery 4. Patient leaves Admission Day Surgery area approximately one hour prior to scheduled surgery time		
	H. Transportation to the operating room 1. Operating room staff member takes patient by stretcher to the holding area		
	I. Activities in the holding area 1. Incisional area shaved 2. Intravenous infusion (IV) usually started by nurse or anesthesia personnel 3. Adhesive pads are placed on chest for monitoring cardiac status during and immediately after surgery 4. Blood pressure cuff placed on arm to monitor blood pressure during and after surgery 5. Personnel may be wearing masks, but can still talk and answer questions before anesthesia 6. The temperature is cool; request blanket if necessary 7. Vital signs (heart rate, respiratory rate, temperature, blood pressure) will be monitored		Oral question/ answer of relevant information Patient is prepared for transportation to surgery

PREADMISSION PREOPERATIVE EDUCATION PROGRAM (continued)

BEHAVIORAL OBJECTIVES	CONTENT OUTLINE	RESOURCE AIDS TEACHING METHODS	EVALUATION
	J. Activities in the recovery room 1. Transported by stretcher to the recovery room after surgery (unless ICU or ready for return to unit, as with local anesthesia) a. Other patients are in the room and can be seen and heard b. Temperature is cool; request blanket if needed c. Approximate stay is one hour 2. Close observation by recovery room staff a. Vital signs at least every 15 minutes b. Encouraged and assisted to turn, cough, deep breath to remove lung secretions from anesthesia c. Approximate stay is one hour 3. Returned by stretcher to inpatient unit by recovery room staff when awake and recovered		
4. Describe post-operative care and activities A. State and explain purpose and details of tubes, drains intravenous devices and equipment	IV. Postoperative care and activities A. Equipment 1. Intravenous (IV) equipment a. Purpose: to maintain adequate body fluids until able to eat and drink; to provide a route to administer medication by vein b. Call the nurse if pain, swelling, or redness occur around the IV insertion site	Show equipment when possible IV equipment	

PREADMISSION PREOPERATIVE EDUCATION PROGRAM (continued)

BEHAVIORAL OBJECTIVES	CONTENT OUTLINE	RESOURCE AIDS TEACHING METHODS	EVALUATION
B. Explain anticipated incisional pain, other discomforts and methods to alleviate them C. Explain expected progression of activities after surgery	2. Drainage tubes a. Naso-gastric tube 1) Purpose: to relieve distension of the stomach and intestines 2) Placed after anesthesia; long, flexible, narrow tube inserted through one side of the nose to the stomach 3) Remains in place until flatus (gas) is passed rectally or bowel sounds can be heard, usually 1-3 days (some surgeries require longer use of this tube) 4) Remain NPO while tube in place (may have ice chips if ordered by physician) 5) Notify the nurse if nausea or belching occur 6) Dry, sore throat from tube may be relieved with lozenges (physician's order) b. Gastrostomy tube 1) Inserted in surgery. Enters the stomach through small incision in skin on the left side below the ribs 2) Purpose: remove stomach contents 3) Remains in place until able to eat and drink c. Jackston-Pratt (J-P) drain or hemovac/reliavac drain 1) Purpose: placed into the surgical area to drain fluid	Naso-gastric tube (Salem sump)	Oral question/answer, discussion of relevant issues to individualize the plan with the patient

PREADMISSION PREOPERATIVE EDUCATION PROGRAM (continued)

BEHAVIORAL OBJECTIVES	CONTENT OUTLINE	RESOURCE AIDS TEACHING METHODS	EVALUATION
	2) Bulb or flat, disc-like compressible suction devices connected to a drainage tube. When bulb or disc is compressed suction is exerted within the tube to suction of fluid. 3) Checked frequently by nursing personnel to empty or compress to maintain suction d. Foley (urinary drainage) catheter 1) Purpose: to empty the urine from the bladder 2) Remains inserted in the bladder until awake and alert to urinate. In some instances must be left in for longer periods of time. The catheter is taped to the thigh for women and the lower abdomen for men 3) The urine is drained into a collection bag which should always be kept below the level of the bladder (hips) to prevent reflux and bladder infection. 3. Anti-embolism stockings (TEDs); sequential compression device (SCD) a. TED stockings may be applied before surgery to reduce the possibility of venous stasis. Readjust as needed to prevent wrinkles and constricture of legs	TED hose (anti-embolism stockings)	

PREADMISSION PREOPERATIVE EDUCATION PROGRAM (continued)

BEHAVIORAL OBJECTIVES	CONTENT OUTLINE	RESOURCE AIDS TEACHING METHODS	EVALUATION
	b. SCD leg sleeves may be applied immediately after surgery and maintained during initial postoperative period to reduce the possibility of venous stasis. A compressor circulates air to the leg sleeves which alternate pressure sequentially to the ankle, calf, and thigh	SCD (Sequential Compression Device)	
	B. Anticipated pain, other discomforts, and methods to alleviate them		
	1. Incisional pain (explain amount, character, duration)		
	a. Pain medication will be ordered; notify the nurse when uncomfortable		
	1) Anticipate need prior to getting out of bed, walking, or exercising		
	2) Take adequate amounts to be active without pain and to get adequate rest		
	3) Clarify misconceptions about narcotic use and fear of addiction or loss of control		
	b. Walking, repositioning, massaging, relaxation techniques can help reduce pain		
	c. Patient controlled analgesia (PCA)	Adapt to individual patient problems	
	1) PCA infuser allows patient to push a button when experiencing pain and deliver medicine directly into the vein through the IV. The infuser is a small pump which attaches to a pole near the bed. It contains a syringe of pain medicine which is delivered in small amounts as needed.		

PREADMISSION PREOPERATIVE EDUCATION PROGRAM (continued)

BEHAVIORAL OBJECTIVES	CONTENT OUTLINE	RESOURCE AIDS TEACHING METHODS	EVALUATION
	2) Allows self-control over pain and delivers the amount of medicine prescribed by the doctor. 3) Safety features of the infusor: special push button conrol; push the button with thumb or finger and then release it to give medication. Only a prescribed amount of medicine can be infused over a specific period of time 4) If pain unrelieved after pushing the button several times, call nurse to check system and evaluate pain 2. Nausea a. Medication can be ordered to relieve b. Deep breathing, repositioning, relaxator techniques can help reduce nausea 3. "Gas" pains a. Medication can be ordered to relieve b. Walking is the best treatment. Repositioning in bed is also helpful C. Expected progression after surgery 1. Family may visit after patient returns to unit 2. Dangle on side of bed and possibly out of bed with assistance to sit in chair for short period on evening of surgery 3. Walking, when permitted, should be done 3-4 times daily as tolerated and progressed individually based on normal activity (do not become exhausted)	PCA pump handout	Patient demonstrates knowledge and ability to operate PCA pump

PREADMISSION PREOPERATIVE EDUCATION PROGRAM (continued)

