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## The Effect of Early Nursing Intervention on Chemotherapy-Induced Fatigue

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**THE EFFECT OF EARLY NURSING INTERVENTION ON  
CHEMOTHERAPY-INDUCED FATIGUE**

**By**

**Jennifer A. Shane**

**A THESIS**

**Submitted to  
Grand Valley State University  
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**ABSTRACT**

**THE EFFECT OF EARLY NURSING INTERVENTION**

**ON CHEMOTHERAPY-INDUCED FATIGUE**

By  
Jennifer A. Shane

Chemotherapy-induced fatigue is a common side effect for cancer patients. This experimental study attempted to identify the effects of an early nursing intervention designed to facilitate adaptation to chemotherapy-induced fatigue. Roy's Adaptation Model was the conceptual framework. A convenience sample (n=49) was randomly assigned to experimental (n= 16) and control (n=19) groups. Each group completed the Piper Fatigue Scale (PFS) during cycle one of chemotherapy. The control group received the standard teaching regarding fatigue. The experimental group received additional instruction about fatigue. Both groups completed the PFS again during the third chemotherapy cycle (2-3 months later). No significant differences between the two groups were found. Additional analysis found significant differences between pretest and posttest for women ( $p=.036$ ) but not for men ( $p=.233$ ) and for the younger group ( $p=.003$ ) but not the older group ( $p=.288$ ). Chemotherapy-induced fatigue is a complex phenomenon requiring continued exploration of causes and treatments.

## DEDICATION

To my patients, their families and significant others. For without them, my nursing career and life would not be fulfilled. They are the ones who teach and inspire me.

## Acknowledgments

To the RNs in the chemotherapy clinics who took precious time from their busy days to assist with data collection for this project. Your efforts in helping a colleague complete her MSN and improve patients' quality of life are appreciated.

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## CHAPTER 1

### INTRODUCTION

Chemotherapy-induced fatigue is a common side effect that often has harsh consequences on the cancer patient's quality of life. When the diagnosis of cancer is given, many are able to reach deep within themselves and find the strength and determination to fight. For most, they anticipate the side effects of treatment and change in lifestyle that occur in the fight against cancer. What is being observed clinically is that many do not expect the severity and chronicity of fatigue that usually accompanies chemotherapy.

Nursing is defined as the "diagnosis and treatment of human responses to actual or potential health problems" (American Nurses Association [ANA], 1980). A primary concern for oncology nurses is to assist patients to cope with side effects associated with treatment. As traditional medical management has had little impact on chemotherapy-induced fatigue (Rhodes & Watson, 1987), nurses are often the patient care providers that recognize and try to influence chemotherapy-induced fatigue (Potempa, 1989).

Fatigue is a universal symptom without a universal definition (Pickard-Holley, 1991; Nail & King, 1987; Jensen & Given, 1991; Rieger, 1988; Aistars, 1987; Piper, Lindsey & Dodd, 1987). The variety of disciplines that examine fatigue from their various perspectives have led to many definitions of fatigue (Pickard-Holley, 1991; Piper et al., 1989; Nail & King, 1987; Jensen & Given, 1991; Aistars, 1987; Piper, Lindsey & Dodd, 1987; Piper, 1989; Nail, 1990). Piper et al. (1989)

have defined fatigue as a "subjective feeling of tiredness that is influenced by circadian rhythm; it can vary in unpleasantness, duration, and intensity. When acute, fatigue serves a protective function; when it is excessive or chronic, its function is unknown" (p.200).

Nail and King (1987) define fatigue as "a human response to the experience of having cancer and to undergoing treatment for cancer. Fatigue is a self-recognized phenomenon involving how the individual feels and how this feeling influences the activities in which one chooses to engage" (p.257). These definitions present the subjective view or "human response" to fatigue.

In 1995, the pharmaceutical company Ortho Biotech agreed to fund a large grant to the Oncology Nursing Society and Foundation. This project, called the Fatigue Initiative through Research and Education (FIRE), sponsored grants, studies, and educational programs designed to enlighten patients, consumers, and healthcare providers to the scope of the fatigue problem. Together with the recent acceptance of chronic fatigue as a nursing diagnosis by the North American Nursing Diagnosis Association (NANDA, 1990) and the definitions of fatigue, nurses are given formal backing for the study of fatigue and confirm the professional responsibility of nurses to adequately diagnose and treat chronic fatigue (Potempa, 1989; Skalla & Lacasse, 1992).

Although research documents that fatigue is a common side effect of chemotherapy (Pickard-Holley, 1991; Rhodes, Watson, & Hanson, 1988; Meyerowitz, Sparks & Spears, 1979; McCorkle & Young, 1978; Love, Leventhal, Easterling, & Nerenz, 1989; Benedict, 1989; Blesch et al., 1991; Meyerowitz, Watkins, & Sparks, 1983), a review of the literature reveals few studies focused on nursing interventions designed to prevent or alleviate fatigue (MacVicar, Winningham, & Nickel, 1989;

Cimprich, 1993; Johnson, Nail, Lauver, King & Keys, 1988; Mock et al., 1994; MacVicar & Winningham, 1986). These studies looked at improving functional capacity via aerobic exercise in cancer patients (MacVicar & Winningham, 1986; MacVicar, Winningham & Nickel, 1989), restoring attentional fatigue by engaging in activities that promote fascination (Cimprich, 1993), and decreasing the perception of fatigue by providing information encompassing the radiation experience including treatment planning for expected experiences after radiation is completed (Johnson et al., 1988).

Common side effects are often considered by patients as reasons to quit chemotherapy. Love, Leventhal, Easterling and Nerenz (1989) identified that nausea, hair loss, and tiredness were each experienced by more than 80% of patients and that almost half (46%) had thought of quitting therapy by the sixth cycle of treatment. The researchers summarized that side effects may be better controlled if techniques to help manage them were identified, especially for tiredness and other more vague or hard to define side effects (Love et al., 1989). A descriptive study by Nail, Jones, Greene, Schipper, and Jensen (1991) was designed to increase the knowledge base of oncology professionals regarding patient experiences in dealing with chemotherapy. The study revealed that fatigue was the most common side effect, experienced by 81% of the subjects.

Patients have identified self-care activities that relieve some of these side effects and enhance acceptance of chemotherapy. Rhodes, Watson, and Hanson (1988) described the relationship between patients' self-reported symptoms and their self-care activities while receiving chemotherapy. Subjects reported that self-care activities were most often inhibited by the symptoms of tiredness and weakness. They also reported that the

expenditure of energy was decreased by planning and scheduling activities (including work), decreasing nonessential activities, and increasing their dependence on others (Rhodes, Watson, & Hanson, 1988). These identified self-care interventions can be incorporated into a teaching plan designed by nurses. The information can then be given to patients prior to starting chemotherapy in hopes of facilitating adaptation to chemotherapy-induced fatigue.

Providing patients with information regarding potential side effects may help them establish self-care measures prior to the onset of the expected side effects. Dodd (1983) designed a study "to determine 1) whether patients practice self-care; 2) whether patients instructed in side-effect management techniques (SEMT) will adopt these techniques; and 3) whether information on SEMT, given alone or in combination with other (e.g., drug) information, elicits differential self-care behaviors" (p. 63). The study revealed that the patients who received SEMT information performed more self-care behaviors than the patients who received none and that the SEMT groups initiated these behaviors earlier, before their side-effects became severe. This study points to many advantages if patients are provided with SEMTs.

Roy's Adaptation Model (RAM) will be used as the conceptual framework for this study. Many of the articles reviewed for this study have used Orem's self-care theoretical framework as their foundation and the use of the term "self-care" has been preserved and incorporated into the paragraphs written by this author. The RAM was chosen for this study because its focus is on adaptation of the patient to a particular phenomenon. Through research directed by the Roy Adaptation Model nurses can

improve their understanding of the way patients adapt to constantly changing environmental stimuli.

Roy's model states that "persons or adaptive systems interact with the environment and move toward the goal of adaptation and health" (Roy, 1984). According to Roy, the goal of nursing is the promotion of adaptation, thereby fostering a person's health, quality of life and dying with dignity. A fatigue framework developed by Piper, Lindsey, and Dodd (1987) is a descriptive model that synthesizes the fatigue literature to generate nursing theory about fatigue in cancer patients. The framework directs the nurse to assess possible causes of fatigue in specific patient situations and to select appropriate nursing interventions to test. Roy's adaptation model, Piper's fatigue framework, and a teaching tool designed to educate patients about fatigue can be brought together to promote adaptation by facilitating acquired coping mechanisms.

### Problem

The studies presented in the introduction document the prevalence of fatigue as a reported side effect and its impact on quality of life. These studies along with nursing's definition of fatigue, NANDA's acceptance of chronic fatigue as a nursing diagnosis, and FIRE, lay the foundation for the study presented here. The question of interest is what are the effects of early nursing interventions designed to promote or facilitate adaptation to chemotherapy-induced fatigue? The purpose of this study is to examine interventions that promote adaptation to fatigue by randomly assigning first-time chemotherapy patients to two groups: (a) adaptation-promoting early nursing intervention group or (b) control group, which receives the regular education given to chemotherapy patients.

## CHAPTER 2

### REVIEW OF THE LITERATURE AND CONCEPTUAL FRAMEWORK

#### Literature Review

Oncology nursing has become a specialty over the past 15-20 years. Along with this trend there has been a growing interest in the phenomenon of fatigue. The increase in the number of studies in recent years on fatigue in the cancer patient shows that oncology nurses are dedicated to the scientific study of the fatigue phenomenon. Most authors of fatigue research agree that oncology nurses need to continue to examine fatigue in order to intervene successfully.

A review of the literature was conducted regarding fatigue in the cancer patient and the 15 articles found were divided into 4 topic areas: (a) fatigue as a common side effect of chemotherapy, (b) patients' methods to counteract fatigue, (c) nursing interventions for fatigue and, (d) fatigue interventions identified by other professionals.

Fatigue as a common side effect of chemotherapy. Research has suggested that fatigue is a common side effect of patients receiving chemotherapy. A study by Meyerowitz et al. (1979) describing the psychosocial effects of adjuvant chemotherapy (chemotherapy used in addition to the primary surgical treatment) in stage II breast cancer patients revealed fatigue as the most frequent symptom with an incidence of 96% (48 of 50 patients). An exploratory study by Blesch et al. (1991) designed to examine and describe "the perception and manifestations of fatigue and its physiological, biochemical,



and behavioral correlates" (p. 81) found that 99% (75 of 76 subjects) experienced some level of fatigue. Another study by Meyerowitz et al. (1983) reported on the quality of life for breast cancer patients receiving adjuvant chemotherapy. Fatigue was identified as the number one disruptive symptom with 96% of the subjects reporting fatigue. In McCorkle and Young's (1978) study designed to develop a system distress scale, fatigue was identified as the fifth (out of 10) most distressful symptom as perceived by the cancer patient. Weakness/fatigue was reported to be one of the sources of greatest suffering by patients with lung cancer (Benedict, 1989). Although the greatest limitation of these studies is their small sample sizes and convenience sampling method, they do indicate that fatigue is an all too common side effect of cancer treatment that has an impact on the patient's quality of life.

