PHASES OF RECOVERY FROM OPEN HEART SURGERY:
A DESCRIPTIVE STUDY OF POSTOPERATIVE PATTERNS IN ADULT CARDIAC SURGERY PATIENTS PRIOR TO DISCHARGE FROM HOSPITAL

by

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We accept this thesis as conforming to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA

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ABSTRACT

PHASES OF RECOVERY FROM OPEN HEART SURGERY:
A DESCRIPTIVE STUDY OF POSTOPERATIVE PATTERNS IN ADULT CARDIAC SURGERY PATIENTS PRIOR TO DISCHARGE FROM HOSPITAL

This descriptive study was designed to investigate the problem of inadequate emotional recovery from open heart surgery. This problem has been defined by a number of earlier researchers who have noted adverse emotional reactions to the experience of cardiac surgery in both the early postoperative and the post-discharge periods. This investigation had as its purpose the examination of the pre-discharge recovery of patients, and the investigator intended to note whether there existed a common pattern of recovery among the patients studied (hence, a pattern of emotional response to surgery). It was anticipated that the discovery of similarities of behaviour might give insight into the responses to open heart surgery and provide information important to the study of long-term rehabilitation.

Twenty adult patients scheduled for open heart surgery were selected as the sample for study. The principal setting for the investigation was the Cardiac Surgery Unit of a large metropolitan hospital. Subjects were interviewed one to two days prior to surgery and then every two
to three days postoperatively until the time of discharge. The investigator obtained qualitative data with the aid of a data collection tool, noting the physiological status of the subjects but focusing most directly on verbal and non-verbal behaviours exhibited. The latter observations included focus of conversation, patterns of communication, affect, orientation, level of anxiety, and activity.

Following analysis of the data, it was noted that a common pattern of recovery was indeed evident. Three phases of recovery - Somatic, Transition and Resolution - could be described for each subject in the sample. The phases indicated the subjects' general responses to surgery and their progression toward increased activity and independence at the time of discharge. In effect, the phases served to define the hospital course of emotional recovery from open heart surgery. The length and onset of these three phases were similar for patients with an uncomplicated recovery but varied with patients who experienced major physiologic difficulties.

The implications of a recovery pattern have been discussed relative to nursing care of the cardiac surgical patient and specific recommendations for nursing intervention have been made. Subject areas worthy of further investigation have been enumerated by the investigator in light of the conclusions of the present study.
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CHAPTER I
INTRODUCTION

Background of the Study

Throughout the past two decades much medical and nursing research has been devoted to the study of the patient undergoing cardiac surgery. Early researchers examined the outcomes of closed surgical procedures in the 1950's; with the evolution of "open heart" procedures employing cardiopulmonary bypass, the investigators of the sixties and seventies have focused on the physiological and psychological sequelae of open heart surgery, seeking to define postoperative outcomes and to determine their possible causality.

In the course of clinical fieldwork in the area of cardiac surgery, the investigator has noted a possible pattern of recovery in patients who have undergone open heart surgery; this "pattern", indicating possible phases of adaptation to the surgical experience, bears further investigation in order to determine whether open heart surgery patients have certain commonalities of experience and reaction during recovery from surgery. Phases of the postoperative period have been noted by Abram (1965) and Kimball (1969b), delineating a range of behaviours from apathy and egocentricity to the anticipation of discharge.
from hospital. To date no researcher has described phases of recovery in detail or discovered their significance for nursing intervention with the cardiac surgical patient.

**Statement of the Problem**

A number of studies have been noted which deal with the postoperative course of the cardiac surgical patient, ranging from the discussion of delirium and unusual sensory and thought disturbances in the immediate postoperative period (Kornfeld, 1965; Egerton and Kay, 1964; Heller, 1970; Blachly and Starr, 1964; Ellis, 1972) to the examination of long-term psychological outcomes of the surgical procedure (Frank, 1972; Heller, 1974; Blachly and Blachly, 1968). The latter studies appear to hold far-reaching implications for clinical nursing since they point out an absence, in many cases, of successful emotional recovery from open heart surgery. Blachly and Blachly (1968), in an evaluation of the vocational and emotional status of open heart surgery patients, found one-third to one-half of a sample of 263 patients complaining of increased nervousness and irritability postoperatively, as compared with their preoperative disposition. A study conducted by Heller _et al._ (1974) showed the incidence of anxiety, depression, low self-esteem, somatic preoccupation and withdrawal in open heart surgery patients interviewed one year following surgery. On the basis of this research, it is noted that a substantial number of open heart surgery patients fail to make adequate emotional adjustment to and recovery from their surgical experience. The investigator intends to examine this problem
in the sense that "emotional adjustment" may be influenced or predicted by phases of recovery in the pre-discharge period.

In light of the above problem statement, the purpose of this descriptive study is to identify, postoperatively, behaviours which are common to open heart surgery patients and which might thus serve as expressions of patient needs, perceptions and experiences. If adaptive or reactive phases can be identified in the postoperative cardiac patient, then nursing interventions may ultimately be designed which aid in meeting patients' emotional needs and facilitate adjustment (short- and long-term) to the experience of surgery. The investigator does not intend to propose such interventions, but will attempt to discover qualitative, empirical data which describe in detail the behaviours observed in and common to patients recovering from open heart surgery.

Assumptions

It is assumed that patients are indeed required to make some form of adjustment to the stress of a surgical procedure such as open heart surgery. It is also assumed that such an emotional adjustment begins to take place as the patient commences his recovery from surgery, and that this recovery may begin as soon as the post-anesthetic recovery period. The investigator makes these assumptions on the basis that other researchers (Abram, 1965; Kimball, 1969; Frank, 1972; Heller, 1974; Blachly and Blachly, 1968) have taken for granted the need for emotional adjustment.
to the impact of open heart surgery.

The assumption is also made that patients exhibit no difference in reaction to the experience of open heart surgery by virtue of their sex. Experiences of the recovery period are not unique to either males or females, as evidenced by the study of Sveinsson (1975).

**Definition of Terms**

The following terms are operationally defined for clarity in the discussion of data presented.

Adaptation: a state of successful coping which implies that the individual has modified his usual behaviour pattern to some extent in order to deal with change.

Emotional recovery: successful adaptation to the stress of open heart surgery, indicated by the patient's acceptance of the outcome of surgery and by his or her return to presurgery or pre-illness function as an individual and/or family member.

Open heart surgery: cardiac surgery employing cardiopulmonary bypass.

Patient needs: any of the physiological, psychological or social requirements of the hospitalized individual.

Phase: a stage of the patient's recovery at which behaviours exhibited by the patient are similar and form a pattern; the phase may be indicated by verbal and nonverbal behaviours of the patient or similar categories of behaviour as shown
by the data.

Psychological adjustment: in this study, congruent with "emotional recovery"; a state of successful coping in which a patient's psychosocial needs are met and in which his response to surgery is that of a positive adaptation.

Limitations

This study does not hypothesize or measure a relationship between the independent and dependent variables, but merely aims to discover and describe phases of recovery from open heart surgery in terms of patient behaviours. Needs of the patient during the recovery period may be inferred from the data and will be discussed if relevant to data analysis and subsequent conclusions.

The selected sample is limited to patients undergoing open cardiac procedures with the use of cardiopulmonary bypass. The study does not investigate any possible correlation between the type of surgical procedure and the occurrence of phases of recovery from surgery, nor does it examine the relationship between other variables, such as age, sex or diagnosis and the existence of a post-surgical pattern.
CHAPTER II

REVIEW OF LITERATURE RELATED TO THE PROBLEM

The topic of psychological outcomes of cardiac surgery has been examined extensively by a number of researchers, some of whom were noted earlier in the definition of the problem under study. Many investigators have sought one or more answers to the problem of lack of emotional recovery from open heart surgery, and several trends or foci can be identified when summarizing their efforts.

_Emotions and Cardiac Disease_

In an attempt to study emotional adjustment to or recovery from open heart surgery, one must first look to the early literature dealing with emotions and cardiac disease. Reiser (1951) was one of several authors who commented on the anxiety connected with heart disease and on the need to integrate the awareness of heart disease into the patient's self-concept. He identified adjustment problems such as guilt, depression and dependency which, although not applied at the time to the cardiac surgery patient, are relevant in the consideration of preoperative emotional adjustment and its possible influence on postoperative outcomes. Reiser (1959) later applied these concepts to cardiac surgery, discussing postoperative defense mechanisms, such as
dependency, depression and reactions to altered body image. His descriptive data gave a clear insight into the emotional picture of cardiac surgery, and paved the way for future qualitative and quantitative research.

The Stress of Cardiac Surgery

With the advent of closed cardiac procedures in the early fifties, Fox (1954) discussed psychological observations made with patients undergoing mitral valve repairs. Fox's study focused on the stress of cardiac surgery, opening up a new trend in postoperative research. His investigation was limited in scope, however, because it considered basically the preoperative reactions to stress (immobility, hysterical amnesia, denial) and did not examine post-surgical reactions in detail. Findings concerned with personal responses to illness and its limitations tended to reiterate earlier literature on the subject of emotions and cardiac disease; in his discussion of defense mechanisms, such as denial, immobilization and anxiety, Fox noted similar preoperative defenses among the patients studied but failed to shed much light on emotional reactions following surgery. In 1956, Kaplan published the results of a descriptive study which dealt with both pre- and postoperative coping mechanisms. Once again, the patients selected for study were undergoing closed cardiac procedures for repair of the mitral valve. Kaplan noted that certain preoperative coping mechanisms reappeared after surgery, even though the presenting symptoms of heart disease had been alleviated. He
found that some patients readily tended to return to a "pre-sickness pattern of living" if they had not totally adjusted to their illness before surgery; others, he noted, developed new symptoms (transient muscle pain or psychotic symptoms for example) in order to utilize an illness to avoid anxiety-provoking situations. His observations of this rehabilitation issue were among the first insights into the "failure to make adequate emotional recovery," and his investigation brought about many questions for further research into responses to cardiac surgery.