BEHAVIORAL OBJECTIVES	CONTENT OUTLINE	RESOURCE AIDS TEACHING METHODS	EVALUATION
	4. Diet will usually begin when bowel sounds are present (unless otherwise indicated) in 1-3 days. Clear liquids are usually begun and diet advanced as tolerated. 5. Progress activities toward independence a. Dependent for initial postoperative days, gradually doing more self care until independent or minimally dependent by discharge 1) Bathing progresses from maximal to minimal or no assistance 2) Activity progresses from a great deal of assistance to minimal or no assistance 3) Caregivers are instructed for continued care at home when necessary b. Promote expectations of patient and family which are realistic 1) Activity tolerance 2) Limitations of disease and surgery		
5. Perform post-operative exercises and state rationale for doing them A. Deep breathing B. Controlled coughing C. Turning D. Leg and foot exercise E. Getting out of bed	V. Postoperative Exercises A. Deep Breathing (with incentive spirometer) 1. Purpose: Keep lungs functioning properly and prevent complications like pneumonia 3. Prodedure: a. Hold or stand unit in upright position b. Exhale normally c. Inhale slowly to raise piston in chamber to prescribed volume d. When inhalation is complete remove mouthpiece, hold breath 2-3 seconds, and exhale normally	Incentive Spirometer (Get preop inspiratory volume as baseline)	

PREADMISSION PREOPERATIVE EDUCATION PROGRAM (continued)

BEHAVIORAL OBJECTIVES	CONTENT OUTLINE	RESOURCE AIDS TEACHING METHODS	EVALUATION
	e. Allow piston to return to bottom of chamber, rest and repeat	Incentive Spirometer	
	f. Take 5 slow breaths every hour while awake until mobile	Demonstration of exercises by the nurse	Return demonstration prior to surgery and follow up after surgery to encourage/supervise performance of exercises
	B. Controlled coughing		
	1. Purpose: remove secretions from lungs (may be contraindicated after brain, spinal, eye surgery)		
	2. Procedure:		
	a. Upright position if possible		
	b. Take two slow deep breaths to move air behind mucous and improve effects of coughing		
	c. Inhale deeply on the third breath and hold to count of three		
	d. Cough fully for 2-3 consecutive coughs without inhaling between coughs		
	e. If surgical incision is abdominal or thoracic, place one hand over the incisional area and the other hand on top of the first to splint or support it (pillow is optional)		
	f. Cough 2-3 times every 2 hours while awake		
	C. Turning		
	1. Purpose: to prevent collection of fluids in lungs, improve circulation and breathing, prevent skin breakdown	Demonstration of exercises by the nurse	
	2. Procedure (for turning to left side):	Nurse instruction	
	a. Use side rails		
	b. Assistance from staff as needed	Preoperative Patient Education Booklet: Information about your admission day surgery	
	c. Lie on back on right side of bed		
	d. Place left hand over incision to splint		

PREADMISSION PREOPERATIVE EDUCATION PROGRAM (continued)

BEHAVIORAL OBJECTIVES	CONTENT OUTLINE	RESOURCE AIDS TEACHING METHODS	EVALUATION

f. Grab left siderail with right hand, pull toward left and roll onto left side
g. Turn every 2 hours while awake

D. Leg and foot exercises
1. Purpose: Promote mobility and range of motion of legs. Promotes circulation and reduces the risk of blood clot formation while in bed. Frequency diminishes as ambulation increases
2. Procedure:
a. Lie on back in bed
1) Rotate each ankle in complete circle
2) Make full circles in both directions
3) Do 3 circles in each direction for both feet every 2 hours
b. Alternate dorsiflexion for 2-3 seconds and plantar flexion for 2-3 seconds. Feel calf muscles contract and relax.
1) Do 3 times every 2 hours
c. Leg Bends
1) Slide foot (heel) along mattress
2) Bend each leg fully (knee sharply bent)
3) Repeat 5 times every 2 hours
d. Leg raises
1) Raise each leg straight up from bed surface, keeping legs straight
2) Repeat 3 times every 2 hours

E. Getting out of bed
1. Start while lying on side
2. Push up to sitting position with elbow
3. Sit on edge of bed

PREADMISSION PREOPERATIVE EDUCATION PROGRAM (continued)

BEHAVIORAL OBJECTIVES	CONTENT OUTLINE	RESOURCE AIDS TEACHING METHODS	EVALUATION
	4. Take 2-3 deep breaths 5. Using hands, push off bed to standing position 6. Reverse steps when returning to bed		
6. State general instructions regarding discharge A. Activity B. Incision C. Signs and symptoms of infection, complication D. Medications E. Diet F. Elimination G. Follow up appointment	VI. General discharge instructions A. Activity: 1. Do not return to work or drive until further instructions received at first clinic appointment 2. Do not lift anything heavier than five pounds 3. Walk; aim toward usual activity to increase endurance, strength, and recovery 4. Use the incentive spirometer for at least seven days after surgery B. Incision: 1. Take shower; allow steri-strips to come off by themselves. Do not scrub incision 2. Inspect incision daily for signs of infection 3. Wound care as ordered by the physician C. Signs and symptoms of infection, complications 1. Change in suture line a. Redness b. Swelling c. Drainage of pus 2. Increased pain and/or unrelieved by pain medication 3. Temperature over 100 degrees F 4. Chills, shaking 5. Notify surgeon or come to the Emergency Room D. Medications 1. Dosage, frequency, purpose and potential side effects of discharge medications	Discharge information and instruction forms (i.e., colostomy packet and other discharge products)	Discuss with patient and family Verbal understanding

PREADMISSION PREOPERATIVE EDUCATION PROGRAM (continued)

BEHAVIORAL OBJECTIVES	CONTENT OUTLINE	RESOURCE AIDS TEACHING METHODS	EVALUATION

E. Diet
   1. Eat nutritious foods to build tissue and provide energy
   2. Drink adequate fluids (at least four 8-ounce glasses daily)

F. Elimination
   1. Avoid constipation and straining with stools

G. Follow up appointment

-Dr._____

-Date_____

-Telephone_____

APPENDIX C

Nomograms for Inspiratory and Vital Capacity

Appendix C

Predictive Nomogram-Inspiratory Capacity*

FEMALE

AGE	58''	60''	62''	64''	66''	68''	70''	72''	74''
20	1.90	2.10	2.30	2.50	2.70	2.90	3.10	3.30	3.50**
25	1.85	2.05	2.25	2.45	2.65	2.85	3.05	3.25	3.45
30	1.80	2.00	2.20	2.40	2.60	2.80	3.00	3.20	3.40
35	1.75	1.95	2.15	2.35	2.55	2.75	2.95	3.15	3.35
40	1.70	1.90	2.10	2.30	2.50	2.70	2.90	3.10	3.30
45	1.65	1.85	2.05	2.25	2.45	2.65	2.85	3.05	3.25
50	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00	3.20
55	1.55	1.75	1.95	2.15	2.35	2.55	2.75	2.95	3.15
60	1.50	1.70	1.90	2.10	2.30	2.50	2.70	2.90	3.10
65	1.45	1.65	1.85	2.05	2.25	2.45	2.65	2.85	3.05
70	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
75	1.35	1.55	1.75	1.95	2.15	2.35	2.55	2.75	2.95
80	1.30	1.50	1.70	1.90	2.10	2.30	2.50	2.70	2.90

