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The Effect of Preoperative Exposure on Spouse Anxiety in the I.C.U.

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THE EFFECT OF PREOPERATIVE EXPOSURE
ON SPOUSE ANXIETY IN THE I.C.U.

By

Carol J. Gates

A THESIS

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ABSTRACT
THE EFFECT OF PREOPERATIVE EXPOSURE
ON SPOUSE ANXIETY IN THE I.C.U.

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The purpose of this investigation was to answer the question: What is the effect of preoperative exposure of the intensive care unit (I.C.U.) on anxiety levels of spouses of open heart patients? A pretest-posttest experimental design was used to analyze data collected on 50 spouses of open heart patients. The subjects were randomly assigned to either experimental or control groups. State and trait anxiety levels were measured using Spielberger's State-Trait Anxiety Inventory (1983). The experimental group received preoperative I.C.U. exposure in the format of a videotape the evening of surgery and the control group received routine preoperative preparation. T-test, chi-square, Pearson correlation coefficient, and analysis of covariance were used to analyze the data. Posttest anxiety levels of the experimental group were lower than the control group but not at a statistically significant level. There was a positive correlation between trait and state anxieties and

a negative correlation between education and anxiety levels. Several implications for nursing practice were identified.

This is dedicated to all the families of open heart patients - A hope to make a difference.

Acknowledgments

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CHAPTER 1

INTRODUCTION

Introduction

A critically ill individual is a member of a family unit and must be considered as such if the nurse is working from a total patient care framework. The staff members in intensive care settings direct most of their energy toward saving the life of the patient, and although the intention of giving family support is ever present, the reality is that needs of family members are frequently neglected (Daley, 1984). If the family's needs are not met, then they may not be able to provide the support necessary to assist the patient in regaining health.

One problem which needs to be addressed is the high anxiety level of families when first visiting their loved ones in the intensive care unit (I.C.U.). The need to relieve this anxiety has been defined and examined by various authors. Molter (1979) and Rodgers (1983) revealed that families of patients in the I.C.U. were able to identify their needs, rank them as to importance, and report if those needs were met. The need to have explanations of the environment before going into the I.C.U. for the first time was identified by families in both studies. Daley (1984) reported that families wanted

someone to explain the equipment being used with the family member. Family members in Lust's study (1984) identified the visiting period as anxiety producing because they didn't know what to expect.

Nurses need to take ownership of this problem and find creative ways to meet this need. Gardner (1978) claims that I.C.U. nurses should prepare the family for the initial visit to the bedside by describing the equipment and physical appearance of the patient. Families have also stated that the nurse should meet this need (Molter, 1979; Daley, 1984). Gillis (1984) recommends that opportunities need to be provided for families to see other patients recovering from coronary artery bypass surgery and to see and touch the equipment involved.

This need for family preparation is not being met consistently. Molter's study (1979) reported that the needs identified by families were met at least fifty percent of the time. Rodgers (1983) examined families that felt their needs were met at least sixty percent of the time. In these studies there were no data given regarding the fulfillment of the specific need to have the environment explained before going into the I.C.U. There are many families that are not being prepared adequately and experience a great deal of stress related to seeing their loved ones attached to numerous unfamiliar machines.

The need to have the I.C.U. environment, routine, and

expectations explained to the families before their first visit has been identified. Including families in the preoperative teaching without actually experiencing the I.C.U. environment is not sufficient.

Meichenbaum's (1986) concept of stress inoculation training and Lazarus' theory (Lazarus & Launier, 1978) of cognitive appraisal of stressful situations would support preoperative exposure of the I.C.U. for families. Similar to role playing, this would allow exposure to the stressful environment before seeing the loved one there. According to Meichenbaum (1986), early exposure allows the client to practice coping skills which decreases anxiety when the actual event occurs. Families should realize how normal and temporary all the machinery is when they see other patients in the different stages of recovery. Lazarus and Launier (1978) suggest that an individual cognitively appraises a situation and evaluates how stressful it is. Theoretically, Lazarus' and Meichenbaum's theories would support preoperative exposure for families. The paucity of research examining preoperative teaching with families suggests a deeper investigation into this area.

Purpose

The purpose of this study is to answer the following questions:

1. What is the effect of preoperative exposure of the I.C.U. on anxiety levels of spouses of open heart patients?
2. What is the relationship between trait and state anxiety levels of spouses of open heart patients?
3. What is the relationship between specific demographic variables and anxiety?

CHAPTER 2

REVIEW OF LITERATURE

Research related to the preoperative needs and postoperative anxiety of the I.C.U. family is meager. Therefore, in addition to the area of the identified needs of families, the literature related to the effect of preoperative teaching on postoperative outcome will be reviewed. There is little documentation examining methods which could reduce postoperative anxiety levels of families in the I.C.U.

Identified Needs of Families

Molter's exploratory descriptive study (1979) identified the need of families to have explanations of environments before going into the I.C.U. for the first time. Of the 45 identified needs, this need ranked 23 in level of importance to families. Structured interviews were used with 40 families of patients who had been in the I.C.U. at least three days and on a general ward for 48 hours or less. Age and socioeconomic status were analyzed to ascertain if they had an influence on the needs. The author suggests that to obtain a more accurate assessment of family anxiety levels upon entering the intensive care setting, it would be better to assess them closer to

admission to the unit. Although this study identifies many family needs, it does not address the means to meet them.

Using a similar instrument, Rodgers (1983) ranked the need to have someone explain the sounds and equipment in the I.C.U. 29 out of 45 in level of importance. The study was similar to Molter's (1979) except the time criteria for interviewing families was different. Interviews were done from 24 hours after admission of the patient in the I.C.U. to 48 hours after the patient had been transferred to the surgical ward. The majority of the interviews were completed on the first or second day postoperatively. Interviews in both Rodgers' (1983) and Molter's (1979) study were conducted by a nurse. Therefore, social desirability could account for the surprising results which indicated the majority of families' needs were being met. Rodgers' (1983) sample was composed of 20 relatives of eleven patients (50% spouses and 35% children). The possibility of interaction and discussion between subjects weakens the internal validity of the study. However, the use of a heterogeneous sample strengthens the external validity.

Leske (1986) also used Molter's instrument to assess family needs in the intensive care unit. She identified the reported needs of the families and compared the results to those reported by Molter (1979). Molter had

individuals complete the inventory, whereas Leske obtained a consensus response from each family. Data were collected within a 72 hour period after admission to the I.C.U. Of the 45 identified needs, the need to have explanations before going into the I.C.U. ranked 19 in level of importance.

Daley (1984) also refined the time criteria for interviewing families to within 72 hours of admission. The instrument used to guide the structured interview was similar to Molter's (1979) but the 46 need statements were subdivided into six major categories. The need category of second highest significance as ranked by family members was the need for information. The need to have explanations given in understandable terms was one of eleven items under this category. Similar to the authors mentioned previously, Daley identified a need for greater informational preparation but did not suggest methods for meeting the need.

A qualitative research method was used by Cozac (1988) to investigate the spouse's experience of having a mate in the I.C.U. following coronary artery bypass graft surgery. Through unstructured interviews she found that for most spouses the time that support was most needed was when they first visited their mates in the I.C.U. All the spouses described the shock of seeing their mate looking dead on first viewing in the I.C.U. One coping strategy

used by families was to seek information concerning the surgery. Information helped them to be better informed to make decisions and prepare for what was to come. Cozac stated "they need information but it may not condition them to see an unresponsive mate surrounded by unfamiliar equipment" (Cozac, 1988, p.70). Families, regardless of the preparation or past experience in I.C.U., described themselves as being in a state of shock. The study suggests there is little health professionals can do to alleviate the stressfulness of the I.C.U. However, her conclusions are based on a small sample of only seven spouses.

Preoperative Teaching with Patients

Even though there are few studies measuring postoperative outcomes after preoperative preparation of families, there are numerous investigations with patients supporting the assumption that preoperative preparation produces positive outcomes postoperatively (Christopherson & Pfeiffer, 1980; Hartfield & Cason, 1981; Hathaway, 1986; Lindeman & Van Aernam, 1971; Schmitt & Wooldridge, 1973). Hathaway (1986) conducted a meta-analysis of sixty-eight studies examining the effect of preoperative instruction on postoperative outcomes. The categories analyzed were: type of content, method of organization, type of presentation, level of patients' fear/anxiety, and types of outcomes measured. Individual instruction with

patients appeared to have more favorable effects on postoperative outcomes than did group instruction. The report of the effect of preoperative teaching on postoperative anxiety levels did not indicate whether the analysis controlled for a proneness to anxiety.

Lindeman and Van Aernam (1971) examined the effect of structured and unstructured preoperative teaching on length of stay, respiratory function studies, and need for analgesics postoperatively. General surgical patients who received a structured slide presentation had a significantly lower length of hospital stay. They also scored better on respiratory function tests than those who received unstructured teaching. Lindeman (1973) also investigated the effects of group versus individualized instruction. She found that group teaching was as effective as individualized instruction in regard to improved ventilation function, decreased hospital stay, and reduced analgesic use. Overall, these studies supported positive effects of preoperative teaching on postoperative outcomes.

When postoperative outcome of anxiety is being measured as a dependent variable, proneness to anxiety must be controlled for to avoid the selection threat. Christopherson and Pfeiffer (1980) and Hartfield and Cason (1981) used the State-Trait Anxiety Inventory (STAI) (Spielberger, Gorsuch, & Lushene, 1970) to measure anxiety

in their studies. The trait anxiety (T-Anxiety) portion of the instrument measures the relatively stable personality disposition of anxiety whereas the state anxiety (S-Anxiety) scale reflects a transitory emotional response to a threatening situation. Individuals with high T-Anxiety are likely to respond to a stressful situation with greater elevations in S-Anxiety scores (Spielberger, 1966).