Emotional Outcomes of Cardiac Surgery

Following Kaplan's study, the research focus in the problem area shifted its emphasis to the examination of emotional outcomes of cardiac surgery. Meyer, (1961) discussed preoperative fear and anxiety and then clearly described postoperative behaviours and experiences of the patients in his sample. He found a catastrophe reaction, described as "frozen terror," in a number of early postoperative patients and discovered them to be immobile, apathetic and indifferent to their surroundings. His descriptive methodology and detailed case studies gave a clear picture of emotional change post open heart surgery, although he did not relate his observations to any existing theoretical or conceptual framework such as those of loss or anxiety.

In 1963, Knox examined the psychiatric aspects of mitral valvotomy and found psychological sequelae to be present in a significant number of patients studied. One
purpose of this study was to determine the frequency of psychological disorders following cardiac surgery; the results noted a decreased incidence of actual psychosis, as compared with the findings of earlier researchers, but did not describe behaviours which in fact were present in post-operative patients (termed "psychological sequelae") or hypothesize "normal" constituents of an uneventful or uncomplicated postoperative course.

Dealing with this same theme, Galdston (1970) noted a psychotic reaction to successful cardiac surgery in his case study of a woman undergoing aortic valvotomy. Galdston related a theory of "intrapsychic stress" to an outbreak of agitated depression with this patient and discussed the patient's prolonged self-interest and dependence due to her preoperative lifestyle within the confines of congenital heart disease. Although the author gave a detailed description of the patient's post-surgical course, it is difficult to say whether his results are generalizable to a larger patient population and if, in fact, they represent some type of common behavioural reaction or response to the surgical procedure.

Postcardiotomy Delirium

The search for a common denominator in adverse post-operative reactions added yet another dimension to the problem of "inadequate emotional adjustment and recovery." In 1964, Egerton and Kay conducted a study dealing with specific psychological disturbances associated with open heart
surgery and found 17 of 60 adult patients to experience delirium postoperatively. Depression and hysteria were also noted in some patients, persisting in a few cases until the post-discharge period. These researchers were the first to discuss abnormal sensory input as a possible etiological factor in adverse postoperative emotional outcomes; they also discussed the possible relation of cardiopulmonary bypass and sleep deprivation to post-surgery psychoses. The findings of Egerton and Kay were consistent with their intent of discovering the frequency of psychological disturbance and enumerating possible causes of psychotic reactions to surgery. This study led the way for numerous other researchers who sought to further describe postoperative reactions of open heart surgery patients.

Blachly and Starr (1964) followed Egerton and Kay's study with an examination of "postcardiotomy delirium". They characterized this phenomenon as having a possible relation to perceptual deprivation, sleep deprivation, central nervous system damage secondary to hypothermia or the pump oxygenator, or microemboli. These investigators utilized a well-planned psychiatric evaluation technique to assess the mental status of participants, and noted that delirium was related to the seriousness of preoperative illness and the degree of stress surgically and post-surgically. They did not, however, describe the phenomenon in greater detail as to onset, length or common behaviours of patients experiencing delirium; "degree of stress" was not operationalized by the investigators in order to give a clearer pic-
ture of possible causality. Studies which followed this examination of psychological complications of open heart surgery included those of Kornfeld (1965), Heller (1970) and Tufo (1970), all of whom were concerned with factors contributing to the incidence of adverse emotional outcomes. Kornfeld (1965) discussed delirium in greater descriptive detail and related its occurrence to physiological factors, environmental factors and anxiety. Heller and associates (1970) confirmed these findings in a later study and Tufo (1970) noted positive neurological findings which correlated with mental function in the postoperative period. Braceland (1974) appeared to agree with causation by organic and sensory factors in a recent review of research relative to emotional outcomes of open heart surgery.

The trend with regard to defining untoward psychological outcomes of open heart surgery appears to have become static for a period, when the focus was narrowed to the examination of postcardiotomy psychosis. The attempts of earlier researchers to define or describe postoperative patterns of behaviour or common reactions seem to have been lost for a time due to intense interest in this phenomenon. Nursing literature was not without its emphasis on environmental or sensory factors related to recovery from open heart surgery, and several studies dealing with sleep deprivation and disorientation evolved from this curiosity (Walker, 1972; Woods, 1972; Ellis, 1972; Budd, 1974; and Lasater, 1975). All of the research in this area has been useful to practitioners and researchers alike, in terms of
modification of the environment of the intensive care unit and the design of nursing care activities which are aimed at reducing the patient's anxiety and maintaining reality orientation. However, it seems that no one factor can be designated as basic to the occurrence of postcardiotomy delirium, and it is therefore necessary to re-direct the literature review (and research interests in general) toward a different angle of investigation of the problem.

Adaptation to Surgery; Phases of Recovery

Blacher (1972) noted that the emotional impact of cardiac surgery may be an additional factor necessary in the explanation of psychosis following open heart surgery. In discussing this point, he directed the researcher's thinking back to the initial investigations of emotional outcomes and tied them together with research focusing solely on delirium. In their search for further explanation of emotional recovery from open heart surgery, two researchers of the sixties discussed adaptation to surgery and to the threat imposed by an operation on a vital organ. Abram (1965) was the first of these researchers to discuss the cardiac patient's emotional response and reaction to surgery and to the threat of death inherent in open heart surgery. In his descriptive study, Abram consistently noted the catastrophe reaction mentioned by Meyer (1961), as well as two other phases characterized by mild depression and "gradual lifting of the affect" (Abram, 1965, p.662). He also described the incidence of psychotic reactions in two
patients. His study was the first to describe, in detail, a meaningful picture of the open heart surgery patient's course of recovery. He also related his findings to the threat of death and considered environmental factors and their influence upon the patient's response to surgery and his experience of the recovery period.

The second researcher to deal descriptively with emotional reaction to and recovery from open heart surgery was Kimball (1969b). In the first of many studies dealing with the experience of open heart surgery, his purpose was to determine the specific experiences of patients undergoing cardiac surgery. Kimball conducted thorough pre- and postoperative interviews to assess mental status, utilized other medical and nursing data sources in contact with the patient and succeeded in gathering a wealth of descriptive data concerning "types" of patients presenting for open heart surgery. Like Abram, he noted phases of recovery which extended from an initial catastrophe response to transfer anxiety to depression to the anticipation of discharge. The description of phases or patterns provided a "missing link" which added necessary information for the study and explanation of post open heart surgery behaviours. The importance of phases to the investigation of the problem at hand will be discussed in the final summary of the literature.

Preoperative Factors and Postoperative Outcomes; Long-Term Outcomes

In order to bring the problem of inadequate emotional recovery from open heart surgery into its proper perspective,
it is necessary to discuss current research trends and interests. A number of clinical researchers are now investigating the relationship between preoperative personality factors to postoperative outcomes. Weiss (1966), Kennedy (1966), Layne (1971), Henrichs (1969, 1971), Quinlan (1974), Kimball (1969b, 1970, 1972, 1973) and Willner (1976) have found a positive correlation between lack of preoperative psychological adjustment and adverse postoperative outcomes. Both Kimball and Henrichs have utilized psychiatric evaluations in order to measure degrees or types of emotional disturbance and have noted fewer post-surgical complications with well-adjusted, less distressed preoperative patients; preoperative denial, high anxiety or depression have been identified as "risk factors" related to emotional response to surgery.

Even more relevant to the issue of emotional recovery or adaptation to open heart surgery is the current literature dealing with post-discharge responses and outcomes. Researchers dealing with this topic have discussed long-term adjustment or sequelae of cardiac surgery. In 1968, Blachly and Blachly evaluated the vocational and emotional status of 263 post-surgical patients and found that forty-one per cent of the sample, while feeling that they benefited from surgery, felt unable to work and complained of nervousness or depression; these researchers suggested an established cardiac rehabilitation program as a means of assisting patients to a fuller recovery. They failed, however, to mention any value of a further inves-
tigation into emotional upsets or causes of reluctance to return to the working force. In the early seventies, both Lucia (1970) and Frank (1972) found improved rehabilitation and functional status in patients studied after open heart surgery, giving optimistic results of a successful recovery period. The subject of emotional adjustment to and recovery from open heart surgery was examined further by Frank (1972b), who also found patients to be satisfactorily rehabilitated, exhibiting gratification regarding the surgical results and noting improvement in their functional capacity (both physiological and social). Frank noted that his sample may have been biased, however, in view of the fact that his patient population were all members of the "Mended Hearts Incorporated", a "service-minded and health-oriented" organization of former cardiac surgical patients.