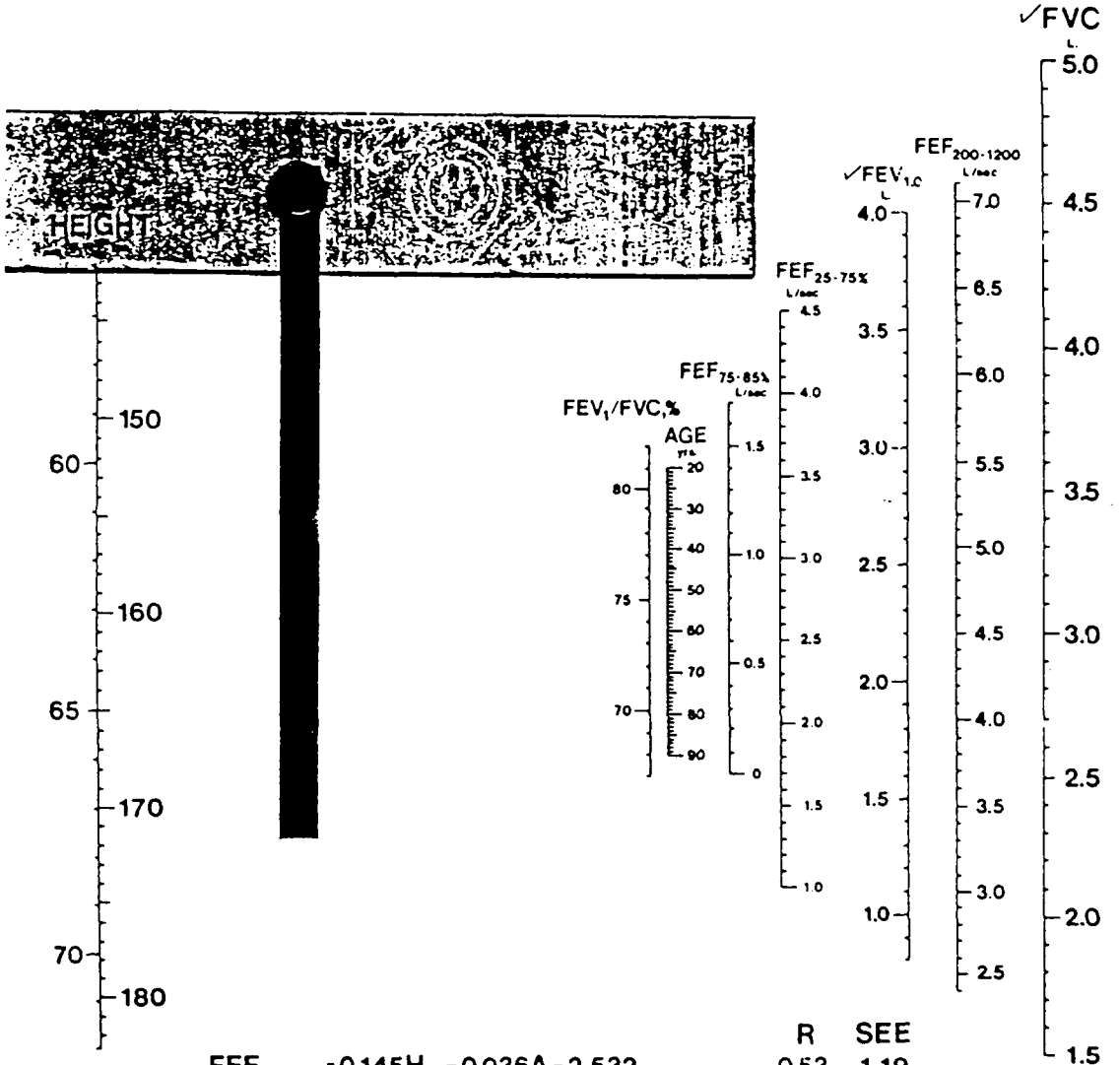
MALE

AGE	58''	60''	62''	64''	66''	68''	70''	72''	74''	76''	78''
20	2.00	2.20	2.40	2.60	2.80	3.00	3.20	3.40	3.60	3.80	4.00**
25	1.95	2.15	2.35	2.55	2.75	2.95	3.15	3.35	3.55	3.75	3.95
30	1.90	2.10	2.30	2.50	2.70	2.90	3.10	3.30	3.50	3.70	3.90
35	1.80	2.00	2.20	2.40	2.60	2.80	3.00	3.20	3.40	3.60	3.80
40	1.75	1.95	2.15	2.35	2.55	2.75	2.95	3.15	3.35	3.55	3.75
45	1.70	1.90	2.10	2.30	2.50	2.70	2.90	3.10	3.30	3.50	3.70
50	1.65	1.85	2.05	2.25	2.45	2.65	2.85	3.05	3.25	3.45	3.65
55	1.55	1.75	1.95	2.15	2.35	2.55	2.75	2.95	3.15	3.35	3.55
60	1.50	1.70	1.90	2.10	2.30	2.50	2.70	2.90	3.10	3.30	3.50
65	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00	3.20	3.40
70	1.35	1.55	1.75	1.95	2.15	2.35	2.55	2.75	2.95	3.15	3.35
75	1.30	1.50	1.70	1.90	2.10	2.30	2.50	2.70	2.90	3.10	3.30
80	1.25	1.45	1.65	1.85	2.05	2.25	2.45	2.65	2.85	3.05	3.25

*Formula used in the above Nomogram published in The American Review of Respiratory Diseases, official journal of the American Thoracic Society September 1979 Vol 120 Number 3 by G Polgar and V Promadhat

TO USE NOMOGRAM: Line up age and height with straight edge and read the predicted values.

For more details, see CHRONIC OBSTRUCTIVE PULMONARY DISEASE, American Lung Association 1977.



	R	SEE
$FEF_{200-1200} = 0.145H_{in.} - 0.036A - 2.532$	0.53	1.19
$FEF_{25-75\%} = 0.060H_{in.} - 0.030A + 0.551$	0.56	0.89
$FEF_{75-85\%} = 0.025H_{in.} - 0.021A + 0.321$	0.63	0.45
$FEV_{1.0} = 0.089H_{in.} - 0.025A - 1.932$	0.73	0.47
$FVC = 0.115H_{in.} - 0.024A - 2.852$	0.71	0.52
$FEV_{1.0}/FVC,\% = 88.70 - 0.0679H_{in.} - 0.1815A$	0.39	6.84

APPENDIX D

Pulmonary Spirometry Measures

Appendix D

PULMONARY SPIROMETRY MEASURES

Identification Number _____

Preop date: _____ Postop date: _____

A = Age in years _____
H = Height in inches _____
P = Predicted value in liters rounded to nearest 50 cc
R = Real value in liters rounded to nearest 50 cc
% = Per cent of predicted value

Inspiratory Capacity

Preop values:	Postop values:
P = _____	P = _____
R = _____	R = _____
% = _____	% = _____

Vital Capacity

Preop values:	Postop values:
P = _____	P = _____
R = _____	R = _____
% = _____	% = _____

APPENDIX E

Chart Review Form (permission letter attached)

Appendix E

CHART REVIEW FORM

I.D. number of the patient: _____

Surgical procedure: _____

Surgeon: _____

Postoperative Physiologic status:

Date/time	Finding
1.	
2.	
3.	
4.	

Complications which can be prevented by preoperative patient education:

1. Elevated temperature (100 degrees Farenheit or above at some time during two day postoperative stay, excluding temperatures that may be attributed to confirmed wound infection, UTI, or other nonrespiratory conditions)

2. Abnormally slow return of bowel function ($\geq$ 48 hours)

3. Atelectasis

4. Pneumonitis

5. Thrombophebitis

UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON 98195

School of Nursing, SC-76
Department of Psychosocial Nursing
(206) 543-6960

May 5, 1989

Judy McDermott, R.N., M.S.
Personnel Health Services
Room 1640B
University Hospitals Clinic
456 W. Tenth Avenue
Columbus, Ohio 43210-1228

Dear Judy:

Enclosed are some materials I hope will be helpful to you in the study you are planning. I think most of these measures are far more elaborate than what you need, but they will give you ideas.

