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## Hardiness and its Relationship to Anticipatory Nausea and Vomiting Experienced by the Patient Receiving Cisplatin Chemotherapy

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HARDINESS AND ITS RELATIONSHIP TO  
ANTICIPATORY NAUSEA AND VOMITING EXPERIENCED  
BY THE PATIENT RECEIVING CISPLATIN CHEMOTHERAPY

By

Colleen K. Smith

A THESIS

Submitted to  
Grand Valley State University  
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1993

Thesis Committee Members:  
Patricia Underwood, PhD, RN  
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## ABSTRACT

### HARDINESS AND ITS RELATIONSHIP TO ANTICIPATORY NAUSEA AND VOMITING EXPERIENCED BY THE PATIENT RECEIVING CISPLATIN CHEMOTHERAPY

By

Colleen K. Smith

Research suggests that the hardiness characteristic acts as a buffer in the stress/illness relationship. The purpose of this study was to assess the presence of hardiness and examine its relationship to the amount of anticipatory nausea and vomiting experienced within a sample of patients receiving cisplatin chemotherapy. It was hypothesized that individuals with a high level of hardiness would experience less anticipatory nausea and vomiting than individuals with a low level of hardiness.

A prospective descriptive correlational design was utilized. A convenience sample of adults with cancer (n=29) receiving cisplatin intravenously was studied. All patients were assessed via two measurement tools: the Health Related Hardiness Scale (Pollock, 1984) and the Rhodes Index of Nausea and Vomiting Form 2 (Rhodes, Watson, Johnson, Madsen, & Beck, 1987). The hypothesis was not supported as being statistically significant, however, there was a greater tendency for those who were hardy to experience less anticipatory nausea and vomiting.

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## CHAPTER ONE

### INTRODUCTION

Oncology patients provide a multitude of diverse challenges for the health care practitioner. Many of these challenges arise from the illness trajectory induced by the cancer itself, while others arise from the treatment regime employed to combat the cancer. One identified treatment induced challenge is that of anticipatory nausea and vomiting associated with chemotherapy.

Many patients receiving the same or similar chemotherapeutic drugs experience wide differences in side effects. Nausea and vomiting have long been identified as two of the most frequently experienced side effects of chemotherapy. This includes nausea and vomiting that result from the anticipation of treatment. As with other chemotherapy side effects, a wide range in the frequency, intensity, and duration of anticipatory nausea and vomiting can be observed from patient to patient.

Research to date has not provided definitive answers to explain why one individual tolerates a particular chemotherapeutic agent better than another

individual receiving the same drug. Nursing recognizes one of its goals as offering competent individualized care to clients and, therefore, must delve into issues that may explain why each individual responds differently. By identifying factors that influence individual responses, interventions that support individualized nursing care can be identified.

One factor that requires further exploration is that of hardiness. Kobasa (1979) initially identified hardiness as a personality characteristic that may act as a buffer, or resistance factor, in preventing illness. Anticipatory nausea and vomiting result as undesirable responses to chemotherapy. If the hardiness characteristic does act as a resistance factor to prevent the development of anticipatory nausea and vomiting, it is essential that further research explore this quality. Identification of such resistance factors may aid patients in the management and reduction of anticipatory nausea and vomiting due to chemotherapy.

The purpose of this study was to assess the presence of the hardiness characteristic and examine its relationship to the amount of anticipatory nausea and vomiting experienced within a sample of patients receiving cisplatin as their primary chemotherapeutic agent. Knowledge of this relationship may facilitate

the identification and utilization of psycho-  
physiological nursing interventions to assist the cancer  
patient experiencing anticipatory nausea and vomiting.

## CHAPTER TWO

### LITERATURE AND THEORY

#### Literature Review

Advances in cancer therapy have provided reason for hope and actual cure in many patients. Chemotherapy is a modality of treatment for cancer that offers improved outcomes, but in addition, a multitude of side effects. These side effects can affect not only the quality of life for the cancer patient, but also the compliance with the individual treatment regime. Anticipatory nausea and vomiting is one such undesirable side effect that can influence the patient's compliance with cancer therapy.

The development of anticipatory nausea and vomiting has been identified in terms of classical conditioning. Pratt, Lazar, Penman, and Holland (1984) describe this process. The chemotherapeutic agent, identified as the unconditioned stimulus, produces an unconditioned reflexive response, nausea and/or vomiting. If extraneous factors, such as odors or surroundings, become paired with the unconditioned stimulus, these previously innocuous stimuli then become conditioned stimuli. The responses which result from conditioned

stimuli are identified then as conditioned responses. Therefore, when the patient receiving chemotherapy experiences nausea and vomiting, often neutral stimuli become paired with the chemotherapy induced nausea and vomiting. After repeated experiences, the patient experiences nausea and may vomit when simply exposed to the neutral stimuli.

Nerenz, Leventhal, Easterling, and Love (1986) present a conditioned anxiety model to explain the development of anticipatory nausea and vomiting. This model identifies anticipatory nausea and vomiting as the result of an emotional state or aversion that is a conditioned response to external stimuli. Interview data obtained from 192 patients receiving chemotherapy for the first time was analyzed to identify predictive factors for the development of anticipatory nausea and vomiting. Three predictors were identified: post-treatment nausea and vomiting, tastes of drugs during injections, and anxiety before injections. Although this study was limited due to the use of retrospective interview methodology and a broad definition of anticipatory nausea and vomiting, evidence was elicited to suggest that anxiety resulting from post-treatment nausea and vomiting did facilitate the later development of anticipatory nausea and vomiting.

Goodman (1987) states that as a result of post-chemotherapy nausea and vomiting, particularly with cisplatin as the primary chemotherapeutic agent, effective antiemetics must be utilized. If inadequate antiemetic therapy is used, fear and anxiety result. This fear and anxiety subsequently become the conditioned response to chemotherapy and anticipatory nausea and vomiting are more likely to result.

The reported prevalence and related influencing variables of anticipatory nausea and vomiting have varied in the research to date. Morrow (1982) reported twenty-one percent (47 of 225 patients) as having experienced anticipatory nausea and vomiting prior to a chemotherapy treatment. Examination of demographic and clinical factors determined that patients with anticipatory nausea and vomiting experienced severe post-treatment vomiting, experienced severe nausea after treatment, and were more likely to be receiving cisplatin than patients without anticipatory side effects.

Reporting an incidence of one in four patients who experience anticipatory nausea and vomiting by the time of their fourth treatment, Morrow (1984) conducted a study to identify characteristics of patients at a high risk for developing anticipatory nausea and vomiting.

The identified characteristics were:

(1) less than 50 years of age; (2) the experience of nausea and/or vomiting after their last chemotherapy treatment; (3) a description of nausea after the last treatment as "moderate, severe, or intolerable"; (4) a description of vomiting after the last treatment as "moderate, severe, or intolerable"; (5) the reporting of the side effect "warm or hot all over" after their last treatment; (6) a susceptibility to motion sickness; (7) the experience of "sweating after the last treatment"; (8) and the experience of "generalized weakness after the last chemotherapy treatment" (p. 1170).

Patients who experienced anticipatory nausea and vomiting were significantly more likely ( $p < .001$  using the Chi-square test) to have four or more of these characteristics.

Coons, Leventhal, Nerenz, Love, and Larson (1987) studied thirty-four patients receiving cisplatin-based chemotherapy. This study was conducted to determine the percentage of patients who experienced anticipatory nausea, to assess factors associated with the development of anticipatory nausea, and to examine the affect of anticipatory nausea on emotional distress with treatment. All subjects experienced post-treatment nausea and/or

vomiting. Anticipatory nausea was experienced by sixty-five percent of the sample in one or more situations. Patients who experienced any anxiety during their first injection reported a somewhat higher frequency of anticipatory nausea than those who were not anxious, however, the study failed to achieve statistical significance in this relationship. This was due primarily to the limitation of a small sample size.

Andrykowski et al. (1988) studied factors related to the prevalence, prediction, and course of anticipatory nausea in women (N=77) receiving adjuvant chemotherapy for breast cancer. Via a prospective longitudinal research design, patients were interviewed before and after each chemotherapy treatment. Findings indicated fifty-seven percent of the patients developed anticipatory nausea. Two important factors influencing this development were the severity and duration of post-treatment nausea following the initial infusion and the patient's expectations for experiencing nausea. While the results of the study indicate that anxiety levels at the initial infusion were not associated with the future likelihood of developing anticipatory nausea, it was suggested that anxiety appears to contribute to the development of anticipatory nausea in patients who have not already developed it following the initial infusion.

It is suggested that anticipatory nausea could be prevented or delayed through improved control of anxiety during the chemotherapy treatment course.

Stefanek, Sheidler, and Fetting (1988) assessed the prevalence of anticipatory nausea and vomiting in patients (N=121) who received intravenous chemotherapy over a seven week period. Ten percent (12) of the subjects received cisplatin-containing regimens. This study was conducted via cross-sectional prevalence methodology. They reported a prevalence ratio of thirty-three percent, with the length of post-chemotherapy nausea as significantly related to the development of anticipatory symptoms. However, they identified that the severity of anticipatory symptoms was very mild to mild. This study concluded that anticipatory nausea and vomiting is not a significant clinical problem for a large majority of patients receiving chemotherapy, however, a significant minority of patients experience anticipatory symptoms.

In summation, a review of the research revealed several factors which have an impact on the development of anticipatory nausea and vomiting. Relevant factors were post-treatment nausea and vomiting, fear and anxiety that result from treatment, and the chemotherapeutic agent used for treatment.

Cisplatin is recognized as a highly emetogenic drug, and the literature identifies highly emetogenic agents as contributing to the development of anticipatory nausea and vomiting (Briscoe, 1989; Coons, Leventhal, Nerenz, Love, & Larson, 1987; Clark, 1989; Duigon, 1986; & Hogan, 1990). While cisplatin has become an instrumental chemotherapeutic agent, its success has been influenced by the often times severe nausea and vomiting that occurs in most patients who receive this drug (Goodman, 1987). Nausea and vomiting may be severe and often begin one to six hours after the administration of the drug and can persist up to twenty-four hours or longer (McEvoy, 1990). It becomes essential to intervene with the symptomatology of nausea and vomiting that result from this agent in an effort to increase patient comfort and compliance.

If nursing interventions are to be effective, an examination of all factors that have an impact on the development of anticipatory nausea and vomiting should occur. This includes an examination of factors that may buffer, thereby reduce, the untoward response identified as anticipatory nausea and vomiting. One factor that may act as a buffer is the personality factor hardiness.

A search of the relevant nursing and medical literature revealed no studies examining the individual hardiness characteristic specifically related to cancer or

to the side effects resulting from therapy for cancer. Carey, Oberst, McCubbin, and Hughes (1991) utilized the concept of family hardiness in an exploratory study to examine appraisal and caregiving burden in family members caring for patients receiving chemotherapy. Family hardiness was again examined in relationship to the appraisal of illness, symptom distress, self-care burden, and mood states in patients receiving chemotherapy for initial and recurrent cancer (Munkres, Oberst, and Hughes, 1992). While these studies examined family hardiness, they do not address individual hardiness, the focus of this study. There were, however, a number of studies that explored the hardiness characteristic in relationship to stress, illness, and adaptation.