In 1974, Heller and associates published the results of another follow-up study of open heart surgery patients and discovered less successful rehabilitation in a sample of 142 patients interviewed one year postoperatively. This study noted physical improvement and psychological decline in the patients interviewed and identified anxiety, depression, low self-esteem, dependency, somatic preoccupation and withdrawal in many of the participants; impaired sexual and marital functioning was also documented. Approximately one-third of the patients in Heller's sample exhibited "psychological hindrances to optimal recovery". These results make clear once again the problem under investigation: the failure of many open heart surgery patients to make ade-
quate emotional recovery from surgery. Heller's study is unique in that it gives specific direction for further investigation of this problem, considering it from a pre-discharge perspective rather than from the popular "pre-operative factors" or "postcardiotomy delirium" angles. In his recommendation for the promotion of optimal recovery by hospital staff, he alludes to the previous findings on emotions and cardiac disease and the stress of cardiac surgery; his suggestions also leave an opening for more intensive descriptive research (following Abram and Kimball) to examine the pre-discharge recovery period. It is from this direction that the purpose of the present study evolves.

Summary

The preceding literature review has illustrated a variety of approaches to the problem of inadequate emotional recovery from open heart surgery. Throughout the past twenty-five years, the problem has been examined with regard to preoperative observations of influencing or causative factors, immediate postoperative aberrant behaviours, such as delirium and related thought disturbances, and post-discharge vocational and emotional outcomes. It has been demonstrated that many post open heart surgery patients return to an adequate level of social and emotional function, either when within the bounds of the hospital or after their return home; however, the discoveries of Blachly and Blachly (1968) and Heller (1974), indicating a significant lack of post-discharge recovery from open heart sur-
gery, cannot be discounted and point to the need for examination of the problem from a new and different focal point. The question of whether or not there exists a critical period (influencing long-term outcomes of surgery) in the patient's hospital recovery remains to be answered. The investigator has chosen to direct the purpose of this study in that vein; to identify behaviours which are common to open heart surgery patients which may indicate phases or patterns figuring significantly in the patient's emotional recovery from open heart surgery. It seems that both Abram (1965) and Kimball (1969b) have uncovered some general patterns of recovery, delineating Meyer's "catastrophe reaction" (1961), as well as a period of mild depression followed by preparation for discharge. These descriptions point to the possible existence of phases of emotional recovery from the entire open heart surgical experience, but they have not been described or followed up in sufficient detail to document their possible significance for long-term recovery. The study of phases of recovery has importance for nursing care of cardiac surgical patients in both the hospital and community settings, since it may assist in more accurate assessment of the needs of these individuals.

The discovery of phases or patterns has taken place with regard to diseases or conditions other than those of the cardiovascular system and has provided valuable tools for nursing assessment and intervention. Lenneberg and Rowbotham (1970), in a descriptive study of the rehabilitation of ileostomy patients, have identified five phases of
the rehabilitation process which are indicators of the patient's adjustment to his situation. The description of these phases includes the emotional reactions of patients to the impact of surgery and a changed body image. Crate (1965) has discussed a model of adaptation to chronic illness which is formulated to aid the nurse in recognizing the adaptation process and the feelings which the patient experiences at different stages of adaptation; it assists also in the development of nursing interventions aimed at assisting the patient to an optimal level of adaptation to chronic illness. In a similar manner, Kubler-Ross (1969) has provided a guideline for assessing successful adaptation to death and dying, and has discussed phases of adjustment which provide guideposts for intervention with patients and families. In the cardiovascular field, similar efforts have begun in the areas of rehabilitative stages following myocardial infarction (Granger, 1974) and the identification of patient needs following aortic valve replacement (Lumpp, 1968). The former article discusses both adaptive and maladaptive behaviours presenting in three phases of rehabilitation extending from the period in the coronary care unit until three years post-discharge; this discussion is not based upon an independent research study, but draws from other research efforts in the area of coronary patient rehabilitation and the concepts of "loss theory" and "crisis theory". The study by Lumpp describes a myriad of patient needs and discusses their frequencies of manifestation with respect to four phases (preoperative-
ICU-postoperative-pre-discharge) of hospitalization. Most recently, Boisvert (1976) has sought to enumerate the post-operative concerns of coronary bypass patients and has uncovered themes related to fatigue, pain, activity level, dependence-independence, and other aspects of the therapeutic regime. From the evidence of other researchers, it seems reasonable to expect that further detailed description of phases or patterns of the postoperative open heart patient will constitute a useful and meaningful addition to existing knowledge of the problems related to emotional recovery.

Descriptive methodology has been chosen for the investigation of the problem because it is felt that empirical, qualitative data are relevant and necessary to the investigator's purpose. The qualitative approach of Glaser and Strauss (1967), seems an ideal means of investigating the postoperative course of recovery since the object is documentation of behaviours and subsequent exploration, analysis and conceptualization related to data obtained. Glaser and Strauss' method of "Observation-Classification-Generalization" will be essential to the identification of any pattern of recovery which may be found, and their approach seems compatible with other examinations of the problem by Blachly and Blachly (1968), Heller (1974), Abram (1965), Meyer (1961) and Kimball (1969b). It is expected that the empirical, inductive approach will be most useful in providing specific information about emotional recovery, just as it has yielded a meaningful picture of patterns in
the chronically or terminally ill individual.
CHAPTER III

THE RESEARCH DESIGN

Introduction: An Overview

The collection of data required to investigate the research problem took place over a period of four months. The approach to this investigation was inductive and empirical data were obtained and analyzed in the manner of Glaser and Strauss (1967). It should be mentioned that the investigator did not follow exactly these authors' "constant comparative" method of data collection and analysis; because a pattern or possible phases were sought, it was felt that concurrent data collection and analysis might bias the observer/interviewer. However, Glaser and Strauss' method of data recording, coding and categorizing was adhered to and proved useful in the examination of the vast quantity of empirical data obtained.

The Research Setting

This investigation of recovery from open heart surgery took place in the Cardiac Surgery Unit of a large metropolitan hospital in Vancouver, British Columbia. An average of six open cardiac surgeries are performed weekly in this institution. The Cardiac Surgery Unit is comprised of fifteen beds and contains a patient population limited to individuals undergoing either open heart surgery, pacemaker...
insertion or cardiac catheterization procedures. Patients admitted for open heart surgery enter the hospital one to two days prior to surgery and are given intensive preoperative instruction by the unit staff members. The preoperative teaching plan includes an overview of the pathophysiology of cardiac disease (specific to the individual patient's diagnosis), the proposed surgical procedure, postoperative routines in the post-anesthetic recovery and intensive care areas and an introduction to the physiotherapy regimen (coughing, deep breathing, progressive ambulation). Following surgery, patients remain in the post-anesthetic recovery area for approximately twenty-four hours and are then transferred to the intensive care unit, where the average length of stay is three to four days. Patients then return to the Cardiac Surgery Unit for the remainder of their hospital stay; one to two days prior to discharge they receive written discharge instructions accompanied by verbal explanation of the physician's orders. The total hospital stay ranges from thirteen to sixteen days for patients with an uncomplicated recovery period.

Sample Selection

The sample for investigation has been selected from the group of patients admitted to the Cardiac Surgery Unit; a convenient non-random sample of open heart surgery patients has been chosen, with a total of twenty patients participating in the study. Subjects selected for study were required to meet the following criteria: 1) between
the ages of nineteen and sixty-five, inclusive; 2) undergoing a cardiac surgical procedure employing the pump oxygenator; 3) English-speaking. Both males and females were included in the sample. A specific diagnosis was not a criterion for sample selection; subjects included in the investigation had diagnoses of congenital or acquired heart disease (rheumatic or arteriosclerotic). Five patients in the sample had undergone previous cardiac surgery at some point in their history. Three patients initially selected for study have been excluded from the sample for analysis because of death, extended complications and unrelated complications, respectively. All participants were given a full explanation of the investigation prior to obtaining their written consent to inclusion in the study sample.

The characteristics of the sample are included in Table 1. The twenty participants are listed with corresponding information about age, sex, diagnosis and surgical procedure. The length of each subject's postoperative hospital stay is indicated, as is the number of contacts made by the investigator for the purpose of data collection.

Thirteen males and seven females were included in the sample. The mean age of participants was 51.5 years. The average length of the postoperative period in hospital was fourteen days.
<table>
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<th>AGE</th>
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<th>DIAGNOSIS</th>
<th>SURGICAL PROCEDURE</th>
<th>TOTAL POSTOPERATIVE DAYS IN HOSPITAL</th>
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<td>single aorto-coronary bypass</td>
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</table>

*includes pre-operative interview  **had previous cardiac surgery
<table>
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<tr>
<th>PATIENT'S INITIAL</th>
<th>AGE</th>
<th>SEX</th>
<th>DIAGNOSIS</th>
<th>SURGICAL PROCEDURE</th>
<th>TOTAL POSTOPERATIVE DAYS IN HOSPITAL</th>
<th>TOTAL CONTACTS MADE BY INVESTIGATOR*</th>
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<tr>
<td>K</td>
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*includes pre-operative interview  **had previous cardiac surgery
### TABLE 1 (continued)

#### CHARACTERISTICS OF THE SAMPLE

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<th>PATIENT'S INITIAL</th>
<th>AGE</th>
<th>SEX</th>
<th>DIAGNOSIS</th>
<th>SURGICAL PROCEDURE</th>
<th>TOTAL POSTOPERATIVE DAYS IN HOSPITAL</th>
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<td>mitral valve replacement</td>
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<td>W</td>
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<td>M</td>
<td>coronary artery disease; left ventricular aneurysm</td>
<td>single aorto-coronary bypass; excision of aneurysm</td>
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</table>

*includes pre-operative interview  **had previous cardiac surgery
Methodological Considerations and Procedures Relative to Data Collection

The empirical, inductive approach has been chosen as the methodology of this investigation. The descriptive "grounded theory" method of Glaser and Strauss (1967) was found to lend itself to the investigator's purpose: the discovery of phases or patterns in postoperative cardiac surgical patients. Because the discovery of a pattern is exploratory in nature and may ultimately constitute new knowledge, detailed data of a qualitative nature were desired. The empirical approach to the problem and purpose at hand is considered to have four components (Mann, 1968): observation, classification, generalization and the operational definition of concepts. These components constitute guidelines for the investigator in all steps of the research process; they give direction for the phases of data collection, coding and analysis and, in and of themselves, form a process of descriptive study.