Christopherson and Pfeiffer (1980) examined postoperative anxiety and knowledge levels after varying the time the preoperative instruction was given. They administered both portions of Spielberger's inventory (1970) two days preoperatively and ten days postoperatively. They found there was a significant decrease in S-Anxiety in the group who received instruction 1-2 days preoperatively compared to those who received the teaching 1-3 weeks preoperatively.

Hartfield and Cason (1981) used the State-Trait Anxiety Inventory (Spielberger et al., 1970) to measure anxiety as the dependent variable with various types of pre-procedure teaching as the independent variable. Three types of information were used in the study: no information, about the sensations to be expected during a barium enema, and about the procedure used in performing a barium enema. The S-Anxiety score was significantly lower for the sensation group as compared to the procedural group when

differences in proneness to anxiety were controlled.

Rice, Caldwell, Butler, and Robinson (1986) examined the effects of relaxation training on patients' state anxiety before cardiac catheterization. The State Anxiety scale (Spielberger et al., 1970) was administered to the relaxation and control groups the night before cardiac catheterization. Relaxation training was then given to the experimental group. One to two hours prior to catheterization all the subjects were asked to complete the State Anxiety (S-Anxiety) scale again. No significant differences were found between relaxation and control groups on the second measure of STAI S-Anxiety. Results of this study suggest that individuals can use relaxation training during an aversive medical treatment, but its use does not modify the anxiety associated with the event.

The effect of educational level on anxiety has varied based upon the population studied. Spielberger et al. (1970) reported no significant correlation between educational level and STAI scores with male neuropsychiatric patients. Yet there was a significant negative correlation ($r = -.22$) between T-Anxiety scores and education of general medical and surgical patients. A similar trend was noted when high school males had higher T-Anxiety scores than that of college males (Spielberger et al., 1970).

Research with Families

Chavez and Faber (1987) examined the effect of an education-orientation program on family members in the intensive care unit. Psychologic self-reports of stress and the physiologic responses of blood pressure and heart rate were analyzed just before and immediately after the first visit to their loved one in the I.C.U. The independent variable was a 10 minute program administered by several I.C.U. nurses which included an overview of the unit and the patient's immediate environment. A handout developed by the investigator was given to the family member which detailed visiting policy, hospital services, and information about chapel services. A pretest-posttest two-group experimental design was used. The sample consisted of 40 family members or significant others. The majority were spouses but there were daughters, sons, and significant others in the sample. The two groups did not differ in blood pressure or scores obtained from the subjective stress scale. The experimental group had a significantly lower heart rate after the education program and after the first visit to the I.C.U. The experimental group also had a greater knowledge of the patient's diagnosis than did the control group.

There are questions which are yet unanswered in this study. It was not clear whether the education program included a tour to the unit or whether it was a didactic

lecture format in which there was no actual sights and sounds experienced. Since the sample was so heterogenous, the internal validity is questioned. A hospitalization of a loved one may have a very different meaning for a spouse versus a sibling. The reason for hospitalization was not detailed, which brings up the issue of severity of the illness. Finally, there were several nurses administering the education-orientation program. Although they followed a written procedural checklist, the actual delivery may have varied. Overall, the findings suggest that the intervention program had a positive effect on the experimental group.

Theoretical Framework

Richard S. Lazarus' theory of stress, appraisal, and coping (1984) provided a framework for this study (see Appendix A). A brief description of the main concepts will be delineated with an application to the variables under investigation.

Stress

Lazarus examines stress from a psychosocial frame of reference making it appropriate for this study as stress will be measured using anxiety rather than physiologic indices. Lazarus and Launier (1978) state that stress requires a judgement that the transaction involves jeopardy (threat), harm/loss, or an opportunity to overcome hardship and grow (challenge) by drawing upon

more than routine resources. When a demand exceeds resources, the individual is psychologically overwhelmed and defeated. Demands may stem from the environment or from internal forces or, commonly, from both.

Environmental demands. Environmental demands can be divided into two subcomponents; the physical demands and the social demands. Lazarus (1969) describes physical demands as conditions of the environment which require some adjustive action to avoid pain, discomfort, or danger. There are many adjustments spouses of critically ill patients must make to the physical demands placed on them. Breu and Dracup (1978) describe the actual or potential changes in the environment that affect families. Examples of these are the interruption of all daily routines, including sleep and meal patterns, and the relocation to an unfamiliar environment for most of the day. Another major stressor reported by spouses of critically ill patients is the lack of control over hospital events (Gillis, 1984). They are also disturbed by the foreign sights, sounds, and smells of the unit (Gardner & Stewart, 1978).

The second subset of environmental demands is the group labelled social demands (Lazarus, 1969). These are demands of other persons, real or imagined, placed on us to fulfill certain roles and to conform to be a certain person. When a family member is critically ill,

especially if that person is a spouse, there may often be a drastic reversal of roles, a loss of the provider and financial stabilizer, and a forced autonomy where there was dependence/interdependence prior to the illness (Breu & Dracup, 1978).

Internal demands. Lazarus and Launier (1978) describe internal demands as goals, values, commitments, or tasks acquired by an individual, the postponement of which would have negative consequences. These demands are also described as social motives (Lazarus, 1969). Although an individual's physical well-being may not always depend on these kinds of interpersonal relationships, social interactions are of importance in producing satisfaction. Breu and Dracup (1978) found that deprivation of their primary social contact, disconnection with other social contacts, and the interruption of an interpersonal reward system were experienced by families of hospitalized critically ill patients.

Cognitive Appraisal

Hospitalization can precipitate a crisis depending on how the patient and the patient's family interpret the hospitalization and the effectiveness of coping mechanisms (Daley, 1984). Lazarus and Launier (1978) define this interpretation, or cognitive appraisal, as the mental process of evaluating any event. Evaluation here relates

either to its significance for the person's well-being (primary appraisal) or to the available coping resources and options (secondary appraisal).

Primary appraisal. Primary appraisal is the individual's initial evaluation of the stress situation in terms of his or her well-being. This evaluation produces one of the three possible appraisals of the stressor: (a) irrelevant; (b) benign, resulting in positively-toned emotions; or (c) stressful, resulting in negatively-toned emotions (Scott, Oberst, & Dropkin, 1980). The stressful stimuli can further be delineated into the following appraisals: (a) harm/loss, where some damage to the person has already been sustained; (b) threat, where harm or loss has not yet taken place, but is anticipated; and (c) challenge, focusing on the potential for gain or growth inherent in an encounter (Lazarus & Folkman, 1984).

The event of a critical illness is often perceived as both harm/loss and threat by the family. Some situations threaten basic motives that are common to all people regardless of culture (threat of death, injury, bereavement, and the like); these situations are universally stressful (Shantz, 1975). Lazarus and Launier (1978) have found that harm and threat are apt to be mixed when, for example, severely burned or otherwise incapacitated patients have to face present loss of their normal function, financial status, and careers -- that is,

harm/loss that has already happened -- but also must cope with the implications of their condition for the future. Anticipatory grief is often seen in families who fear the death of a close family member, often before the loss has actually occurred (Breu & Dracup, 1978). Gaglione (1984) noted that the association between a cardiac event and death is clear and the potential for loss is great for family members. In actuality, even with recovery, the patient may not return to a lifestyle previously enjoyed. In this case, a loss is perceived and family members may grieve.

Secondary appraisal. Examining what might be done to alleviate or mitigate the stressor is secondary appraisal. According to Lazarus and Folkman (1984), the secondary appraisal takes into account which coping options are available, the likelihood that a given coping option will accomplish what it is supposed to, and the likelihood that one can apply a particular strategy effectively. Cognitions about coping strategies can be stored in memory and be in place before the stressor occurs and can affect the primary appraisal itself. Seeing the I.C.U. before surgery, the spouse can rehearse and store coping strategies. This could influence the appraisal of seeing the loved one after surgery as less stressful.

Coping

Based on the individual's primary and secondary appraisals, the coping mode is selected. Coping is defined by Lazarus and Folkman (1984) as ". . .constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p.141). Coping is classified under the two main functions it serves: changing the situation for the better through actions, and regulating the emotions to manage the somatic and cognitive components of the stressful situation (Lamontagne, 1985). Most stressful situations elicit both coping functions.

The four main categories of coping modes are information seeking, direct action, inhibition of action, and intrapsychic. Lazarus and Launier (1978) state that information seeking has a function of providing a basis for action to change the stressful situation, but it also may be used to make the person feel better by making the situation seem more under control. Direct action and inhibition of action, such as drinking or taking tranquilizers, can be designed to regulate and emotion. Coping modes can also be used to change the environment. An example of this would be seeking revenge against an enemy. Intrapsychic modes of coping include all cognitive processes designed to regulate the emotion, such as denial

or avoidance.

The spouses in the experimental group were provided information preoperatively regarding the "normal" sights in the I.C.U. The spouses experienced routine recovery progression of other patients. Then when spouses see their loved one immediately postoperatively, they may remember that this is the first stage of rapid recovery. The loved one will soon look like the tubeless patients the spouse saw the night before. Theoretically, this knowledge should affect the primary appraisal of the situation as being less stressful.

Reappraisal. Lazarus and Folkman (1984) define reappraisal as a changed appraisal on the basis of new information from one's own reactions and from the environment. An example of this is the spouse's visit to her loved one postoperatively for the first time. The spouse who has not had preoperative exposure to the I.C.U. visits her loved one who is cold, unconscious, and enveloped in numerous "beeping" machines. This foreign and unexpected environment may frighten her more, amplifying her primary appraisal which was already one of extreme threat. Conversely, the spouse who is prepared preoperatively for the foreign sights and sounds should view the environment as appropriate. Regardless of the preparation, these postoperative experiences are stressful for spouses, but the spouses who receive the exposure may

reappraise the situation as less stressful than those who do not receive it.