Patient Interview Guide - First Interview.

This measure detected nurses' implementation of information, skills teaching, and psychosocial support. Our psychosocial support measure included only 13 of the E items, specifically E2, E3, E4, E6, E8, E10, E11, E12, E13, E14, E15, E16, E17.

Items 2/4 and 13/14 were each weighted only half, because of similarity to each other. Note that the psychosocial scale taps nursing behavior throughout the stay, while the skills and information scales reflect primarily preoperative nursing activity. Also, many subjects didn't answer #3, saying they didn't know, and also #15; anxious is too strong a word.

Patient Interview I Questionnaire - Directions for Coding.

This tells how we coded patients' answers for computer entry.

Chart Abstraction Form.

This was a measure of patient clinical outcomes.

Patient Chart Data - Directions for Coding

This describes how we coded chart abstraction data. The last page describes our analgesic conversions. I must admit I can no longer recall what everything on that page means. I think we may have calculated analgesics two ways, but what we actually finally used were the conversions at the bottom of the page. Beth Devine was closer to that than I was and can probably clarify it if you need it.

Patient Interview Guide - Second Interview.

Although I didn't mention it while I was in Columbus, we called people four weeks after discharge to ask about return to usual activities. We didn't get much from this. I think for question #8, collecting the data earlier might have shown more differences between control (pre-workshop) and experimental (post-workshop) subjects. The return to work is a jazzy outcome. We never did much with it. For one thing, we wanted to restrict analysis to people working full-time - at least 36 hrs/week. We had surprising few subjects who worked full time out of their homes and whose work was available to them as soon as they might feel ready to return (which excluded teachers in summer, for example). We also thought it was a problem that our control data was collected through the winter months, when climatic conditions might have led people to think they had to be stronger, before going off to work, while experimental patients recovered primarily between late spring and Christmas. If was had had more patients meeting our work criteria, we could have partitioned the sample to compare only moderate months.

Patient Interview II - Directions for Coding.

This just describes how we coded for computer entry.

As you move along, feel free to contact me again. Are you aware of our article in the American Journal of Public Health, October, 1988? That might also be useful.

Sincerely,

Rica

Rica W. O'Connor, R.N., Ph.D.
Assistant Professor

RO:cb
Enclosure

P.S. Thanks for your assistance last week!

APPENDIX F

Postdischarge Recovery Measure

POSTDISCHARGE RECOVERY MEASURES

PART I: DEMOGRAPHIC AND LIFESTYLE BASELINE

	Data	Code
1.	Name _____ Address _____ Subject ID Phone # _____	[ ] [ ] 1 2
2.	Set/predischarge interview (coded with 1st return to normal data set)	[ ] 3
3.	Sex: 1 = male 2 = female	[ ] 4
4.	Age in years	[ ] [ ] 5 6
5.	Marital status 1 = married 4 = widowed 2 = separated 5 = never married 3 = divorced	[ ] 7
6.	Employment status 1 = full-time 4 = temporarily unemployed 2 = part-time 5 = not employed, not looking 3 = retired	[ ] 8
7.	Education 01-12 = grade completed 17 = some graduate 13-15 = years post high school 18 = postgrad or professional degree 16 = college degree	[ ] [ ] 9 10
8.	Income (See Code Schedule/Subject Card)	[ ] [ ] 11 12
9.	Insurance 1 = yes 2 = no	[ ] 13
10.	Total number in household 01-99 = number	[ ] [ ] 14 15
11.	Number of children 5 years or under 1-8 = children 5 and under 9 = none 5 and under	[ ] 16
12.	Number of children 6 to 18 1-8 = children over 5 9 = none over 5	[ ] 17

13. Spouse living in home [ ] 18
    1 = yes
    2 = no

14. Number of "others" in home [ ] 19
    1-8 = "others" in household
    9 = no "others"

15. Home management responsibilities [ ] 20
    1 = self 3 = joint
    2 = spouse 4 = other

16. Category of surgery [ ] 21
    1 = cholecystectomy 5 = small intestine
    2 = explor/lysis of adhesions 6 = colon
    3 = ventral hernia 7 = other
    4 = gastric

17. Number of preoperative days hospitalized [ ] [ ] 22 23

18. Number of postoperative days hospitalized [ ] 24
    (or = day of surgery)

For 19-21, ask the subject to describe a typical week prior to becoming ill or having surgery - write descriptions and code after interview.

19. Work descriptions [ ] 25

    _____ [ ] 26

    _____ [ ] 27

    _____

20. Community activity descriptions [ ] 28

    _____

    _____

    _____

21. Leisure activity descriptions [ ] 29

    _____

    _____

    _____

22. Support/functional assistance after discharge [ ] 30
    1 = yes, in home
    2 = yes, outside of home
    9 = no assistance/support identified

PART II: RETURN TO NORMAL

Data/Interview Schedule

1. Subject - ID# [ ] [ ] (1 2)
   Telephone_____

2. Interview Set # [ ] (3)
   1 = less than 2 weeks
   2 = 2 weeks
   4 = 4 weeks
   6 = 6 weeks
   8 = 8 weeks

3. Has your recovery gone better, worse or as expected since discharge from the hospital (since the last interview)? [ ] (32)
   Worse 1 = lot worse
   2 = little worse
   3 = as expected
   Better 4 = little better
   5 = lot better

THE FOLLOWING QUESTIONS ASK YOU TO COMPARE WHAT YOU HAVE EXPERIENCED IN THE LAST 24 HOURS WITH WHAT YOU CONSIDERED NORMAL BEFORE GETTING ILL AND HAVING SURGERY. (MAY NEED TO RESTATE DURING QUESTIONING OR PREFACE QUESTIONS WITH, "COMPARED TO NORMAL...).

4. Do you have more or the same awareness of your body? [ ] (33)
   more 1 = lot more
   2 = little more
   3 = same
   comments:_____

   _____

5. Do you have discomfort? [ ] (34)
   1 = all of the time
   2 = most of the time
   3 = part/some of the time
   4 = once in a while
   5 = not at all
   comments:_____

   _____

6. Are you sleeping more or the same amount? [ ] (35)
   1 = lot more
   2 = little more
   3 = same
   comments:_____

   _____

7. Do you have less or the same amount of energy? [ ] 36
   1 = lot less
   2 = little less
   3 = same or more
   comments: _____

   _____

8. (Compared to normal) are you having difficulty with your bowels? [ ] 37
   1 = lot of difficulty
   2 = little difficulty
   3 = no difficulty

   8a. If any difficulty, describe:

   _____

   _____

9. Are you having any difficulty eating? [ ] 38
   1 = lot of difficulty
   2 = little difficulty
   3 = no difficulty

   9a. If any difficulty, describe:

   _____

   _____

10. Are you experiencing any other physical symptoms that are different from normal? [ ] 39
    1 = yes
    2 = none additional

    10a. If yes, describe:

    _____

    _____

11. Have you needed help to get responsibilities taken care of around your home or is it the same? [ ] 40
    1 = lot of help
    2 = little help
    3 = same
    comments: _____

    _____

12. Have you felt more bored or alone? [ ] 41
    1 = lot more
    2 = little more
    3 = no/same
    comments: _____

    _____

13. How would you compare your ability to take care of yourself (bathing, dressing, getting around the house)? [ ] 42
    1 = lot less able
    2 = little less able
    3 = same/no different

14. Does it take more time to take care of yourself? [ ] 43
    1 = lot more time
    2 = little more time
    3 = same/no different

15. Do you spend more, less, or the same amount of time doing activities with family and/or special friends? [ ] 44
    1 = lot less
    2 = little less
    3 = same or more

QUESTIONS 16-20 ARE SPECIFIC TO THE WORK, COMMUNITY, AND LEISURE ACTIVITIES IDENTIFIED IN PART I.