In this investigation data collection was conducted in the manner described, beginning with the process of observation. Participants in the study were purposefully interviewed and observed with the intent of gathering relevant data regarding the recovery period of the open heart surgery patient. In order to facilitate and systematize observation and the interview procedure, a data collection tool was developed by the investigator. The tool allowed for pre-sorting of data obtained from dialogue with and observation of study participants; this was, in effect, a preliminary coding procedure which separated data into
distinct observational categories for both the pre- and postoperative periods. The preoperative portion of the data-gathering instrument included demographic data, details of the medical history, the patient's perception of his illness and its limitations and psychosocial data giving insight into significant forces or factors in the life of the individual. An assessment of communication patterns was also made, considering verbal behaviour (participation in conversation, initiation of or response to questions, characteristics of speech) and nonverbal behaviour characteristics (eye contact, gestures, body movement during interview). A general comment regarding the anxiety level of the patient was also included preoperatively; anxiety level was rated mild, moderate or severe according to the scales of Peplau (1963) and Hays (1961). Thus, verbal and nonverbal behaviours were indicators of anxiety; parameters included alertness, perception, degree of physical or emotional distress and concentration.

The postoperative portion of the data collection tool was composed of more specific categories of behaviour, focusing most directly on the patient's verbal and nonverbal behaviour. The focus of the individual's conversation was considered to be of prime importance in assessing the recovery period, particularly in the determination of a level or stage of recovery. This emphasis was made in view of Abram (1965) and Kimball's (1969b) observations of the postoperative behaviour of cardiac surgical patients. Consequently, the questions posed by the investigator at this
point were very general, serving only to direct the dialogue to the topic desired by the subject and to encourage his expansion of ideas and feelings to the utmost. Additional postoperative data included documentation of nonverbal behaviours (also integral observations made by Abram and Kimball), determination of the level of consciousness and examination for alterations in the thought processes of the subject. The latter data were noted using the descriptive characteristics given by Bates (1974) and Mechner (1975). Finally, physiological parameters were included in the data gathering instrument, keeping in mind the possible organic influences upon the subject's postoperative behaviour. The patient record and consultation with unit staff were utilized as complementary data sources to obtain this information. A complete copy of the data collection tool, accompanied by interview guidelines, is provided in Appendices A, B and C.

The data collection was completed for each participant on the occasion of each visit by the investigator. Preoperative interviews took place one to two days prior to the proposed surgery, following the introduction to the patient and the explanation of the study. The postoperative interview schedule commenced on the patient's first postoperative day, approximately twenty-four hours following surgery. The setting for the initial postoperative interview varied between post-anesthetic recovery and the intensive care unit, depending upon the patient's time of transfer. During the first postoperative week, visits were made
every three days. Interviews became more frequent during the second week following surgery when patients were seen every two days. In all cases, interviews ranged from five to forty-five minutes in length, depending upon the patient's condition and tolerance; the most lengthy sessions were consequently toward the end of the participant's hospital stay. In cases where the patient's condition was poor or if he experienced fatigue, the investigator's visit was postponed until the following day to allow the patient to rest; such an alteration in schedule was found to be most necessary in the intensive care setting.

Data Coding and Analysis Procedures

Following the data collection phase of the investigation, the raw data were sorted and coded into categories of behaviour. A "data analysis worksheet" (Appendix D) was developed in order to condense the volume of raw data into a workable format. Marginal notations were made in the data themselves to indicate illustrative case examples for later use in the discussion of findings. As this "joint coding and analysis" evolved (Glaser and Strauss, 1967, p. 107), categories and their components appeared, offering a narrower unit of analysis. "Orientation", "anxiety" and "affect" were three of the categories which emerged. Data for each participant were reviewed and the individual and group patterns of recovery were considered. The topic of conversation, coupled with nonverbal behaviour and observations of general activity, became the most significant consider-
ations both for the individual subject and for the entire sample. Components or properties of these categories included negative somatic feelings, boredom, humor, and positive somatic feelings. These properties were color-coded in the margin of the analysis worksheet (next to the postoperative day) in order that the data might be quickly reviewed for the incidence and frequency of certain behaviours. For example, a red dot denoted all negative somatic statements; when the investigator reviewed the worksheets of the entire sample, the red dots in the margin could be counted to determine the total number of negative somatic responses for all patients on a certain postoperative day. These "recovery indicators" served as the basis for delineation of the recovery pattern to be discussed in Chapter IV.

Reliability and Validity Issues

At this point it is necessary to address the issues of reliability and validity of the data base derived from the procedures outlined in the preceding section. Observations made by the investigator in the course of data collection were verified wherever possible with the staff nurses and the medical and nursing records, in order to ensure reliability of the findings. Notations were made by the investigator indicating specific behaviours described by other health personnel in the course of health care delivery. When appropriate, staff were directly questioned about their assessment or observations of particular behaviours. During
the actual interview process, the investigator made note of key words, topics and observations in order to maintain accurate recall of events. The data collection tool was completed immediately following the interview in order to minimize errors of memory. Audio or video recordings were not utilized as a means of determining reliability because of the potential difficulty of operating such equipment in the critical care areas and due to the possible hardship taping might impose upon the patient. The systematic approach to data collection and analysis lends a degree of reliability to the study, however (Riley, 1963, p. 73). A standardized procedure for the collection and analysis of data affords a more consistent approach to the research process and is thereby more explicit in relaying the methodology to other investigators.

The validity of the methodology and the results obtained is a "negligible problem" (according to Deutscher, 1970, p. 213) when the design of the study is considered. Deutscher states that "the problem of validity disappears when we have direct observation of the actual phenomenon (direct behavioural observation) we are attempting to approximate with our measuring instrument." A preliminary test of validity was conducted with a pilot study (sample size: two subjects) using the data gathering instrument. In addition, this study provided an opportunity to assess the interview schedule. At the conclusion of the pilot study, the data gathered appeared to be adequate for the determination of postoperative patterns and were consistent
with the investigator's purpose of obtaining behavioural observations at varying stages of recovery from cardiac surgery.
CHAPTER IV

FINDINGS OF THE INVESTIGATION

Upon intensive examination of the investigator's field notes and the data analysis worksheets, it is found that a pattern of recovery indeed exists for open heart surgery patients. A series of adaptive or recovery behaviours has been extracted from both the raw and coded data and indicates commonalities in the postoperative experiences of the twenty subjects studied. All subjects were found to demonstrate specific verbal and nonverbal behaviours which occurred with a degree of order and with high frequency at certain points in the postoperative course. Differences in the time of occurrence or in behaviours observed at certain intervals may be attributed to the incidence of complications (and thus the postoperative time factor with certain subjects).

The Recovery Pattern of the Individual Subject: Three Phases

As it is described here, the recovery pattern of the individual represents a summation of the commonly occurring behaviours observed in study participants. The overall pattern can be viewed as having three components or phases; each phase is a sub-pattern or group of similar behaviours which indicate a trend that is unique and separate.
A. Somatic Phase

The initial phase, labelled the "Somatic Phase", has its onset as the individual commences recovery from open heart surgery. This phase has been observed to extend from the post-anesthetic recovery period through the third day of the patient's convalescence. Variations in length include a duration of up to four days (or the entire period in the intensive care unit) or an extension for nearly one week with a critically ill subject. This phase was clearly observed in all subjects under study.

The occurrence of the Somatic Phase coincides with the aggressive aspects of the medical and nursing regime. Within the time period described above, the patient experiences constant monitoring of physiological function and is confined to a controlled activity level. He is frequently medicated for pain and receives intravenous narcotic analgesics. He undergoes vigorous chest physiotherapy and is in constant contact with a variety of health professionals. Visitors are restricted to members of the patient's immediate family and the length of contact is usually limited to promote the patient's rest.

As one might infer, the Somatic Phase has as its major characteristic a preoccupation with bodily state and function. This preoccupation has both positive and negative aspects, depending upon its expression by the subject. With nearly half of the subjects interviewed, the response to questioning about their progress in this early stage was
a negative one. The other portion of the sample reported that they were "doing OK" or "feeling pretty good." At times, these comments were given in combination with one another; for example, a response stating fatigue or noting extreme discomfort might follow a positive comment such as "I'm doing pretty well." In general, however, all subjects interviewed had a basic conversational focus dealing with some aspect of physical well-being, whether it be optimism, discomfort, fatigue or a dislike of tubings and monitoring devices. Some individuals summarized their situation with a totally negative comment such as "I'm doing terrible" or "I'm really dead but I'm still fighting," indicating a degree of discomfort or anxiety. Patients at this stage of recovery rarely mentioned individuals other than themselves in conversation; in cases where other patients were mentioned, enquiries most often did not appear until the latter portion of the subject's stay in the critical care area. If the subjects were asked about family members or friends, the response in all cases was succinct ("they come in every day" or "fine").