A study by Irvine, Vincent, Graydon, Bubela, and Thompson (1994) expanded the research on the prevalence of fatigue by comparing the fatigue experienced by chemotherapy and radiotherapy patients with the fatigue experienced by apparently healthy individuals. They found that among their sample there was no difference in the mean level of fatigue between the cancer patients and the control group before the start of treatment. But by the end of the 5-6 week course of radiotherapy or 14 days after chemotherapy the cancer patients had experienced a significant increase in their levels of fatigue.

Patients' methods to counteract fatigue. Patients are often a great source of information for nurses. Just asking the patient who has experienced a particular phenomenon of interest can provide a nurse with a wealth of information to use in future nursing interventions. In a study conducted by Rhodes et al. (1988), patients were able to

identify three self-care activities that assisted them to adjust and cope with the symptom of tiredness/weakness. The purpose of the study was to "examine the relationship between self reported symptoms and self-care agency perceived by patients receiving antineoplastic chemotherapy " (p. 186). Patients (n =20) receiving an average of six cycles of chemotherapy were interviewed by telephone. They reported that the symptoms that most interfered with self-care activities were tiredness and weakness. The self-care activities reported most frequently to help with these symptoms included planning/scheduling activities and work, decreasing nonessential activities and increasing dependence on others for home management. This study is limited by its small sample size and convenience sampling but it does imply that "patients adjust their activities to cope with the symptom of fatigue" (p. 193). Nurses can use the information from this study to take a proactive stance. By providing the chemotherapy patient with the identified self-care activities prior to the onset of tiredness and weakness, the patient could adapt to the side effects as they develop thereby decreasing their severity. This is suggested by the authors as an avenue for future research and is the focus of the study presented in this paper.

Nail et al. (1991) designed a descriptive study to increase professionals' knowledge base of patients' experiences in dealing with chemotherapy. A convenience sample (n=49) was used. It consisted of predominantly white (98%), females (61%), who were married (75.5%) and middle-aged (mean age = 54.9 yrs). A variety of diagnoses and treatment regimens were included. A self-care diary was developed by the authors for this study. The self-care diary included a list of 18 possible side effects and provided space for other experiences perceived as side effects of treatment (the list was derived from the literature by the authors). Patients were then asked to rate the severity of each side effect

experienced and record the self-care activity used at two and five days post treatment. Fatigue was the most frequently reported side effect (81%). Patients identified that taking naps, going to bed earlier, sleeping later and keeping busy to keep their mind off fatigue were self-care activities they employed against fatigue. Limitations include a small convenience sample (n=49), heterogeneous population including different diagnoses and treatments, patients who had had previous treatments and therefore possibly altered perceptions, and combinations of self-care activities used by patients. Despite these limitations, the authors concluded that the high incidence of fatigue reported challenges nurses to prepare patients for the likelihood of chemotherapy-induced fatigue.

Nursing interventions for fatigue. A variety of nursing interventions have been used to try to decrease or alleviate fatigue associated with cancer treatment but few have been tested empirically (Nail & King, 1987). One study by MacVicar, Winningham and Nickel (1989) tested the effects of a 10-week aerobic exercise training program on the functional capacity of women (n=45) undergoing chemotherapy for stage II breast cancer. Functional capacity was measured as the volume of inspired oxygen in liters per minute. The results showed that the functional capacity of the experimental group improved significantly from pretest to posttest but no significant pre- to posttest changes were noted for the control or placebo groups. Limitations include an undefined relationship between functional capacity (as defined in this study) and self-care activities, and a small sample size. Although self-care activities were not measured, the increases in functional capacity could improve the individual's ability to perform ADLs. The data suggest that nursing should implement interventions designed to improve functional capacity.

Cimprich (1993) studied 32 women during the three month period following surgery for localized breast cancer. The study tested the effects of an intervention designed to minimize or prevent attentional fatigue. The intervention consisted of engaging in regular activities that promote fascination. Using subjective and objective measures, attentional capacity was assessed at approximately 3, 18, 60 and 90 days after surgery. While the nonintervention group showed a pattern of inconsistent performance over time, the intervention group showed significant improvement in attentional capacity. This study had a number of limitations including questionable validity and reliability of the instrument used to measure attention (the instrument was created for this study) and the inability of the researchers to ensure that the specific restorative intervention was the reason for the increase in attentional capacity. The possibility exists that any intervention that facilitated the recovery process could have a beneficial effect on attentional capacity.

Johnson, Nail, Lauver, King and Keys (1988) examined the effect of an informational intervention on the functional status of radiation therapy patients, specifically the ability to cope with side effects and mood disturbances. Patients in the control group (n=42) received the usual information provided to radiation patients. The experimental group (n=42) received, in addition to the usual information, four informational messages describing the experience of treatment planning, experience of receiving radiation, usual side effects (including their onset, characteristics, and activities to decrease their severity), and the usual experiences once radiation is completed. These messages were tape recorded and given to the patients at various times throughout the course of treatment. As measured by the Sickness Impact Profile, the experimental group reported less disruption in usual activities during and following radiation. The amount of

emotional disturbance, as measured by the Profile of Mood States was low for both the experimental and control groups and did not differ significantly. The study supports prior research findings that preparatory information can lessen the disruption in usual activities of patients coping with stressful health care experiences. This could be a significant factor in cancer patients' quality of life. This was a well designed study as it built on previous research and the authors tried to address the limitations of the previous studies. The researchers (a) randomly assigned patients to the experimental and control groups, (b) restricted the sample to an early stage disease, (c) followed patients for three months after the study, (d) extended the evaluation of effectiveness by measuring disruption of activities as well as emotional disturbance , and (e) used appropriate interventions that have been found to facilitate coping in other health care experiences.

Dodd (1983) examined whether chemotherapy patients instructed in side-effect management techniques would assume these techniques. Her results were significant in that the patients ( $n=24$ ) who received information on side-effect management techniques showed no significant relationship between severity of side-effects and initiation of self-care in post-intervention interview ( $r = .19$ ,  $p = .36$ ). That is, patients did not wait until the side effects became severe before initiating side-effect management techniques. The group ( $n = 24$ ) that did not receive the information continued to show a significant relationship between the severity of side-effects and initiation of self-care ( $r = .41$ ,  $p = .04$ ) thereby waiting until side-effects became severe before initiating management techniques. Limitations of this study include a heterogeneous sample (small sample size, multiple diagnostic categories and chemotherapy protocols) and that patients were asked to recall the self-care behaviors performed from memory, decreasing the reliability.

Dodd's findings can be applied to chemotherapy-induced fatigue. If patients can be given management techniques to help them initiate self-care behaviors prior to the onset of fatigue then adaptation may be enhanced.

Fatigue interventions identified by other professionals. Gerber et al. (1987) studied a patient education program designed to teach energy conservation behaviors to patients with rheumatoid arthritis. Patients were randomly assigned to either the experimental workbook group (n = 16) or the standard control group (n = 9). Preintervention and postintervention measurements of disease activity, disability and psychosocial adjustment to illness were taken. Although no statistical differences were found between the two groups, two measures approached significance. The first was the amount of time spent being physically active. Physical activity increased in 50% of the experimental group but only in 11% of the control group (p = .10). The second measure to approach significance was a better balance between rest and activity achieved by 50% of the experimental group but only 22% of the control group (p = .07). This indicates that the experimental group interrupted their physical activity with rest periods, a behavior identified as important in the workbook. Due to the small sample size, the authors were not surprised that statistically significant differences were not identified. One of the main goals of the study was to learn whether the workbook produced the desired behavior.

Others have advocated a variety of nursing interventions to help decrease the fatigue during cancer treatment. These include conservation of energy, nutritional management, stress management and management of contributing factors (Rieger, 1988), as well as patient counseling and promotion of adaptation to fatigue because of its often chronic nature in the cancer patient (Aistars, 1987).

In summary, a review of the literature has revealed that the nursing profession needs to continue to explore the phenomenon of fatigue through research. Although many articles have been written about fatigue in the cancer patient, few have empirically tested nursing interventions designed to combat fatigue. Because in many cases medical management does not alleviate fatigue, nursing interventions may be the only source of hope to improve cancer patients' quality of life. Studies designed to test nursing interventions often had small, heterogeneous, convenience samples that reduced the generalizability of the findings. Although these studies add valuable information to the body of knowledge regarding fatigue, research in this area needs to continue.

### Conceptual Framework

Roy's Adaptation Model. The Roy Adaptation Model (Roy & Andrews, 1991) provided the framework for this study. Roy's conceptual model of nursing supplies nurses with a "road map" allowing them to focus on a particular phenomenon, implement interventions and predict possible outcomes. In this study, the phenomenon of fatigue will be assessed using the Roy Adaptation Model. A specific nursing intervention will be implemented at the control processes aspect of the model and the outcome of positive adaptation will be anticipated (see Figures 1 & 2). Roy's 1984 model of the person as an adaptive system will be used to more clearly show where nursing will intervene. Roy's 1991 model of the person as an adaptive system is helpful in depicting the interrelatedness of the four adaptive modes (Figure 3).

Roy defines the nursing's goal as "promotion of adaptation in each of the four modes, thereby contributing to the person's health, quality of life, and dying with dignity" (Roy & Andrews, 1991, p.20). The recipient of nursing care is an adaptive system. Roy

defines the person's adaptation level as "the changing point that represents the person's ability to respond positively in a situation" (Roy & Andrews, 1991, p.10).

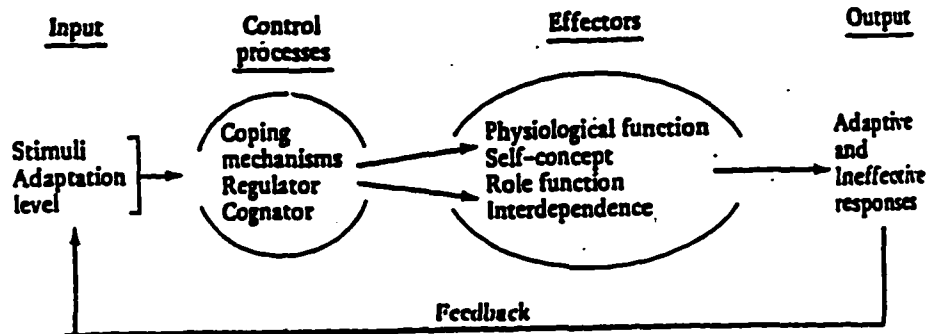


Figure 1. The person as an adaptive system.