Hypotheses

Using the State-Trait Anxiety Inventory (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) as a measure of anxiety, the following hypotheses were explored in this study:

1. Postoperative state anxiety level will be lower among spouses of open heart patients who receive preoperative I.C.U. exposure than those who do not receive the exposure, controlling for differences in proneness to anxiety.
2. There will be a positive relationship between the preoperative trait and state anxiety levels of spouses of open heart patients regardless of any intervention.

In addition to the above hypotheses, the relationships between specific demographic variables and anxiety will be examined.

Operational Definitions

Cardiac Surgery Patient

A cardiac surgery patient is defined as a male patient who is scheduled for his first elective coronary artery bypass surgery.

Spouse

The spouse is the wife of the cardiac surgery patient.

Preoperative Teaching

Routine preoperative teaching is administered to patient and spouse the day before surgery by the cardiac nurse clinician. This teaching includes the distribution of a booklet which explains the anatomy of the heart, coronary artery disease, and the description of preoperative and postoperative routines and procedures. The nurse clinician explains some of the sights and sounds the family will see, but there is no tour of the I.C.U. provided.

Preoperative I.C.U. Exposure

The exposure consisted of viewing a videotape. The preoperative exposure provides the sensory information that cannot be provided in a booklet. Actual sights and sounds were experienced with the preoperative exposure. The preoperative I.C.U. exposure was the independent variable in this study.

Included in the video was an explanation of equipment and the normal recovery progression (see Appendix I). Four stages that most families experience are described: the waiting period, relief and shock, unbelievable recovery, and moving day. The video also includes interviews with several spouses who describe their similar experiences. One patient one- and two-days postoperative were filmed, allowing the spouses to view the various phases of recovery. The use of a video allowed for

consistency in the information presented to spouses. The alternative choice was to show the actual patients on the unit to the spouses. The use of a video was selected to preserve the privacy of other patients and families.

The videotape was produced by this investigator and Telstate, which is a branch of the department of telecommunication at Michigan State University. Content validity was assessed by four critical care nurses who were most knowledgeable of the current routines and equipment. The two cardiac nurses who do all the routine preoperative teaching also assessed the video for content validity.

Anxiety Level

Anxiety states are characterized by feelings of tension, fear, and worry. Spielberger (1983) describes state anxiety (S-Anxiety) as a palpable reaction taking place at a given time and level of intensity. In contrast to the transitory nature of emotional states, personality traits are seen as enduring differences in dispositions to react in a predictable manner. Trait anxiety (T-Anxiety), refers to relatively stable individual differences in anxiety-proneness.

In general, the S-Anxiety score for a group is approximately equal to its T-Anxiety score when evaluated under neutral conditions. S-Anxiety is higher when measured under stressful conditions and lower under

relaxed situations. T-Anxiety scores are usually not affected by stress (Spielberger et al. 1983).

In the revised State-Trait Anxiety Inventory, Spielberger et al. (1983) recommend administering the S-Anxiety scale before and after an intervention is given. Rice et al. (1986) did not administer the Trait Anxiety (T-Anxiety) portion of the STAI. The use of the T-Anxiety scale allows for controlling for the individuals' proneness to anxiety. Spielberger et al. (1983) recommend the scale to be administered one time prior to the treatment. State anxiety measured postoperatively is the dependent variable in this study.

CHAPTER 3

METHODOLOGY

Research Design

This study was conducted using a pretest-posttest control group experimental design (see Figure 1). The evening prior to surgery a questionnaire measuring trait and state anxiety was administered to all subjects. Trait anxiety level as a covariate was controlled for statistically. The independent variable is the preoperative exposure which was administered to the experimental group the same evening. State anxiety level is the dependent variable and was measured postoperatively.

Figure 1. Anxiety measurement using a pretest-posttest control group experimental design.

GROUP	NIGHT BEFORE SURGERY	POSTOPERATIVE
Control	O1(trait & state)	O2(state)
Experimental	O1(trait & state) I.C.U. exposure	O2(state)

Setting and Sample

This study was conducted in a 410-bed private teaching hospital in western Michigan. Approximately 10-15 cardiac surgical procedures are performed weekly. Preoperatively, the patients and spouses were on one of six general

medical surgical units where most of the rooms were semi-private. After surgery all the patients were in the 16-bed surgical critical care unit where patients go immediately postoperatively.

The sample selection was one of convenience, including spouses of patients who met the criteria and were willing to participate in the study. The criteria used for selection of subjects were: English speaking, able to read and write, and 18 years of age or older.

Criteria used to identify patients for the investigation were: male, no history of previous cardiac surgery, physiologically stable, and admitted for pre-scheduled coronary artery bypass graft (CABG) surgery. Physiologically, the sample was consistent with the profile reported in a nationally randomized study of bypass patients (Kennedy et al., 1981). Spouses of patients who became unstable preoperatively or postoperatively were omitted from the sample. Instability was defined as having a condition which necessitates cardiopulmonary resuscitation, defibrillation, the intra-aortic balloon pump, or a return to surgery.

The sample size was 25 in each of the experimental and control groups. With an alpha value of .05, statistical power of .70, and large effect size, the sample size of 25 in each group was considered adequate (Polit & Hungler, 1987). The subjects were assigned randomly to

experimental and control groups using a table of random numbers.

The source of subjects was derived from the weekly CABG surgery list within a three month period of time. This block of time was chosen because the two primary cardiac nurses who do most of the preoperative teaching have three month rotations. During the three month data collection there was one nurse who did 80% of the preoperative teaching. This was an attempt to limit the variability in the information spouses received before the exposure.

Instrument

The instrument used to measure anxiety was the State-Trait Anxiety Inventory (STAI) developed by Spielberger et al. (1983) (see Appendix B). This is a revised version of the widely used STAI of 1970 (Spielberger et al., 1983). It provides operational measurement of state anxiety (S-Anxiety) and trait anxiety (T-Anxiety). Each scale (state and trait) contains twenty items that describe symptoms of, or the absence of, anxiety. The STAI S-Anxiety scale measures the intensity of the subject's feelings of anxiety at a particular moment. The STAI T-Anxiety scale requires subjects to report how they generally feel. Subjects rate their anxiety on a 4-point Likert scale of increasing intensity. The total possible score ranges from 20-80. The scale is balanced for acquiescence set (Hartfield & Cason, 1980).

Stability as measured by test-retest coefficients is high for the T-Anxiety scale and low for the S-Anxiety scale (Spielberger et al., 1983). The test-retest correlations for T-Anxiety for college students were .73-.86. They were lower for high school students with a range of .65-.75. S-Anxiety test-retest coefficients for college and high school students were low ranging from .16-.62 with a mean reliability coefficient of only .33. A low reliability is expected for the S-Anxiety scale since it measures anxiety influenced by a transitory state.

Measures of internal consistency provide a better index of reliability of S-Anxiety than test-retest correlations. Based on studies with working adults (Spielberger et al., 1983), the alpha coefficient for the S-Anxiety scale was .93 and .91 for the T-Anxiety scale. Spielberger, Vagg, Barker, Donham, and Westberry (1980) reported that the alpha reliability coefficients were higher for the STAI S-Anxiety scale when it was given under conditions of psychological stress.

To assure a high degree of concurrent, convergent, divergent, and construct validity, the following methods were used in its development: contrasted groups; correlations between the S-Anxiety scale with other measures of trait anxiety; correlations of the STAI scales with other widely used measures of personality and

adjustment; correlations of the STAI scales with measures of academic aptitude; and investigations of the effects of different amounts and types of stress on S-Anxiety scores (Spielberger et al., 1983). Specific reports of these findings can be obtained in The Manual for the State-Trait Anxiety Inventory (Spielberger et al., 1983). In summary, there was a high degree of validity reported for the scales.

The manual for the STAI scales (Spielberger et al., 1983) does not address the potential problem of subjects remembering the questions if given within a short time span, therefore influencing the response of the second administration. According to Mark Pope (personal communication, May, 1989), a researcher working for the questionnaire's publishing company, Consulting Psychologists Press, Inc., the scale has been administered within hours of giving it the first time and there has been no evidence of the subject's memory of the first administration affecting subsequent responses.

Three studies examined the relationship between anxiety and the stress of surgery (Auerbach, 1973; Chapman & Cox, 1977; Spielberger, Auerbach, Wadsworth, Dunn & Taulbee, 1973). Repeated administrations of both T-Anxiety and S-Anxiety forms were carried out with a time frame of 24-72 hours between the first and second testing. In these studies there was no mention of the effect memory

could have on taking the same test within a short time frame.

Additional data were obtained from the patient's chart, via interview with investigator, and from a page added to the STAI Anxiety questionnaire. The number of bypass grafts received in surgery was obtained from the patient's chart. Unfamiliarity to a community may seem stressful, so information related to whether the spouse was familiar with the Grand Rapids area was asked during the initial contact. Age of spouse was included on the STAI questionnaire. The following items were on the page added to the questionnaire:

1. Age of husband
 2. Whether the spouse has ever been in an I.C.U. before.
 3. The waiting period between knowledge of surgery and surgery.
 4. Whether there were children residing in the household under eighteen years of age.
 5. Educational background (highest grade completed).
 6. Emotional support available to spouse during that week.
- Respondants were asked whether there were persons with whom they can share their feelings and they can depend on emotionally.

Procedure

A description of the study was given to all the thoracic surgeons. An explanation of the research was

also be given to the cardiac nurse doing the routine preoperative teaching. An attempt was made to limit information provided to the staff involved with the patients and spouses.