The appearance of patients in the Somatic Phase generally gave a picture of fatigue and discomfort. Patients were lethargic and pale, and they often showed signs of pain or exhaustion. Speech was mumbled and faint and appeared to require a great deal of effort, particularly on the first postoperative day. Subjects did not readily initiate conversation and limited their verbalization to brief responses to the questions posed by the investigator or
other health professionals. Nonverbal communication included nods, eye contact in response to conversation and limited gestures given as a greeting to persons approaching the subject. Nine of the twenty subjects studied were asleep at intervals when contacted during the first three postoperative days; one patient was intubated and unable to verbalize during this entire period. Two of the patients contacted did not wish to be seen by the investigator because of their generalized discomfort.

According to the investigator's observations and documentation from the patient record, all patients in this phase of recovery were well-oriented and none of the study subjects experienced disturbances of thought or affective disorders during this time period. Anxiety level was low for most subjects; if present, anxiety was noted most often in relation to procedures (physical or physiologic care) and the individual's tolerance of them. This observation was made with five subjects in the investigation.

B. Transition Phase

Following the Somatic Phase, a second trend appears in the overall pattern of recovery. This second grouping of behaviours shall be indicated as the "Transition Phase". This period has been observed to occur approximately between the fourth and ninth postoperative days; it was noted to have a later occurrence for subjects experiencing prolonged complications or a slightly longer stay in hospital. Once again, all subjects were noted to demonstrate to some degree the behaviour characteristics described herein.
The corresponding medical and nursing regimen includes an increased activity level through progressive ambulation and group physiotherapy sessions, increased participation in self care, diet as tolerated with group meals in the ward lounge, and the removal of tubings, cardiac monitors and parenteral medications (with the exception of intravenous sodium heparin administered via a "heparin lock"). At this time, the patient has usually returned to the Cardiac Surgery Unit; one of the patients in this sample was an exception to this routine and remained in the intensive care unit while "Transition Phase" behaviours were observed.

Behaviours characterizing the Transition Phase may be summarized as those moving away from the somatic, egocentric focus of conversation and action toward an increased awareness of other individuals; this transition may include a "rest" from the discomfort of previous days and the patient's inward and outward reflections upon the experience of surgery or upon his past and present states of well-being.

Subjects at this stage appeared stronger with improved colour and activity tolerance. They were more neatly groomed and usually wore eyeglasses and watches. Often they were cheerful and more talkative, although several individuals (six of the sample) were noted to be sleeping extensively. A number of subjects noted decreased discomfort at this time, although eleven respondents continued to complain of persistent pain. Four patients characterized their pain as being unrelated to surgical incisions but consist-
ing of a generalized aching. Nearly half of the sample noted poor sleeping patterns and continued to complain of some degree of fatigue.

There was, however, a change in focus from these somatic topics to more global statements of subjects' attitudes or perceptions. Although the somatic aspects of the patient's situation continued to receive mention, this topic was not foremost in either occurrence or emphasis. Many patients inquired about the status of other patients whom they had known preoperatively. Subjects tended to talk at greater length about their families or friends, recounting stories of visits made by significant persons. The activity level was another focus of conversation, and several subjects outlined their daily ward routines of self care, exercise, rest and meals. One patient described himself as experiencing "little bursts of energy" which highlighted periods of increased mobility and function.

A second definitive shift in subjects' concerns was noted in the reflective expressions of certain individuals. A few patients recalled either complications or the course of events in the critical care areas. Three patients clearly stated that they were "glad to be alive" following surgery and an even greater number of patients indicated optimism at the outcome of surgery. These individuals were generally progressing well and were happy to return to the Cardiac Surgery Unit. Other subjects (slightly over one-fourth of the sample), while optimistic, expressed the desire to have greater knowledge of the outcome of the sur-
gical procedure and their prognosis. Often these individuals were unsure of their actual status and referred to a nebulous "they" (presumably physicians and nurses) when discussing their progress — i.e. "they say I'm doing fine" or "they tell me I'm OK." It appeared that all subjects required some manner of reflection to contemplate the extent of their experience and to integrate the past with present events or feelings. Some patients reflected on the future as well, and began to wonder at the date of discharge from hospital. One patient quite freely expressed his thoughts about the experience of surgery and the postoperative period: he stated that he was "off Cloud Nine, down to Cloud Six" and clarified that the elevation of mood in the immediate postoperative period (which coincided with his perception of survival and feelings of having conquered death), had subsided, leaving him with a realization of his own mortality and a thankfulness for a positive outcome.

A number of subjects also noted a lowering of mood during the period described as the Transition Phase. This experience was labelled by patients "as depression", the "blues" or a "down day." Subjects who encountered this phenomenon could not identify a specific precipitating factor, nor could they delineate any specific focus of thought at the time of depression. One woman likened the experience to the postpartum depression following the birth of her children. Two men described this mood as one of irritability and impatience with others, staff and family members included. Another man discussed feelings of emp-
tiness and heaviness, stating that he felt as if "the bottom had dropped out" of everything; he acknowledged that he wanted to be alone at this time and had a need to "sort things out". All of the individuals who experienced this post-surgical depression (approximately one-third of the sample) found that its one-day duration did not constitute a setback.

In spite of prevailing improvement manifested during this phase, six of the subjects under study had a mild increase in anxiety during this time period. For all patients, the level of anxiety was low and appeared related to one of the following factors: prolonged incisional discomfort, an episode of chest pain (attributed to surgical trauma and not diagnosed as angina or pulmonary embolism) or gastrointestinal disturbances. This anxiety, usually noted by the patient's verbal emphasis on the precipitating factor, was absent at the time of subsequent interviews with all patients concerned.

The subjects' level of orientation was generally good during the Transition Phase, although four individuals exhibited a mild degree of disorientation or periodic confusion between the ninth and eleventh postoperative days. This disorientation usually involved lack of knowledge of time or person or a disruption of short-term memory processes. No subjects experienced hallucinatory phenomena, although two patients reported strange dreams and one of these men behaved inappropriately after awakening.
Communication patterns in the Transition Phase were changed dramatically from those of the Somatic Phase. The subjects interviewed at this time demonstrated more spontaneous communication and spoke at greater length in response to questions. Patients at this stage of the recovery period were observed to converse with staff and other patients to a greater extent than previously. Nonverbal communication was also significant at this time - many subjects (over half of the sample) punctuated their speech with gestures or actions in order to more clearly express themselves, and eye contact was generally increased. Several patients displayed their incisions or venipuncture sites to the investigator while discussing discomfort; others showed greeting cards or flowers while mentioning visitors or their improved physical state. As a whole, subjects appeared more outgoing and solicitous of attention and conversation than in the preceding phase of recovery.

C. Resolution Phase

The third and final phase of the recovery period is that segment in which study participants showed the greatest improvement. This stage is named the "Resolution Phase" because it is the time during which conflicts and problems appear to achieve total or partial solution. At this time, the patient continues to improve steadily and exhibits a greater degree of independence in daily activities. He readies himself for discharge by obtaining information which will assist him to progress outside of the hospital environment. The routine of the Cardiac Surgery Unit allows the
individual to attempt an increased daily activity level through self-care and physiotherapy. Toward the conclusion of the hospital stay, the patient receives discharge guidelines and instructions from the physician and/or members of the nursing staff. This information includes topics such as medications, diet and activity level post-discharge.

The Resolution Phase has been noted to occur approximately three days prior to the subject's discharge from hospital. For individuals with an uneventful recovery period, this phase would begin on or about the tenth post-operative day.

Subjects interviewed in the Resolution Phase were noted to have improved appearance and activity tolerance as compared with the previous stage. All patients were neatly groomed, talkative, alert and often jovial. Many were found in the patient lounge socializing with other individuals. All subjects indicated the anticipation of discharge as a major conversational focus at this time.

The anxiety level was low once again for subjects observed at this point in time. The mild anxiety provoked by the discomfort of the first two phases had disappeared. Patients who exhibited mild anxiety during the Resolution Phase were concerned about receiving information regarding discharge (on subjects such as activity level, visits to the physician, sexual activity, travelling) and most often this anxiety was resolved by the pre-discharge teaching. Two of the subjects studied continued to experience mild anxiety about their prognosis and these persons questioned their
physicians appropriately regarding this matter.

As was mentioned in the initial discussion of the Resolution Phase, discharge from hospital was the primary focus of conversation for patients at this stage of their recovery. Subjects were generally happy to be approaching discharge and awaited the event with optimism and a degree of enthusiasm. All subjects posed a number of questions concerning the post-hospital period and most individuals were eager for the physician's or nurse's teaching session. Many patients were of the opinion that recovery would proceed more quickly at home - several persons stated that they could "recover just as well at home as (they) could here."

Over half of the subjects studied had concrete plans for daily activity and a return to their jobs or usual functions at some projected date.

Additional topics of conversation which surfaced during the Resolution Phase included the mention of the subject's family or the discussion of various events totally unrelated to hospitalization or illness. A few minor complaints of pain or fatigue persisted, but these did not constitute a major focus of verbalization. Two patients introduced a profound topic dealing with the impact of open heart surgery on their emotions. In summarizing their experiences of cardiac surgery and the postoperative period, these individuals noted that the surgery had exerted a significant effect upon their emotions, leaving them with feelings of anxiety, depression, loneliness or fear. Each subject acknowledged that he currently felt improved and in a
brighter mood, but agreed that open heart surgery was a tremendously emotional experience for him. Both individuals felt that their physical needs had been met repeatedly during the course of recovery, but noted that their needs for psychological support were not always satisfied. One woman felt that she could not rely on her family for such support because they were unable to deal with her need for them - she felt that they denied the seriousness of her surgery because it threatened the emotional make-up of the family group. This subject suggested that the nurse would be the ideal individual to provide emotional support, because he or she would be "neutral" and not feel personally threatened by the situation.