Note. From *Introduction to Nursing: An Adaptation Model* (2nd Ed.) (p.30), by C. Roy, 1984, Englewood Cliffs, NJ: Prentice Hall. Copyright 1984 by Appleton & Lange. Reprinted by permission (see Appendix A).

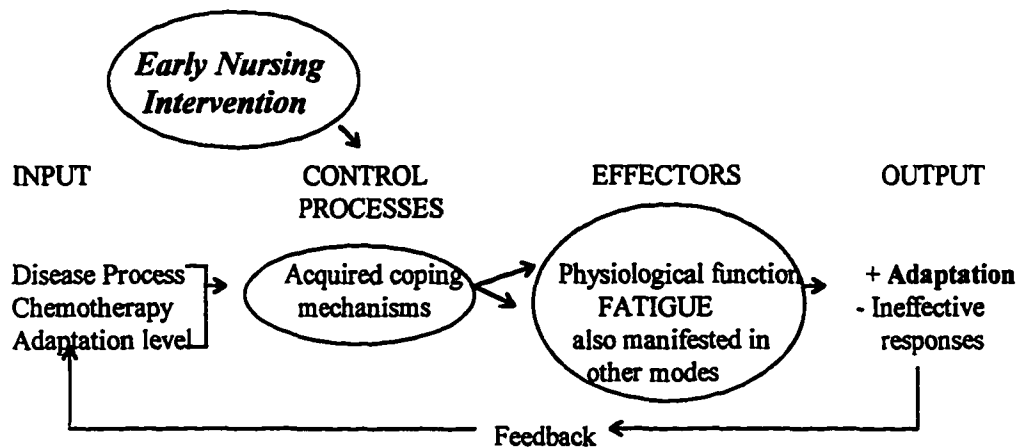


Figure 2. Roy's model applied to chemotherapy-induced fatigue.



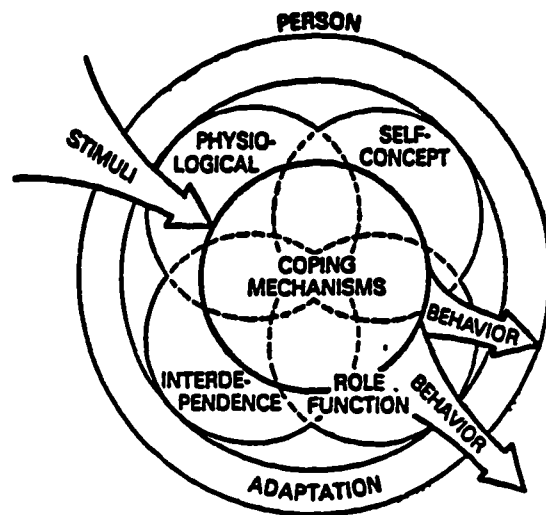


Figure 3. The person as an adaptive system.

Note. From The Roy Adaptation Model: The definitive statement (p.17), by C. Roy & H.A.Andrews, 1991, Norwalk: Appleton & Lange. Copyright 1991 by Appleton & Lange. Reprinted by permission (see Appendix A).

There are three forms of input or stimuli that make up a person's adaptation level. These are termed focal, contextual, and residual stimuli. When describing the relevant stimuli that affect a person's range of coping or adaptation level, the focal, contextual, and residual stimuli must be reviewed (Roy & Andrews, 1991). The focal stimulus is the most critical stimulus as it is the immediate threat to the person and is the cause for the adaptation response. For the purposes of this study, the focal stimuli are the disease process and subsequent chemotherapy. All other stimuli that may be influencing the current situation are called contextual stimuli. In this study, examples of this form of stimuli could include role changes secondary to treatment and disease, responsiveness of family and friends, and the occurrence of a family milestone (such as the last child going off to college). The residual stimuli are any remaining stimuli that may be affecting the adaptation level but either cannot or have not been identified and/or confirmed.

The adaptation level and stimuli serve as input to the person as an adaptive system. The input is then processed through control mechanisms. The regulator and cognator subsystems are two internal control processes that the adaptive system uses to respond to changes in internal and external environmental stimuli. The regulator and cognator subsystems are viewed by Roy and Andrews (1991) as innate or acquired coping mechanisms. While innate coping mechanisms are genetically determined, the acquired coping mechanisms can be developed through processes such as learning. It is not possible to observe the functioning of the regulator and cognator subsystems, but the responses that are produced can be observed. These responses are manifested through coping behavior observed in four categories or adaptive modes that were developed by Roy and Andrews (1991) and that can be used as a framework for nursing assessment. These modes are the physiological, self-concept, role function, and interdependence mode.

The physiological mode "is associated with the way the person responds as a physical being to stimuli from the environment" (Roy & Andrews, 1991, p.15). The activities of the cells, tissues, organs and systems of the body make up the behaviors of this mode. The stimuli affecting the person will activate the coping mechanisms producing adaptive and/or ineffective behavior. In this mode "the coping mechanisms are those associated with physiological functioning and the responses produced are physiological behaviors" (Roy & Andrews, 1991, p.15). There are five needs associated with physiological integrity: oxygenation, nutrition, elimination, activity and rest, and protection. There are four complex processes associated with physiologic integrity: senses, fluids and electrolytes, neurological function, and endocrine function. These

combine to form the nine components used as a basis for nursing assessment in the physiological mode.

The other three adaptive modes in Roy's model are psychosocial modes. The first of these is the self-concept mode. It includes the individual's psychological and spiritual aspects. Psychic integrity is the basic need underlying the self-concept mode and is defined by Roy as "the need to know who one is so that one can be or exist with a sense [of] unity" (Roy & Andrews, 1991, p.16). The self-concept mode is viewed as having two components: "the physical self including body sensation and body image and the personal self comprised of self-consistency, self-ideal, and moral-ethical-spiritual self" (Roy & Andrews, 1991, p.16).

The second of these psychosocial modes is the role function mode. The roles a person occupies in society is the focus of this mode. Roy defines a role as a "set of expectations about how a person occupying one position behaves toward a person occupying another position" (Roy & Andrews, 1991, p.16). Social integrity is the basic need underlying this mode and is defined as "the need to know who one is in relation to others so that one can act" (Roy & Andrews, 1991, p.16).

The final adaptive mode in Roy's model is the interdependence mode. Affectional adequacy is defined as "the feeling of security in nurturing relationships" (Roy & Andrews, 1991, p.17) and is the basic need of this mode. The interactions related to the giving and receiving of love, respect and value are the focus of this mode.

Though the four adaptive modes are often viewed separately for assessment purposes, nurses must remember that they are interrelated. This demonstrates the holistic and complex nature of the person. As shown in figure 3, the four modes are represented

as overlapping circles with a central circle representing a person's coping mechanisms. The behavioral responses manifested through the four adaptive modes "may be either adaptive and thus promoting the integrity and wholeness of the person (as depicted by the arrow remaining within [in] the adaptation circle) or ineffective and not contributing to the goals of the person (arrows extending beyond the adaptation circle)" (Roy & Andrews, 1991, p.21).

Studies using Roy's model. Roy's Theory of Adaptation or Roy's Adaptation Model (RAM) has been the framework for numerous studies (Fawcett, 1989). Fawcett (1990) described an ongoing program of research (four studies in all) designed to develop and test nursing interventions derived from RAM. Roy's conceptual model served as a blueprint for the design and conduct of the studies. Support for the credibility of Roy's model was found in the first three studies (Fawcett & Tulman, 1990). However, hypotheses in the fourth study were based on a Roy Adaptation Model proposition that management of contextual stimuli promotes adaptation. Research findings did not support this proposition and therefore challenge the credibility of the RAM. The authors suggest that the study may not have thoroughly tested the proposition because the contextual stimuli, in the form of experimental and control treatments, did not differ substantially (Fawcett et al., 1993). Fawcett used the Roy Adaptation Model to guide future research studies and believed it to be a useful framework, especially for content analysis (Reichert, Baron, & Fawcett, 1993; Fawcett, Tulman, & Spedden, 1994).

Varvarro (1991) applied RAM to women with coronary heart disease. Two key concepts from Roy's model, the focal and contextual stimuli as influencing adaptation and the four modes of adaptive response, were used to gather information regarding the life

experience of women (n = 83) with coronary heart disease. Roy's model was used to assess the patient's adaptation or non-adaptation to stimuli in the four adaptive modes. Specific measurements under each of the four modes were outlined and various scales were used to assess and obtain the measurements. The study reported that the women identified focal stimuli related to the physiological and role function modes as occurring most frequently. The physiological stimuli such as fatigue and loss of energy may have affected role function. The utility of using a nursing theory as an organizing framework to assess life experiences in women with coronary heart disease was demonstrated in the study. These studies show the utility of the RAM to various nursing specialties and to nursing as a profession.

Fatigue framework. Piper, Lindsey and Dodd (1987) proposed a framework for the conceptualization of fatigue that allows "multiple discipline perspectives, definitions, and theories to be analyzed" (p.17). Their project was undertaken in part because of the numerous definitions of fatigue across disciplines and because so little is known about the varied mechanisms that produce fatigue. The framework can be used to help develop a nursing theory about fatigue with the goal being to "identify and predict which patients are at high risk for fatigue in order to test specific nursing interventions that prevent or ameliorate its occurrence" (Piper et al., 1987, p.17). Figure 4 represents the Piper et al. (1987) fatigue framework for the conceptualization of fatigue in healthy and clinical populations. The center circle contains the manifestations of fatigue, both subjective and objective, that have been reported. The mechanisms of fatigue are situated around the circle and may or may not have an impact on an individual's fatigue symptoms. Although the actual mechanisms that produce fatigue are unknown, the framework allows the nurse

to begin an assessment and possibly intervene. The fatigue framework helps "round out" Roy's model by having synthesized the fatigue literature and by generating a framework that allows the nurse to begin to "assess possible causes of fatigue in a specific patient situation to select an appropriate intervention to test" (Piper et al., 1987, p.20).