Initial contact by this investigator with the spouse was on the night before surgery in the patient's room on the medical surgical ward. Routine preoperative teaching was completed before the investigator had contact with the subjects. Subjects were randomly assigned to experimental and control groups using a table of random numbers. A brief explanation of the purpose of the study, methodology, and the individual's rights as far as confidentiality, risks, potential benefits, voluntary participation, and the right to withdraw from the study at any time was given. The spouses were asked to sign the informed consent (see Appendix C for control group form and Appendix D for experimental group form). To prevent instrumentation threat, an attempt was made to follow written scripts throughout the data collection process (see Appendices E, F, G, and H).

The spouse was asked to come to a private conference room where an explanation of the State-Trait Anxiety Inventory was given and each subject was asked to complete the State Anxiety (S-Anxiety) and Trait Anxiety (T-Anxiety) scales. Spielberger et al., (1983) recommend the S-Anxiety scale be given before the T-Anxiety scale

when given together. In agreement with Spielberger's recommendations (1983), the term "anxiety" was not used and the instrument was always referred to as the Self-Evaluation Questionnaire.

The principal investigator read the instructions aloud while the subjects read them silently. If there were any questions by the subject, the investigator responded in a non-committal manner. The investigator was not present while the subject completed the scales. The investigator was waiting outside the room to meet the subject when she completed the questionnaire. Each subject in the experimental group was then directed back to the conference room where the 10 minute videotape was shown. Subjects in the control group did not view the videotape.

The second and final contact with the subjects was within 5 hours of the patient coming to the surgical intensive care unit after surgery. At this point the S-Anxiety scale was administered to both groups. To limit the influence of the experimenter expectancy effect on the subjects, a different investigator administered the second questionnaire. Appreciation was expressed for participating in the study and the subjects were told that they would receive a copy of the results of the study.

The procedures were tested on a small group of spouses (n=4) prior to the actual data collection process. Based

on the test run, there were minor changes made in the way
the data was coded.

CHAPTER 4

RESULTS

Data were collected during a 90 day period from April 15, 1989 to July 15, 1989. During this period, there were 59 spouses that met the criteria and were approached regarding study participation. Nine were not included in the study for the following reasons: surgery was cancelled ($n = 1$), physiological instability of the patient ($n = 1$), additional unexpected surgery performed ($n = 2$), and refusal to complete the second questionnaire postoperatively ($n = 5$). Fifty subjects (85%) gave consent to participate and completed the study. All analysis was computed using the Statistical Package for the Social Sciences (SPSSX) software.

Characteristics of Subjects

Age, Education, and Waiting Time

Distribution of subjects by age, education, and waiting time listed in Table 1. Education was measured as years of formal education. The waiting time, or length of time the subjects knew their husbands were to have surgery, ranged from that morning to 60 days. The waiting time variable was positively skewed with a mean of 12.6 and a median of 9.5. Prior to analysis, log transformation was

performed so that assumption of normality was not violated. The two groups were compared using the log transformed data.

T-tests were computed to compare differences in the means of the experimental and control groups. The results showed that the two groups did not differ significantly from each other on mean age, education, and waiting time (see Table 1).

Table 1
Sample Distribution by Age, Education, and Waiting Time

Characteristic	Group				
	Experimental (n = 25)		Control (n = 25)		t ^a
	M	SD	M	SD	
Age (years)	59	10	59	9	.04
Education (years)	12	2	12	3	-.11
Waiting Time (days)	13	12	12	13	-.08
Waiting Time (Log) ^b	.89	.47	.93	.44	.26

^ap > .05, df = 48. ^bThe log₁₀ transformed data were used in analysis due to a skewed distribution.

Previous I.C.U. Exposure and Familiarity with Area

Sample distribution based on previous I.C.U. exposure and familiarity with the community is shown in Table 2. Chi-square analysis of distribution between groups was

computed. The differences in distribution for both characteristics were not significant at a .05 level.

Anxiety Levels

Cronbach's alpha was used to analyze the internal consistency of Spielberger's STAI (1983) in this present study. Alpha coefficients for the anxiety scales of both groups are listed in Table 3. The values suggesting a high degree of internal consistency are similar to the results of Spielberger et al. (1983).

Pretest and posttest anxiety scores are shown in Table 4. Scores for both the State and Trait Scales can vary from a low anxiety score of 20 to the highest anxiety score of 80. Variance in anxiety levels of subjects (N = 50) is reflected in the ranges of Pretest Trait Anxiety (20 - 62), Pretest State Anxiety (24 - 79), and Posttest State Anxiety (20 - 77). Although the experimental group had lower anxiety scores for all three tests than the control group, there were no significant differences between groups.

Normal anxiety levels are reported for various groups in the Manual for the State-Trait Anxiety Inventory (Spielberger et al., 1983). Spielberger et al. (1983) claim that while the norms are not based on representative samples, STAI scores reported by other investigators for similar populations are quite comparable. A comparison of

Table 2
Previous I.C.U. Exposure and Familiarity with Area

Characteristic	Group		χ^2 ^a
	Experimental (n = 25)	Control (n = 25)	
	n	n	
Previous I.C.U. Exposure			
Yes	17	16	0.00
No	8	9	
Familiar with Area			
Yes	9	15	2.00
No	16	10	

^ap > .05, df = 1.

Table 3
Internal Consistency for Anxiety Scales

Anxiety Scale	Cronbach's Alpha	
	Experimental (n = 25)	Control (n = 25)
Pretest State	.92	.96
Pretest Trait	.86	.95
Posttest State	.92	.96

Table 4
Sample Distribution by Anxiety Level

Anxiety	Group				
	Experimental (n = 25)		Control (n = 25)		t ^a
	M	SD	M	SD	
Pretest State	45.08	12.41	51.52	15.07	.106
Pretest Trait	34.36	8.30	35.68	11.94	.652
Posttest State					
Obtained	42.88	11.76	44.96	15.03	.588
Adjusted	43.04		44.80		

^ap > .05, df = 48.

scores from this study and the norms for females and general medical and surgical (GMS) patients reported by Spielberger et al. (1983) is shown in Table 5. The Trait Anxiety (T-Anxiety) level of this study is similar to the other two groups. Since the State Anxiety (S-Anxiety) score is expected to be higher during stressful conditions, it is not surprising S-Anxiety measured before open heart surgery is higher than that of both of the other two groups.

Table 5
Anxiety Levels of Spouses Compared to Findings of
Spielberger et al. (1983)

Group	N	S-Anxiety		T-Anxiety	
		Mean	SD	Mean	SD
Present Study (pretest scores)	50	48.30	14.04	35.02	10.20
Females in 50-69 age group (Spielberger, et al., 1983)	106	32.20	8.67	31.79	7.78
GMS Patients ^a mean age 55 (Spielberger, et al., 1983)	110	42.68	13.76	41.33	12.55

^aGMS = General medical-surgical patients.

Other Characteristics

Other characteristics of interest are listed in Table 6. The small percentage of subjects with dependent children at home was not surprising given the mean age of the study participant (M = 59). Only one subject felt that there was no one available for emotional support. Considering the magnitude of the surgery, this distribution was not surprising. Differences in experimental and control group by ethnic background, dependent children at home and perceived emotional support were not analyzed due to the unequal distribution of

subgroups (minorities: $n = 1$, no perceived emotional support: $n = 1$).

Contact by the investigator with the majority of subjects (58%) on the day of surgery was after the subjects' first postoperative visitation. There was one hour between subsequent visits. Every contact made on that day was within a time frame of 5 hours after the patient returned to the I.C.U. after surgery. Due to the small number that were contacted after the third ($n = 4$) and fourth ($n = 1$) visit, groups were collapsed to form one group (posttest after 2 - 4 visits). Chi-square was performed to compare the control and experimental groups. There was a significant difference ($X^2 = 5.25$, $df = 1$, $p < .05$). There were more subjects in the control group took the posttest immediately after the first postoperative visit. Theoretically, one would expect the subjects' anxiety levels to be higher since they did not have multiple visits to get accustomed to the patients in the I.C.U. environment. As reflected by final S-Anxiety scores, this was not the case.

Table 6
Sample Distribution by Other Characteristics

Characteristic	Group			—
	Experimental (n = 25)	Control (n = 25)	Total (N = 50)	
	n	n	n	
Ethnic background				
Caucasian	25	24	49	
Mexican	0	1	1	
Dependent children at home < 18 years old				
Yes	1	6	7	
No	24	19	43	
Perceived emotional support				
Yes	25	24	49	
No	0	1	1	
Number of visits before posttest				
1	10	19	29	
2 - 4	15	6	21	

Characteristics of Patients

Age

Ages of the patients, or husbands of the subjects, ranged from 41 years to 79 years with a mean age of 61.74

years. The majority of patients were in the 60-69 year old category (See Table 7).

Table 7
Patient Distribution by Age

Age	n	Percentage
40-49	6	12%
50-59	12	24%
60-69	23	46%
70-79	9	18%

Vessels Grafted in Surgery

The number of vessels grafted in surgery ranged from one to five with the majority (46%) having three vessels bypassed. Mean number of vessels for this group was 3.5.

Hypotheses

Hypothesis 1

Analysis of covariance (ANCOVA) was used to analyze the first hypothesis: Postoperative state anxiety levels will be lower among spouses of open heart patients who receive preoperative I.C.U. exposure than those who do not receive the exposure, controlling for differences in proneness to anxiety. ANCOVA was used to compare the experimental and control groups' posttest anxiety levels. The pretest measure of trait anxiety was used as the covariate. The hypothesis was not supported (see Table 8).

Table 8
Analysis of Covariance for Posttest Anxiety Scores

Source of Variation	df	MS	F	p
Between groups	1	178.034	.992	>.05
Covariate	1	317.604	1.769	>.05
Within groups	47	179.524		

Hypothesis 2

The Pearson product-moment correlation was used to analyze the second hypothesis: There will be a positive relationship between the preoperative mean trait and state anxiety of spouses of open heart patients regardless of any intervention. The hypothesis was supported ($r = .288$, $p < .05$). Subjects who had a higher trait anxiety prior to intervention also had a higher state anxiety.