Kobasa (1979) utilized a retrospective descriptive correlational design to examine stressful life events, personality, and health. Two groups were refined from a large subject pool (N=827) that consisted of all middle and upper level executives of a large public utility. The groups were divided based on the completion of a stress and illness questionnaire. Group one (N=86) consisted of executives who suffered high stress/low illness. Group two (N=75) consisted of executives who suffered high stress/high illness. These groups were then administered a composite of several personality

tests to evaluate personality characteristics (including hardiness) and their relationship to stress and health. The findings, as they related to stress and illness, showed a weak, but significant correlation ( $r=.24$ ,  $p<.025$ ) between stress and illness. Kobasa did support her hypothesis that the high stress/low illness executives had a higher level of hardiness than the high stress/high illness executives. The limitations of this study included self-report measures for data collection and potential distortion of findings due to a variable identified as illness behavior: Subjects want to act and behave as if they are ill and thus report themselves as ill.

Pollock (1986) hypothesized that the presence of the hardiness characteristic would correlate with physiological adaptation in chronically ill adults. A convenience sample ( $N=60$ ) of male and female adults diagnosed with adult onset illness for at least one year was identified. The sample was divided into three equal groups based on diagnosis: insulin dependent diabetes mellitus ( $N=20$ ), essential hypertension ( $N=20$ ), and rheumatoid arthritis ( $N=20$ ). Physiological adaptation was measured via a scale specific to each of the three identified diagnoses. Hardiness was measured by the Health Related Hardiness Scale developed by Pollock in

1984. Results of this study indicated that the presence of hardiness was related to adaptive behavior in the diabetic group, but not in the arthritic or hypertensive group. The small sample size in each diagnostic category was identified as a limitation in this study, along with the difficulty of examining common elements in these diagnostic categories without accounting for the differences between categories.

Schmied and Lawler (1986) used a correlational design to examine the relationships among stress, illness, hardiness, and Type A behavior in a convenience sample (N=82) of female secretaries. The findings indicated a strong positive relation between stress and illness with no relation between Type A behavior and illness ( $F(1,72)=3.67, p=.05$ ). In addition, there were no hardiness effects or interactions between stress, Type A behavior, and hardiness. One of the primary limitations of this study is that one cannot generalize from the secretarial work force response to all working women, thus its application is limited.

Using a correlational design, Rich and Rich (1987) examined the burnout-moderating effects of the hardiness characteristic in female staff nurses. A convenience sample (N=100) of staff nurses was studied. This group of nurses had at least one year of experience as a staff

nurse in an acute care hospital in western Pennsylvania. The results of this study supported the hypothesis that personality hardiness is an important stress-resistance attribute in preventing or reducing burnout in female staff nurses. The education level of the nurses in this study was obtained as a demographic variable, but was not discussed as a possible influence on burnout. Another limitation identified was that this sample was taken from only one hospital with no mention of benefits and/or work environment that may have influenced burnout in the sample.

Banks and Gannon (1988) conducted a prospective study to examine the potential of hardiness as a mediator in the relationship between stress and symptoms. Thirty male and fifty-eight female students received questionnaires on four separate occasions at one-month intervals. Results indicate that hardiness tended to have additive and opposite effects in looking at it as a mediator between stress and symptoms. Those with a higher hardiness level experienced stress less often and perceived minor events as less stressful. Limitations include the use of self-reported measures and a short prospective period of assessment.

In a survey of women with rheumatoid arthritis (N=122), Lambert, Lambert, Klipple, and Mewshaw (1989)

explored the ability of social support and hardiness to predict psychological well-being. Subjects were administered three questionnaires via interviews, with results suggesting that both satisfaction with social supports and the presence of hardiness were factors that enhance coping with a chronic debilitating disease. Limitations of the study include the restricted usefulness of determining causal effects with the exploratory survey design, and the inability to generalize findings as the subjects were primarily Caucasian, well educated, and from a high socioeconomic background.

Ross (1991) conducted a study to determine if the presence of hardiness influenced compliance in elderly patients with diabetes (N=50). The Health Related Hardiness Scale (HRHS), developed by Pollock, was utilized to measure hardiness. The Self-Management Compliance Questionnaire was administered to measure compliance with the prescribed diabetic regime. The Pearson r correlation coefficient was calculated to demonstrate a significant relationship between the total HRHS score ( $r = -.60$ ,  $p < .05$ ) and compliance. The results of this study suggest that the degree of hardiness in individuals with diabetes may predict compliance to a prescribed diabetic regimen. A limitation to this study was the inability to generalize

the findings as the subjects were primarily white, male, married, and diagnosed with Type II diabetes.

It is determined from these studies that there does exist a relationship between stress and illness and that hardiness may act as a mediator in the stress/illness link, however, more research is needed to support previous research and to further examine the hardiness characteristic and its relationship to both stress and illness.

### Theoretical Framework

The development of anticipatory nausea and vomiting has been described in the literature via the classical conditioning model and the conditioned anxiety model. However, symptom development can also be approached from a stress theory framework. Few would dispute that cancer and its treatment are a source of anxiety and stress. Lindsey and Carrieri (1986) identify stress as a sociopsychophysiological phenomenon, therefore an interaction of physiologic, mental, and behavioral responses to a stressor of some type. Lindsey and Carrieri further identify stress as an integrated hypothalamic response that is subject to the strength of the stimulus (stressor) and is modified by specific individual characteristics such as age, sex, and previous experience. The stress response is identified as a

protective adaptive function (Lindsey & Carrieri, 1986) unless the stressor is prolonged or severe, in which case illness or maladaptation occurs.

The life stress and illness model (Rahe, 1988) identifies a series of steps to represent the sequence of events from exposure of a life stressor to the development of illness.

1. Life events may be altered based on an individual's perception of these events.

2. Psychological defense mechanisms can be utilized to buffer the impact of a life stressor, however, these defenses are not adaptive for extensive periods of time.

3. If a life stressor cannot be buffered, the stressor may persist to stimulate physiological reactions.

4. If an individual is aware of these psychophysiological responses, and the responses are perceived as a threat to health, they become symptoms.

5. When the individual's ability to cope is inadequate, and the symptoms become prolonged and severe, anxiety and illness result.

The life stress and illness model supports the relationship between stressor and symptom in the cancer patient receiving chemotherapy. The stressor may be

identified as the chemotherapeutic agent administered to the patient. Often the agent produces nausea and vomiting post-treatment, which acts to reinforce the agent as a stressor. The psychophysiologic response to this stressor, if unbuffered, may result in the symptom of anticipatory nausea and vomiting.

It must be recognized that a number of factors interface to produce the individual's perception of the stressor. Often an individual's perception evolves from both life events and individual personality attributes. Kobasa (1979) proposed that people who experience high degrees of stress without falling ill may have a specific personality characteristic that differentiates them from people who do become sick under stress: hardiness is that characteristic. The hardiness characteristic, therefore, may well act as a buffer, or resistance factor, in the stress/illness connection. The hardiness trait would affect an individual's perception of chemotherapy, thereby resulting in a greater resistance to the symptomatology of anticipatory nausea and vomiting that evolves from the stressor chemotherapy.

Existential psychology provides the basic framework for the development of the concept of hardiness as it is used in this study. Existential philosophy views the

ultimate aim of life as the "creation of personal meaning through decision making and action in the continual pursuit of possibility" (Bigbee, 1985, p. 54). The existential viewpoint (Bigbee, 1985) considers stressful life events as a challenge that enables an individual to grow and pursue a higher level of authenticity.

From this overview of existential philosophy, the three basic components of the hardiness characteristic evolve (Kobasa, 1979). These three components are identified as control, commitment, and challenge. Control is determined according to the individual's locus of control: internal or external. Internally oriented people are able to face stressors by believing they can modify the stressor as a result of their own efforts or attributes, while externally oriented people believe they have little to no control over events in their lives. Hardy individuals have an internal locus of control. Commitment is identified in the hardy individual as a purpose in life which is supported by a strong sense of dedication to personal values, beliefs, and to self. Committed individuals have a belief system that acts to decrease the perception of life events as threatening. Lastly, challenge is perceived by the hardy person as an opportunity for growth (Kobasa,

1979). Stress and change are therefore viewed as potential growth experiences.

#### Definition of Terms

The key concepts identified for this study were:

- A. Hardiness: a specific personality characteristic which acts as a resistance factor in the stress-illness connection. The hardiness characteristic is a composite of three other traits identified as control, commitment, and challenge (Kobasa, 1979).
- B. Control: the belief that one can influence or direct the events in their life (Kobasa, 1979).
- C. Commitment: the ability to believe in the importance of and feel deeply involved in the activities of one's life (Kobasa, 1979).
- D. Challenge: the belief that change is a normal part of life and an incentive for growth rather than a threat to growth (Kobasa, 1979).
- E. Perception: the process of evaluating stimuli as threatening or nonthreatening.
- F. Anticipatory nausea: the patient's perception of feeling sickness at the stomach that occurs twenty-four hours prior to, in expectation of, chemotherapy.
- G. Anticipatory vomiting: the patient's perception of the expulsion of stomach contents (emesis) that

occurs twenty-four hours prior to, in expectation of, chemotherapy.

H. Chemotherapy: the use of chemical pharmacologic agents in the treatment of cancer.

As a result of examining anticipatory nausea and vomiting as symptoms resulting within the stress and illness framework, factors which mediate this response must be examined. Therefore, the following research question was posed: What is the relationship of the hardiness characteristic to anticipatory nausea and vomiting experienced by the patient receiving cisplatin chemotherapy?

The conceptual framework of the research question is diagramed below (see Figure 1):

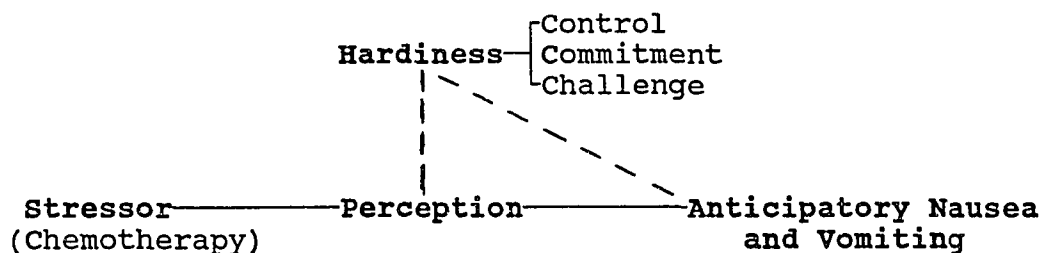


Figure 1. Model of Conceptual Framework

### Hypothesis

The resultant hypothesis was identified as:  
Individuals with a high level of the hardiness characteristic (control, commitment, and challenge) will experience less anticipatory nausea and/or vomiting than

those individuals with a low level of the hardiness characteristic.