16. How would you describe your ability to do (work #1 _____): [ ] 45
    1 = not at all
    2 = lot less
    3 = little less
    4 = same
    5 = not applicable

17. How would you describe your ability to do (work #2 _____): [ ] 46
    1 = not at all
    2 = lot less
    3 = little less
    4 = same
    5 = not applicable

18. How would you describe your ability to do (work #3 _____): [ ] 47
    1 = not at all
    2 = lot less
    3 = little less
    4 = same
    5 = not applicable

19. How would you describe your participation in community activities such as (specify) _____ [ ] 48
    1 = not at all
    2 = lot less
    3 = little less
    4 = same
    5 = not applicable

20. How would you describe your participation in leisure activities such as (specify) _____ [ ] 49
    1 = not at all
    2 = lot less
    3 = little less
    4 = same
    5 = not applicable

21. (Compared to normal), are you taking any medications? [ ] 55
    1 = yes
    2 = no

    21a. If yes, what medications are you taking?

    _____

    _____

    _____

    1 = pain/symptom control
    2 = pain & maintenance
    3 = maintenance only
    4 = not applicable

22. Did you receive homegoing (new) instructions? [ ] 56
    1 = yes
    2 = no
    9 = not applicable

    22a. What were you told?

    _____

    _____

    _____

23. Who gave you homegoing (new) instructions? [ ] 57
    1 = physician
    2 = R.N.
    3 = physician & R.N.
    4 = physician & other
    5 = other
    9 = not applicable

24. Have you been in contact with the doctor since discharge (since the last interview) [ ] 58
    1 = yes
    2 = no

25. If yes, why did you contact the doctor? [ ] 59
    1 = prescheduled appointment
    2 = subject initiated appointment
    3 = physician called
    4 = subject called re: symptoms
    5 = subject called & was seen
    6 = subject called to increase activities
    7 = subject called/seen & admitted
    9 = N/A (no contact or subject called for instructions to make appointment)

26. Is there anything else you would like to say regarding your recovery?

_____

_____

_____

EXIT

- Is there any special time you would like me to call you next time?

  _____

- THANK YOU and I will be calling you again on _____.

  or

- THANK YOU for participating in this study.

APPENDIX G

Sampling Procedures

Appendix G

Sampling Procedures

A convenience sample of 40 subjects will be from surgical patients scheduled for preadmission testing (PAT) in the clinic who meet inclusion criteria. Randomization will be done using a table of random numbers. The numbers 1 through 20 will be assigned to patients in the control group. The numbers 21 through 40 will be assigned to patients in the experimental group.

The procedure for selecting the sample is (Wilson, 1989):

1. With eyes closed place a pencil point on a number on the table of random numbers.
2. Move downward and then top to bottom on the table choosing those subjects whose numbers correspond to the table of random numbers. Ignore numbers that do not appear on the sample frame which is 1 through 40.
3. Once a number is selected and becomes part of the sample, ignore it if it appears again in the table of random numbers.
4. List the numbers selected in the order of selection. (example: (1)21 experimental
   (2)12 control
   (3)33 experimental, etc)

The order will determine assignment of subjects to groups as they are listed on clinic rosters.

5. If an eligible patient chooses not to attend preoperative teaching sessions or not to participate in the study or has cancelled surgery, the number will go to the next eligible patient in listed order.

APPENDIX H

Nursing Data Base

Guidelines for Assessing Patient

Learning Needs and Readiness

Appendix H

THE OHIO STATE UNIVERSITY HOSPITALS
Columbus, Ohio

NURSING DATA BASE

Name preference _____
Arrival date _____ time _____ to room _____
from _____
walking ☐ wheelchair ☐ cart ☐
accompanied by self ☐ hospital staff ☐ other ☐
Significant other _____
Relationship _____

Perception of reason for admission _____

Description of usual health, pre-existing health problems, prior hospitalizations, and current treatment _____

ALLERGIES

Type of allergic reaction:

MEDICATIONS

☐ None ☐ Unknown ☐ Yes — list names/description, frequency, length of time taken

Medication brought to hospital: sent home ☐ given to pharmacy ☐ kept in room ☐

OXYGENATION	Cough/expectoration Exertion tolerance Smoking history Orthostatic changes Respirations Breath sounds Color Supportive breathing devices Heart sounds/pulses Peripheral circulation Skin integrity	Temp	Pulse	Resp	BP

The Ohio State University
Form 9979—Rev. 3/88
SRI 30006

NUTRITION Diet at home/appetite Eating patterns Food allergy/intolerance Dentures Oral cavity Alcohol/caffeine use Weight changes Physical appearance	Height	Weight kg lbs

ELIMINATION Bowel function and patterns Urinary function and patterns Eliminative aids used at home Ostomies Diaphoresis Other excretions

ACTIVITY AND REST Usual activities Ability to perform ADL Tolerance to activity Prosthetics/orthotics Mobility aids Sleep/rest patterns Sleep/rest aids used at home Transfer techniques Body position/range of motion/coordination/abnormal movements

SAFETY AND SECURITY Risk factors in home/hospital/work environment Stressors Using coping mechanisms Infections Pain/discomfort Suicidal ideation	Valuables Disposition of valuables

Appendix H

SENSATION AND COMMUNICATION Sensory perception (vision, hearing, touch, taste, smell, pressure, temperature) Sensory aids Speech/language Orientation to person, place, time Mental Status

ROLES/SEXUALITY Social roles Family/significant other support system Family's perception of patient's condition Sexual roles Reproductive Last menstrual period

SELF ESTEEM Belief value system Religious practices Occupation Financial status Interests/hobbies Hygienic care dress Perceptions of personal strengths Emotional status/mood

LEARNING Ability to read write Educational level Attention span Comprehension/application Past health instruction/ experiences Skill performance Learning needs and readiness

ANTICIPATED DISCHARGE PLAN Destination Level of self-care Caregiver Supplies and equipment needed Current referrals Anticipated referrals

PREADMISSION Source of data _____ Informant reliability _____
Date _____ Time _____ Signature and title _____
ADMISSION Source of data _____ Informant reliability _____
Date _____ Time _____ Signature and title _____
Dr _____ notified at _____ (AM, PM) of patient's admission
Signature of Primary Nurse _____

LEARNING

Ability to read/write/educational level

S: Can you read and write English? Another language?
What is your educational background (grade school, high school, technical or college)?
Do you have a reading problem?

O: Observe evidence of patient's ability to read/write, e.g. read signs, read admission brochure, complete written questionnaire.