This discussion of the Resolution Phase concludes the general description of the recovery pattern. Table 2 illustrates the three phases of hospital recovery as they were evidenced in the behaviour of one of the subjects studied. Appendix 3 represents an overview of the total recovery pattern.
<table>
<thead>
<tr>
<th>POSTOPERATIVE DAY</th>
<th>APPEARANCE</th>
<th>VERBAL AND NONVERBAL BEHAVIOUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Intensive Care Unit)</td>
<td>pale colour; sleeping soundly</td>
<td>sleeping soundly; nurses' notes report patient well-oriented and co-operative</td>
</tr>
<tr>
<td>4 (Cardiac Surgery Unit)</td>
<td>appears tired and in moderate discomfort; pale; tolerating ambulation well</td>
<td>complains of persistent neck pain which interferes with sleep; states he is tired; states incisional pain decreased; volunteers information; slightly short of breath with speech</td>
</tr>
<tr>
<td>7</td>
<td>appears tired and pale; lying quietly in bed; hair combed</td>
<td>states he feels better to-day and is resting following physiotherapy; walked in hall six times this morning; walks after each meal; complains of groin discomfort; worried about edema at CVP site - displays site; initiates conversation; asks questions</td>
</tr>
<tr>
<td>9</td>
<td>cheerful, laughing at times</td>
<td>outlines daily routine; feels better; has had &quot;bad days&quot; where he felt tired and in</td>
</tr>
<tr>
<td>POSTOPERATIVE DAY</td>
<td>APPEARANCE</td>
<td>VERBAL AND NONVERBAL BEHAVIOUR</td>
</tr>
<tr>
<td>-------------------</td>
<td>------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>9 (continued)</td>
<td>cheerful; walks briskly; in lounge watching television with a group of patients; well-groomed</td>
<td>pain - little things got on his nerves, lost temper; complains of poor sleep; initiates conversation; talkative</td>
</tr>
<tr>
<td>11</td>
<td>discharged from hospital</td>
<td>feels much better; less pain; improved sleep; anxious to go home; finds small things (kindness, comfort) mean a lot to him; spontaneous conversation; joking with some patients</td>
</tr>
</tbody>
</table>
Differences in the Recovery Pattern

The preceding discussion has focused on three stages of the recovery period which were noted to represent a pattern common to the twenty subjects studied. It is noteworthy that, while the recovery pattern was fairly consistent, the length and time of onset of the phases are named arbitrarily. Subjects who had an uncomplicated postoperative period were observed to experience a recovery pattern within the parameters named; subjects who experienced complications of a serious nature exhibited similar behaviours (i.e. a pattern), but at differing postoperative intervals. Thus, it must be stated that the significance of these research findings lies in the actual description of behaviours constituting a recovery pattern and does not center on the length of phases or the post-surgical date of occurrence.

Postoperative complications are, of course, the most significant intervening variable with regard to the course of recovery. Four of the subjects in this sample experienced postoperative complications which were resolved without affecting the length of the recovery period: postoperative hemorrhage (two subjects), pyrexia and bowel obstruction. Two subjects had major setbacks due to cardiac arrest. One of these individuals arrested on the ninth postoperative day and the other subject had multiple ventricular arrhythmias (necessitating nine defibrillations) in the first four postoperative days; both subjects' conditions eventually stabilized and each resumed a fairly
The three phases of recovery were noted in a similar time span for the four subjects whose complications had no bearing on the length of hospitalization; that is, the phases occurred within a time span similar to that for "uncomplicated" subjects. The two patients who experienced postoperative hemorrhage within the first twenty-four hours of surgery progressed smoothly following surgical investigation of bleeding and subsequent transfusions. Their recall of these complications coincided with the latter portion of the Somatic Phase and the Transition Phase. One subject who remained febrile for a number of days did not experience a prolonged hospital stay, but was noted to remain in the Transition Phase for a slightly longer period (approximately two days greater than the duration for other patients with the same length of stay in hospital). The patient who experienced gastrointestinal complications remained longer in the Somatic Phase (i.e. had a continual focus on physical state and discomfort) until the thirteenth postoperative day; he then proceeded through the second and third phases quite rapidly as the time of discharge approached.

The two subjects with a prolonged hospital stay due to cardiac arrest also demonstrated behaviours which constituted three recovery phases, but the duration of each stage was quite different from the uncomplicated recovery course described earlier. The subject who had multiple ar-
rests remained in the intensive care unit for seventeen days post-surgery and was intubated with ventilator assistance to respiration until the tenth postoperative day. Following this period, the patient showed a low incidence of somatic complaints and moved quickly into the discussion of his experiences in the critical care setting, his wife's support of him during this time and his progress in activity level (Resolution Phase). Following transfer to the Cardiac Surgery Unit, this subject continued to progress well until the time of discharge on the twenty-ninth postoperative day.

The second subject who sustained a cardiac arrest demonstrated a different postoperative course. She progressed in the typical fashion until the time of asystole on the ninth postoperative day, and then reverted to the Somatic Phase with the recurrence of fatigue, a restricted activity level and more vigorous medical and nursing treatment. As she recovered further this subject repeated her former recovery pattern, moving through the Somatic and Transition Phases and, finally, experiencing the components of the Resolution Phase.

In summary, then, it appears that the incidence of complications may precipitate a more lengthy recovery pattern (and thus differences in the time of occurrence of the behaviours labelled as phases). The alteration of pattern in this sample has been significant only in terms of the timing or length of certain patterns, and has shown no differences which would negate the existence of commonalities in the recovery experience.
Discussion of Current Findings with Respect to Earlier Research

The recovery pattern described herein appears to corroborate the research findings of Abram and Kimball, both of whom noted specific types or classes of emotional responses to open heart surgery. Abram (1965, p. 662-663) noted a "catastrophe reaction" in which patients were described as "immobile, apathetic, indifferent and 'flat' in affect." This period had a few days' duration and was followed by an episode of mild depression and a subsequent elevation of mood. Psychotic reactions (hallucinations, delusions) were noted in two of Abram's subjects who remained in the early catastrophe state for a prolonged period.

Kimball (1969b, p. 352-354) described postoperative behaviours at great length, delineating three periods which spanned both the postoperative course and the discharge period up to fifteen months post-hospitalization. The first two of these periods correspond with the phases of recovery described in this thesis. Kimball first mentioned the early postoperative period which encompassed the fifth to seventh postoperative days (the time Kimball's subjects spent in the intensive care unit). In this time period, he noted four types of responses: unremarkable (patients well-oriented and co-operative with health professionals; admitted discomfort), catastrophic (patients immobile, passive, alert and aware), euphoric (patients confident, bright, responsive) and altered states of consciousness (delirium; unresponsive or semi-conscious patients). The first three
of these responses concur with findings describing the Somatic Phase, both in the specific observations noted and in the characteristic patterns of communication exhibited by subjects (monosyllabic responses, little spontaneity or elaboration). Kimball's fourth observation of altered states of consciousness does not apply to observations made of this sample.

Kimball next described an intermediate period which commenced with the patient's transfer from the intensive care unit. He noted three classes of behaviour in this period, beginning with anxiety regarding transfer from the intensive care area to the general surgical unit. Depression was described next and was characterized by withdrawal and complaints regarding the physical or environmental state. Extensive sleep was noted in many subjects at this time. Following the period of depression, Kimball observed an elevation of mood and an anticipation of discharge with concurrent planning on the part of the patient. He also noted an increase in anxiety level prior to discharge; at this time patients had a number of inquiries about the future and some individuals expressed a need for more hospital time "to adjust". Kimball's intermediate period appears to approximate the Transition Phase noted by this investigator, in which continued somatic complaints, abundant sleep, depression and mood elevations were observed; anxiety regarding the transfer from the critical care area was not observed in this sample, perhaps due to the close proximity of the intensive care and cardiac sur-
gery units. The latter portion of Kimball's description concerning the anticipation of discharge and pre-discharge anxiety correspond closely with the behaviours noted in the Resolution Phase. An interesting difference between the investigator's data and those of Kimball is that four of the subjects discussed here exhibited disorientation in this later period (from the ninth through thirteenth postoperative day); this finding is not in agreement with Kimball's observations or with the findings of other researchers who have noted early postoperative changes in orientation.

Discussion of Current Findings with Respect to Selected Theoretical Constructs

The findings of this investigation have been discussed in view of the premise that there exist three phases of recovery from open heart surgery. Thus far, these findings have been described and then compared with similar findings made by other researchers. In order to carry the analysis one step further, the recovery pattern will now be compared with theoretical constructs which appear related to certain of the observed behaviours or phenomena. This comparison does not represent an attempt to explain or qualify the existence of phases of recovery; rather, it serves only to enlighten the reader by denoting similarities between the findings of this investigator and the theoreticians presented. If hypotheses were developed from these similarities, further research would be necessary to determine if the concepts or theories provide an explana-
The theory of loss has implications for any surgical patient or individual with a life-threatening illness. Loss itself may entail the loss of a body part or function, loss of membership or status, failure of a plan or venture or changes in lifestyle (Engel, 1964, p. 295). Each of these forms of loss can be related to the cardiac surgical patient who may face the loss of a family or social role, the loss of bodily function or changes in plans and lifestyle. The patient may either face these threats at the time of surgery, or he may have already experienced them at the time of onset and throughout the duration of heart disease. According to Engel (1964), Lindemann (1965) and Peretz (1970a, 1970b), grieving is the reaction to loss which allows for response to the loss and, hopefully, to its ultimate resolution. Janis (1965, p. 1363) states that illness or hospitalization constitute a "danger of mutilation or annihilation (which) gives rise to acute emotional shock"; consequently, the grief reaction is not uncommon in hospitalized patients. Janis also mentions the grieving process specifically in relation to convalescence:

"Especially in the physically injured and diseased persons, there is a well-known sequence such that acceptance of the medical regimen and psychological readjustment during the course of normal convalescence gradually occurs following an initial period of overt grieving and preoccupation with loss".