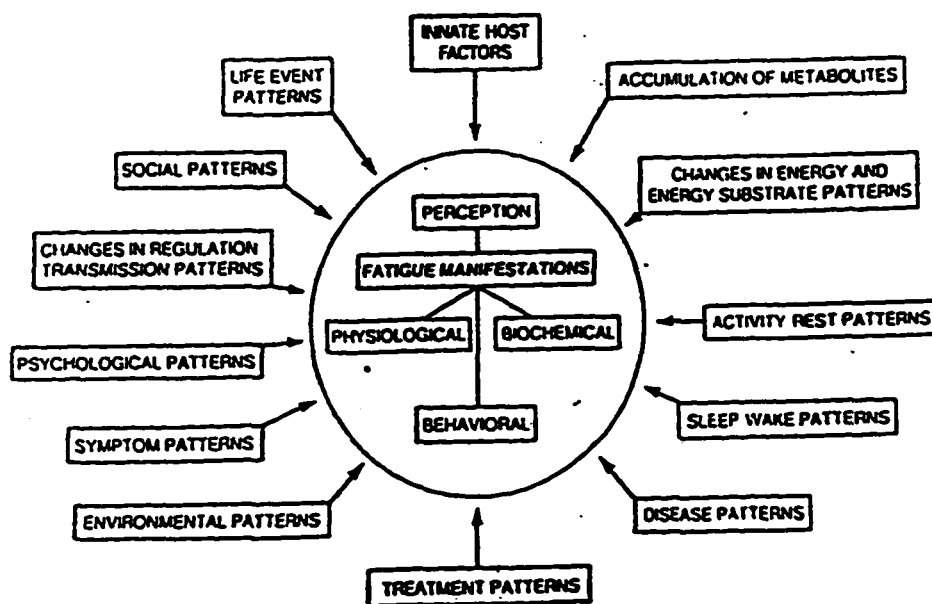


Figure 4. Fatigue framework.

Note. From "Fatigue mechanisms in cancer patients: Developing nursing theory" by B.F.Piper, A.M.Lindsey, & M.J.Dodd, 1987, *Oncology Nursing Forum*, 14, p. 19. Copyright 1987 by B. Piper (see Appendix A).

### Need for Further Study

Further study of the fatigue phenomenon in cancer patients is warranted to help improve the quality of life in this patient population. Often patients do not expect the severity of fatigue experienced once chemotherapy has begun. They often lack appropriate measures/activities to help alleviate fatigue symptoms or wait too long to

implement them. Nurses have a responsibility to assist patients with fatigue symptoms. The high incidence of fatigue and the lack of impact by medical management on fatigue open the door for the nursing profession to intervene. Empirical testing of specific nursing interventions needs to continue. The study presented in this paper strives to add to nursing's body of knowledge regarding fatigue and related nursing interventions.

### Research Question

What are the effects of early nursing interventions designed to promote or facilitate adaptation to chemotherapy-induced fatigue?

### Research Hypothesis

The early nursing intervention group will subjectively adapt to the fatigue experience associated with chemotherapy more positively, as measured by scoring lower on the Piper Fatigue Scale (PFS) (Piper et al., 1989), than the control group.

### Key Terms

1. Early nursing intervention-- A teaching intervention that is provided to the patient/family prior to completion of the initial chemotherapy treatment thus enhancing the patient's acquired coping mechanisms and facilitating adaptation.

2. Fatigue-- "a subjective feeling of tiredness that is influenced by circadian rhythm; it can vary in unpleasantness, duration and intensity. When acute, fatigue serves a protective function; when excessive or chronic, its function is unknown" (Piper et al., 1989, p. 200). Fatigue is manifested as an effector state in Roy's model. Subjective fatigue will be measured by the Piper Fatigue Scale.

3. First-time chemotherapy patients-- the recently diagnosed cancer patient (having been diagnosed with a new or recurrent cancer in the past one to three months)

presenting to the outpatient chemotherapy clinic to receive a minimum of three cycles of chemotherapy. Patients will have received no prior medical treatment other than surgery for their disease (i.e., no immunotherapy or radiation).

### Key Concepts

1. Adaptation-- a change in structure, function, or form that produces better adjustment of a person to his/her environment(Guralnik, 1980, p.15), as measured by the PFS.

2. Acquired coping mechanisms-- learned behaviors that facilitate adaptation.

To be taught in the early nursing intervention.



## CHAPTER 3

### METHODOLOGY

#### Design

The following experimental study examined the relationship of early nursing interventions (designed to promote adaptation to chemotherapy-induced fatigue) and chemotherapy patients' level of adaptation. A pretest posttest experimental design was chosen to strengthen the study results by achieving "greater confidence in the genuineness and interpretability of relationships" (Polit & Hungler, 1991, p. 152). A convenience sample was used and subjects were randomly assigned to the experimental and control groups. Manipulation occurred in the experimental group by the use of nursing interventions designed to promote adaptation to chemotherapy-induced fatigue. Patients were given the pretest on the first day of their chemotherapy regimen. The control group received the regular nursing instructions (see Appendix B) that included a statement such as "You may experience fatigue due to your chemotherapy." The experimental group received verbal and written information on fatigue (see Appendices B & C). After two full cycles of chemotherapy (on the first day of the third treatment) all patients completed the posttest.

Potential threats to internal validity included history, testing, and mortality. The occurrence of external events during the two to three month time span between the pretest and posttest may have had an impact on how patients adapted to fatigue. Various pieces

of literature, well-meaning friends and/or increased media attention could have affected patients in either group and therefore this threat was minimized. Testing was another potential threat to internal validity. The effect of taking the pretest may have influenced the patients' responses on the posttest. Because all of the patients completed the pretest and posttest, this threat should be equalized, if not eliminated. Loss of subjects in each group occurred for a variety of reasons including death, discontinuation of the chemotherapy regimen, failure to have the patient complete the posttest, and failure of the patient to complete more than 65% of the pre or posttest. This threat is a limitation of this study and is discussed further.

Threats to external validity included a decrease in the ability to generalize the study results and the potential for a Hawthorne effect. Although the results of this study can only be generalized back to the sample, the information obtained will add to the body of knowledge regarding fatigue. The Hawthorne effect could have affected both groups due to the extra attention received during the research process. Patients could perceive their fatigue as less severe and demonstrate this on the Piper Fatigue Scale. This threat should be equal in both groups as all patients received some form of educational material regarding side effects.

### Sample

The subjects were chosen for study from the outpatient chemotherapy clinic of a 250 bed acute care facility. Approximately six months into data collection the doctors' group which referred the majority of patients to the clinic moved their practice to a private office. All patients were transferred to this new office and referrals from this office were placed on study in the same manner.

Subjects were randomly assigned to the experimental and control groups. The first 25 numbers between 1 and 50 obtained from a table of random numbers were designated the experimental group. All others were placed in the control group. The author then wrote out a master list with three columns that listed the patient number, assigned group, and place for the patient name. Names of consecutive patients who met the criteria were placed on the list in order and thus assigned to groups. Each patient had a packet coded with their corresponding number. The packet included a fatigue pamphlet (Appendix C) (experimental group only), two Piper Fatigue Scales (Appendix D), a demographic sheet (Appendix E), and two consent forms (Appendix F) (one for the researcher and one for the patient). At the completion of this study, the master list was destroyed via paper shredder.

Subjects eligible for study were recently diagnosed cancer patients (having been diagnosed with a new cancer or recurrent cancer in the past 1-3 months) who presented to the outpatient chemotherapy clinic (hospital based clinic or private office clinic) to receive a minimum of three cycles of chemotherapy. A cycle of chemotherapy varies depending upon individual aspects of each patient, such as age, type of cancer, and medical history. Generally, a cycle of chemotherapy is three to four weeks in length. No limits on the type of cancer, underlying conditions, or type of chemotherapy regimen were placed on subjects eligible for study as the nursing literature supports that fatigue is a universally recognized side effect of chemotherapy treatment. Patients had to be 18 years or older and be able to read and write English. Criteria making patients ineligible for study included patients having received chemotherapy or radiation therapy for their disease

process in the past year and patients receiving other concurrent medical treatment such as radiation or unproven methods for their cancer (recent surgical procedures permitted).

The original sample of 50 patients was reduced to 49 after one patient, having completed the pretest, was found to be receiving concurrent radiation therapy. The experimental group contained 24 subjects and the control group had 25 subjects. There were more females (61.2%) than males (38.8%) in the total sample. Ages ranged from 19 to 83 years of age with a mean of 57.9 years. Of the original 49 subjects only 35 completed both the pre and posttest and, therefore, the study. The 14 subjects were lost for the following reasons: (a) deceased, (b) taken off chemotherapy, (c) failure to complete more than 64% of pre or posttest, or (d) failure to complete posttest. The final sample of 35 subjects ranged in age from 19 to 79 years with a mean of 56.8. There were 12 men (34.3%) and 23 (65.7%) women. These data are summarized in Table 1.

Patients were receiving a variety of chemotherapy regimens for a variety of cancers (Table 2). Patients were not receiving concurrent radiation therapy or immunotherapy.

Most subjects in the original group ( $n = 49$ ) lived in a house (87.8%) and no one resided in a nursing home. Subjects who lived alone accounted 20.8% of the sample. A little more than 60% of the sample had 1 or 2 persons living with them. No subjects had more than 6 persons living with them. Most subjects (89.3%) could rely on those who lived with them for support with everyday tasks such as housekeeping, errands, and meals. The remaining sample of 35 subjects also predominantly lived in a house (88.6%). Most patients had 1-2 persons living with them (64.7%). Among the persons living with the subjects, 88.2% could be relied on for some type of support (see Table 3).

Table 1

Sample Characteristics

characteristics	original (n=49)		remaining (n= 35)	
	n	%	n	%
<u>Gender</u>				
Male	19	38.8	12	34.3
Female	30	61.2	23	65.7
<u>Age (years)</u>				
19-40	8	16.3	7	20.1
41-50	7	14.3	4	11.6
51-60	8	16.3	6	17.3
61-70	16	32.7	12	34.4
71-83	10	20.4	6	17.3

Table 2

Cancer Diagnoses of Sample

type of cancer	original (n=49)		remaining (n=35)	
	n	%	n	%
Breast	13	26.5	9	25.7
Lung	6	12.2	3	8.6
Colorectal	16	32.7	15	42.9
Ovarian	1	2.0	1	2.9
Lymphoma	4	8.2	2	5.7
Leukemia	3	6.1	2	5.7
Pancreatic	3	6.1	1	2.9
Bladder	1	2.0	1	2.9
Prostate	1	2.0	--	--
Unknown primary	1	2.0	1	2.9

Subjects were assessed for the number and types of care services they received in the home. More than half the subjects (51%) in the original sample of 49 patients did not answer this question which may suggest that they are not receiving any homecare services. Of the subjects that did answer this question, very few were receiving meals (4.2%), nursing services (8.3%) or other (4.2%). No one was receiving hospice or oxygen services (see Table 4).