Attention span

S: What kinds of things do you find difficult to remember?
What helps you to understand and remember what you have heard or read?
To what degree do your surroundings (such as noise, presence of others) influence your ability to concentrate?

O: Observe for behaviors that indicate memory loss or lack of concentration.

Comprehension/application

S: What, if anything, don't you understand as well as you would like to?
Once you understand something, to what extent do you try to apply it to everyday life situations?
Is your usual tendency to follow directions as given or to change them to suit yourself?
What helps you to understand and remember what you have read?
What do you think would happen if _____ (give a situation such as failure to take medications or adhere to dietary restrictions)?
What do you think accounts for changes in _____?
Why do you think your physician _____?

O: Give some instructions and ask patient to restate them; observe for ability to explain what to do.

Past health instruction/experiences

S: Tell me a little about your way of life.
What do you know about your illness/disease/problem?
How did you find out about it?
Have you ever attended any classes on _____?
Do you have any reading material about _____?
How do you usually react to being ill?
How do you like others to treat you when you are ill?
What things do you do or try to do to keep healthy?
What things in your life seem to make it hard to keep healthy?

Skill performance

S: How do you _____(give your own insulin, change your dressing, give your tube feeding)?
How would you describe your ability to learn this skill?
How would you describe your feelings about learning this skill?
How would you describe your reaction to using _____ _____equipment?
How would you describe your manual dexterity at present?
How much practice do you usually need in order to learn a new skill?

O: Observe patient/family as he/she demonstrates a particular skill. Observe for correct use of equipment and supplies, sequencing of procedural steps, recordings.

Learning needs and readiness

S: What would you like to know more about?
What have you heard about the likely outcome of this condition?
What have you been told about the treatment/tests planned for you?
What do you think may be the major effect of this illness or condition on you and your family?
Do you know what classes/educational programs are available here? In your community?

APPENDIX I

Teaching Learning Flowsheet

The Ohio State University Hospitals
Columbus, Ohio

TEACHING – LEARNING FLOW SHEET

Teaching method code* A = audiovisual
R = role play
E = explanation
D = demonstration
H = handout
G = group class

No	Date and Time	Intervention: Include content taught and identity of learner (if other than the patient)	Teaching Method*	Response/Evaluation: States, Identifies	Applies Knowledge	Can Return Demonstrate	Routinely Performs	No Evidence of Learning	Other	Revision: Reinforce Content	Re Teach	Needs Practice	Other	Comments	Initials
		Provided copy of and discussed information contained in the following handouts:	E												
		instructed patient to review handouts prior to day of admission.	E												

Initials	Signature and Title	Initials	Signature and Title	Initials	Signature and Title

The Ohio State University
Form 10304 HMS #30010

TEACHING – LEARNING FLOW SHEET

No	Date and Time	Intervention		Response/Evaluation						Revision				Comments	Initials
		Include content taught and identity of learner (if other than the patient)	Teaching Method	States Identifies	Applies Knowledge	Can Return Demonstrate	Routinely Performs	No Evidence of Learning	Other	Reinforce Content	Re Teach	Needs Practice	Other		

Initials	Signature and Title	Initials	Signature and Title	Initials	Signature and Title

APPENDIX J

Bournes Ventilation Monitor

Appendix J

INTRODUCTION

The Bourns® Model LS 75 Ventilation Monitor is a completely solid state medical calculator with a flow sensor which automatically measures flowrate by a patented ultrasonic sensing of flow generated vortices. This single unit provides the clinician with a digital display of consecutive or cumulative tidal volumes, minute volume and respiratory rate over an automatically timed 60 second period. The device consists of a flowtube through which gas passes; a transducer holder which contains the ultrasonic transmitting and receiving crystals; and the electronics package comprised of the rechargeable nickel-cadmium battery pack, circuitry and digital display.

The Monitor's design allows the clinician to use the device during spontaneous breathing or mechanical ventilation. It is capable of being easily connected to a mask, mouthpiece, endotracheal tube, positive pressure mechanical ventilator or IPPB device.

The instrument provides measurement and visual displays of tidal volumes between 0-9999 ml, minute volumes between 0-99.99 liters and respiratory rate between 0-99 breaths per minute.

The Bourns LS 75 Ventilation Monitor comes complete with monitor, flow tube sensor, battery pack, battery charger, universal adaptor, one-way-thru flow "TEE" assembly, and carrying case.

PERFORMANCE CHARACTERISTICS AND SPECIFICATIONS

Operating Modes:	Spontaneous Mode Mechanical Mode 120 Second Automatic Cycle in either Mode
Digital Displays:	Tidal Volume: 0-9999 ml Minute Volume: 0-99.99 liters Respiratory Rate: 0-99/minute
Minimum Flow Sensing Threshold:	5 LPM
Flow Range:	5-150 LPM (bi-directional).
Overall Accuracy:	±5% in Typical Clinical Applications
Battery:	Removable rechargeable nickel-cadmium battery pack. Charge Time: A full 4 - 5 hours, but may be used after 1 hour
Physical Dimensions:	3" wide x 6¼" long x 1⅞" high (15.88 cm x 37.62 cm x 4.76 cm).
Weight:	1¼ lbs. (0.57 Kg)