## CHAPTER THREE

### Methodology

#### Research Design

The purpose of this study was to describe the relationship between the hardiness characteristic and anticipatory nausea and vomiting experienced by patients receiving chemotherapy. A prospective descriptive correlational design was used.

#### Sample and Setting

The source of subjects for this study was oncology patients who received chemotherapy on an in-patient basis at a 529-bed metropolitan regional hospital, a 190-bed community hospital, a 350-bed regional hospital, and a 405-bed regional hospital, all of which were located in the Midwest. A convenience sample of 40 subjects was utilized for this study. The sample consisted of men and women with a confirmed diagnosis of cancer. The subjects all received cisplatin, at least 70 mg/m<sup>2</sup>, as one of their primary chemotherapeutic agents. The subjects were between cycle two and six of their chemotherapy protocol. In addition, the subjects were between the ages of 18-79, alert and oriented to person, place, and time, and able to read and write English.

Patients were excluded from this study if they had a confirmed primary gastrointestinal cancer or were receiving radiation therapy to the upper and lower abdomen.

### Instruments

There were two major instruments for data collection used in this study: the Health Related Hardiness Scale (HRHS) and the Rhodes Index of Nausea and Vomiting Form 2 (INV Form 2). In addition, a demographic and related data form was utilized to obtain information about the subjects via interview (Appendix A), a chart review form was utilized to obtain information relevant to the chemotherapy protocols the patient had received and was to receive (Appendix B), and a patient questionnaire was utilized to obtain information about how the patient felt after chemotherapy (Appendix C).

In early studies aimed at measuring the hardiness characteristic, Kobasa's Hardiness Scale (Kobasa, 1979) was widely used. The Health Related Hardiness Scale (Pollock, 1986) is a more recent instrument developed to better measure the hardiness characteristic in individuals with an actual or potential health problem (Appendix D). The HRHS contains 40 items rated on a 6-point, forced-point scale from strongly disagree to

strongly agree. There are three subscales for control, commitment, and challenge. The 14 items to measure control were selected from the Multidimensional Health Locus of Control Scale, while items to measure the commitment and challenge concepts were developed from operational definitions of commitment to health related activities and motivation for health promotion.

Content validity of the HRHS was addressed by Pollock (1989) by asking a panel of judges (faculty and doctoral students with experience in adult health) to evaluate the representativeness of the control, commitment, and challenge items. Interrater reliability was .85 via interclass correlation of raters, thus assuring selection of the best items to measure the three concepts. This same panel evaluated both the HRHS and Kobasa's Hardiness Scale (Kobasa, 1979) for measuring the hardiness characteristic, with experts all agreeing that the HRHS was the more appropriate instrument (Pollock, 1989).

Internal consistency of the HRHS was established via a pilot study (N=65 well adults) in which the subjects completed both Kobasa's Hardiness Scale and the HRHS. The HRHS indicated better reliability (higher alpha coefficients) as compared to Kobasa's scale.

Table 1 below illustrates the alpha coefficients obtained from each test.

Table 1

Comparison of Alpha Coefficients from HRHS and Kobasa's Hardiness Scale

	HRHS	Kobasa's Scale
Total instrument:	.80	.65
Control subscale:	.82	.55
Commitment subscale:	.74	.58
Challenge subscale:	.65	.23

Internal consistency reliabilities using Cronbach's alpha for the 40-item HRHS for this study were .70 for the total score, .65 for the control subscale, .48 for the commitment subscale, and .26 for the challenge subscale.

The Rhodes Index of Nausea and Vomiting Form 2 (Rhodes, Watson, Johnson, Madsen, & Beck, 1987) was utilized to measure anticipatory nausea and vomiting. The INV Form 2 is an 8-item, 5-point, Likert-type scale, utilized in a self-report method (Appendix D). The INV Form 2 was designed to measure nausea and vomiting in the subject in 12 hour blocks of time after the subject had received chemotherapy. For the purpose of this study, the time blocks were changed to 24 hours. The tool was adapted with permission of the author.

Form 2 was developed to measure the subject's perceived frequency of nausea, duration of nausea, distress from nausea, frequency of vomiting, amount of vomiting, distress from vomiting, frequency of dry heaves,

and distress from dry heaves. The subject's total symptom experience score is obtained from the total score on the INV Form 2. In addition, there are several sub-scores that can be derived from the INV Form 2.

Rhodes et al. (1987) estimated concurrent validity of the INV Form 2 by comparing the ratings of patients with the ratings of a family member the evening after the patient received chemotherapy, using Spearman's correlation coefficient ( $r=.87$ ,  $n=18$ ,  $p=.001$ ). Construct validity was measured by the tool's ability to discriminate between cancer patients and well citizens. The Wilcoxon-Mann Whitney test was used for this purpose. Through factor analysis the three experience scales were supported as being distinct and unique.

After the completion of a study of nausea and vomiting using a previously constructed Index of Nausea and Vomiting Form 1 (INV Form 1) the INV Form 2 was developed. Internal reliability of the INV was measured by two methods. The split-half correlation was .90, and Cronbach's Alpha was .89 to .97 over 12 index administrations. These findings relate to the INV Form 1. No other information specific for Form 2 was given except Cronbach's Alpha, which was .98 (Rhodes et al., 1987).

The coefficient alpha for the twelve INV Form 2 items for this study was .93. The coefficient alpha for the

nausea experience subscale was .92, .95 for the vomiting experience subscale, and .92 for the retching experience subscale.

#### Procedure

Application was made to the Grand Valley State University Human Research Review Committee for proposal approval. Approval was also obtained from the Research Committees of the hospitals in which subject recruitment took place. Once approval from all agencies was obtained, subject recruitment and data collection proceeded.

Recruitment of subjects occurred on the oncology units within three of the identified hospitals and via an oncology physician's office for patients admitted to the remaining hospital. An oncology nurse was contacted in three of the institutions and upon thorough discussion of the research data collection process, was recruited to collect data for the study. Each data collector was provided the appropriate tools, consent forms, and paper products required for data collection. Identification of subjects who met basic eligibility criteria occurred on a daily (Monday through Friday) basis at each institution. The researcher or nurse data collector reviewed admitting orders to confirm that the subject was

indeed receiving cisplatin and was between cycle two and six of treatment.

Once eligible subjects had been identified, the researcher or nurse data collector made personal contact with each subject. The researcher or nurse data collector introduced herself, gave a brief statement regarding the nature of the research (Appendix F), and presented the subject with the appropriate consent form (Appendix G). Explanations were given at this time regarding the process for data collection. The researcher or nurse data collector then gave the subject time to read the consent form privately and then returned to the room to answer any questions and to pick up the consent form if it was signed. Once consent was obtained, one copy of the consent was placed in the subject's chart, one copy given to the subject, and the final copy retained by the researcher. At this time, the researcher or nurse data collector interviewed the subject, utilizing the demographic and related data form (Appendix A). The researcher or nurse data collector then completed the chart review form (Appendix B).

The patient questionnaire and the Health Related Hardiness Scale (Pollock, 1987) were mailed to the subjects approximately 10 days after the present chemotherapy treatment, requesting that they complete the

forms and mail them back to the researcher (Appendix H). The intent was to have the subjects complete the questionnaires at a point in time when they had recovered optimally from the previous chemotherapy treatment and were not yet experiencing any distress in anticipation of the next treatment. Subjects were to complete the HRHS and the patient questionnaire within the privacy of their own home. Subjects were requested to mail the forms back to the researcher in a stamped, addressed envelope that was provided. To enhance confidentiality, the questionnaire was coded by number and the subjects were instructed not to identify themselves on any of the questionnaires completed during this study. If the forms were not received by the investigator within ten days of being mailed to the subject, a follow-up phone call was placed to the subject.

The INV Form 2 (Rhodes et al., 1987) was administered by the researcher or the nurse data collector the first day of the next admission to the hospital for chemotherapy, prior to pre-medications or chemotherapy being initiated. The subject was asked to complete the INV Form 2 at this time. The questionnaire was then placed in a plain envelope and returned to the researcher (Figure 2).

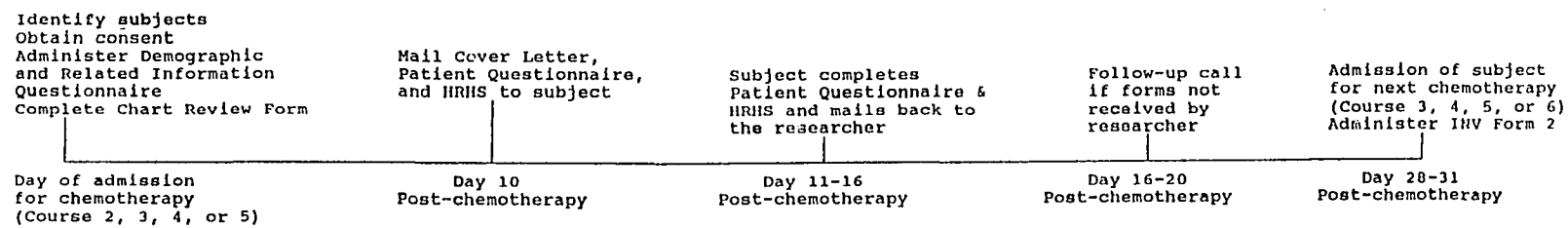


Figure 2. Time Line of Interaction With Subjects

If requested at the time of informed consent, results of the study were mailed to the subject at the completion of the study. All consent forms and returned forms were kept in a locked file at the researcher's home to enhance confidentiality.

The chance of untoward effects resulting from this study were considered minimal, however, two potential risks were identified. First, it was possible that the subjects could become fatigued when completing the 40-item Health Related Hardiness Scale. The researcher attempted to reduce this risk by enabling the subjects to take this paper and pencil test in their own home, allowing the subjects to rest as needed.

Second, the study deals with the psychophysiological phenomenon of anticipatory nausea and vomiting. It was possible that through too much information being given to patients who have never experienced anticipatory nausea and vomiting, they were at an increased risk of developing anticipatory nausea and vomiting during their chemotherapy protocol. In an effort to reduce this threat, the researcher and nurse data collectors did not expose the subjects to the words "anticipatory nausea and vomiting". Finally, the tool utilized to measure this phenomenon was identified simply as a means to measure the subject's personal experience before chemotherapy.

## CHAPTER FOUR

### Data Analysis

The life stress and illness model (Rahe, 1988) supports the relationship between stressor and symptom development in the cancer patient receiving chemotherapy. Anticipatory nausea and vomiting may be a psychophysiologic response to chemotherapy. The literature identifies the hardiness characteristic as a buffer, or resistance factor, in the stress/illness connection. Therefore, it is important to explore the relationship between hardiness and anticipatory nausea and vomiting in cancer patients.

The independent variable, the hardiness characteristic, including the concepts control, commitment, and challenge, were measured at the interval level for the total score. The dependent variable, anticipatory nausea and vomiting experienced by the patient receiving cisplatin chemotherapy, was also measured at the interval level. The Pearson  $r$  correlation coefficient was used to test the hypothesis: Individuals with a high level of the hardiness characteristic (control, commitment, and challenge) will experience less

anticipatory nausea and/or vomiting than those individuals with a low level of the hardiness characteristic. Relationships were considered to be significant at the 0.05 level.