Subjects in the remaining sample of 35 did not rely heavily on any particular homecare service. Many subjects (51.4%) did not answer this set of questions and a blank

response was considered a "no" answer. Of those that did answer, no one was receiving meals, hospice, oxygen, or other services. Nursing services were used by 2 subjects (11.8%).

Table 3

Characteristics of Subjects' Home Situation

characteristic	original (n=49)		remaining (n=35)	
	n	%	n	%
<u>Residence</u>				
House	43	87.8	31	88.6
Apartment	3	6.1	2	5.7
Condominium	1	2.0	1	2.9
Other	2	4.1	1	2.9
<u>Number of persons living with patient</u>				
0	10	20.8	6	17.6
1-2	29	60.5	22	64.7
3-6	9	18.8	6	17.6
<u>Number of support persons</u>				
0	10	21.3	6	17.6
1-2	32	68.0	24	70.6
3-5	5	10.7	4	11.7

Table 4

Care Services Received in Home (n=49)

homecare service	number	%
<u>Meals</u>		
Yes	1	2.0
No	22	44.9
No response	26	53.0
<u>Nursing Service</u>		
Yes	2	2.0
No	21	42.9
No response	26	53.0
<u>Hospice</u>		
Yes	0	0.0
No	23	46.9
No response	26	53.0
<u>Oxygen</u>		
Yes	0	0.0
No	23	46.9
No response	26	53.0
<u>Other</u>		
Yes	1	2.0
No	22	44.9
No response	26	53.0



Subjects were also asked if they had any other medical condition. Of the subjects from the original group that answered this question (11 subjects left this question blank), 57.9% did not have another medical problem. Diabetes, hypertension and migraines were some of the conditions listed by subjects. Most patients (53.6%) in the remaining sample group denied having a medical condition other than cancer. Diabetes and hypertension were listed by 25.0% of the sample. Table 5 summarizes these data.

Table 5

Non-Cancer Medical Conditions of Sample

medical condition	original (n=49)		remaining (n=35)	
	n	%	n	%
None	22	57.9	15	53.6
Diabetes	5	13.2	3	10.7
Hypertension	4	10.5	4	14.3
Depression	1	2.6	1	3.6
Deep Vein Thrombosis	1	2.6	--	--
Migraines	2	5.3	2	7.1
High Cholesterol	1	2.6	1	3.6
Kidney stones	1	2.6	1	3.6
Back problems	1	2.6	1	3.6

The whole group (n = 49) and the final sample of 35 subjects are comparable in gender and age. Both contained more females than males and had a mean age in the mid to late 50s. Most subjects lived in homes with support persons. Very few in-home care services were utilized by the groups. The majority of patients in both groups denied other

medical conditions or failed to answer the question. Of the other medical conditions listed by 16 (32.6%) of the original sample and 13 (37% ) of the remaining sample, the majority were diabetes, hypertension, and migraines.

### Instruments

Piper Fatigue Scale. The Piper Fatigue Self-Report Scale (PFS) was used to measure the subjective phenomenon of fatigue experienced by the cancer patients in this study (see permission in Appendix A). The PFS has two forms, the Piper Fatigue Scale-Baseline (PFS-B) and the Piper Fatigue Scale-Current (PFS-C). The PFS-B is used to measure usual patterns of fatigue and any changes experienced during the six months prior to a medical diagnosis or start of treatment (Piper et al., 1989). Patients are asked to rate their fatigue symptoms on a 0-10 point scale, circling the number that best indicates the degree to which they are experiencing the feeling or activity (see Appendix D). The PFS-C determines fatigue patterns for "now" or "for that day." The fatigue symptoms are measured using a visual analog scale (100 millimeter, horizontal) with each end anchored with verbal descriptions. The subjects are asked to place an "X" on the point of the scale which best indicates the degree to which they are experiencing the symptom. The PFS-B and PFS-C are, for the most part, identical. Some of the questions differ in their verb tense reflecting each scale's temporal focus. This author chose to use the PFS-B as the pretest and posttest scale. This assisted in the comparison of the two tests during data analysis.

The PFS has seven subscales: (a) temporal, measuring the timing of fatigue; (b) intensity/severity, reflecting the severity of fatigue and the degree of distress and interference with activities of daily living; (c) affective, reflecting the emotional meaning

of fatigue; (d) sensory, measuring the physical, emotional and mental sensations associated with fatigue; (e) evaluative, assessing what the person believes is the cause of the fatigue; (f) associated symptoms, measuring physical signs and symptoms that occur concurrently with fatigue; and (g) relief, which measures the perceived effectiveness of actions taken to relieve fatigue (Piper et al., 1989). The subscales are composed of the following items: temporal subscale, items 1,3,4 and 5; severity/intensity subscale, items 2 and 6-16; affective subscale, item 17; sensory subscale, 18-35; evaluative subscale, item 36; associated symptoms subscale, items 38-39; and relief measures subscale, item 37. The items from subscales temporal (excluding item 3), severity/intensity, affective, and sensory are used to calculate the total fatigue score based on earlier psychometric testing by Piper et al. The subjects' responses to these items are summed and divided by four. The higher the score the greater the fatigue experienced by the subject. Scores may range from a minimum of 0 to a maximum of 400.

The validity of an instrument refers to the degree to which an instrument measures what it is supposed to measure (Polit & Hungler, 1991, p. 374). Construct validity was established for the PFS-B by Piper et al. (1989). Using the Profile of Moods States (POMS) and the Fatigue Symptom Checklist (FSCL), convergent and discriminant validity were also determined. Moderate convergent validity was supported by a coefficient of .55 ( $p < .001$ ) between the general mean intensity of the FSCL and the affective subscale of the PFS and the validity coefficient of .54 ( $p < .001$ ) between the general symptoms subscale of the FSCL and the affective subscale of the PFS. Moderate discriminant validity was determined by a coefficient of  $-.57$  ( $p < .001$ ) between the sensory subscale of the PFS and the vigor/activity subscale of the POMS. For the

purpose of the validity study conducted by Piper et al. (1989) the total fatigue score was calculated on the scores of four subscales (temporal, severity, affective and sensory). The other three subscales (evaluative, associated symptoms and relief) were determined not essential to the measurement of subjective fatigue when reviewed by 11 fatigue experts in regards to content validity (Piper et al., 1989).

Reliability is the degree of consistency with which an instrument measures the attribute it is supposed to be measuring (Polit & Hungler, 1991, p. 367). Piper et al. (1989) used Cronbach's alpha to measure internal consistency. The reliability coefficients ranged from an alpha of .69 for the associated symptoms subscale to .95 for the sensory subscale. The reliability estimate for the total fatigue score was .85 (calculated on the temporal, severity, affective and sensory subscales only). Reliability of the total fatigue score for this investigation was established at .97 using Cronbach's alpha.

Demographic information sheet. A demographic information sheet was developed by the author to gather demographic information about the sample (see Appendix E). The questions were reviewed by an oncology Clinical Nurse Specialist for their appropriateness to the phenomenon of fatigue in cancer patients.

### Procedure

Prior to the start of data collection, an inservice (Appendix G) was held with the clinic registered nurses (RNs) giving them information about the study, how to approach a potential study participant, how to offer them the opportunity to participate in the study and how to obtain consent (see Appendix F). The researcher prepared a script for the RNs to read when offering participation into the study (see Appendix H). A written outline with the basic step by step instructions of how to proceed once a patient had been

placed on study was available for easy reference during busy clinic hours. The RNs had the opportunity to ask questions at this inservice and were informed that the researcher would be available by phone at any time throughout the study. The researcher visited the clinic two to three times per month to monitor progress of the study, assess potential subjects' eligibility, reinforce importance of keeping control and experimental information separate, and to answer any questions the RNs had. When the location of the study moved from the hospital-based clinic to the private office, the same inservice was given to the new RNs assisting in data collection. Two of the clinic RNs originally involved in the study took positions at the new center and were, therefore, able to continue the study with some level of consistency. The researcher provided the other three RNs with the same inservice given prior to the start of data collection.

Potential subjects were identified and screened for eligibility by the researcher and participating RNs prior to their scheduled appointment at the outpatient chemotherapy clinic. Once a patient agreed to participate, the RN obtained the master form and wrote the patient's name on the next line which then identified the patient number and group they were randomized to. The patient packets were precoded by the researcher. The RN then took the packet, obtained written consent for study participation and had the patient fill out the PFS-B.

The treatment involved in this experimental study was the implementation of a nursing intervention designed to facilitate adaptation to the fatigue associated with chemotherapy by impacting the patient's acquired coping mechanisms. The typical chemotherapy patient education given to the control group combines written and verbal information. The written information includes the Chemotherapy and You booklet

(National Institutes of Health, 1990), a general information sheet, and specific drug literature (see Appendix B). The RN then verbally highlighted some of the more important information individualized to each patient, and his or her diagnosis and treatment regimen. Often general statements are given regarding the expectation of fatigue associated with chemotherapy. For example, "Chemotherapy can lower your blood cell counts. You therefore may experience some fatigue. Many patients find they need to rest more often."

The early nursing intervention given to patients in the experimental group supplemented the typical education patients receive regarding fatigue. A pamphlet describing the possible causes of fatigue, specific suggestions to help alleviate fatigue and verbal reinforcement of the information was given to the experimental group patients (see Appendix C). Patients were asked if they had any questions regarding fatigue. The teaching involved in the experimental group took approximately five to ten minutes.

The Piper Fatigue Scale and the experimental nursing intervention (or standard nursing intervention) were administered on patients' initial visit to the outpatient chemotherapy clinic for their first chemotherapy treatment and prior to release from that day's clinic appointment. The Piper Fatigue Scale was administered again after two cycles of therapy (on the first day of the third cycle) prior to a patient's release from that day's clinic appointment.

#### Potential Risks and Methods to Reduce Those Risks

As with any research process, a variety of risks are possible. The potential risks to patients in this study included confidentiality issues, additional stress, and loss of time and fatigue in completing the questionnaires.

Confidentiality was maintained to the best of the researcher's ability. All data collected were numerically coded. There was only one master form that identified patients by name. This was destroyed after all requirements for this project were fulfilled. The subject's name was not attached to any of the fatigue scales nor did it appear in any of the results. All data presented is in group form.

Newly diagnosed cancer patients are understandably overwhelmed with the many new situations they face, especially their first day of chemotherapy. Some patients, especially the elderly, declined participation in the study for this very reason. One of the clinic RNs, who put the majority of patients on study, stated that approximately six patients declined participation because they felt "bombarded" with information. These patients were not pressured to participate in the study and were encouraged to verbalize their feelings. Other patients welcomed the chance to take an active role in a research study that may potentially benefit themselves as well as future cancer patients.