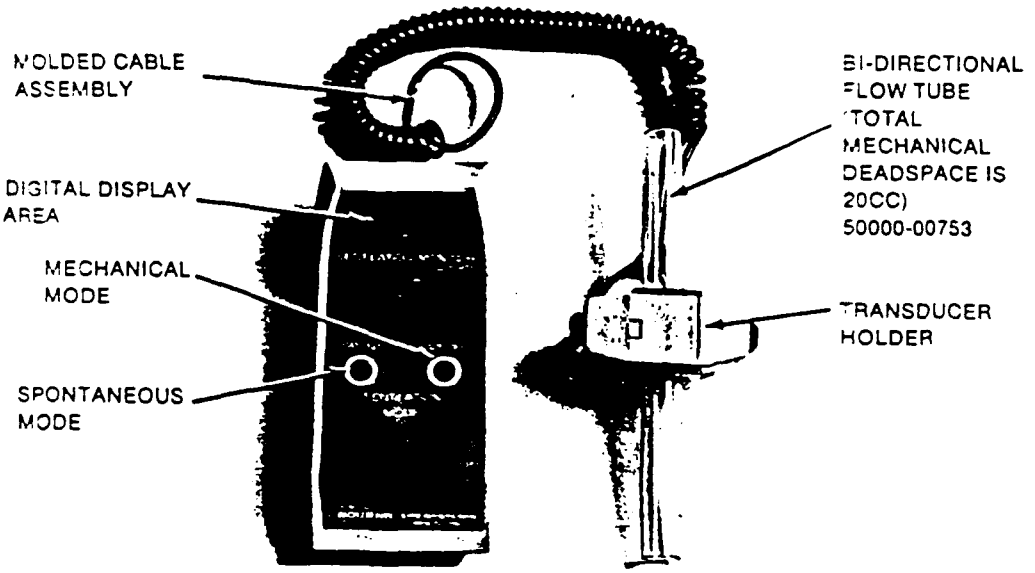


***Figure 1** — LS 75 Ventilation Monitor Front View.*

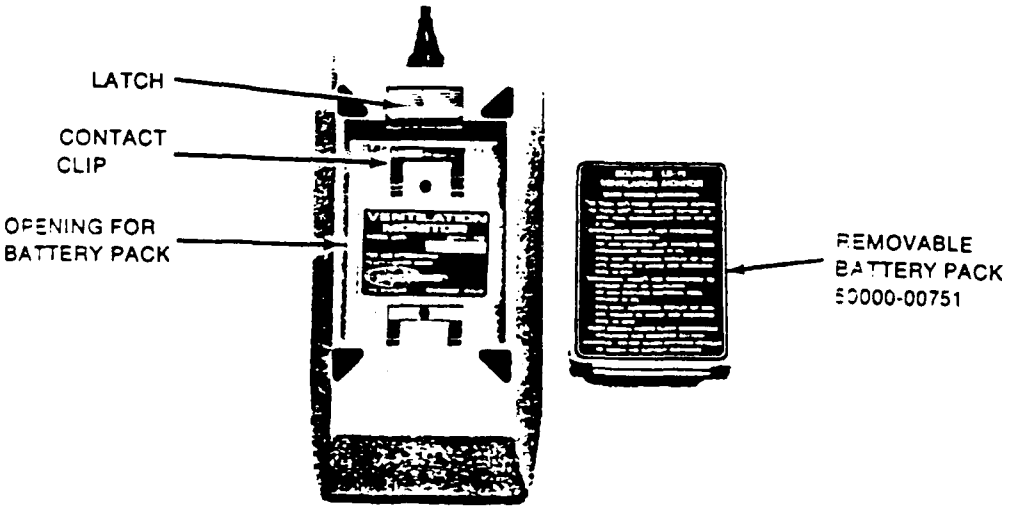


***Figure 2** — LS 75 Ventilation Monitor Rear View.*

OPERATION:

The LS 75 Ventilation Monitor has two 120-second automatic cycle modes; Spontaneous or Mechanical, (Figure 1). The Spontaneous Mode is used for measuring patients' respiratory function during voluntary breathing. The Mechanical Mode is utilized for connection to any mechanical ventilator.

Operation of the unit is accomplished by the clinician connecting the LS 75 Ventilation Monitor flow tube (Figure 1) to the patient via a mask, mouthpiece or through an attachment to the exhalation valve of the ventilator. The appropriate mode selector is then depressed and the value is read on the digital display.

SPONTANEOUS — The monitor digitally displays cumulative tidal volumes for 60 seconds. It then gives an alternating display of minute volume and respiratory rate for an additional 60 seconds.

MECHANICAL — The monitor digitally displays consecutive tidal volumes for 60 seconds. It will then give an alternating display of minute volume and respiratory rate for an additional 60 seconds.

NOTE: In the Mechanical Mode of operation, the monitor does not record the first 13 milliliters of tidal volume; therefore, a reading difference will be observed between the spontaneous and mechanical modes. This small error is required to allow a breath sensing circuit to distinguish between a normal exhalation and the leak that occurs in some ventilators at the start of inspiration due to a slow closing of the exhalation valve.

After either of the above measurements, the unit will automatically turn itself off to conserve battery power.

Figure 3: *Measurement of exhaled tidal volume during IPPB administration.*

DESCRIPTION OF OPERATION

The Bourns LS 75 Ventilation Monitor is a completely solid-state medical calculator which automatically measures flowrate without the use of moving parts.

The flow sensor utilizes a patented concept to accurately sense ventilatory gas flowrates by ultrasonic sensing of vortices (Figure 8). Vortices are waves which may be generated in a fluid stream. In the Bourns flow sensor, the vortices are caused by air tumbling over a strut or rod placed in the airstream. As the air passing off the strut moves down the flow tube, it continues to vibrate from side to side inside the flowtube the way a flag waves in the wind.

The faster the airstream flows past the strut, the faster the airstream vibrates in the tube. The tube-strut combination in the Bourns sensor is designed to generate one beat, or vortex, each time one milliliter of gas passes the strut.

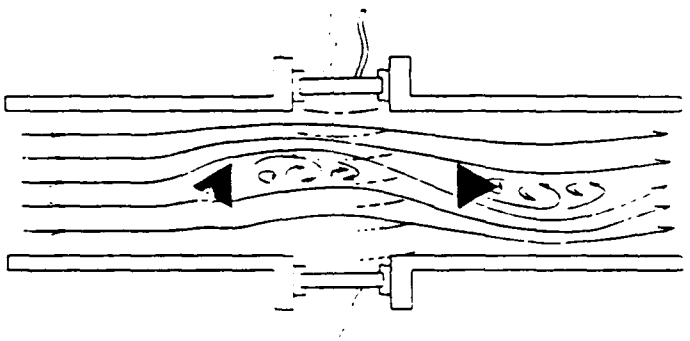


Figure 8: The Vortex Principle.

The waving motion of the airstream is detected by an ultrasonic beam. An electronically powered crystal transducer transmits an ultrasonic sound wave across the flow stream. The vibrating airstream intermittently changes the ultrasonic beam strength. A second crystal receives the ultrasonic beam and converts it into an electronic signal. An electronic circuit processes the vortex modulated signal and computes the tidal volume.

ORDERING INFORMATION

Part Number	Description
50000-00075	Model LS 75 Ventilation Monitor (*Accessories included)
50000-00076	Model LS 75 Ventilation Monitor (With all accessories except battery charger)

ACCESSORIES

50000-00751	*Battery Pack
50000-00752	*Charger, Battery (117 VAC, 50/60 Hz)
51000-00754	Charger, Battery (100 VAC, 50/60 Hz) (Export Version)
51000-00755	Charger, Battery (230 VAC, 50/60 Hz) (Export Version)
50000-00753	*Flow Tube
50000-01004	*Adaptor, Universal
52000-00313	*Tee Assembly, One-Way, 22mm O.D.-15mm I.D., all legs
51000-06013	*Case, Carrying
50000-10075	*Manual, Instruction

*These items supplied with unit.

BOURNS INC

LIFE SYSTEMS DIVISION
9335 DOUGLAS DRIVE, RIVERSIDE, CALIFORNIA 92503
PH. 714 781-5060, TWX 910-332-1252, CABLE BOURNSINC.

For Europe and Africa, Contact
Bourns, AG Zugerstrasse 74 6340 Baar/Switzerland

LITHO IN U.S.A. LS75 REV. AUGUST '78/SM/7752

Appendix K

Infection Control Procedures

Appendix K

Infection Control Procedures

This procedure will be accomplished after each patient use of the Bournes LS 75 ventilation monitor. THe purpose is to prevent the spread of communicable respiratory disease.

Disposable mouthpeices will be discarded.

The flowtube will be washed with soap and water to remove organic matter. This step is critical because organic matter inactivates alcohol.

The flowtube will be submersed in isopropyl alcohol for a minimum of five minutes. Alcohol is a disinfectant which is effective against vegetative organisms, and is fungicidal, bactericidal, tuberculocidal, and viricidal (Curriculum Committee of the Association of Practitioners in Infection Control, 1983).

The flowtube will be rinsed with sterile water to remove residual alcohol. Alcohol is drying and irritating to tissues. It also has an unpleasant residual odor.

The equipment will be maintained in a clean receptacle in a clean storage area of the clinic.

Appendix L

Patient Telephomne Introduction

for Control and Experimental Groups

Appendix L

Patient Telephone Introduction Guide

(Control Group)

Hello, _____. This is _____. I am a registered nurse at Ohio State University studying for a masters degree. At this time, I am working in the Ohio State University Hospitals Preadmission Testing Clinic. I obtained your name and phone number from this clinic where you are scheduled for an appointment on _____ to have tests to prepare you for your surgery. Do you plan on going to the Preadmission Testing Clinic on that day? ___.