Other Results of Interest

Relationship Between Other Variables and Anxiety

The relationships between five variables and pretest anxiety were analyzed revealing some interesting findings. The Pearson correlation was used to analyze the relationship between the trait and state anxiety levels and educational level of spouses of open heart patients. There was a negative relationship between preoperative S-Anxiety levels and education ($r = -.290$, $p < .05$), and T-Anxiety levels and education ($r = -.238$, $p < .05$).

Subjects who had a higher educational level had lower anxiety scores.

The Pearson correlation was used to analyze spouse's age and pretest S-Anxiety and T-Anxiety. A significant negative correlation was obtained for pretest S-Anxiety ($r = -.254$, $p < .05$). There was no significant relationship found between T-Anxiety and age. The older the subjects, the lower the preoperative state anxiety.

The relationship between familiarity with the community and pretest State Anxiety scores was analyzed using a 2-tailed t-test. There was no significant difference between the anxiety scores of those that were familiar with the area and those that were not ($t = -.72$, $df = 48$, $p = .476$). Trait Anxiety was not analyzed since Trait Anxiety is defined as a more permanent characteristic and therefore should not be altered by a momentary state.

Preoperative Teaching

As stated earlier, an attempt was made to have all the routine preoperative instruction given to subjects by the same nurse. There were 10 subjects who received the routine instruction from other nurses. Therefore, a comparison of posttest anxiety scores by instruction group was analyzed using t-tests. In the experimental group ($n = 25$), there were 19 who received the instruction from the same nurse and six who received the teaching from others. There was no significant difference in posttest

scores ($t = -1.71$, $df = 23$, $p = .101$). In the control group four of the 25 received instruction from other nurses. Likewise there was no significant difference in their anxiety scores ($t = -.43$, $df = 23$, $p = .668$).

CHAPTER 5
DISCUSSION/LIMITATIONS/IMPLICATIONS

Discussion

The major findings of this study point to the relationship of various factors and anxiety levels of spouses of open heart patients.

Hypothesis 1

Although the mean difference in anxiety scores between experimental and control groups was not statistically significant, the trend favors the experimental group and the positive impact of preoperative exposure. Chavez and Faber (1987) also found no statistical difference in family member's self-reported stress when comparing the control and experimental groups. The independent variable in their study was a verbal 10-minute education-orientation program. Although no significant differences were found in blood pressure or self-reported stress, there was a significant difference between groups in heart rate. Hartfield and Cason (1981) reported a significant difference in anxiety levels between patients who received sensation information and procedure information. The difference between the sensation information group and the no information group was not significant as was the

difference between the procedure and the no information groups. These results suggest that educational programs have a neutral or negative effect on the recipients. Before informational programs are dismissed altogether due to lack of significant statistical support, a thorough examination of various factors related to anxiety must be made.

As described earlier, Lazarus and Launier (1978) delineate four different modes in which people cope: information seeking, direct action, inhibition of action, and intrapsychic modes. Individual variation in the choice of coping depends on a number of factors. One of the factors described by Lazarus and Launier (1978) is the degree of uncertainty. A high degree of uncertainty, as in a spouse's open heart surgery, decreases the use of direct action and increases information seeking. If there is ambiguity, obtaining more accurate information should increase a sense of control in the situation. If there is a failure or perceived failure to gain more information, then the intrapsychic modes are usually implemented. These include denial, avoidance, or intellectualization.

In the present study there was an assumption that all spouses were information seeking. The more information they received, their primary appraisal of the situation would be one that would lead to a decreased anxiety. This assumption was not supported. Perhaps all subjects were

not information seeking. Perhaps some were employing the denial or avoidance mode. To place an informational video in front of a denier or avoider may not decrease his/her anxiety, rather, anxiety may be increased. As health care providers, we may see the information seekers accepting the severity of a situation and coping better throughout the hospital course. Denying spouses need to realize their husbands are having surgery and also need to be prepared for the frightening sights and sounds they will soon be seeing. It might be more effective to identify the deniers and avoiders, support and assist them to work through and accept the reality of the situation, and then provide them with the needed information.

The second question to be addressed is: How and when do you measure a subject's preparation as sufficient for an upcoming event. In other words, was the STAI sensitive enough to measure the dependent variable - that of postoperative adjustment. Was the dependent variable, the A-State scale measured after the first visit, sensitive enough to detect the impact of the independent variable? Aurbach's study (1973) evaluated the effects of surgery-induced stress on anxiety and the relationship between preoperative S-Anxiety levels of patients on postoperative adjustment. Postoperative adjustment was measured using the Pleasure-Displeasure Quotient which assesses emotional adjustment to being hospitalized. Preoperative S-Anxiety

and T-Anxiety levels were found to be inversely related to scores on the Pleasure-Displeasure Quotient. This finding suggests that those who had high preoperative state anxieties had a poorer postoperative adjustment.

Aurbach (1973) evaluated emotional reactions of patients to surgery. The STAI was administered to patients 24 hours before surgery, 48 hours after surgery, and again six days postoperatively. T-Anxiety scores were essentially the same before and after surgery. S-Anxiety scores slightly increased from 24 hours before surgery to 48 hours after surgery, and decreased markedly six days later. One of Bouman's (1984) research questions was: What are the self-perceived needs of family members within 36 hours and after 96 hours of the patient's admission to the I.C.U. A descriptive study using a Q-sort methodology was used to collect data on family members in the I.C.U. For data analysis, need statements were divided into three categories: cognitive or informational needs, emotional needs, and physical needs. Informational needs consistently rated higher than the emotional, and physical. The number of informational needs decreased between the two times (at 36 and 96 hours after admission).

The studies suggest anxiety levels and informational needs change over time. The S-Anxiety score obtained in this study immediately after spouses saw their loved ones

for the first time postoperatively was much higher ($M = 48.3$, $SD = 14.04$) than the average S-Anxiety score for women ($M = 32.2$, $SD = 8.67$, Spielberger, 1970). The elevation may be due to the shock, fear, and ambivalence of seeing a loved one amidst the foreign sights and sounds. The initial shock and anxiety may not be affected by any preoperative preparation. The timeframe for the various stages described in the video is from the preoperative waiting period to the day of transfer out of the I.C.U. As spouses progress through the various stages, there may be a calming effect in experiencing the stages as were previously described. A greater orientation may occur and a feeling that everything is progressing as expected. Perhaps a better evaluation of an educational program would be to assess the dependent variable at various time intervals, for example immediately postoperatively, at 24 hours, 36 hours, and finally at 72 hours.

Hypothesis 2

The positive relationship ($r = .288$, $p < .05$) between the preoperative S-Anxiety and T-Anxiety scores is similar to Hartfield and Cason's (1981) findings ($r = .23$, $p < .05$). Auerbach (1973) and Spielberger et al. (1973) found a similar relationship. In order to evaluate the changes in S-Anxiety for patients who differed in T-Anxiety anxiety, Aurbach divided the sample into two

groups by T-Anxiety levels. Anxiety groups were identified by dividing scores at the median. The mean STAI S-Anxiety scores for the two groups were evaluated in an analysis of variance. The analysis revealed highly significant main effects for T-Anxiety ($F(1,54) = 34.67$, $p < .001$). These findings indicate that the high T-Anxiety subjects were higher in S-Anxiety than the low T-Anxiety subjects both before and after surgery. Using the same analysis, Spielberger et al. (1973) reported similar results ($F(1, 22) = 13.50$, $p < .01$).

Education and Anxiety

The negative correlation between education and T-Anxiety levels ($r = -.238$, $p < .05$) and S-Anxiety levels ($r = -.290$, $p < .05$) is similar to the findings of Spielberger et al. (1970), who found a significant negative correlation ($r = -.22$) between T-Anxiety scores and education of general medical and surgical patients. A similar trend was noted among high school and college males. One possible explanation is that spouses with higher education have more information related to the upcoming surgery and are therefore better prepared to cope.

Age and Anxiety

The negative correlation between age and S-Anxiety is consistent with the results of a study by Spielberger et al. (1983). Of the men and women ($N = 1761$) tested under

conditions of average stress, younger subjects (ages 25-29) had higher S-Anxiety scores than did subjects in the older group (60-69). Spielberger et al. (1983) report a similar negative correlation between age and T-Anxiety which was not the case in the present study. In the present study, the age range of subjects was 40 - 79 years old with a mean age of 59. Unlike the younger subjects, many of the older subjects may have had spouses with underlying health problems. Therefore, the surgical event may have been expected and therefore less anxiety producing. Also, the majority of younger subjects had dependents at home, and therefore reasonable that the stress of major heart surgery would be greater for a 40 year old than for a 79 year old.

Familiarity with the Community and Anxiety

It was of interest that there was not a significant relationship between being familiar with the community and anxiety levels. Approximately half (52%) of the subjects were not from the area and were not familiar with the community. It is reasonable to assume that being away from home creates additional stress such as sleeping at the hospital or motel, eating out, lack of familiarity with the hospital and driving area and not being able to attend to the responsibilities at home. Perhaps the separation from routine duties and responsibilities was a stress reducer. It is possible that subjects who were

from the area perceived greater stress in handling this major surgical event in addition to their daily duties.

Subject Selection

The primary function of randomization is to secure comparable groups, that is, to equalize the groups with respect to the extraneous variables (Polit & Hungler, 1987). The use of a table of random numbers was very effective in this study to obtain equal groups as evidenced by no difference between experimental and control groups in education, age of subjects, age of patients, waiting time, familiarity with the community, and previous exposure to the intensive care unit.