One other relationship explored by the study was the differences between males and females in relation to the hardiness characteristic in each group. The t-test was used to determine if the gender groups differed significantly in relation to the hardiness characteristic. All data were analyzed using the SPSS/PC package.

#### Characteristics of Subjects

Identification of potential subjects for the study was made by the principal researcher and oncology nurse data collectors over a two year period within four institutions. More than one hundred patients were screened as potential candidates for the study, however, only forty subjects met the inclusion and exclusion criteria and consented to participate in the study. All forty candidates completed portions of the data collection process, with twenty-nine subjects completing all components of the data collection process. Nine subjects were unable to complete data collection as their treatment regime was changed prior to completing the final data collection tool, e.g., chemotherapy changed to radiation therapy or chemotherapy placed on hold. One subject was

unable to complete the data collection instruments at home due to existing family dynamics which prevented him from receiving the mail. One subject expired as a result of his cancer just prior to readmission for chemotherapy, thus the final data collection tool was not completed.

The breakdown of subjects in the study according to study site is shown in Table 2.

Table 2.

Distribution of Sample Based on Data Collection Site

Site	# of Subjects
529 bed regional hospital	29
190 bed community hospital	6
350 bed regional hospital	5
405 bed regional hospital	0

Twenty-four of the subjects were male and sixteen of the subjects were female. Age of the participants ranged from 36 to 79 years of age. The mean age was 56.87, with a standard deviation of 10.16. Thirty-two of the participants were married, four subjects were single, divorced, or widowed and living alone, and four subjects were single divorced, or widowed and living with someone. Thirty-nine subjects identified themselves as Caucasian, one subject as Hispanic. The distribution of subjects by ethnicity is listed in Table 3. The distribution of

subjects by education is listed in Table 4. Demographic characteristics were similar with respect to marital status, race, and education. The majority of subjects were Caucasian and married with a high school or partial college education.

Table 3

Distribution of Sample by Ethnicity

Characteristic	Group	
	Frequency	Percent
Dutch	8	20.0
Irish	5	12.5
German	13	32.5
Polish	2	5.0
Scottish	2	5.0
Mexican	1	2.5
English	2	5.0
Lithuanian	1	2.5
Native American Indian	2	5.0
Other	2	5.0
None	2	5.0
Total	40	100.0

Table 4.

Distribution of Sample by Education

Characteristic	Group	
	Frequency	Percent
Less than High School	6	15.0
High School	13	32.5
Partial College	14	35.0
College	4	10.0
Beyond 4 Years of College	3	7.5
Total	40	100.0

All 40 subjects had a confirmed diagnosis of cancer. Twenty subjects were diagnosed with lung cancer, while the remaining subjects had one of a variety of primary sites (Table 5). Twenty-six, or 65% of the sample had some metastatic disease present.

Table 5

Distribution of Sample Based on Primary Site of Cancer

Primary Site	Group	
	Frequency	Percent
Bladder	1	2.5
Testicle	4	10.0
Head/Neck	1	2.5
Lung	20	50.0
Breast	1	2.5
Bone	1	2.5
Uterine	2	5.0
Unknown	2	5.0
Other	7	17.5
N/A	1	2.5
Total	40	100.0

Point of entry into the study was after the completion of at least one course of chemotherapy and before receiving the fifth course of chemotherapy. Twenty-seven subjects were entered into the study prior to their second course of chemotherapy, eight subjects prior to their third course, four subjects prior to their fourth course, and one subject was entered prior to his fifth course of chemotherapy. The minimum dose of cisplatin the

subject could receive for inclusion into the study was 70 mg/m<sup>2</sup>. The distribution of the subjects based on cisplatin dose is listed on Table 6. Twenty-three subjects, or 57.5% of the sample received their cisplatin dose split and administered over more than one day, while the remaining 17 subjects, or 42.5% of the sample, received their cisplatin in a single dose. While cisplatin was identified as the primary chemotherapeutic agent the subjects were to receive, all forty subjects received at least one additional chemotherapeutic agent during their treatment regime.

Table 6

Distribution of Sample Based on Dose of Cisplatin

Dose Range	Group	
	Frequency	Percent
70 - 79 mg/m <sup>2</sup>	17	42.5
80 - 89 mg/m <sup>2</sup>	8	20.0
90 - 99 mg/m <sup>2</sup>	6	15.0
100 - 109 mg/m <sup>2</sup>	8	20.0
> 120 mg/m <sup>2</sup>	1	2.5
Total	40	100.0

Fifteen of the subjects had someone close to them receive chemotherapy in the past. Seven of the

individuals identified as being close to the subjects had experienced distressing symptoms while receiving chemotherapy, with nausea being the distressing symptom in four of the cases. Eight of the 40 subjects had themselves received chemotherapy treatments in the past (prior to the present regime), with six of those individuals having experienced distressing symptoms during that treatment regime. Nausea was identified as the most frequent distressing symptom in that group, experienced by three of the six subjects. Three subjects experienced nausea and/or vomiting prior to the initial chemotherapy treatment of the present treatment regime. Three subjects experienced mild distress from nausea in the two days prior to the chemotherapy treatment at which they were recruited into the study. No one experienced any vomiting in the two days prior to the chemotherapy treatment at which they were recruited into the study.

Table 7 identifies the distress from nausea experienced one week after the previous chemotherapy treatment as reported by the subjects. Table 8 identifies the distress from vomiting experienced one week after the subject's previous chemotherapy treatment as reported by the subjects. It is evident that of those subjects experiencing nausea, mild nausea was most frequently experienced. Post-chemotherapy vomiting was

experienced by fewer of the subjects than nausea, but was most often described as causing moderate distress. Pharmacological intervention to control post-chemotherapy nausea and vomiting was utilized by 77.9% of the subjects reporting this information (Table 9). Of the drugs identified, lorazepam (Ativan), prochlorperazine (Compazine), metoclopramide hydrochloride (Reglan), trimethobenzamide hydrochloride (Tigan), thiethylperazine maleate (Torecan), and ondansetron hydrochloride (Zofran), Torecan was taken by 50% of the subjects for control of post-chemotherapy nausea and vomiting.

Table 7

Distribution of Sample by Nausea Experienced One Week After Chemotherapy (n=36).

Characteristic	Group	
	Frequency	Valid Percent
No nausea	11	30.6
Mild distress	13	36.1
Moderate distress	8	22.2
Severe distress	4	11.1
Total	36	100.0

Table 8.

Distribution of Sample by Vomiting Experienced One Week After Chemotherapy (n=36).

Characteristic	Group	
	Frequency	Valid Percent
No vomiting	21	58.3
Mild vomiting	7	19.4
Moderate vomiting	8	22.2
Severe vomiting	0	0.0
Total	36	100.0

Table 9.

Distribution of Sample by Frequency of Medication Taken for Nausea & Vomiting One Week After Chemotherapy (n=36).

Characteristic	Group	
	Frequency	Valid Percent
No medication	8	22.2
2 X in 24 hours	15	41.7
3 - 4 X in 24 hours	11	30.6
> than 4 X in 24 hours	2	5.6
Total	36	100.0

Thirty-nine of the forty subjects received Zofran prior to the administration of cisplatin, thirty received dexamethasone (Decadron), and seventeen received Ativan. Two subjects received furosemide (Lasix) as part of the pre-chemotherapy regime and one subject received diphenhydramine hydrochloride (Benadryl). All but two subjects received a combination of two or more drugs prior to the administration of cisplatin. The two subjects receiving only one drug prior to the administration of cisplatin received Zofran intravenously.

Thirty-six of the forty subjects were administered the Health Related Hardiness Scale (HRHS). Six returned HRHS forms had one or more missing items. Scores have the potential to range from 40-240, with low scores indicating hardiness. Hardiness is determined by using the median split of the sample, with those scores below the median indicating the presence of hardiness. Subscores for each of the concepts control, commitment, and challenge can be obtained from the HRHS. Control scores range from 14-84 with low scores indicating high control, commitment scores range from 13-78, with low scores indicating high commitment, and challenge scores range from 13-78, with low scores indicating high challenge. The mean scores, median scores, and the standard deviations for the HRHS and the subscales are shown in Table 10. With a median

score of below 90 representing hardiness, 14 subjects, or 46.7% scored below the median score to indicate hardiness. Seventeen subjects, or 50.0% of the 34 subjects completing the control subscale scored below the median score of 41.50 for the subscale indicating control. Twelve subjects, or 37.5% of the thirty-two subjects completing the commitment subscale scored below the median score of 23 indicating commitment. Sixteen, or 47.1% of the total thirty-four subjects completing the challenge subscale scored below the median score of 24 indicating a sense of challenge.

Table 10.

Mean Scores of the HRHS and Subscales

Scale/Subscales	Score		
	M	Median	SD
HRHS Total (n=30)	87.833	90.00	14.518
Control (n=34)	41.971	41.50	9.622
Commitment (n=32)	23.375	23.00	6.729
Challenge (n=34)	25.618	24.00	6.325

Twenty-nine subjects were administered the Rhodes Index of Nausea and Vomiting Form 2 (INV Form 2). As this was the final data collection tool administered, eleven subjects were unable to complete this form (see page 36).

Two forms had missing data when returned. The INV Form 2 has a potential range in scores from a low of 0 to a maximum of 32. In addition, scores can be obtained from a variety of subscales. The subscales examined are those identified within the symptom experience subscale. They include the nausea experience with a potential range of scores of 0-12, the vomiting experience with a potential range of scores of 0-12, and the retching experience with a potential range of scores of 0-8. The mean score and standard deviations for the INV Form 2 total and selected subscales are shown on table 11. These scores reflect very low levels of perceived anticipatory nausea, vomiting, or retching in the subject group as a whole.

Table 11

Mean Scores for the INV Form 2 and Selected Subscales

Scale/Subscales	Score	
	M	SD
INV Form 2 total (n=27)	1.667	3.637
Nausea experience (n=28)	1.179	2.144
Vomiting experience (n=29)	.241	.912
Retching experience (n=28)	.179	.670

### Analysis of the Research Hypothesis

The Pearson  $r$  correlation coefficient was used to test the study hypothesis: Individuals with a high level of the hardiness characteristic (control, commitment, and challenge) will experience less anticipatory nausea and/or vomiting than those individuals with a low level of the hardiness characteristic. The Pearson  $r$  correlation coefficients were calculated to determine if a significant relationship existed between the total HRHS score with the total INV Form 2 score. Mean substitution with the variable mean was used for those few items not answered by the participants. Results indicated no significant relationship between the total HRHS and the total INV Form 2 ( $r=.07$ ,  $p=.72$ ), thus the hypothesis was not supported.

A  $t$ -test was utilized to examine the differences between males and females in relation to the hardiness characteristic in each group. There was homogeneity of variance so the pooled formula was used. There was no difference in the HRHS total based on gender ( $t=.77$ ,  $df=32$ ,  $p=.445$ ).