Although the research process did not keep patients in the clinic any longer than they would be normally to receive their treatment, patients were allowed to take the survey home if they were scheduled to return to the clinic the next day. Patients complained that the scale was too long and that it had redundant questions. Some patients even made written comments on the survey itself that they had increased fatigue due to the length of the survey. Every attempt was made to ensure full understanding of the study and fatigue scale forms and an RN was nearby to answer any questions. They were allowed to withdraw from the study if they found participation too burdensome.

## CHAPTER 4

### DATA ANALYSIS

Of the original 49 patients participating in the study, 4 died before completing the posttest, 3 were taken off their chemotherapy regimens before completing the posttest, 4 completed 64% or less of the pretest or posttest, and 3 failed to complete the posttest altogether. An equal number of males (7) and females (7) were dropped from the study. Nine of the lost subjects came from the experimental group whereas only 5 came from the control group. These and other subject characteristics are summarized in Table 6.

In addition to the high drop out rate, there was a large amount of missing data. Subjects had not been informed of the importance of completing the entire survey and this was evident by the fact that very few subjects completely filled out both the pretest and posttest. Polit and Hungler (1995) address the issue of missing data in nursing research. Before selecting one of five approaches, it is important to first determine the distribution and patterning of the missing data (Polit & Hungler, 1995). By using Chi-square and Fisher's Exact test the researcher found no pattern in the missing values. It was determined that the missing data were random and that two separate populations were not sampled among those that completed or did not complete the study. One of the approaches described by Polit and Hungler (1995) is to substitute the mean value for the missing values. This is a particularly useful method when the missing values come from a multiple-item scale, like the Piper Fatigue Scale. The mean was therefore used to replace



Table 6

Characteristics of Subjects Dropped from the Study (n=14)

Characteristic	Number of Subjects	
	Experimental (n=9)	Control (n=5)
<u>Age (years)</u>		
31-40	0	1
41-50	2	1
51-60	1	1
61-70	2	2
71-83	4	0
<u>Gender</u>		
Male	4	3
Female	5	2
<u>Type of Cancer</u>		
Unknown primary	0	1
Pancreatic	0	2
Lymphoma	3	0
Colorectal	1	0
Breast	3	1
Lung	2	1
<u>Reason for Drop Out</u>		
Deceased	2	2
Off Chemotherapy	2	1
> 35 % of survey incomplete	3	1
Failed to complete posttest	2	1

the missing values on all surveys with less than 35% data missing. If more than 35% of the survey was not completed, the subject was dropped from the study. As noted in Table 6, three experimental group subjects and one control group subject were eliminated from the study for this reason.

Complete data were collected on 35 subjects. The experimental group had 16 subjects and the control group had 19 subjects. There were 8 males and 8 females in the experimental group. In sharp contrast, the control group had only 4 males and 15 females. Table 7 summarizes these characteristics as well as providing information regarding the types of cancer in each group.

It is well documented that fatigue is prevalent no matter what type of chemotherapy regimen patients are receiving. However, other important information may come from further research that controls for this variable. The chemotherapy regimens of the experimental and control groups are therefore listed in Table 8.

Other variables that could potentially affect a person's level of fatigue were assessed. Issues such as where people reside, how many people live with them and how many of those they could rely on for support, homecare services, and other medical conditions are reported in this study. It is interesting that very few subjects had any type of homecare services. Perhaps the eligibility criteria for this study disqualified the subjects more likely to have these services, such as the end-stage patient who has repeatedly failed chemotherapy (i.e., they are more likely to have had chemotherapy within the last year and,

therefore, be ineligible for study participation). The data describing other variables that could affect a person’s level of fatigue are displayed in Tables 9 (Home Situation), 10 (Homecare Services), and 11 (Other Medical Conditions).

Table 7

Final Sample Characteristics (n=35)

Attribute	Experimental (n=16)		Control (n=19)	
	n	%	n	%
<u>Age (years)</u>				
19-40	4	25.0	3	15.8
41-50	0	0	3	15.8
51-60	4	25.0	3	15.8
61-70	5	31.2	7	36.8
71-83	3	18.8	3	15.8
<u>Gender</u>				
Male	8	50.0	4	21.1
Female	8	50.0	15	78.9
<u>Type of Cancer</u>				
Breast	4	25.0	5	26.3
Lung	1	6.3	2	10.5
Colorectal	9	56.3	6	31.6
Ovarian	0	0	1	5.3
Lymphoma	0	0	2	10.5
Leukemia	1	6.3	1	5.3
Pancreatic	1	6.3	0	0
Bladder	0	0	1	5.3
Unknown primary	0	0	1	5.3

Table 8

Chemotherapy Regimens (n=35)

Chemotherapy Regimen	Experimental (n=16)	Control (n=19)
5FU/Leukovorin	8	4
5FU/Levamisole	2	2
CMF	0	3
CAF	4	2
Carbo/Taxol	0	1
VP16/Carbo	1	1
MVAC	0	1
Carbo/CTX	0	1
CHOP	1	1
CTX/VCR	0	1
MOPP	0	1
Velban/Estramustine	0	1

Table 9

Variables of Home Situations That Might Affect Fatigue

Variable	Experimental		Control	
	n	%	n	%
<u>Residence</u>				
House	13	81.3	18	94.7
Apartment	2	12.5	0	0.0
Condominium	0	0.0	1	5.3
Other	1	6.3	0	0.0
<u>Number of Persons Living with Subject</u>				
0	4	26.7	2	10.5
1-2	8	53.3	14	73.7
3-5	3	20.0	3	15.9
<u>Persons for Support</u>				
0	4	26.7	2	10.5
1-2	9	60.0	15	79.0
3-5	2	13.4	2	10.6

Table 10

Use of Home Care Services Among Experimental and Control Groups

Variable	Experimental		Control	
	n	%	n	%
<u>Meals</u>				
Yes	0	--	0	--
No	7	43.8	10	52.6
No response	9	56.3	9	47.4
<u>Nursing Service</u>				
Yes	0	--	2	10.5
No	7	43.8	8	42.1
No response	9	56.3	9	47.4
<u>Hospice</u>				
Yes	0	--	0	--
No	7	43.8	10	52.6
No response	9	56.3	9	47.4
<u>Oxygen</u>				
Yes	0	--	0	--
No	7	43.8	10	52.6
No response	9	56.3	9	47.4
<u>Other</u>				
Yes	0	--	0	--
No	7	43.8	10	52.6
No response	9	56.3	9	47.4

Table 11

Medical Conditions That Might Affect Fatigue

Variable	Experimental		Control	
	n	%	n	%
None	6	54.5	9	52.9
Diabetes	2	18.2	1	5.9
High Cholesterol	1	9.1	0	--
Hypertension	0	--	4	23.5
Kidney stones	1	9.1	0	--
Depression	0	--	1	5.9
Bad back	1	9.1	0	--
Migraines	0	--	2	11.8

Hypothesis

The hypothesis for this study was: the intervention group would subjectively adapt to the fatigue experience associated with chemotherapy more positively, as measured by scoring lower on the Piper Fatigue Scale, than the control group. Both the experimental and control groups pretest and posttest scores were totaled and used to compare the two groups. Parametric tests included the paired and independent t-test and ANCOVA. Based on preliminary findings, further paired and independent t-tests were done. The findings do not support the research hypothesis.

The total scores on the PFS ranged from 1 to 293 (see Table 12). Using a paired sample t-test, the relationship between the samples' pretests and posttests was examined. There was a significant increase in the pretest to posttest scores of the entire sample. The mean pretest score was 95.03 (s.d.= 67.72) and the mean posttest score was 126.57 (s.d.=

78.41) ( $t = -2.58$ ,  $d.f. = 34$ ,  $p = .014$ ). As expected, this shows the progression of fatigue for this group of cancer patients receiving chemotherapy. Independent sample t-tests showed no significant difference between the experimental and control groups' pretest. The experimental group's mean pretest score was 96.69 ( $s.d. = 83.94$ ) and the control group's mean pretest score was 93.63 ( $s.d. = 52.78$ ) ( $t = .13$ ,  $d.f. = 24.4$ ,  $p = .901$ ). The posttest scores also showed no significant difference. The experimental group had a mean score of 124.87 ( $s.d. = 91.10$ ) on the posttest and the control group 128.00 ( $s.d. = 68.50$ ) ( $t = -.12$ ,  $d.f. = 33$ ,  $p = .909$ ).

Table 12

Piper Fatigue Scale Scores

TEST	NUMBER OF SUBJECTS	
	Experimental	Control
<u>Pretest</u>		
1-74	9	7
75-150	3	9
151-225	1	3
226-293	3	0
	mean 96.69	mean 93.63
<u>Posttest</u>		
1-74	6	4
75-150	3	7
151-225	5	6
226-293	2	2
	mean 124.87	mean 128.00



A paired sample t-test was then used to examine the relationship between the pretest and posttest scores for the experimental group as well as for the control group. The experimental group scores showed no significant difference between the two times (  $t = -1.27$ ,  $df = 15$ ,  $p = .224$ ) but the control group scores did ( $t = -2.61$ ,  $df = 18$ ,  $p = .018$ ). This suggests that the control group had significantly more fatigue from pretest to posttest.

Analysis of covariance was used to compare the two groups posttest scores while controlling for the pretest. A significant difference was found between the pretest and posttest scores ( $F = 11.73$ ,  $p = .002$ ). No difference was found based on group membership ( $F = .04$ ,  $p = .834$ ) (Table 13). The variation explained by the nursing intervention was small ( $R\text{-squared} = .268$ ).

Table 13

Analysis of Covariance for Posttest Fatigue Scores

Source of Variation	d.f.	MS	F	p
Between groups	1	213.36	.04	.834
Covariate	1	56043.40	11.73	.002
Within groups	32	4779.26		

Additional Analysis

Pearson's  $r$  was used to examine the relationship between age and the pretest and posttest scores. A moderate inverse relationship which approached significance was found between the age of the subject and the pretest (  $r = -.30$ ,  $df = 35$ ,  $p = .074$ ) and posttest (  $r = -.31$ ,  $df = 35$ ,  $p = .066$ ) scores. This suggests that younger subjects may

have experienced greater fatigue. Another Pearson's  $r$  examined the correlation between age and the number of people living with the subject. Again, a significant inverse relationship was found ( $r = -.4554$ ,  $df = 34$ ,  $p = .007$ ). The younger the patient the more people lived with the patient.