Limitations

Several threats to internal and external validity existed in this study. Factors such as maturation, instrumentation, experimenter effect, and sample size pose threats to internal validity. The sample selection and construct validity factors may decrease the external validity of this study.

Maturation refers to processes occurring within the subjects during the course of the study as a result of time rather than as a result of the treatment (Polit & Hungler, 1987). An attempt was made to administer the posttest after the subject's initial visit to her husband postoperatively. Due to an inability to contact spouses consistently, not all the subjects completed the second

questionnaire after the first visit. There is approximately one hour between each visit. There is a possibility that during that time, the subjects were able to implement various coping modes which could have decreased their posttest anxiety scores.

To minimize the differences of instrumentation with the subjects, an attempt was made to limit dialogue to a script. However, there were situations in which subjects proceeded to discuss concerns or ask questions. Ethically, it was not reasonable to refuse to respond, so there were some situations in which differences in instrumentation may have presented a threat.

All routine preoperative teaching was not done by the same nurse. This factor also poses a threat to internal validity. Upon comparison of posttest anxiety levels, there was no significant difference between subjects who received the teaching from the one nurse versus the group who received instruction from other nurses. Although the comparison groups were small, this information suggest the utilization of various formats and approaches to administer preoperative teaching. Although this factor was a potential threat to internal validity, it strengthened the external validity of this study.

As stated earlier, the use of a second data collector for the final measurement of anxiety limited the effect of experimenter expectancy on the subjects. However, knowing

that both investigators were nurses, there may have been a tendency to respond to the questions in such a way as to appeal to the investigators.

The experimental group received approximately 12 more minutes of attention than did the control group. The effect of having additional time and opportunity to ask questions and having more attention from the investigator may have affected the anxiety levels of the experimental group.

The sample size was moderate ($N = 50$) which limits the power to detect the effect of the independent variable upon the dependent variable. Upon initial determination of sample size, the following factors were used: significance criterion of .05, statistical power of .70, and a large effect size of .70. Cohen (1988) claims that the effect size used in behavioral science is generally small (0 - .40) with a medium effect size of .25. The majority of nursing studies cannot expect effect sizes in excess of .50, and those in the range of .20 - .40 are probably most common (Polit & Hungler, 1987). Polit and Hungler (1987) also explain that just as .05 has been adopted as the standard, the standard for statistical power is .80. Since there are no previous studies similar to this to use to calculate effect size, an estimated medium effect size of .25 should be used to compute statistical power. Therefore, using an estimated effect

of .25, significance criterion of .05, and statistical power of .80, sample size according to Cohen (1988) should be 64 in each group.

Although Spielberger et al. (1983) report a high degree of concurrent, convergent, divergent, and construct validity, there were no specific reports found regarding construct validity in a high stress situation similar to the one in which these subjects were tested. A multimethod approach to quantifying anxiety may be better to assure the abstract concept of anxiety is adequately measured.

Finally, in discussing generalizability, characteristics of the sample must be taken into consideration. The sample population may be atypical because 98% of subjects ($n = 49$) were caucasian and all subjects were female. All patients had coronary artery bypass surgery and all other heart surgeries were excluded.

These potential threats to internal and external validity must be kept in mind when analyzing the data and making conclusions regarding anxiety levels of spouses of open heart patients.

Implications for Nursing Practice

Several implications for nursing practice become evident. The findings suggest that a mate's life-threatening illness has an appreciable impact on his or

her spouse as evidenced by the elevated state anxiety pre- and postoperatively. The first visit to see the mate can be extremely stressful and the spouse needs to be supported and reassured that the mate is doing well.

The hypothesis that preoperative preparation via an educational videotape would decrease anxiety was not supported. Since not all individuals are helped by increased information, an assessment should be completed to assess coping modes and ways in which the nurse can assist in coping. The spouse may prefer information seeking as a coping strategy, yet may be utilizing denial or avoidance at that particular time. In that case, an educational video would not be appropriate and alternative measures should be implemented to assist the spouse in his/her coping.

In light of study findings regarding the positive correlation between trait and state anxiety, and the negative correlation between education and anxiety, the nurse should pay particular attention to trait anxiety and pre- and postoperative education. Individuals with high trait anxiety or lower educational levels will tend to exhibit a higher state anxiety related to the hospitalization. The recognition of clients who may have a tendency to experience higher state anxiety may aide the nurse in implementing measures to decrease or prevent a high anxiety response.

Finally, the evidence that there was no difference in anxiety levels of subjects receiving preoperative teaching from various nurses should be encouraging to the nurse who is reluctant to use preoperative teaching as a strategy. However, additional investigation is needed to measure knowledge level of recipients of preoperative teaching from various sources. It would be reasonable to hypothesize that knowledge level of recipients from an experienced cardiac nurse would be greater than those of inexperienced nurses.

Recommendations for Future Investigation

The findings of this research study raise several questions that suggest a need for further investigation. The author suggests the following as areas meriting further research.

It would be of interest to conduct a similar study with a variance in sample. The study could be repeated to include equal numbers of male and female subjects. A comparison of anxiety levels of spouses and other family members would be interesting. Group versus individualized preoperative preparation would be important to assess in light of present work load and shortage of nurses. It has been suggested that patients with cardiac valve surgery cope differently than those having coronary artery bypass grafting because those with valve problems have coped with the disease for a longer period of time. A comparison of

coping and anxiety levels of spouses of patients with various surgeries would be of interest. Finally, replication of the present study is needed with a larger sample size to increase the power to detect the effect of the independent variable upon the dependent variable.

Variations of the independent variable should be considered. Many institutions provide a tour of the intensive care unit to explain and show the families the sights and sounds they will be experiencing. Since an educational video similar to the one used in this study would be less costly than the time it takes to provide a tour, it would be wise to study the differences.

The timing of the administration of the exposure must be evaluated. As reflected in the present study, anxiety levels of spouses on the night before surgery are higher than normal. Effectiveness of a videotape may be decreased due to elevated anxiety levels. Perhaps a video would be more effective if shown between three and seven days before surgery, assuming anxiety levels are less than the night before surgery.

A moderator to assist the spouse to review and debrief the information after reviewing a videotape may be more effective than just watching a videotape. An investigation comparing the effect of a videotape versus a videotape and a debriefing by a moderator would be of interest.

The dependent variable, anxiety, could be evaluated more thoroughly by adding additional criteria. A trend study similar to Aurbach's (1973) would assist in evaluating how anxiety levels change over time. Perhaps the STAI scales could be assessed preoperatively, after the first visit, at 24 hours and three days postoperatively. A multimethod approach to operationalizing anxiety may increase construct validity of Spielberger's STAI tool (1983) when administered in a similar setting. Blood pressure, heart rate, and additional questions specifically addressing the adequacy of preparation for this event are additional measures which could be assessed.

Finally, an additional evaluation of subjects' coping behaviors would be of interest to identify subjects who are information seekers and those who are deniers or avoiders. Wikoff and Miller (1989) analyzed the Jalowiec Coping Scale with 210 cardiac surgery patients. They found the tool to be useful in determining how people cope with various stressors in their lives. The educational video could be administered to all subjects and correlational tests could be performed to evaluate the relationship between coping modes and anxiety scores. It is the author's hypothesis that since all subjects would receive the educational video, the information seekers

would have lower postoperative state anxiety scores than those who were utilizing the denial coping mode.