The Pearson  $r$  correlation coefficient was used to test each of the HRHS subscales (control, commitment, and challenge) to determine if a significant relationship existed between a subscale and the INV Form 2 score.

Results indicated no significant relationship between any of the subscales and the INV Form 2 total (Table 12).

Table 12

Correlations Between HRHS Subscales and INV Form 2 Totals

Subscales	Coefficients	Significance
Control	.19	.35
Commitment	-.19	.40
Challenge	.10	.64

$p < .05$

Additional Findings of Interest

Ethnicity and its relationship to hardiness was explored. A t-test was used to examine the differences between Dutch/German and Irish ethnic groups in relation to the HRHS total. These groups were chosen as they were the largest ethnic groups identified within the sample. There was no difference in the HRHS total based on ethnicity ( $t = .28$ ,  $df = 4.38$ ,  $p = .791$ ).

A variety of relationships were examined related to the development of anticipatory nausea and vomiting. A t-test was used to examine the differences between subjects who had and those who had not received chemotherapy in the past in relation to the anticipatory nausea experience (subscale of the INV Form 2) with the present treatment protocol. There was no difference in the anticipatory

nausea experience based on past chemotherapy experience ( $t=-.44$ ,  $df=26$ ,  $p=.665$ ).

The anticipatory nausea and vomiting experience was also examined in relationship to subjects having had someone close to them receive chemotherapy in the past. A t-test was used to examine the differences between subjects who had someone and those who did not have someone close to them receive chemotherapy in the past in relation to the anticipatory nausea experience and the anticipatory vomiting experience with this chemotherapy regime. There was no difference in the anticipatory nausea experience based on having had someone close receive chemotherapy ( $t=1.02$ ,  $df=26$ ,  $p=.318$ ) nor in the anticipatory vomiting experience based on having had someone close receive chemotherapy ( $t=.63$ ,  $df=9.87$ ,  $p=.544$ ).

The Pearson r correlation coefficient was used to determine if a significant relationship existed between the amount of nausea one week after chemotherapy (from the previous course of cisplatin) with the amount of anticipatory nausea for the present course of chemotherapy. The Pearson r indicates there is some relationship approaching significance ( $r=.33$ ,  $p=.07$ ). This same relationship was explored substituting vomiting

for nausea, with the results indicating significance ( $r=.46$ ,  $p=.01$ ).

The dose of cisplatin and the method of administering the cisplatin (single dose or split doses) were analyzed in relationship to anticipatory nausea and vomiting. The Pearson  $r$  correlation coefficient was used to determine if a significant relationship existed between the dose of cisplatin administered and the anticipatory nausea experience. Results indicated no significant relationship between the dose of cisplatin and anticipatory nausea ( $r=-.05$ ,  $p=.80$ ). Similarly, there was no significant relationship between the dose of cisplatin and anticipatory vomiting ( $r=-.27$ ,  $p=.14$ ). A  $t$ -test was utilized to examine the differences between groups based on the dosing of cisplatin (single dose or split doses) and the amount of anticipatory nausea experienced by subjects. There was no significant difference between the single dose group and the split dose group and the amount of anticipatory nausea experienced ( $t=2.02$ ,  $df=13.21$ ,  $p=.064$ ).

Lastly, the Fisher's Exact test was used to analyze subjects who scored less than 90 on the HRHS (indicating hardness) and subjects who scored 90 or greater on the HRHS with subjects who experienced no anticipatory nausea and vomiting and subjects who experienced some degree of

anticipatory nausea and vomiting (based on INV Form 2 totals). Table 13 demonstrates this relationship.

Table 13

Relationship Between Presence of Hardiness and  
Anticipatory Nausea and Vomiting

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Anticipatory Nausea and Vomiting		
	<u>No</u>	<u>Yes</u>
Hardy (n=13)	10 (77%)	3 (23%)
Not Hardy (n=14)	8 (57%)	6 (43%)

---

p=.249, one-tailed.

## CHAPTER FIVE

### Discussion and Implications

#### Discussion

This study was designed to examine the relationship between personality hardiness and the experience of anticipatory nausea and vomiting within a sample of patients receiving cisplatin as their primary chemotherapeutic agent. Kobasa (1979) identified hardiness as a buffer or resistance factor in the stress/illness connection. Recognizing that the symptoms of anticipatory nausea and vomiting may evolve via the process described in the life stress and illness model (Rahe, 1988), the results of this study were expected to support a correlation between hardiness and anticipatory nausea and vomiting. The data, however, did not support this premise. The findings of the study revealed no statistically significant relationship between hardiness and anticipatory nausea and vomiting. It is of clinical importance, however, that a much lower percentage of hardy individuals experienced anticipatory nausea and vomiting than the non hardy group.

The mean scores for the INV Form 2 and selected subscales (Table 11) indicate very low levels of perceived

nausea, vomiting, or retching in the twenty-four hours prior to admission for chemotherapy. It was anticipated that there would be greater variability in the degree of these symptoms within the subject group as a whole. There may be a number of factors which influenced these low scores.

The literature (Pratt, Lazar, Penman, & Holland, 1984) supports the development of anticipatory nausea and vomiting based on the classical conditioning model, from which repeated experiences with an unconditioned stimulus (chemotherapy) contributes to an unconditioned reflexive response (post-chemotherapy nausea and vomiting). With repeated experiences, the conditioned response (anticipatory nausea and vomiting) may evolve. This model is supported by Morrow (1984), identifying that patients who experience moderate, severe, or intolerable nausea and vomiting post-chemotherapy were more likely to experience anticipatory nausea and vomiting. Data in this study found a relationship approaching significance between the amount of nausea one week after chemotherapy (from the previous course of cisplatin) with the amount of anticipatory nausea and vomiting for the present course of chemotherapy. Significance was achieved in examining this same relationship substituting vomiting for nausea. These findings support the literature, indicating post-

chemotherapy nausea and vomiting influence the development of anticipatory nausea and vomiting.

Based on the classical conditioning model, it is logical that the further into the treatment protocol, the greater the potential would exist for anticipatory nausea and vomiting to develop. This is particularly true if the patient experiences distressing stimuli which act to elicit an unconditioned reflexive response. While the discussion above explains that the majority of subjects experienced no to mild levels of distress related to post-chemotherapy nausea and vomiting, this may be due, in part, to the fact that 27 subjects were entered into the study prior to their second course of chemotherapy. The majority of subjects had few experiences with chemotherapy at this point, thus this may have contributed to the low INV Form 2 scores.

The introduction of ondansetron (Zofran), a serotonin antagonist, may also have influenced the INV Form 2 and subscale scores. Zofran was introduced to the clinical setting during the period of time the study was designed. Zofran has been widely utilized since that time as an antiemetic in pre-chemotherapy treatment regimes, as evidenced by the fact that 39 out of the 40 subjects in this study received this drug as a premedication for cisplatin. Clinical trials with this drug had promised

new advances in the control of chemotherapy-induced nausea and vomiting (Egan, Taggart, & Bender, 1992). Control of nausea and vomiting during and immediately after chemotherapy will influence the development of anticipatory nausea and vomiting (Goodman, 1987). While no direct analysis of Zofran, post-chemotherapy nausea and vomiting, and anticipatory nausea and vomiting was carried out in this study, the low INV Form 2 and subscale scores may be a reflection of the effectiveness of this drug in controlling post-chemotherapy nausea and vomiting.

Additional factors thought to influence the development of anticipatory nausea and vomiting were examined. The theoretical framework for this study recognizes that many factors interface to produce an individual's perception and response to a stressor. Included in these factors are the life events an individual experiences. Experiences identified in the study which would be considered life events include having had someone close to the subject receive chemotherapy in the past and the subject himself having received chemotherapy prior to the current treatment regime. There was no difference in the anticipatory nausea and vomiting experience based on either of these life events. This may be attributed to the fact that only 15 subjects had someone close to them receive chemotherapy and only

in seven of these instances was the person perceived as having distressing symptoms as a result of the chemotherapy, of which nausea was the distressing symptom identified in four of the cases. Only eight of the 40 subjects had received chemotherapy treatments previously, six of which experienced distressing symptoms, and three of these six had experienced nausea as the distressing symptom. It may be possible that other factors are impacting the perception of chemotherapy, both on an individual and societal level. Education has improved both on an individual level and family level for those undergoing chemotherapy treatments. Information has been widely disseminated within the public sector related to cancer, its treatment, potential side effects resulting from treatment, and the increasing frequency of positive outcomes once diagnosed with cancer. In addition, survivorship and all that it implies has become the focus of much of the information released to the health care team and public today. Based on this, the perception of cancer and its treatment may be slowly changing and may be perceived in a less negative light.

The literature does not explore in detail factors that affect the development or presence of hardiness. In an effort to further explore this, two additional relationships were examined. The first relationship

examined was that of hardiness and gender. The findings of this study indicated that there was no difference in the HRHS total score based on gender. Gender identification is influenced by biological aspects (e.g., anatomic and physiologic organs, hormones, etc.), psychologic aspects (e.g., sexual self-concept), and sociocultural aspects (e.g., gender role learned through family and society) (Hogan, 1985). It is plausible that these biopsychosocial factors may impact the development of hardiness, recognized in the literature as a personality characteristic, although this study did not support that relationship.

Lastly, ethnicity and its relationship to hardiness was explored. If factors can be identified that influence the development and presence of hardiness, ethnicity may be one of those factors. Subjects were asked to identify the ethnic group that they most closely identified with in their own lives. The Dutch and German groups were joined for analysis as they have somewhat similar cultural norms. The Dutch/German and Irish groups were chosen to examine the differences between them as they were the largest ethnic groups identified within the sample. The findings did not identify a difference in the HRHS total based on ethnicity.

### Limitations

As with many studies, there were identified threats to both internal and external validity. There were two major threats to internal validity identified in this study: maturation and testing effects. It was possible for the subjects in this study to experience the effect of maturation as a result of their cancer disease process. Often fatigue and disease progression are unavoidable due in part to the chemotherapy treatment and the disease trajectory itself. Attempts were made to control this process by expediting the data collection process. Only a four week interval occurred between the initial contact and the final questionnaire.

The second risk to internal validity, testing effects, may have occurred as a result of the nature of the questionnaires. If the subjects were exposed to the questionnaire dealing with the hardiness characteristic prior to their next chemotherapy treatment, this may have stimulated the subjects to examine their own attitudes toward life and their diagnosis. This may, in turn, have affected their normal response to chemotherapy and altered the research findings. No mention of hardiness, control, commitment, or challenge was made directly to the subjects. They were told that this study was to examine how people view certain issues related to their own

health. In addition, the questionnaires were administered at one point between cycle two and six of the individual's chemotherapy protocol, thus the pattern of anticipatory nausea and vomiting would likely be already established.

The two major threats to generalizability were identified as experimenter effects and characteristics of the sample. The performance of the subjects may have been affected by the researcher's expectations. The subjects may have recognized the researcher's interest and enthusiasm for the project, and answered the questionnaires in the manner they think the researcher or nurse data collectors expected them to be answered. An attempt was made to reduce this threat by the presentation of a brief, simple introductory statement made to each subject (Appendix F).