I am one of the nurses assigned to do preoperative teaching at the clinic. We are conducting a study to examine how we prepare patients for surgery. I am asking you to participate. If you decide to participate, I will meet you in the clinic during the preadmission testing to inform you about the study, to answer any questions you have, and to ask you to sign a consent form. I will also measure your breathing and ask you some questions about your normal daily activities. Two days after your surgery I will visit you in the hospital to see how you are doing and to measure your breathing and review your clinical record. Two weeks after your surgery I will call you at home to ask you some questions about your recovery from surgery.

Your participation in this study is completely voluntary. If you choose not to participate or to withdraw from the study at a later time your nursing and medical care will not be affected in any way. If you choose not to participate in the study, you will still receive routine preoperative care through the preadmission clinic. Your name will not be requested on any of the forms except the consent form, nor will your name be used in the final report after the study is completed.

I would like to meet with you 30 minutes before your clinic appointment. Is this time (_____) convenient for you? _____.

I look forward to meeting with you.

Thank you,
(sign off)

Appendix L

Patient Telephone Introduction Guide

(Experimental Group)

Hello, _____. This is _____. I am a registered nurse at Ohio State University studying for a masters degree. At this time, I am working in the Ohio State University Hospitals Preadmission Testing Clinic. I obtained your name and phone number from this clinic where you are scheduled for an appointment on _____ to have tests to prepare you for your surgery. Do you plan on going to the Preadmission Testing Clinic on that day? ___.

I am one of the nurses assigned to do preoperative teaching at the clinic. We are conducting a study under the direction of Dr. Cornett to examine how we prepare patients for surgery. I am asking you to participate. If you decide to participate, I will meet you in the clinic during the preadmission testing to inform you about the study, to answer any questions you have, and to ask you to sign a consent form. I will also measure your breathing, complete the nursing admission assessment form and ask you some questions about your normal daily activities. After this assessment I will help you learn what you need to do before and after surgery to recover quickly. You will be given special instructions on breathing exercises to do at home to prepare for your surgery.

Two days after your surgery I will visit you in the hospital to see how you are doing and to measure your breathing and review your clinical record. Two weeks after your surgery I will call you at home to ask you some questions about your recovery from surgery.

Your participation in this study is completely voluntary. If you choose not to participate or to withdraw from the study at a later time your nursing and medical care will not be affected in any way. If you decide not to participate in the study, you will still receive routine preoperative care through the preadmission clinic. Your name will not be requested

on any of the forms except the consent form, nor will your name be used in the final report after the study is completed.

I would like to meet with you 30 minutes before your clinic appointment. Is this time (_____) convenient for you? _____.

Please bring a family member or friend who will be helping you at home, if possible. They can be involved in learning about recovering from surgery so they can help you, if you desire.

I look forward to meeting with you.

Thank you,
(sign off)

APPENDIX M

Summary Script of Study

Control (a) and Experimental (b) groups

Appendix M

Summary of Study: (Control)

Preparing Patients for Surgery (a)

I am Alice Cox, a registered nurse at Ohio State University studying for a masters degree. At this time, I am working in the Ohio State University Hospitals Preadmission Testing Clinic.

I am one of the nurses assigned to do preoperative teaching at the clinic. We are conducting a study to examine how we prepare patients for surgery. I am asking you to participate. Before you decide to participate, I want to inform you about the study and answer any questions you have. If you decide to participate, I will ask you to sign a consent form.

I will tell you about what I will do with you in the study. First, I will measure your breathing and ask you some questions about your normal daily activities.

Two days after your surgery I will visit you in the hospital to see how you are doing and to measure your breathing and review your clinical record. Two weeks after your surgery I will call you at home to ask you some questions about your recovery from surgery. I will tape record the telephone conversation to be sure I get all the information you have to tell me. Once the information is written down and analyzed, I will erase the tape recordings completely .

Your participation in this study is completely voluntary. If you choose not to participate or to withdraw from the study at a later time your nursing and medical care will not be affected in any way. If you decide not to participate in the study, your preoperative care through the preadmission clinic will not be affected. Your name will not be requested on any of the forms except the consent form, nor will your name be used in the final report after the study is completed.

You will receive a copy of this information and a copy of the consent form if you decide to participate.

Date: _____

Signed: _____
(Person obtaining consent)

Signed: _____
(Witness to oral presentation)

Summary and Consent copies given to patient:

____ ____
YES NO

Appendix M

Summary of Study: (experimental group)

Preparing Patients for Surgery (b)

I am Alice Cox, a registered nurse at Ohio State University studying for a masters degree. At this time, I am working in the Ohio State University Hospitals Preadmission Testing Clinic.

I am one of the nurses assigned to do preoperative teaching at the clinic. We are conducting a study to examine how we prepare patients for surgery. I am asking you to participate. Before you decide to participate, I want to inform you about the study and answer any questions you have. If you decide to participate, I will ask you to sign a consent form.

I will tell you about what I will do with you in the study. First, I will measure your breathing, complete the nursing admission assessment form and ask you some questions about your normal daily activities. After this assessment I will help you learn what you need to do before and after surgery to recover quickly. You will be given special instructions on breathing exercises to do at home to prepare for your surgery.

Two days after your surgery I will visit you in the hospital to see how you are doing and to measure your breathing and review your clinical record. Two weeks after your surgery I will call you at home to ask you some questions about your recovery from surgery. I will tape record the telephone conversation to be sure I get all the information you have to tell me. Once the information is written down and analyzed, I will erase the tape recordings completely .

Your participation in this study is completely voluntary. If you choose not to participate or to withdraw from the study at a later time your nursing and medical care will not be affected in any way. If you decide not to participate in the study, you will still receive routine preoperative care through the preadmission clinic. Your name will not be requested

on any of the forms except the consent form, nor will your name be used in the final report after the study is completed.

You will receive a copy of this information and a copy of the consent form if you decide to participate.

Date: _____

Signed: _____
(Person obtaining consent)

Signed: _____
(Witness to oral presentation)

Summary and Consent copies given to patient:

____ ____
YES NO

APPENDIX N

Consent for Participation in Social and Behavioral Research

(Form HS-027)

Appendix N

THE OHIO STATE UNIVERSITY Protocol No. _____

CONSENT FOR PARTICIPATION IN
SOCIAL AND BEHAVIORAL RESEARCH

I consent to participating in research entitled :
The effect of Structured Preadmission Preoperative Teaching on Patient Outcomes after Abdominal Surgery

Sandra Cornett, RN, PhD or her authorized
(principle investigator)

representative has explained the purpose of the study, the procedures to be followed, and the expected duration of my participation. Possible benefits of the study have been described as have alternative procedures, if such procedures are applicable and available.

I acknowledge that I have had the opportunity to obtain additional information regarding the study and that any questions I have raised have been answered to my full satisfaction. Further, I understand that I am free to withdraw consent at any time and to discontinue participation in the study without prejudice to me.

Finally, I acknowledge that I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me.

Date: _____ Signed: _____
(Participant)

Signed: _____ Signed: _____
(Principle Investigator or her Authorized Representative) (Person authorized to consent for Participant)

Witness: _____