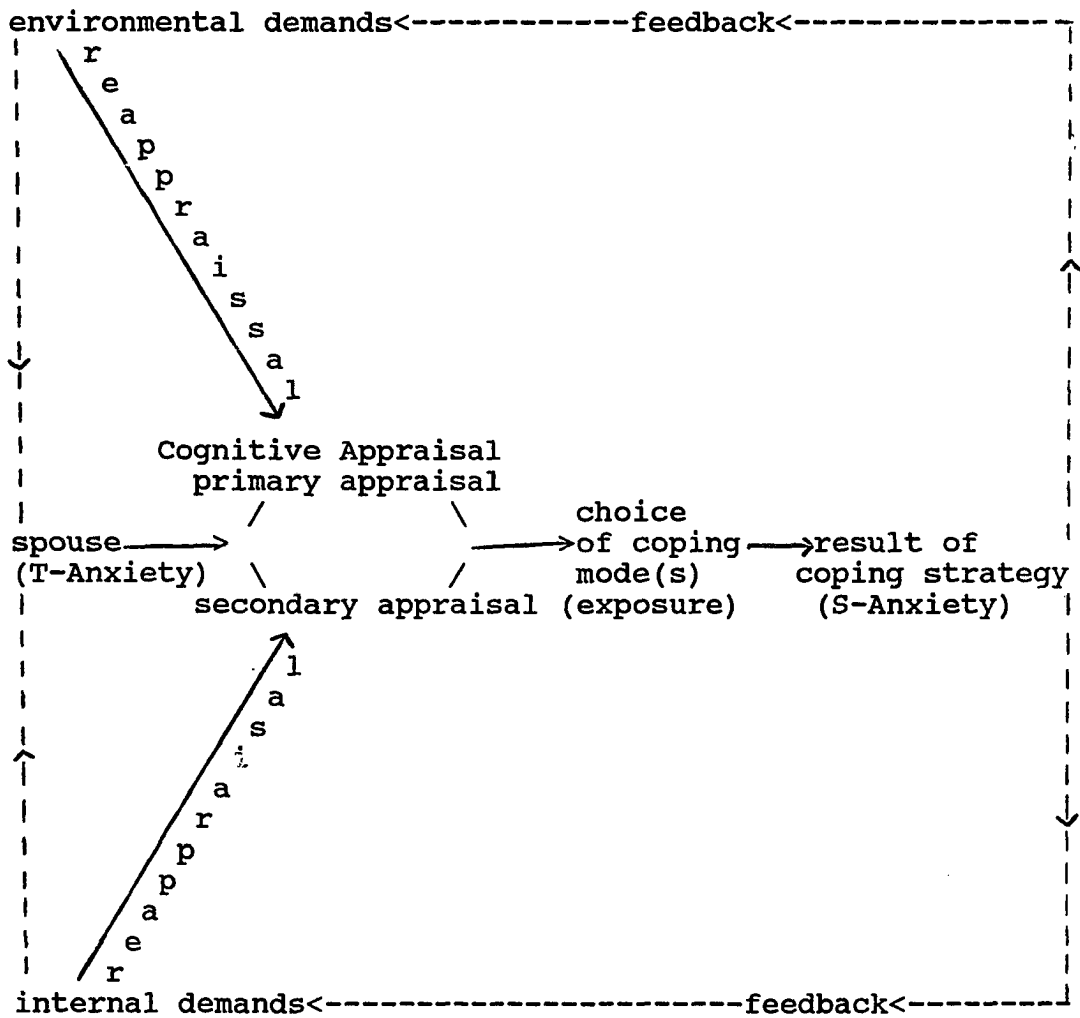
Summary

The purpose of this study was to answer the following question: What is the effect of preoperative exposure to the intensive care unit on anxiety levels of spouses of open heart patients. This research, while of an introductory nature, identified several findings of significance: 1) There was no significant difference in state anxiety levels of subjects who received preoperative I.C.U. exposure and those who did not receive the exposure; 2) Subjects who had higher trait anxieties also had higher state anxieties regardless of any intervention; 3) Subjects who had higher educational levels had lower anxiety scores; and 4) The older the subjects, the lower the preoperative state anxiety. Certainly, many questions remain unanswered regarding the best method of preparing spouses and their families for their loved one's cardiac surgery. Therefore, nurses must continue to care for the whole family and investigate creative ways to assist them in coping with the attendant stress.

APPENDICES

APPENDIX A

Conceptual Framework: Stress, Appraisal, and Coping



APPENDIX B **SELF-EVALUATION QUESTIONNAIRE**

Developed by Charles D. Spielberger
in collaboration with
R. L. Gorsuch, R. Lushene, P. R. Vagg, and G. A. Jacobs

STAI Form Y-1

Name _____ Date _____ S _____
Age _____ Sex: M _____ F _____ T _____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you feel *right now*, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

- | | | | |
|--|------------|---------------|--------------|
| | NOT AT ALL | MODERATELY SO | VERY MUCH SO |
| 1. I feel calm | ① | ② | ③ ④ |
| 2. I feel secure | ① | ② | ③ ④ |
| 3. I am tense | ① | ② | ③ ④ |
| 4. I feel strained | ① | ② | ③ ④ |
| 5. I feel at ease | ① | ② | ③ ④ |
| 6. I feel upset | ① | ② | ③ ④ |
| 7. I am presently worrying over possible misfortunes | ① | ② | ③ ④ |
| 8. I feel satisfied | ① | ② | ③ ④ |
| 9. I feel frightened | ① | ② | ③ ④ |
| 10. I feel comfortable | ① | ② | ③ ④ |
| 11. I feel self-confident | ① | ② | ③ ④ |
| 12. I feel nervous | ① | ② | ③ ④ |
| 13. I am jittery | ① | ② | ③ ④ |
| 14. I feel indecisive | ① | ② | ③ ④ |
| 15. I am relaxed | ① | ② | ③ ④ |
| 16. I feel content | ① | ② | ③ ④ |
| 17. I am worried | ① | ② | ③ ④ |
| 18. I feel confused | ① | ② | ③ ④ |
| 19. I feel steady | ① | ② | ③ ④ |
| 20. I feel pleasant | ① | ② | ③ ④ |



Consulting Psychologists Press
577 College Avenue, Palo Alto, California 94306

***Enlarged questionnaires from publishing company was used.**

SELF-EVALUATION QUESTIONNAIRE

STAI Form Y-2

Name _____ Date _____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you *generally* feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

	ALMOST NEVER	SOMETIMES	OFTEN	ALMOST ALWAYS
21. I feel pleasant	①	②	③	④
22. I feel nervous and restless	①	②	③	④
23. I feel satisfied with myself	①	②	③	④
24. I wish I could be as happy as others seem to be	①	②	③	④
25. I feel like a failure	①	②	③	④
26. I feel rested	①	②	③	④
27. I am "calm, cool, and collected"	①	②	③	④
28. I feel that difficulties are piling up so that I cannot overcome them	①	②	③	④
29. I worry too much over something that really doesn't matter	①	②	③	④
30. I am happy	①	②	③	④
31. I have disturbing thoughts	①	②	③	④
32. I lack self-confidence	①	②	③	④
33. I feel secure	①	②	③	④
34. I make decisions easily	①	②	③	④
35. I feel inadequate	①	②	③	④
36. I am content	①	②	③	④
37. Some unimportant thought runs through my mind and bothers me	①	②	③	④
38. I take disappointments so keenly that I can't put them out of my mind	①	②	③	④
39. I am a steady person	①	②	③	④
40. I get in a state of tension or turmoil as I think over my recent concerns and interests	①	②	③	④

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SELF-EVALUATION QUESTIONNAIRE

1. What is your husband's age? _____(years)
2. How many children under 18 years old reside in your home? _____
3. How long have you known that your husband was going to have open heart surgery? _____(days)
4. Have you ever been in an intensive care unit? (Circle letter)
 - a. No
 - b. Yes (if yes, please explain)_____
5. What is the highest grade or year of school you have completed? (please circle)

none	00								
elementary	01	02	03	04	05	06	07	08	
high school	09	10	11	12					
college	13	14	15	16					
some graduate school			17						
graduate or professional degree								18	
6. There may be persons with whom you feel very close to -- family, friends, or neighbors. These may be persons you share confidence and feelings with, whom you feel you can depend on emotionally, and can call on for help.

Do you have any close persons such as these?_____

How many are available for you during this week?_____

Code # _____

APPENDIX C

INFORMED CONSENT FOR HUMAN RESEARCH PROJECT

I, _____ agree to serve as a subject in the research study of Preoperative preparation of spouses of open heart patients under the supervision of Carol J. Gates. The purpose of the study is to investigate the effectiveness of various methods of preoperative preparation for spouses of open heart patients.

I understand that I will be asked to complete two questionnaires, each of which takes approximately 15 minutes to complete. I understand that I will complete the first one the night before my husband's surgery and the second one a few hours after surgery. The questionnaires assess how I generally feel and how I feel at that particular time.

This study poses no personal risk or discomfort to myself or my husband. I realize that my participation may contribute to new knowledge that may benefit spouses of open heart patients in the future.

I understand that my participation is voluntary. I understand that confidentiality will be protected, that I am free to withdraw from participation in the investigation at any time, and that my husband and I will obtain the best care available. I have read and fully understand the above information. Any questions I have about the project will be answered by Carol Gates, phone 774-7409. I will receive a copy of this signed consent form. I will also receive a copy of the results of this study.

Date

Subject's Signature

Date

Witness' Signature

Code # _____

APPENDIX D

INFORMED CONSENT FOR HUMAN RESEARCH PROJECT

I, _____ agree to serve as a subject in the research study of Preoperative preparation of spouses of open heart patients under the supervision of Carol J. Gates. The purpose of the study is to investigate the effectiveness of various methods of preoperative preparation for spouses of open heart patients.

I understand that I will be asked to complete two questionnaires, each of which takes approximately 15 minutes to complete. I understand that I will complete the first one the night before my husband's surgery and the second one a few hours after surgery. The questionnaires assess how I generally feel and how I feel at that particular moment.

I understand I will see a 10 minute video which explains the recovery process and other sights and sounds in the intensive care unit.

By participating, I understand that the knowledge gained may benefit spouses of open heart patients in the future. I also understand that I may see some unfamiliar equipment, sounds, and sights during the video.

I understand that my participation is voluntary. I understand that confidentiality will be protected, that I am free to withdraw from participation in the investigation at any time, and that my husband and I will obtain the best care available. I have read and fully understand the above information. Any questions I have about the project will be answered by Carol Gates, phone 774-7409. I will receive a copy of this signed consent form. I will also receive a copy of the results of this study.

Date Subject's Signature

Date Witness' Signature

Code # _____

APPENDIX E

Verbal Script for Informed Consent

Hello Mr. and Mrs._____. My name is Carol Gates and I am a nurse here at Blodgett. I am one of the critical care educators here and I help orient the nurses new to critical care. I am also working on my Masters degree in Nursing out at Grand Valley.

I have worked in critical care for quite awhile and have always been very interested in the families of our patients. Many spouses and families find these days difficult before and around the surgery and then seeing their loved one in the intensive care unit afterwards.

I am conducting a study which looks at how spouses of open heart patients are prepared for the upcoming surgery. My goal is to find the best way to prepare families like you for what you will be experiencing soon. I am asking spouses of open heart patients to participate. Your involvement would mean completing two short questionnaires, each of which takes about fifteen minutes to complete. I would ask you to complete the first one tonight. The first questionnaire has two parts. The first part asks how you feel right now and the second part has questions regarding how you usually feel. The second questionnaire which will be given to you tomorrow and a few hours after surgery is geared toward how you feel at that moment.

(Script for experimental group: Tonight after you complete the questionnaire, I will show you a ten minute video which shows you some of the sights and sounds you might see tomorrow. The video will also describe the recovery process.)

There are no risks for you or your husband by being a part of the study. Filling out the questionnaires may increase your awareness of how you feel. You will be helping us find the best way to prepare spouses like you in the future.

Your participation is completely voluntary. If you should decide to help out, you may withdraw from the study at any time. Your decision to participate or not to participate will have no influence on the care you or your husband receive.