The small sample size was a limitation to the study. The subjects were fairly homogenous as a group with the majority being married, Caucasian with a high school or partial college education. Another limitation was that convenience sampling was utilized for the study. Almost every patient receiving cisplatin during the study period was reviewed as a potential subject for the study, excluding only those who did not meet the inclusion and exclusion criteria. Despite this, data collection took two years with four data collectors in four different

institutions. This was attributed, in part, to the fact that cancer therapy advances, making other chemotherapeutic drugs available to patients, occurred during the time frame this study was conducted. Several subjects consented to participate in the study, but were unable to complete all aspects of the data collection process as a result of a change in therapy. One subject expired as a result of his cancer prior to completing the data collection process. As a result of this method of sampling, the findings cannot be generalized to the total cancer population.

Another factor that may have influenced the results of this study was the introduction of Zofran as an antiemetic. This drug has been identified in the literature and by cancer clinicians as effectively reducing the amount of post-chemotherapy nausea and vomiting. The effect of this drug on the study results is unknown, but may have impacted the levels of anticipatory nausea and vomiting experienced by the subjects.

The Health Related Hardiness Scale used in this study must be examined as a potential limitation related to the results of this study. The reliability coefficients for the challenge subscale (.26) and the commitment subscale (.48) indicate a low degree of internal consistency within these scales. Wagnild and Young (1991) examined a number

of concerns in relationship to the instruments presently being used to measure hardiness. Their review of the literature revealed that a number of studies have identified the challenge subscale as being problematic and lacking internal consistency. Hull, Van Treuren, and Virnelli (1987) also examined hardiness and its subcomponents, identifying that only commitment and control have adequate psychometric properties (based on the Hardiness Scale developed by Kobasa) and are systematically related to health outcomes. Hull, Van Treuren, and Virnelli recommend that composite hardiness should not be calculated because this does not allow for the independent contributions of each subcomponent (challenge, commitment, and control). Pollock and Duffey (1990) describe the development and the psychometric evaluation of the present HRHS scale, which has evolved to a 34-item instrument. The conclusion of the authors is that two separate but related dimensions exist, those of commitment/challenge and control. The recommendation is that a total HRHS score and the two subscores be obtained from this newer instrument.

At the time this study was designed, the 40-item HRHS was the current instrument to measure hardiness and the subcomponents control, challenge, commitment. Further analysis of the instrument has identified problems with

measuring the three subcomponents individually. Based on the variety of instruments available to measure hardiness and the questions that remain related to the consistency of the subscales, further research and testing of the instruments is indicated.

The data collection tool used to elicit information related to post-chemotherapy nausea and vomiting (Appendix C) was also a limitation to the study. This tool was designed as a self-reporting tool. It was completed by the subjects approximately two weeks after the previous chemotherapy treatment, thus the subject's perceived experiences at that point in time may have differed from their actual experiences at the time they were having post-chemotherapy nausea and vomiting. The tool is designed poorly in regard that the responses allow room for individual interpretation. The responses include choices such as no nausea, mild distress from nausea, moderate distress from nausea, etc. Each individual may interpret these responses differently based on their own sense of what mild, moderate, and severe indicate.

#### Implications for Nursing Practice

While the hypothesis was not supported there remain important implications for nursing practice. Given the fact that a much lower percentage of hardy individuals experienced anticipatory nausea and vomiting when compared

to non hardy individuals, recognition of hardiness in the clinical setting is important. Nursing interventions that may impact an individual's ability to maximize characteristics such as hardiness in a stressful situation may be as simple as giving the patient control over his environment whenever possible. These may be basic interventions such as mutually establishing appropriate medication schedules according to the patient's needs and desires, empowering the patient to control environmental stimuli such as noise, television, lights, and routines, and advocating for the patient who chooses to use interventions such as imagery and music therapy. There are undeniably many factors that impact the complexity with which an individual responds to illness and the treatment regime, however, hardiness may be an important characteristic that may promote a positive response in the patient facing stress and illness.

Cancer patients continue to provide a myriad of challenges for nursing practitioners, particularly in relationship to the side effects to chemotherapy. This study does support, albeit weakly, the relationship of post-chemotherapy nausea and vomiting to anticipatory nausea and vomiting. While the scores of the INV Form 2 would indicate low levels of anticipatory nausea and vomiting, it is important to control post-chemotherapy

nausea and vomiting. Clearly Zofran may impact this, but it remains an important nursing challenge to provide nursing care to combat the side effects of chemotherapy. Such interventions may focus not only from a pharmacological basis, but also from a behavioral basis. These patients may benefit from interventions such as imagery, music therapy, and relaxation breathing techniques.

#### Recommendations for Future Research

Although the hypothesis was not supported statistically, the fact that hardy individuals experienced anticipatory nausea and vomiting in much lower percentages would suggest a continued exploration with refined instruments, additional variables and larger samples. Based upon the changes encountered with cancer treatment and symptom control since the inception of this study, replication of this study would not be advised. However, as hardiness is considered a personality characteristic, it could be examined in relationship to any health care issue experienced by an individual. This may include symptom development, perceived symptom experience, response to illness, impact on health promotion behaviors, etc.

Hardiness should be explored not only in relationship to health care issues, but in relationship to the

characteristic itself. Of particular interest would be how this characteristic develops or evolves within the individual. If this were determined, recommendations could be made for interventions to promote or develop the characteristic within the individual or to enhance the buffering effects of this characteristic in times of stress or illness.

Another potential source for further research was identified during the selection process of subjects for this study. Many of the potential subjects were not receiving high dose cisplatin ( $>70\text{mg/m}^2$ ). In one location, fourteen potential subject charts were reviewed with not one patient receiving high dose cisplatin, despite the fact that the diagnosis may have indicated this treatment regime was appropriate. It is not the intent of this study to determine appropriate medical practice and this study did not examine the different drugs used in conjunction with cisplatin, which may impact the dose of cisplatin administered. As a result of this incidental finding, however, it may be of interest to research factors influencing the dosing of cisplatin in the various cancer patient populations and the geographical locale of these patients.

## Conclusion

The purpose of this study was to determine the relationship between hardiness and the amount of anticipatory nausea and vomiting in patients receiving cisplatin chemotherapy. The investigator concluded that there was no statistically significant relationship between the independent variable hardiness and the dependent variable anticipatory nausea and vomiting. However, small sample size was a major limitation to this study. Hardiness may well impact the individual's ability to buffer stress and symptom development when confronted with an illness, but further research must be conducted to explore this relationship in more depth.

## APPENDICES

## APPENDIX A

### Demographic and Related Data

Please answer each question as accurately as possible.

1. Age: \_\_\_\_\_ years (to the nearest year).
2. Gender: 1\_\_\_\_male 2\_\_\_\_female
3. Marital status:
  - 1\_\_\_\_Married
  - 2\_\_\_\_Single/divorced/widowed, living alone
  - 3\_\_\_\_Single/divorced/widowed, living with someone you are close to
4. Race:
  - 1\_\_\_\_Caucasian
  - 2\_\_\_\_Black
  - 3\_\_\_\_Hispanic
  - 4\_\_\_\_Asian
  - 5\_\_\_\_Native American
  - 6\_\_\_\_Other (please identify)\_\_\_\_\_
5. Highest level of education completed:
  - 1\_\_\_\_Less than high school
  - 2\_\_\_\_High school
  - 3\_\_\_\_Partial college education (3 years or less)
  - 4\_\_\_\_College education (4 years)
  - 5\_\_\_\_Beyond 4 years of college
6. Which ethnic group do you identify with?  
\_\_\_\_\_
7. Has any one close to you ever received chemotherapy for the treatment of cancer?
  - 1\_\_\_\_Yes
  - 2\_\_\_\_No

8. If answered "yes" to item 7:  
Did this person experience any distressing symptoms during their chemotherapy?

1 ☐ Yes  
2 ☐ No

9. If answered "yes" to item 8:  
What were the distressing symptoms that person experienced?

1 ☐ Anorexia  
2 ☐ Nausea  
3 ☐ Vomiting  
4 ☐ Hair loss  
5 ☐ Weakness/fatigue  
6 ☐ Stomatitis  
7 ☐ Pain at injection site  
8 ☐ Bruising  
9 ☐ Bleeding  
10 ☐ Others \_\_\_\_\_

10. Have you had any past chemotherapy treatments (prior to this course of therapy)?

1 ☐ Yes  
2 ☐ No

11. If answered "yes" to item 10:  
Did you experience any distressing symptoms during that chemotherapy treatment regime?

1 ☐ Yes  
2 ☐ No

12. If answered "yes" to item 11:  
What distressing symptoms did you experience during that chemotherapy regime?

1 ☐ Anorexia  
2 ☐ Nausea  
3 ☐ Vomiting  
4 ☐ Hair loss  
5 ☐ Weakness/fatigue  
6 ☐ Stomatitis  
7 ☐ Pain at injection site  
8 ☐ Bruising  
9 ☐ Bleeding  
10 ☐ Others \_\_\_\_\_

13. With the present chemotherapy treatments you are undergoing, did you experience any nausea and vomiting **before the very first treatment?**  
1 ☐ Yes  
2 ☐ No
14. With the present chemotherapy treatments you are undergoing, how much nausea do you experience in the two days **before** coming in for treatment?  
1 ☐ I do not experience any nausea.  
2 ☐ I experience only mild distress from nausea.  
3 ☐ I experience moderate distress from nausea.  
4 ☐ I experience severe distress from nausea.
15. With the present chemotherapy treatments you are undergoing, how much vomiting do you experience in the two days **before** coming in for treatment?  
1 ☐ I do not experience any vomiting.  
2 ☐ I experience only mild distress from vomiting.  
3 ☐ I experience moderate distress from vomiting.  
4 ☐ I experience severe distress from vomiting.

## APPENDIX B

### Chart Review Form

1. Cycle number of chemotherapy this admission:  
  - 1\_\_\_ Cycle two
  - 2\_\_\_ Cycle three
  - 3\_\_\_ Cycle four
  - 4\_\_\_ Cycle five
  
2. Dose of cisplatin to be received this cycle of chemotherapy:  
  - 1\_\_\_ 70-79 mg/m<sup>2</sup>
  - 2\_\_\_ 80-89 mg/m<sup>2</sup>
  - 3\_\_\_ 90-99 mg/m<sup>2</sup>
  - 4\_\_\_ 100-109 mg/m<sup>2</sup>
  - 5\_\_\_ > 110 mg/m<sup>2</sup>
  
3. Drug protocol for the administration of cisplatin this chemotherapy cycle:

4. Drug protocols for the administration of cisplatin  
the previous chemotherapy cycles:

Cycle 1: Date:

Cycle 2: Date:

Cycle 3: Date:

Cycle 4: Date:

5. Primary site of cancer:

- 1 ☐ Bladder
- 2 ☐ Testicle
- 3 ☐ Ovary
- 4 ☐ Head/Neck
- 5 ☐ Cervix
- 6 ☐ Lung
- 7 ☐ Breast
- 8 ☐ Other \_\_\_\_\_

6. Is metastatic disease present?

- 1 ☐ Yes
- 2 ☐ No

7. If item "6" is Yes, identify area/s of metastatic  
disease:

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## APPENDIX C

### Patient Questionnaire

Please answer each question as accurately as possible.