The intriguing findings regarding young patients experiencing more fatigue led to more analysis of data. Paired sample  $t$ -tests showed a significant difference between the pretest and posttest scores for women (pretest mean 97.35 [s.d. = 71.58]; posttest mean 134.52 [s.d. = 84.74] [ $t = -2.23$ ,  $df = 22$ ,  $p = .036$ ]) but not for men (pretest mean 90.58 [s.d. = 62.39]; posttest mean 111.33 [s.d. = 65.26] [ $t = -1.26$ ,  $df = 11$ ,  $p = .233$ ]). The subjects were then broken down into two age groups: a younger age group (ages 19-60) and an older group (ages 61-79).  $T$ -tests showed a significant difference from pretest to posttest in the younger group ( $t = -3.58$ ,  $df = 16$ ,  $p = .003$ ) but not in the older group ( $t = -1.10$ ,  $df = 17$ ,  $p = .288$ ). Independent sample  $t$ -tests showed no significant difference between the young and old groups on the pretest ( $t = 1.04$ ,  $df = 33$ ,  $p = .305$ ) or the posttest ( $t = 1.55$ ,  $df = 33$ ,  $p = .132$ ).

Subjects identified causes of fatigue and relief measures they used. The chemotherapy treatment, sleep disturbance, and cancer were the three most common causes of fatigue listed by subjects on the PFS. Other reasons for fatigue included pain, coping, and the post-operative recovery process. The primary relief measure was rest, such as relaxing, napping, or getting a good night's sleep. The next two most frequently identified relief measures were positive reading and thinking and prayer/bible study. It is interesting that none of the subjects in this study identified delegating tasks as a relief measure.

## CHAPTER 5

### DISCUSSION AND IMPLICATIONS

#### Hypothesis

The purpose of this study was to investigate whether an early-nursing intervention, the handing out and discussing of information regarding fatigue, could help patients subjectively adapt to the fatigue associated with chemotherapy. The findings presented in this study did not support the hypothesis. Both the independent t-tests and ANCOVA showed no significant differences between the experimental group and the control group scores. It is interesting to note that the control group's mean fatigue score on the pretest was lower (93.63) than the experimental groups (96.69) and that their mean posttest score was higher (128.00 for control and 124.87 for experimental). These value differences were not significant, however, a larger sample and reinforcement of the information on the brochure during the course of the study may strengthen the study and the results.

#### Additional Findings

Interesting and valuable information did emerge from the data analysis. Paired t-tests showed significant differences between the pretest and posttest for women ( $p=.036$ ) but not for men ( $p=.233$ ). This finding led to questions such as: Are there multiple role issues that occur for female patients? Are women more comfortable expressing their feelings and therefore more apt to report their level of fatigue through the PFS?

Lee, Lentz, Taylor, Mitchell, and Woods (1994) examined fatigue as it related to women's lives, particularly their internal and external environmental demands. They found no significant relationship between the severity of fatigue and age (an internal demand). The internal environmental demands that showed the strongest correlations with fatigue were anxiety ( $r = .239, p < .001$ ) and depression ( $r = .231, p < .001$ ). A significant relationship was found between fatigue and the external environmental demand called Negative Life Event ( $r = .177, p = .002$ ). Of course, a diagnosis of cancer and subsequent treatment with chemotherapy is considered a negative life event. No other external environmental demands, such as positive events, role behavior including parenting and homemaking, or conflicting social support, correlated significantly with fatigue in these women.

Another study by Libbus, Baker, Osgood, Phillips, and Valentine (1995) looked at fatigue in healthy women. Their objective was to identify relationships of behavioral, socio-demographic, and emotional factors among women generally thought to be healthy who complained of persistent fatigue. They used an investigator-designed survey to gather demographics, the Piper Fatigue Scale (PFS), and the Beck Depression Inventory to assess subjective fatigue and depression, respectively. Women who perceived themselves as having difficulty coping with stress had higher levels of fatigue. The authors suggest that this finding could indicate that women become less able to handle stress as their level of fatigue increases. No significant relationship was found between women's fatigue scores and either the percent of responsibility for household tasks or number of hours worked at a job outside the home. This finding supports Lee et al. (1994) study which found women's internal demands to correlate with fatigue better than external

demands. Clearly these findings do not support the theory of multiple-roles as the cause of increased fatigue in the women of this study sample.

Paired t-tests on the younger and older groups of the sample showed a significant difference between the younger group ( $p=.003$ ) but not the older group ( $p=.288$ ). Questions that arose from this finding included: Do older patients, many of whom are retired, have more time to rest? Do younger patients feel more tired because they do not expect nor have they usually experienced such physical exhaustion before? Perhaps the older patient, who is more likely to have suffered a physical ailment, has to adapt less than the younger patient.

Graydon, Bubela, Irvine, and Vincent (1995) reported on the fatigue-reducing strategies used by cancer patients. In this study, an interesting correlation between age and fatigue was found. The older the subject, the greater the relief of fatigue at the second interview ( $r = 0.21$ ,  $p < 0.05$ ). Other than to report the correlation, the authors did not discuss this finding further. As mentioned earlier, Lee et. al. (1994) found no significant relationship between the severity of fatigue and age. Further investigation, including focusing on age of subject, methods of coping, and previous adaptation to physical and mental stressors will need to continue.

#### Relationship of Findings To Conceptual Framework

The findings of this study do not support the intent: that the outcome of positive adaptation be enhanced. Roy's theory is holistic and therefore complex. Fatigue and the mechanisms that produce fatigue are also very complex. This study focused on and tested for the complex nature of fatigue, hoping to capture all that was needed to assist patients to adapt to this severe side effect. There are obviously other factors, residual stimuli as

well as contextual stimuli, that influence and impact a patient's level of fatigue. Perhaps assessment for contextual stimuli takes longer than this study allowed for. Often this type of information is elicited once a rapport has been built with a patient. Perhaps there is residual stimuli common to certain groups (such as young women) that have yet to be uncovered.

There is also the control processes aspect of Roy's model. While this study focused on the acquired coping mechanisms there are the genetically determined innate coping mechanisms. Again, a group of people (such as young or old, male or female) may cope and, therefore, adapt better or worse than another group. Patients may have also needed more reinforcement of the information regarding fatigue. Perhaps the acquired coping mechanisms need time to develop.

Reinforcement of this information may need to be done over and over, especially considering that the patients received it on their first day of chemotherapy, a day full of new information. Incorporating more effort into identifying as many of the residual and contextual stimuli as possible and reinforcement of the fatigue information throughout chemotherapy treatments may have achieved better results.

Roy's adaptation model was a useful tool that assisted in the theoretical design of this study. The model served to organize a plan to assist patients to adapt to fatigue, and in light of the findings, also served to guide future research as adjustments in the research process can be made based on Roy's model.

### Limitations

This study used a small ( $n = 35$ ), convenience sample. Therefore, findings can only be generalized back to this sample. In addition, the large amount of missing data and

dropout rate hindered aid data analysis. Although a rigorous process was used to deal with the missing data, complete data would have made for a larger final sample. It also may have been beneficial to have the same RN (or researcher) to assist all subjects in completion of the surveys. Unfortunately, this is not always possible in a fast-paced clinic.

In view of the research findings regarding women and fatigue, it would have been helpful to add the Beck Depression Inventory or similar scale. However, many subjects complained that the PFS was already too long, redundant and, for lack of a better word, "nonsense." The researcher believes this viewpoint contributed to the amount of missing data. Having someone very familiar with the PFS present during the time when patients were filling out the surveys may have assisted patients to understand the rationale behind the PFS. Many subjects were overwhelmed by having to fill out the PFS on the first day of chemotherapy. There may be a better time to fill out the PFS other than the first day of treatment although it is important to assess the fatigue level prior to the start of therapy. To add another scale, such as the Beck Depression Inventory may have proved even more overwhelming for subjects.

The PFS is composed of 7 subscales yet only 4 of these subscales are used to obtain a fatigue score. To eliminate the other 3 subscales would not considerably shorten the PFS. The evaluative, timing, and associated symptoms subscales comprise 4 open-ended questions that allow for valuable assessment data for nurses.

Data collection took 1 1/2 years because more patients were receiving concurrent radiation than the researcher anticipated. This excluded a large number of potential candidates for study participation. Each patient that was placed on study took approximately 3 months to complete the pretest and posttest. The time frame for data

collection allowed for a greater threat of history. Many things were happening in the oncology arena regarding fatigue during this time. The Oncology Nursing Society held the Fatigue Initiative through Research and Education (FIRE). The pharmaceutical company sponsoring FIRE provided free literature to oncology patients regarding fatigue, its mechanisms, and interventions to help alleviate it (generally the same information presented in the fatigue pamphlet). Although the researcher was aware of this information and tried to maintain experimental conditions, it is easy to see that information of this type may have reached the study subjects (both experimental and control).

Data regarding the status of subject's co-existing diseases (such as diabetes, cardiovascular disease, or depression) and/or physiological causes of fatigue (such as anemia) were not gathered or statistically controlled for. Questions arose about whether these physical states had an impact on the total fatigue score? Measures for these conditions could have been gathered (such as the routine CBCs for anemia) or added (such as the Beck Depression Scale) but this author believed fatigue to be universal in the chemotherapy population, even in patients without evidence of concurrent disease or physiological changes. Theoretically, random assignment should eliminate concerns regarding co-existing disease and physiologic causes but future researchers may want to assess the impact of underlying medical conditions and physiological causes on fatigue more carefully.

### Implications for Nursing

Practice. The prevalence of fatigue in cancer patients is not disputed and this study affirms this as well. The findings clearly point to the need to continue to holistically assess for chemotherapy-induced fatigue. Roles, stressors, coping mechanisms, and



supports should be included in order to assure the best possible outcome for each individual. Teaching patients that getting them through chemotherapy-induced fatigue is a team effort, that no intervention will alleviate all of their fatigue, and that what they are experiencing is normal are avenues for hope and success.

Nurses also need to be mindful of different groups within the chemotherapy population. Findings of this study point to very different needs based upon age, sex, and perhaps other attributes. Although all the information regarding different groups is not yet available, keeping in mind that there are most likely significant differences can assist in positive outcomes until we know more.

Education. Educators need to be aware of the trends in nursing. Fatigue and other quality of life components are issues that nurses are focusing on in the 1990s. Educating nurses regarding the theories about these issues is vitally important. Holistic assessment must be taught to nurses so that appropriate interventions can be implemented. This allows for the best possible outcomes. Finally, timely follow-up and evaluation are skills every nurse needs to incorporate into his or her practice.

Administration. Administrators also need to be aware of the trend focusing on fatigue. This allows them to encourage RNs to attend conferences and workshops regarding quality of life issues such as fatigue. Administrators can promote the dissemination of information and literature regarding fatigue to the RNs under their direction through task forces, bulletin boards, and journal review clubs. The nursing profession as a whole needs to continue striving to understand the patterns, causes, and effects of fatigue. This will only benefit future patients.