Should you decide to be involved, your answers will be kept confidential. The results will be compiled but there won't be identification of specific answers with specific spouses. Do you have any questions about the study?

Would you be interested in participating?

If yes, obtain written informed consent, give the first questionnaires to all subjects, and give the I.C.U. exposure to the experimental group.

If no, thank them for their time.

APPENDIX F

Verbal Script for Administering First STAI Anxiety Scale

(Investigator will direct spouse to follow her to a conference room on the second floor. Offer the spouse a cup of coffee, tea, or juice. Spielberger et al. (1983) recommend establishing a rapport with the participant which will encourage the subject to answer the questions more honestly and objectively. The investigator should sit next to the subject.)

Mrs. _____, do you have questions so far? If not, let's take a look at this first questionnaire. I will read through the instructions while you take a look at them. It says here, "A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you feel right now, that, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best." The second part of this questionnaire asks you to describe how you usually feel - not how you feel at the moment - but how you usually feel. This last page asks some additional questions regarding you and your family. Let me go over them with you. (Read

each question.)

Remember that all your answers will be kept confidential. Take as much time as you need. I will be right outside the door here, so when you are done, just come on out. As I said before, for the first section, think about how you feel right now, and for the second half think about how you generally feel. Do you have any questions about any of this?

(Leave the room and wait until she comes out. If she is in the control group, thank her and direct her back to her husband's room. Inform her that a different nurse will be talking with her tomorrow after surgery and at that time, the second and final questionnaire will be given to her. If she is in the experimental group, continue with the preoperative exposure.)

APPENDIX G

Verbal Script for the I.C.U. Exposure

(Videotape will be shown in the same room as where the questionnaires were administered.) This videotape is entitled "Heart Surgery in our Family" and we filmed it right here at Blodgett. It's only about 10 minutes long. After you watch it I will show you back to your room.

(Show videotape)

Do you have any questions about what you saw? Any questions about anything else? (If not, direct her back to her husband's room.) Tomorrow another nurse will talk with you after your husband's surgery and give you the last questionnaire. Thank you and I hope you get some sleep tonight.

APPENDIX H

Script for Second Questionnaire Administration

(This contact will be within five hours from the time the patient was taken off the heart lung machine in surgery. By this time the spouse should have been in to see the patient two or three times by now. The second data collector will ask to speak to the spouse outside of the waiting room where the spouse probably will be found.

Hi Mrs. _____. My name is Lori Kane. Do you remember the questionnaire you filled out for Carol last night? Well I am the nurse that she told you about who will give you that last questionnaire. Do you mind taking five minutes to fill out this last questionnaire for us? Let's go to that same room that Carol took you to last night. (As they walk toward the conference room) How is your husband doing? How are you doing? Good. (As she enters in the room, offer her a cup of coffee, tea, or water. Show her to a chair.)

I will read through the directions as you read them. "A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you feel right now, that is, at this moment. There are no right or wrong answers. Do not

spend too much time on any one statement but give the answer which seems to describe your present feelings best." As you complete this, remember this is how you feel right now, and not how you usually feel. Do you have any questions? I'll step outside here and when you are done, just come on out.

(After she comes out direct her back to the waiting room.) Mrs. _____ thank you for taking the time to help us out with this. We will be sending you a copy of the results of the study within a year. Any other questions? Well, thank you and we really appreciate your participation.

APPENDIX I

Script for Videotape

SPOUSE 1: The time that I was waiting in surgery I felt I was numb.

SPOUSE 2: Anxiety...The nervousness of making sure everything's going to go all right. Wanting everything to go all right.

SPOUSE 3: Then when they came out and said they had put him on the pump, that was the hard, kind of trying time. Time got quite long on your hands, you know, you were worried.

NARRATOR: Tomorrow your loved one will have heart surgery. Whether you have been preparing for this for some time, or whether this was a decision made just this week--for all families this is a time of apprehension; it is a time when waiting seems so difficult, because of all of the unknowns that are ahead.

CAROL GATES, NURSE: Through this short program, we hope to make the waiting more bearable -- by making the unknown familiar. We will talk with spouses about the concerns and fears they had as their loved one went through surgery; we will explain some routines; and show you some sights you will soon be seeing.

NARRATOR: Through the years since we have perfected open heart surgery, we've found that the days immediately surrounding the operation can be the most trying for the family of the patient. We've found that through this period there are four stages that every family goes through. We call these: the waiting period; the day of shock; the period of unbelievable recovery; and moving day. While every patient's case is different, most families find themselves going through these four stages in only four days. That's part of what can make this period so trying: each day is a new, and sometimes frightening, experience. We will make them less frightening by making them more familiar; by taking you through these stages one at a time.

The period you are in right now is one of the most difficult stages -- waiting. There are so many unknowns for you now. Unfortunately, with all these unknowns, it is human nature to focus our thoughts on the things that could go wrong. This waiting period will last up until the surgery is completed and your loved one has been taken

to the intensive care unit. The actual surgery usually takes between three and five hours -- the length will vary depending on the type of operation your loved one will have. All of this means more anxious waiting -- to help ease this waiting, the nurses will bring you periodic messages during surgery. About an hour after the patient has been taken off of the heart-lung machine, the doctor will come out to talk with you. Your loved one will be taken to the intensive care unit where the nurse will continue to monitor him closely. As soon as she is able, she will tell you that you may see him.

SPOUSE 1: When I first walked into the room to see my husband after surgery, I was shocked...I couldn't believe that he was going to be hooked up to as many tubes as he was.

SPOUSE 3: I wanted him to sleep through the whole thing, that was my feeling.

SPOUSE 2: It didn't frighten me to see him the next day with all this machinery because he just seemed to be resting well.

NARRATOR: We call this next period the relief and shock stage because family members can be torn by these two conflicting emotions. You experience such relief that your loved one made it through surgery. Yet at the same time, it's alarming when you see him hooked up to all that equipment and machinery. Mr. Price just had bypass surgery this morning. He is not awake yet, since it takes a few hours for the anesthesia to wear off. Your loved one probably won't respond when you come into the room -- just remember that this is normal.

Like Mr. Price, the patient's skin will probably feel cold and look a little puffy. In surgery they keep his body temperature low. So don't be alarmed if his skin feels cool to you. He will soon warm up. The tubes that you see were all put in while he was asleep in surgery.

Since the anesthesia will still have effect, he will not be able to breathe on his own. A machine will do it for him.

This machine pumps oxygen into his lungs through this tube. As he starts waking up, the doctor will slowly decrease what the machine does for him and he will breathe more and more on his own. This tube is usually removed that same night or the next morning. He will be able to talk to you as soon as it is removed.

This tube leads to the patient's stomach, where it prevents the nausea and vomiting that could otherwise occur after surgery. It will usually be removed the

morning after surgery and then be able to drink and eat.

The small tv screen at the bedside is a monitor that the nurse uses to continually check your loved one's blood pressure, heart pressure, heart rate, and temperature. Most of the equipment here has alarms to let the nurse know if any of the readings are out of the ordinary. If you should hear an alarm sound, feel free to ask the nurse to explain it; in most cases it just indicates an area that may need some extra attention. Out at the main nursing station the nurse also sees these same readings, so your loved one will be watched very closely, whether the nurse is at the bedside or out at the station.

Dressings and tape will be covering the incisions that were made during the operation. Mr. Price also has dressings on his legs, but you will not necessarily see this for all types of heart surgery.

You will also see two or three tubes from the chest that lead to a container at the bedside. These tubes drain the fluid and blood that normally collects in the chest after surgery. Intravenous tubes, or I.V.s return some of this blood, back to the patient.

I.V.s also are used to provide the patient with necessary fluids and drugs. The rate of flow from each I.V. tube is carefully controlled.

Sometimes patients can be confused when they are waking up. To prevent them from pulling at one of their tubes, their wrists may be loosely confined, as a reminder not to pull at anything.

The sight of you loved one under all this equipment can be very frightening. But if you realize this is normal and very temporary, this time of fear will soon pass.

Later that same day he will begin to awaken. He will hear you and be able to communicate with you through writing or mouthing words. He will feel warmer now and will understand what you are saying.

SPOUSE 1: The thing that I remember about the day after surgery was, just about everything was off of him already. I walked in and he didn't have the tube down his mouth and down his nose, and coming out of everything...He looked like my husband again.

NARRATOR: The next stage usually begins the day after surgery: we call it the day of unbelievable recovery. We call it that because your loved one will look so different from when you first saw him after surgery, surrounded by

all of that equipment with all of those tubes running into him. Like Mr. Price, he should now have the tubes out of his mouth and nose, and he will be able to sit up and talk. By lunch time he will be encouraged to sit up at the edge of the bed to eat.

The nurse will encourage him to do his coughing and breathing exercises, helping to clear out his lungs to avoid the chance of his getting pneumonia.

SPOUSE 2: When he was moved out of the ICU it was like a weight load was off... I felt that if they felt he was capable of going to the fourth floor, he was well on the road to recovery.

NARRATOR: The last stage of this initial recovery period, we call moving day. Your loved one will be able to leave the intensive care unit, and will be transferred to the general nursing floor. This is usually the second day after surgery. On this day all the rest of his tubes will be removed except one IV line in his arm. He will be eating regular foods by now and will be getting up and around better on his own.

CAROL GATES: As you can see, you and your loved one will quickly pass through the stages of: relief and shock; unbelievable recovery; and moving day, when he's transferred to the regular floor.

Look at these stages as a guide. Every patient is different and may progress more rapidly or slowly. Know that the staff here will do everything they can to assist them through these stages.

Now focus on making it through one stage at a time, and before you know it, this difficult period will be over, and you will be home picking up your life again.

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LIST OF REFERENCES

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