1. How much nausea did you experience during the first week after your last chemotherapy treatment?
  - 1\_\_\_ I did not experience any nausea.
  - 2\_\_\_ I experienced only mild distress from nausea.
  - 3\_\_\_ I experienced moderate distress from nausea.
  - 4\_\_\_ I experienced severe distress from nausea.
  
2. How much vomiting did you experience during the first week after your last chemotherapy treatment?
  - 1\_\_\_ I did not experience any vomiting.
  - 2\_\_\_ I experienced only mild distress from vomiting.
  - 3\_\_\_ I experienced moderate distress from vomiting.
  - 4\_\_\_ I experienced severe distress from vomiting.
  
3. Did you take any medication to prevent or control nausea and vomiting the first week after your last chemotherapy treatment?
  - 1\_\_\_ I did not take any medication to prevent or control nausea and vomiting.
  - 2\_\_\_ I took medication to prevent or control nausea and vomiting one to two times in a twenty-four hour period.
  - 3\_\_\_ I took medication to prevent or control nausea and vomiting three to four times in a twenty-four hour period.
  - 4\_\_\_ I took medication to prevent or control nausea and vomiting more than four times in a twenty-four hour period.

4. If you took medication to prevent or control nausea and vomiting after your last chemotherapy, please complete the following information:

1 Name of medication: \_\_\_\_\_

2 Dose of medication if known: \_\_\_\_\_

3 How often you took the medication: \_\_\_\_\_

\_\_\_\_\_

YOU HAVE COMPLETED THIS QUESTIONNAIRE. PLEASE CHECK AND  
MAKE SURE YOU HAVE ANSWERED ALL THE QUESTIONS  
THAT APPLY TO YOU.

THANK YOU!!!!

# APPENDIX D

## Health Related Hardiness Scale

Number \_ \_ \_ \_

### HEALTH RELATED HARDINESS SCALE

#### Instructions:

This is a questionnaire designed to determine the way in which different people view certain important issues related to their health. Each item is a belief statement with which you may agree or disagree. Beside each statement is a scale which ranges from strongly disagree (1) to strongly agree (6). For each item we would like you to circle the number that represents the extent to which you disagree or agree with the statement. Please make sure that you answer every item and that you circle only one number per item.

DISAGREE			AGREE			
S	M	S	S	M	S	
T	O	L	L	O	T	
R	D	I	I	D	R	
O	E	G	G	E	O	
N	R	H	H	R	N	
G	A	T	T	A	G	
L	T	L	L	T	L	
Y	E	Y	Y	E	Y	
	L			L		
	Y			Y		
1	2	3	4	5	6	1. When I get sick I am to blame.
1	2	3	4	5	6	2. I can avoid illness, if I take care of myself.
1	2	3	4	5	6	3. I find it difficult to imagine enthusiasm about good health.
1	2	3	4	5	6	4. Luck plays a big part in determining how soon I will recover from an illness.
1	2	3	4	5	6	5. No matter how hard I try to maintain my health, my efforts will accomplish very little.
1	2	3	4	5	6	6. I am in control of my health.
1	2	3	4	5	6	7. I admire people who work hard to improve their health.
1	2	3	4	5	6	8. It is more important to have financial security than good health.
1	2	3	4	5	6	9. The ideas about health promotion and illness prevention are social inventions to limit freedom of action.
1	2	3	4	5	6	10. My good health is largely a matter of good fortune.

DISAGREE			AGREE		
S	M	S	S	M	S
T	O	L	L	O	T
R	D	I	I	D	R
O	E	G	G	E	O
N	R	H	H	R	N
G	A	T	T	A	G
L	T	L	L	T	L
Y	E	Y	Y	E	Y
	L			L	
	Y			Y	

Number \_ \_ \_ \_

- |   |   |   |   |   |   |       |                                                                                                 |
|---|---|---|---|---|---|-------|-------------------------------------------------------------------------------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | _____ | 11. No matter what I do, I'm likely to get sick.                                                |
| 1 | 2 | 3 | 4 | 5 | 6 | _____ | 12. I find it boring to eat and exercise properly to maintain my health.                        |
| 1 | 2 | 3 | 4 | 5 | 6 | _____ | 13. The main thing which affects my health is what I myself do.                                 |
| 1 | 2 | 3 | 4 | 5 | 6 | _____ | 14. Changes taking place in health care are not exciting to me.                                 |
| 1 | 2 | 3 | 4 | 5 | 6 | _____ | 15. I find people who are involved in health promotion interesting.                             |
| 1 | 2 | 3 | 4 | 5 | 6 | _____ | 16. Setting goals for health is unrealistic.                                                    |
| 1 | 2 | 3 | 4 | 5 | 6 | _____ | 17. Most things that affect my health happen to me by accident.                                 |
| 1 | 2 | 3 | 4 | 5 | 6 | _____ | 18. Close relationships with others contribute to my mental and physical well-being.            |
| 1 | 2 | 3 | 4 | 5 | 6 | _____ | 19. Changes taking place in health care will have no effect on me.                              |
| 1 | 2 | 3 | 4 | 5 | 6 | _____ | 20. If I get sick, it is my own behavior which determines how soon I get well again.            |
| 1 | 2 | 3 | 4 | 5 | 6 | _____ | 21. I do not find it interesting to learn about health.                                         |
| 1 | 2 | 3 | 4 | 5 | 6 | _____ | 22. I will stay healthy if it's meant to be.                                                    |
| 1 | 2 | 3 | 4 | 5 | 6 | _____ | 23. I am not interested in exploring new health care regimens or programs to improve my health. |
| 1 | 2 | 3 | 4 | 5 | 6 | _____ | 24. A close relationship with my family has no effect on my health.                             |
| 1 | 2 | 3 | 4 | 5 | 6 | _____ | 25. The only reason to be involved in the health promotion movement is to increase my lifespan. |

DISAGREE			AGREE		
S	M	S	S	M	S
T	O	L	L	O	T
R	D	I	I	D	R
O	E	G	G	E	O
N	R	H	H	R	N
G	A	T	T	A	G
L	T	L	L	T	L
Y	E	Y	Y	E	Y
	L			L	
	Y			Y	

Number \_ \_ \_ \_

1	2	3	4	5	6	_____
1	2	3	4	5	6	_____
1	2	3	4	5	6	_____
1	2	3	4	5	6	_____
1	2	3	4	5	6	_____
1	2	3	4	5	6	_____
1	2	3	4	5	6	_____
1	2	3	4	5	6	_____
1	2	3	4	5	6	_____
1	2	3	4	5	6	_____
1	2	3	4	5	6	_____
1	2	3	4	5	6	_____
1	2	3	4	5	6	_____
1	2	3	4	5	6	_____
1	2	3	4	5	6	_____

26. No matter what I do, if I am going to get sick, I will get sick.
27. I feel no need to try to maintain my health, because it makes no difference anyway.
28. The current focus on health promotion is a fad that will probably disappear.
29. No matter how hard I work to promote health for society, it never seems to improve.
30. Our society holds no worthwhile goals or values about health.
31. If I take the right actions, I can stay healthy.
32. I get excited about the possibility of improving my health.
33. I am determined to be as healthy as I can be.
34. When my health is threatened, I view it as a challenge that must be overcome.
35. I read everything I can about health.
36. I can be as healthy as I want to be.
37. I see nothing wrong with taking risks with my health.
38. When something goes wrong with my health, I do everything I can to get at the root of the problem.
39. I have little influence over my health.
40. Adequate rest is part of my daily routine.

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YOU HAVE COMPLETED THIS QUESTIONNAIRE. PLEASE CHECK AND MAKE SURE YOU HAVE ANSWERED ALL QUESTIONS.

THANK YOU!!!!

# SAMPLE

## RHODES INV-FORM 2

Directions: Draw a circle around or mark through the sentence in each row that most clearly corresponds to your experience. Please make *one* mark on each line.

I.D. Number \_\_\_\_\_ Date \_\_\_\_\_

Time \_\_\_\_\_ Time of C T. \_\_\_\_\_

I threw up seven or more times during the last 12 hours.	I threw up five-six times during the last 12 hours.	I threw up three-four times during the last 12 hours.	I threw up one-two times during the last 12 hours.	I did not throw up during the last 12 hours.
During the last 12 hours, I have not felt any distress from retching or dry heaves.	During the last 12 hours, I have felt mild distress from retching or dry heaves.	During the last 12 hours I have felt moderate distress from retching or dry heaves.	During the last 12 hours, I have felt great distress from retching or dry heaves.	During the last 12 hours I have felt as severe distress from retching or dry heaves as can be.
During the last 12 hours I have felt as severe distress from vomiting as can be.	During the last 12 hours I have felt great distress from vomiting.	During the last 12 hours I have felt moderate distress from vomiting.	During the last 12 hours I have felt mild distress from vomiting.	During the last 12 hours I have not felt any distress from vomiting.
I have not felt nauseated or sick at my stomach during the last 12 hours.	I have felt nauseated or sick at my stomach for one hour or less during the last 12 hours.	I have felt nauseated or sick at my stomach for two-three of the last 12 hours.	I have felt nauseated or sick at my stomach four to six of the last 12 hours.	I have felt nauseated or sick at my stomach more than six of the last 12 hours.
During the last 12 hours I have not felt any distress from nausea/sickness at my stomach.	During the last 12 hours I have felt mild distress from nausea or sickness at my stomach.	During the last 12 hours I have felt moderate distress from nausea or sickness at my stomach.	During the last 12 hours I have felt great distress from nausea or sickness at my stomach.	During the last 12 hours I have felt as severe distress from nausea or sickness at my stomach as can be.
During the last 12 hours, I produced a <i>very large</i> (3 cups or more) amount each time I threw up.	During the last 12 hours, I produced a <i>large</i> (2-3 cups) amount each time I threw up.	During the last 12 hours, I produced a moderate ( $\frac{1}{2}$ -2 cups) amount each time I threw up.	During the last 12 hours, I produced a <i>small</i> (up to $\frac{1}{2}$ cup) amount each time I threw up.	During the last 12 hours, I did not throw up.
I have felt nauseated or sick at my stomach seven or more different times during the last 12 hours.	I have felt nauseated or sick at my stomach five-six different times during the last 12 hours.	I have felt nauseated or sick at my stomach three-four different times during the last 12 hours.	I have felt nauseated or sick at my stomach one-two different times during the last 12 hours.	I have not felt nauseated or sick at my stomach during the last 12 hours.
During the last 12 hours I have had NO periods of retching or dry heaves without bringing anything up.	During the last 12 hours I have had 1-2 periods of retching or dry heaves without bringing anything up.	During the last 12 hours I have had 3-4 periods of retching or dry heaves without bringing anything up.	During the last 12 hours I have had 5-6 periods of retching or dry heaves without bringing anything up.	During the last 12 hours I have had 7 or more periods of retching or dry heaves without bringing anything up.