Closely related to the concept of loss is the idea of self-concept. This second concept includes such factors
as self-esteem and body image. Once again, the temporary loss of function and dependency inherent in recovery from a major surgical procedure may contribute to alterations of an individual's self-esteem. Changes in body image due to pain, loss of function or physical trauma (the incision and other wounds) may also be evident in the patient undergoing open heart surgery and can lead to withdrawal from other persons with a focus on one's physical self.

Role theory may add meaning to any discussion of the cardiac surgical patient as he experiences loss or changes in the self-concept. An individual's role performance depends upon his concept of "role" (Aguilera, 1970, p. 62): how he perceives its effect upon the self-concept, how the role is influenced by life goals and values, and how he views society's expectations of a particular role. Patients who undergo open heart surgery appear to make numerous role changes during the course of their illness and its surgical treatment. Preoperatively, they may experience role alterations which are related to physical, social and family function and which result from the limitations imposed by illness. The assumption of the sick role (Suchman, 1972) is one of the possible role alterations that any patient experiences. Following treatment in the patient role, the individual may resume his former role of "health" or, in the case of chronic illness, assume the "chronically ill" or "rehabilitee" roles. This second role change is often as difficult as the initial acceptance of the sick role. For the cardiac patient, the post-surgical
role change (in response to a surgical success) may evoke anxiety. The patient may be fearful of assuming independence because of a prior dependency upon "caring" others or he may lack confidence in performing physical and social activities or in the resumption of social relationships. During convalescence, the self-concept figures significantly in the transition from dependency to independency (Brown and Rawlinson, 1975).

Summary

The findings of this investigation of the recovery patterns of cardiac surgical patients have indicated that, for this sample, three phases of recovery were present. These phases were characterized by specific verbal and non-verbal behaviours which were similar for most patients at a particular stage of the postoperative period. In their totality, the phases represented a recovery process extending from the immediate postoperative period until the time of discharge from hospital. As separate entities, they appeared to be an indication of the patient's affect, activity level, communication pattern and overall needs at different intervals during convalescence. The phases were found to represent a common pattern between all subjects studied; their time of occurrence and duration have been arbitrarily described according to the "average" and time differences have been noted to occur with patients having serious physiological complications. A possible relationship between the recovery pattern and the theories of loss and
role performance was explored, but this relationship has been neither examined nor conclusively demonstrated by this investigation.
CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

This investigation has been aimed at the discovery of post-surgical recovery patterns of patients who have undergone open heart surgery. A pattern has, in fact, been noted and delineated herein. It is noteworthy that the phases described represent commonalities among the twenty subjects studied and that these similarities coincide with the observations of two earlier researchers, Abram and Kimball. However, caution must be exercised in generalizing the findings to the population of open heart surgery patients in North America due to the limited, non-random sample selected for examination by this investigator.

Major Conclusions Derived from the Findings

The problem which has been considered throughout this investigation has been that of inadequate emotional adjustment to open heart surgery. This problem has been manifested in both the post-surgical and post-discharge recovery patterns of cardiac patients. The latter pattern of recovery is currently the subject of intensive investigation on many fronts. It has already been noted that Blachly and Blachly (1968) and Heller (1974) have discovered adverse psychological outcomes following the physiological recovery
from open heart surgery. A more recent study by Bigelow (1977) has uncovered similar reactions (particularly depression and anxiety) in patients following discharge. David (1977) has also noted that forty percent of his sample of 1655 subjects have failed to return to work. These discoveries indicate that the problem under consideration continues to exist for a great number of cardiac surgical patients. It appears that, for many individuals, the rehabilitation phase is unsuccessful and does not facilitate the return to health which a successful surgery allows. The author would postulate that perhaps the pre-discharge recovery pattern sets the stage for the post-hospital course of rehabilitation. If the needs of patients in this "hospital stage" of recovery were accurately and systematically identified and met, the cardiac patient might experience a more successful beginning to emotional recovery and rehabilitation as a whole.

The description of behaviour patterns (the phases of recovery) provides a basis for determining the patient's response to surgery and his emotional orientation toward recovery. Any pattern serves to describe a sequence or an organization of content. The Somatic, Transition and Resolution phases describe common emotional reactions and attitudes at particular points during convalescence. Common needs of patients may be inferred from such patterns and thus, a focus for intervention (aimed at the promotion of emotional recovery) may be obtained.
Implications for Nursing

The existence of phases of recovery from open heart surgery has important implications for nursing which have been previously alluded to. First, the phases denote a common recovery pattern which has not formerly been the focus of nursing assessment and intervention. Second, if the phases are to some degree a representation of patients' needs at various stages of recovery, then need satisfaction and the resolution of emotional problems (anxiety, depression, dependency) should be the crux of cardiovascular nursing practice. Physiologic needs are, of course, an ever important nursing consideration; however, attention to psychosocial needs should never be of secondary importance, particularly after the patient's physical condition has stabilized.

Nursing care planning for chronically or terminally ill patients has revolved around the concept of "phases" for a number of years. Kubler-Ross (1969) described five phases of adjustment to terminal illness which are now used extensively by health professionals in the assessment and intervention processes. Her discussion of the behaviours common to dying persons has provided insight for physicians and nurses who seek to interact therapeutically with terminally ill individuals. Likewise, Crate (1965) has delineated the adaptive process in chronic illness, discussing nursing functions in relation to patients at each stage of adaptation. Janis (1965) and other "loss" theorists (Peretz, 1970; Lindemann, 1965; Engel, 1964) have provided
similar descriptions and guidelines for therapeutic intervention. In each case, the discussion of patterns has served as an organizing center for approaching problems and working toward need satisfaction for patients. The investigator believes that the information regarding phases of recovery from open heart surgery may be useful when dealing with the recovery process prior to the patient's discharge from hospital.

From the data obtained, it appears that anticipatory guidance is a major nursing intervention which can facilitate the patient's long-term emotional adjustment to open heart surgery. With a basic knowledge of the individual's recovery pattern, the nurse can anticipate problems and questions, prepare the patient for certain feelings such as depression and anxiety, and provide him with support as he regains independence. Such ego-supportive care is discussed by Abramson (1973) and, although he relates his suggestions specifically to the treatment of psychopathological phenomena, he makes concrete suggestions for treatment or intervention modalities which may be applied to any patient.

A recent article by Hart and Frantz (1977) notes a need for improved discharge planning and pre-discharge teaching programs with open heart surgery patients. One problem area identified by these researchers is the lack of knowledge regarding the readiness for learning exhibited by the patient. If one were to examine the recovery pattern of a particular patient, perhaps an appropriate time for teaching could be assessed according to the stage of re-
covery and the behaviours present. To use the subjects in this investigation as an example, readiness for learning might correspond with the Transition or Resolution phases, when questions about discharge begin to arise. The patient's needs for information and support can be more accurately assessed and discharge planning and referral can be carried out more efficiently with the knowledge of the patient's stage of recovery.

Over the last decade, the nursing profession has made great strides in the improvement of cardiovascular nursing care. Preoperative teaching programs have been implemented and patients have gone to surgery much better prepared for the experience than previously. Post-hospital rehabilitation programs have also been developed in many areas to provide for the teaching and follow-up of cardiac patients. Pre-discharge teaching about medications, diet and activity is also carried out thoroughly in most hospitals where open heart surgery is performed. However, the research of Hart and Frantz (1977) notes that thirty-four percent of United States hospitals with facilities for open heart surgery do not have organized postoperative teaching programs. If these statistics can be considered representative of North American trends, then they indicate that the emphasis on pre-discharge teaching should be examined and, if necessary, improved; perhaps the examination of the recovery pattern can attest to this necessity, since the subjects studied here exhibited needs for information in the hospital recovery period.
Recommendations for Cardiovascular Nursing Practice

On the basis of the findings discussed, and with consideration of their implications for nursing, the following recommendations are put forth by the investigator:

When providing care for the patient who has undergone open heart surgery, the nurse should remain alert for patient behaviours which indicate level of orientation, emotional status, degree of dependency and readiness to assimilate new information.

Using this information, the nurse should . . .

1. Assess the patient's phase of recovery from open heart surgery (Somatic, Transition or Resolution).

2. Accept the patient's behaviour in each phase of recovery, allowing for self-expression, dependency, egocentricity and a somatic focus where appropriate.

3. Recognize individual differences in needs manifested during the recovery period.

4. Assist the patient toward independence, recognizing his individual needs and concerns as he progresses.

5. Assess factors which may impede "resolution" and endeavour to alleviate these.

6. Teach the patient regarding aspects of his recovery as he demonstrates an interest and motivation to learn.

7. Provide psychological as well as physical care, with the goal of optimal emotional and physiologic recovery from open heart surgery.