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Verna A. Rhodes, RN, EdS

Instructions for administering and scoring may be obtained from V. Rhodes or J. Lay, S221 School of Nursing Building, University of Missouri, Columbia, MO 65211; 314-882-0204.

## SAMPLE INV SCALE

Complete *one* INV Scale starting  
at 7, 8, or 9 p.m. the evening  
following chemotherapy

Choose the best hour for your  
schedule.

Beginning with your chosen hour,  
complete one INV Scale every 12  
hours at the *same* clock hour for  
six times.

Example: 7 PM - 7 AM  
8 PM - 8 AM  
9 PM - 9 AM

VR:lb  
7/21/82

## APPENDIX F

### Introductory Statement

Hello, I am Colleen Smith, a registered nurse. I am conducting a study to find out what people think about their health and how they feel before getting their chemotherapy treatments.

I hope that information gained from this study will help nurses and doctors to better meet the needs of cancer patients. In order to conduct my study, I need several patients to answer a few questions and complete three brief paper and pencil questionnaires. Two of the questionnaires will be mailed to you to be completed in your home. These questionnaires will require about 20-30 minutes to complete. The other questionnaire will be given to you at the time of your next admission for chemotherapy. This questionnaire will require about 5 minutes to complete.

Please understand that at no time will you be identified and that all information is kept strictly confidential.

If you are interested in participating, I would like to leave this consent form for you to read and sign. I will return in a few minutes to pick up the form. Your

signature on the consent form will indicate your consent to participate in this study, at which time you will receive further information and instructions.

Thank you very much for your cooperation.

## APPENDIX G

### Consent to Participate in Study

I am aware that this is a study of how people view certain important issues related to their health. I also understand that this study will examine how I feel just before and after I receive my chemotherapy treatment. I understand that the knowledge gained is expected to help nurses and physicians provide health care in a manner which will be responsive to the needs of patients receiving chemotherapy.

I also understand that:

1. participation in this study will involve a brief interview that will be conducted after I sign the consent form. Participation will also include three paper and pencil questionnaires to be completed one time only. The first questionnaire will deal with general information about how I feel after my chemotherapy. The second questionnaire will deal with how I view certain issues related to my health. Both of these questionnaires will be mailed to me so I can complete them in my own home. The third questionnaire will deal with how I feel just before I receive my chemotherapy. This questionnaire will be given to me to complete in the hospital the day I am admitted to receive my next chemotherapy treatment.
2. there are no anticipated physical or emotional risks as a result of participating in this study.
3. a summary of the results will be made available to me upon my request.

I acknowledge that:

I have been given an opportunity to ask questions regarding this research study, and that these questions have been answered to my satisfaction.

In giving my consent, I understand that my participation in this study is voluntary and that I may withdraw at any time without affecting the care I receive from my physicians or the staff at Butterworth Hospital.

I understand I will receive no payment for my participation. Continuing medical care and/or hospitalization will not be provided free of charge, nor will financial compensation be available.

The investigator and/or delegated representatives from Butterworth Hospital and/or the Food and Drug Administration may inspect any data collected in relationship to this study where appropriate and necessary.

The investigator, Colleen Smith, has my permission to review my chart regarding my chemotherapy drugs and dosage.

I hereby authorize the investigator to release the information obtained in this study to scientific literature. I understand that I will not be identified by name.

I may contact Colleen Smith at (616) 732-3541 between 9AM and 5PM Monday through Friday for any questions. Should I have any questions regarding my rights as a patient, I may call the Human Rights Committee Representative at 774-1299.

I acknowledge that I have read and understand the above information, and that I agree to participate in this study.

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Participant Signature)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Investigator Signature)

\_\_\_\_\_  
(Date)

\_\_\_\_ I am interested in receiving a summary of the study results.

APPENDIX H

Cover Letter

Date\_\_\_\_\_

Subject Name\_\_\_\_\_  
Address\_\_\_\_\_

Dear\_\_\_\_\_,

As you recall, you agreed to participate in my research study while you were at Butterworth Hospital. As a part of this study, I am asking you to fill out the two questionnaires which are enclosed. They should require about 20-30 minutes to complete. A stamped, addressed envelope is provided for you to return the completed questionnaires to me. Do not sign your name or identify yourself in any way on the questionnaires. Please complete and return them at your earliest convenience.

Also enclosed find a stamped, addressed postcard which requests information about your next admission for treatment. Please complete this postcard and drop it in the mail when you are able to determine the date of your next admission. This information will enable me to provide you with the final questionnaire for the study at the time of your next admission. This questionnaire will be brief, requiring only about 5 minutes to complete. Please mail the postcard separate from the questionnaires you have completed.

I look forward to receiving your completed questionnaires and postcard soon and to seeing you again in the next few weeks.

Sincerely,

Colleen Smith, RN, BSN

## LIST OF REFERENCES

## LIST OF REFERENCES

- Andrykowski, M. A., Jacobsen, P. B., Marks, E., Gorfinkle, K., Hakes, T. B., Kaufman, R. J., Currie, B. E., Holland, J. C., & Redd, W. H. (1988). Prevalence, predictors, and course of anticipatory nausea in women receiving adjuvant chemotherapy for breast cancer. Cancer, 62, 2607-2613.
- Banks, J. K., & Gannon, L. R. (1988). The influence of hardiness on the relationship between stressors and psychosomatic symptomatology. American Journal of Community Psychology, 16(1), 25-37.
- Bigbee, J. (1985). Hardiness: A new perspective in health promotion. Nurse Practitioner, 10(11), 51-56.
- Briscoe, K. (1989). Optimal management of nausea and vomiting in clinical oncology. In R. E. Wittes (Ed.), A Supplement to Oncology (Vol. 3, pp. 11-15). New York: Dominus Publishing Company.
- Carey, P. J., Oberst, M. T., McCubbin, M. A., and Hughes, S. H. (1991). Appraisal and caregiving burden in family members caring for patients receiving chemotherapy. Oncology Nursing Forum, 18, 1341-1348.
- Clark, R. A. (1989). Management of chemotherapy-induced nausea and vomiting. Symposium Observer (p. 5). New York: Materia Medica/Creative Annex.
- Coons, H. L., Leventhal, H., Nerenz, D. R., Love, R. R., & Larson, S. (1987). Anticipatory nausea and emotional distress in patients receiving cisplatin-based chemotherapy. Oncology Nursing Forum, 14, 31-35.
- Duigon, A. (1986). Anticipatory nausea and vomiting associated with cancer chemotherapy. Oncology Nursing Forum, 13, 35-40.
- Egan, A. P., Taggart, J. R., & Bender, C. M. (1992). Management of chemotherapy related nausea and vomiting using a serotonin antagonist. Oncology Nursing Forum, 19, 791-795.

- Goodman, M. (1987). Management of nausea and vomiting induced by outpatient cisplatin (platinol) therapy. Seminars in Oncology Nursing, 3(1), 23-35.
- Hogan, C. M. (1990). Advances in the management of nausea and vomiting. Nursing Clinics of North America, 25, 475-497.
- Hogan, R. (1985). Human sexuality: A nursing perspective (2nd ed.). Norwalk, CN: Appleton-Century-Crofts.
- Hull, J. G., Van Treuren, R. R., & Virnelli, S. (1987). Hardiness and health: A critique and alternative approach. Journal of Personality and Social Psychology, 53, 518-530.
- Kobasa, S. C. (1979). Stressful life events, personality, and health: An inquiry into hardiness. Journal of Personality and Social Psychology, 37, 1-11.
- Lambert, V. A., Lambert, C. E. Jr., Klipple, G. L., & Mewshaw, E. A. (1989). Social support, hardiness, and psychological well-being in women with arthritis. IMAGE: Journal of Nursing Scholarship, 21(3), 128-131.
- Lindsey, A. M., & Carrieri, V. K. (1986). Stress response. In Carrieri, V. K., Lindsey, A. M., & West, C. M. (Eds.), Pathophysiological phenomena in nursing: Human responses to illness, (pp. 301-318). Philadelphia: W. B. Saunders.
- McEvoy, G. K. (1990). Cisplatin. In G. K. McEvoy (Ed.), AHFS Drug Information (pp. 482-491). Bethesda, Md: American Society of Hospital Pharmacists, Inc.
- Morrow, G. R. (1982). Prevalence and correlates of anticipatory nausea and vomiting in chemotherapy patients. Journal of (the) Nursing Cancer Institute, 68, 585-588.
- Morrow, G. R. (1984). Clinical characteristics associated with the development of anticipatory nausea and vomiting in cancer patients undergoing chemotherapy treatment. Journal of Clinical Oncology, 2, 1170-1176.

- Munkres, A., Oberat, M. T., & Hughes, S. H. (1992). Appraisal of illness, symptom distress, self-care burden, and mood states in patients receiving chemotherapy for initial and recurrent cancer. Oncology Nursing Forum, 19, 1201-1209.
- Nerenz, D. R., Leventhal, H., Easterling, D. V., & Love, R. R. (1986). Anxiety and drug taste as predictors of anticipatory nausea in cancer chemotherapy. Journal of Clinical Oncology, 4, 224-233.
- Pollock, S. E. (1986). Human responses to chronic illness: Physiologic and psychosocial adaptation. Nursing Research, 35(2), 90-95.
- Pollock, S. E. (1989). The hardiness characteristic: A motivating factor in adaptation. Advances in Nursing Science, 11(2), 53-62.
- Pollock, S. E., & Duffy, M. E. (1990). The health-related hardiness scale: Development and psychometric analysis. Nursing Research, 39, 218-222.
- Pratt, A., Lazar, R. M., Penman, D., & Holland, J. C. (1984). Psychological parameters of chemotherapy-induced conditioned nausea and vomiting: A review. Cancer Nursing, 7, 483-490.
- Rahe, R. H. (1988). Anxiety and physical illness. Journal of Clinical Psychiatry, 49, 26-29.
- Rhodes, V. A., Watson, P. M., Johnson, M. H., Madsen, R. W., & Beck, N. C. (1987). Patterns of nausea, vomiting, and distress in patients receiving antineoplastic drug protocols. Oncology Nursing Forum, 14(4), 35-44.
- Rich, V. L., & Rich, A. R. (1987). Personality hardiness and burnout in female staff nurses. IMAGE: Journal of Nursing Scholarship, 19, 63-66.
- Ross, M. E. T., (1991). Hardiness and compliance in elderly patients with diabetes. The Diabetes Educator, 17, 372-375.

Schmied, L. A., & Lawler, K. A. (1986). Hardiness, type A behavior, and the stress-illness relation in working women. Journal of Personality and Social Psychology, 51, 1218-1223.

Stefanek, M. E., Sheidler, V. R., & Fetting, J. H. (1988). Anticipatory nausea and vomiting: Does it remain a significant clinical problem? Cancer, 62, 2654-2657.

Wagnild, G., & Young, H. M. (1991). Another look at hardiness. IMAGE: Journal of Nursing Scholarship, 23, 257-259.