Suggestions for Further Research

If a common recovery pattern is a key to the solution of inadequate emotional recovery from open heart surgery, then it is appropriate that this pattern be examined to a greater extent with a random sample of patients from a
variety of institutions. If the pattern (or phases) were well-documented, it might next be feasible to examine patients' needs at various stages of recovery with the specific purpose of identifying "teachable moments". Since preoperative teaching has been demonstrated to reduce the incidence of postoperative complications, perhaps postoperative teaching strategies (focusing on needs perceived by the patient) would alleviate adverse emotional outcomes (both short- and long-term). This hypothesis bears investigation.

Another approach to further investigation of the problem would be to measure the effects of routine planned counselling with open heart surgery patients in the postoperative period. Would such counselling facilitate long-term emotional recovery by providing the patient with a supportive listener and assistance with problem-solving? The question is an interesting one - a positive correlation between counselling and successful emotional outcomes could signal an expanded role for the cardiovascular nurse.

To summarize these concerns, the following questions for further consideration are enumerated:

1. To what extent are "phases" of recovery present in the population of patients undergoing open heart surgery in North America?

2. What are the specific psychological needs of patients at various stages of recovery from open heart surgery?
3. At what stage of recovery do patients exhibit certain learning needs?

4. What are the effects of selected, planned nursing interventions on the patient's emotional status following open heart surgery?

5. What are the effects of selected, planned nursing interventions on the long-term rehabilitation of the cardiac surgical patient?

Whatever the research approach to follow, the door is open to further investigation of emotional recovery from open heart surgery. It is anticipated that the knowledge of patients and their recovery patterns will assist the members of the nursing profession with the establishment of interventions which promote recovery and prevent poor psychological outcomes. It is interesting to note that phases of recovery exist, but it is most important to use this knowledge to facilitate optimal recovery of the patient experiencing cardiac surgery.
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Quinlan, Donald M.; Kimball, C.P.; and Osborne, F. 1974. The experience of open heart surgery: IV. Assessment of disorientation and dysphoria following cardiac surgery. *Archives of General Psychiatry.* 31: 241-244.


C. Miscellaneous


APPENDIX A

INTERVIEW GUIDELINES FOR THE PREOPERATIVE PERIOD

A) Introduction to the patient; explanation of the study

B) Consent form: patient's signature, date

INTERVIEW

C) General assessment of the patient:
   (1) knowledge of disease
   (2) perception of reason for proposed surgery
   (3) medical history
   (4) family/social history
   (5) level of functioning/cardiac status
   (6) limitations of function
   (7) level of anxiety
   (8) additional pertinent information

OBSERVATION

(1) appearance
(2) affect
(3) nonverbal behaviour; facial expressions, activity during interview
(4) verbal behaviour: focus of conversation, tone of voice

D) Problems, potential problems or concerns identified on the basis of assessment data
APPENDIX B

INTERVIEW GUIDELINES FOR THE POSTOPERATIVE PERIOD

A) General assessment: (1) level of consciousness
(2) orientation to time/person/place
(3) presence of thought disturbances or hallucinations

B) Opening question: How are you doing?
How are things going for you?

C) General lead-in: Is there anything you would like to talk about to-day?
Is there anything you would like to tell me about?

Pick up on verbal and nonverbal cues here

D) Concurrent observations: (1) appearance
(2) affect
(3) nonverbal behaviour
(4) verbal behaviour: focus of conversation
characteristics of speech

E) Additional data: (1) number of days postoperative
(2) setting
(3) stage of medical regime - current orders
(4) physiological parameters - pump time
quality/duration of sleep
electrolytes
blood gases
vital signs
ECG
analgesics/hypnotics

F) Interview schedule: first week postoperative - every
other day, to include time in PAR and ICU
second week postoperative – every two days

duration of interviews – five minutes to forty-five minutes, depending upon the patient's condition and need (five-ten minutes only in PAR and ICU)
APPENDIX C
DATA COLLECTION TOOL

DEMOGRAPHIC DATA

DATE:_______ NAME OF PATIENT (INITIALS):____________________

ROOM NUMBER:_____

DIAGNOSIS:__________________________

PROPOSED SURGERY:__________________________

PROPOSED DATE OF SURGERY:_________

CARDIOLOGIST/SURGEON:__________________________

PATIENT'S AGE:_____

MARITAL STATUS:_____

RELIGION:_________

EDUCATION/OCCUPATION:__________________________

INTERVIEW DATA

(1) KNOWLEDGE OF DISEASE - diagnosis
   - prognosis

(2) PERCEPTION OF REASON FOR PROPOSED SURGERY -

(3) MEDICAL HISTORY - onset of cardiac disease
   - current symptoms
   - previous hospitalization for this problem
   - past illnesses, complaints, surgeries (other than cardiac)
   - conditions existing concurrently with cardiac disease
DATA COLLECTION TOOL - continued

(4) FAMILY/SOCIAL HISTORY - significant others
   - occupation
   - sources of enjoyment (hobbies, etc.) or interest
   - significant life experiences

(5) LEVEL OF FUNCTIONING/CARDIAC STATUS/LIMITATIONS OF FUNCTION
   - patient's perception of limitations, if any
   - data from chart re: functional capacity

(6) LEVEL OF ANXIETY

(7) ADDITIONAL PERTINENT INFORMATION

(8) OBSERVATIONS - appearance
    - affect
    - nonverbal behaviour
    - verbal behaviour

(9) PROBLEMS, POTENTIAL PROBLEMS OR CONCERNS IDENTIFIED
DATA COLLECTION TOOL - continued

POSTOPERATIVE DATA

DATE:
NUMBER OF DAYS POSTOPERATIVE:
SETTING:
STAGE OF MEDICAL REGIME:

1) LEVEL OF CONSCIOUSNESS -

2) ORIENTATION TO TIME/PERSO/N/PLACE -

3) PRESENCE OF THOUGHT DISTURBANCES, HALLUCINATIONS -

4) APPEARANCE, AFFECT -
   LEVEL OF ANXIETY -

5) VERBAL BEHAVIOUR * focus of conversation
   * characteristics of speech
   * patterns of communication

6) NONVERBAL BEHAVIOUR * appearance
   * activity during interview
7) PHYSIOLOGICAL PARAMETERS - pump time
   quality/duration of sleep
   electrolytes
   blood gases
   vital signs
   ECG
   analgesics/hypnotics
   other

8) GENERAL COMMENTS

9) PROBLEMS, POTENTIAL PROBLEMS OR CONCERNS IDENTIFIED

LENGTH OF INTERVIEW:__________________
## APPENDIX D

### DATA ANALYSIS WORKSHEET

**PT. INITIAL:**

<table>
<thead>
<tr>
<th>POSTOP. DAY</th>
<th>Orientation</th>
<th>Anxiety</th>
<th>Affect</th>
<th>Conversation</th>
<th>Communication - Verbal, Nonverbal</th>
<th>Physiological</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</tbody>
</table>
## APPENDIX E

### AN OVERVIEW OF THE RECOVERY PATTERN

<table>
<thead>
<tr>
<th>Phase</th>
<th>Common Verbal Behaviours</th>
<th>Common Nonverbal Behaviours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somatic</td>
<td>complaints of pain and discomfort</td>
<td>wincing or other expressions of discomfort</td>
</tr>
<tr>
<td></td>
<td>statements indicating well-being</td>
<td>nods, gestures</td>
</tr>
<tr>
<td></td>
<td>statements indicating fatigue</td>
<td>eye contact</td>
</tr>
<tr>
<td></td>
<td>monosyllabic responses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>statements indicating optimism</td>
<td></td>
</tr>
<tr>
<td></td>
<td>faint speech</td>
<td></td>
</tr>
<tr>
<td>Transition</td>
<td>statements indicating decreased discomfort</td>
<td>increased grooming behaviours</td>
</tr>
<tr>
<td></td>
<td>complaints of pain</td>
<td>intermittent or total eye contact</td>
</tr>
<tr>
<td></td>
<td>complaints of fatigue and/or poor sleeping patterns</td>
<td>display of incisions or other sites of trauma</td>
</tr>
<tr>
<td></td>
<td>statements about specific routines or activity level</td>
<td>increased use of gestures with speech</td>
</tr>
<tr>
<td></td>
<td>queries about other patients</td>
<td>display of greeting cards or flowers</td>
</tr>
<tr>
<td>Phase</td>
<td>Common Verbal Behaviours</td>
<td>Common Nonverbal Behaviours</td>
</tr>
<tr>
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<td>---------------------------</td>
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<tr>
<td></td>
<td>mention of family or friends</td>
<td></td>
</tr>
<tr>
<td></td>
<td>statements indicating satisfaction with surgical outcome</td>
<td></td>
</tr>
<tr>
<td></td>
<td>queries regarding surgical outcome and prognosis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>wondering about date of discharge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lowering of mood or depression</td>
<td></td>
</tr>
<tr>
<td></td>
<td>mention of irritability</td>
<td></td>
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<tr>
<td></td>
<td>unexplained pain or other disturbance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>increased spontaneity in conversation</td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>anticipation of discharge</td>
<td>increased smiling</td>
</tr>
<tr>
<td></td>
<td>queries regarding medications, visits to physician, activity</td>
<td>increased eye contact</td>
</tr>
<tr>
<td></td>
<td>plans following discharge</td>
<td>increased concern for appearance and grooming</td>
</tr>
<tr>
<td></td>
<td>discussion of topics unrelated to surgery or hospitalization</td>
<td></td>
</tr>
</tbody>
</table>