### Implications for Research

Fatigue has become a priority issue, especially in oncology nursing research. It is a side effect that diminishes quality of life for the majority of cancer patients and requires nursing to understand and, hopefully, control it better. The interest in fatigue is tremendous and research will continue. There are so many aspects of fatigue that need attention, as this study demonstrates. Questions include: Why does the level of fatigue vary from person to person, even if type of cancer and chemotherapy regimen are controlled for? Why is fatigue subjectively rated higher for younger women than for younger men or older men and women? These and countless other questions need to be addressed in future research studies.

As is often the case in nursing research, a larger sample would have decreased the sampling error and increased the confidence in generalizing the results. Future studies would hopefully draw a large number of chemotherapy patients from a variety of hospitals and clinics thereby decreasing the sampling error and increasing the sample size. A power analysis may also help determine how large a sample is needed to detect what may be a small difference between outcome variables. Polit and Hungler (1991) suggest 100-300 subjects in each group (for a total sample of 200-600) to detect a small to moderate difference in outcome variables.

Changing the research procedures might also clarify the results. It may be beneficial to add a third survey at the sixth cycle of chemotherapy or skip the third cycle posttest and perform the posttest at the sixth cycle. This, however, would increase the length of time of data collection.

Throughout the chemotherapy courses, RNs could continue to reinforce the information in the brochure, referring to it casually during chemotherapy administration. This may help increase the likelihood that the patient assimilates the information regarding fatigue and, therefore, utilizes the information to help himself or herself adapt to fatigue.

The PFS was also noted by the subjects of this study to be quite lengthy and tiresome. Unfortunately, eliminating 3 of the 7 subscales only reduces the survey by 4 open-ended questions. The majority of the PFS would still need to be completed. Perhaps future researchers could assess or develop other fatigue scales for their length and appropriateness in this population of patients or assist patients in completing the PFS. Assessment of concurrent medical and physiological conditions should also be done. Many routinely collected measures like CBCs can be assessed. Consideration to the addition of scales like the Beck Depression Scale should also be given. This may add support to the need to develop or find a more concise instrument to assess fatigue.

### Summary

The prevalence of fatigue in cancer patients will not diminish until more knowledge regarding fatigue and its mechanisms is obtained. Adaptation to fatigue was assessed as a possible relief measure in this study. The findings did not support the hypothesis but that should not discourage future research about adaptation and fatigue. Both are very complex processes and may require numerous studies before yielding data that will directly benefit patients. The Roy Adaptation Model proved useful in the theoretical design of the study and can guide future nursing research regarding fatigue. All realms of nursing should continue to focus on fatigue and other quality of life issues as these are so important to the quality of care patients receive.

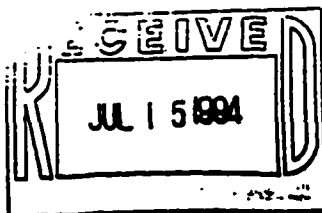
## APPENDICES

## **APPENDIX A**

### **Permission Letters**

APPENDIX A

To: Prentice Hall Publishers  
Permissions  
Fax # 201-461-7945



From: Jennifer A. Shane, RN, OCN, MSN  
1800 Post Dr. NE  
Belmont, MI 49306  
616-381-0946 (H)  
616-774-6155 (W)

I am using Roy's adaptation model as the theoretical framework for my thesis proposal. I request permission to use the following figure in that proposal.

Roy, C. (1984). Introduction to Nursing: An Adaptation Model. (2nd ed.) Englewood Cliffs, NJ :  
Prentice Hall. p. 30. Figure

If permission is granted, please sign below and return to the above address. Thank you.


Sincerely,

Jennifer A. Shane

Jean B. Wilson  
Permissions Editor



*Appleton & Lange, Inc.*  
*now The Prentice*  
*Hall Health Care*  
APPLETON & LANGE  
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203-838-4400 • Fax: 203-834-9486

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APPLETON & LANGE

APPENDIX A (continued)

To: Jean Wilson  
Appleton & Lange Publishers  
Fax # 203-854-8486

From: Jennifer A. Shane, RN, OCN, MSN  
1800 Post Dr. NE  
Belmont, MI 49306  
616-361-0946 (H)  
616-774-6155 (W)

Dear Jean,

I am using Roy's adaptation model as the theoretical framework for my thesis proposal. I request permission to use the following figure in that proposal.

Roy, C. & Andrews, H.A. (1991). The Roy Adaptation Model: The definitive statement. Norwalk, CT: Appleton & Lange. p. 17. Figure 1-3.

If permission is granted, please sign below and return to the above address. Thank you.

Sincerely,

*Permission granted,  
please fully credit  
the source.*

Jennifer A. Shane

signature

date

APPENDIX A (continued)

To: Barbara Pifer  
190 Professional Ctr Parkway  
San Rafael, CA 94903

From: Jennifer A. Shane  
1800 Post Dr. NE  
Belmont, MI 49306  
616-361-0946 (H)  
616-774-6155 (W)

Dear Barbara,

I have written to you in the past to request permission to use your PFS as the instrument in my masters thesis proposal. I am nearing the data collection aspect and am beginning to "see the light at the end of the tunnel". I am writing to request permission to use the Fatigue framework for the conceptualization of fatigue in my proposal. My source came from the following reference:

Pifer, B., Lindsey, A.M., & Dodd, M.J. (1987). Fatigue mechanisms in cancer patients: Developing nursing theory. Oncology Nursing Forum, 14, p.19.

If permission is granted, please sign below and return to the above address. Thank you.

Sincerely,

Jennifer A. Shane

signature

date

7/20/94



APPENDIX A (continued)

BARBARA F. PIPER, R.N., M.S.  
190 PROFESSIONAL CENTER PARKWAY  
SAN RAFAEL, CA. 94903  
(415) 491-1441

Dear Colleague:



Thank you for expressing interest in using the "Piper Fatigue Scale" (PFS). The instrument contains 41 horizontal visual analogue scale (VAS) items that measure four dimensions of subjective fatigue: the temporal dimension (5 items), relating to the timing, frequency, pattern and duration of fatigue; the intensity/severity dimension (12 items), relating to the severity, distress and degree of disruption in activities of daily living; the affective dimension (5 items), relating to the emotional meaning attributed to fatigue; and the sensory dimension (19 items), relating to the physical, emotional and mental symptoms of fatigue.

Individual subscale and total fatigue scores are calculated and range from "0" to "100". Four additional "open-ended" items are included that identify perceived causes, relief measures, associated symptoms and additional fatigue descriptors.

Reliability and validity estimates have been calculated for breast and lung cancer patients receiving radiation therapy (RT) and breast cancer patients receiving chemotherapy (CT). In these samples, internal consistency reliabilities (Cronbach's alpha) range from .80 to .95; concurrent validity estimates (correlations between PFS, Fatigue Symptom Checklist and Profile of Moods State scores) are moderate to strong. The VASs can be scored by hand or by computer using a software program specifically designed for the PFS and used with a digitizer tablet.

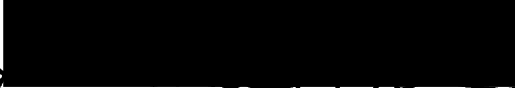
Investigators using the PFS are asked to furnish sample data useful for further development of the PFS such as age and sex characteristics; subscale and total fatigue scores; and reliability-validity estimates if calculated. A copy of the final manuscript also would be appreciated.

To receive a copy of the PFS, two articles describing the development and testing of the PFS and additional information on how to order the digitizer and software program, please forward a cashier's check in the amount of \$25.00 to the above address.

APPENDIX A (continued)

I am delighted that you are interested in studying fatigue and I look forward to reading about your contributions in the literature. If I can be of further assistance, please contact me.

Sincerely,

  
Barbara F. Piper, R.N., M.S.  
Doctoral Candidate, U.C.S.F. School of Nursing and  
Oncology Staff Nurse, U.C.S.F./Mt. Zion Medical Centers.

## **APPENDIX B**

### **Standard Chemotherapy Patient Information**

## APPENDIX B

### GENERAL INFORMATION WHEN RECEIVING CHEMOTHERAPY

1. If you have any questions or concerns call the St. Mary's Regional Cancer Center at 774-6714. The center is open Monday through Friday from 8:00 am to 4:30 pm. Any emergencies that occur at other times will be handled by the physician who is "On Call". Call your oncologist's office number and the answering service will contact the doctor for you.

Dr. Sobong/Dr. Yost/Dr. Scott	774-8200	
Dr. Marks/Dr. Oviatt/Dr. Anderson/Dr. O'Donnell		456-7892
Dr. San Diego	774-4446	
Dr. M. Campbell/Dr. A. Campbell	942-1310	

2. If you ever need to call the RCC or your doctor with a problem, take your temperature first. You will need to buy a thermometer if you do not own one. Always call if your temperature is 100 degrees or greater, orally no matter what time of day or night, weekend or holiday! You may have an infection. Signs and symptoms of infection include:
  - a. Shaking chills are often a sign of a rapidly rising temperature. If these occur take your temperature immediately and call your doctor if it is 100 degrees or greater.
  - b. Foul smelling, cloudy or bloody urine, pain and/or burning upon urination.
  - c. Persistent cough, productive cough (especially if phlegm is green) with or without accompanying chest pain.
  - d. Redness, swelling and/or pain anywhere else (e.g.: an old IV site or a stubbed toe that will not heal).3. Headache and/or stiff neck with accompanying fever.  
\*\* Remember: Always call if your not feeling well and have a fever!!!!
3. Nausea and Vomiting: You may feel nauseated for one to two days after your chemotherapy. Always call if you are taking the medication for nausea and are still feeling nauseated. Here are some ways to help prevent or minimize nausea (esp. for the first 24 hours after receiving your treatment):
  - a. If given a prescription for compazine, phenergen, torcan or tigan, take one tab every 4-6 hours around-the-clock (except when sleeping) for the first 24 hours after receiving chemotherapy. Then take one tab every 4-6 hours as needed. (Always READ and FOLLOW the directions on the prescription label if different than above).
  - b. Eat a light dinner. Avoid eating your favorite foods or spicy, greasy foods.
  - c. Rest once you've arrived home. Take it easy!!! Watch TV or read a good book.
4. Inform your oncologist of all medications that you take. Aspirin and any ibuprofen product (Motrin, Advil and Nuprin) increase bleeding. DO NOT TAKE these unless check with your oncologist. For minor aches and pains take Tylenol.
5. Call if any skin rashes appear and do not clear up. Avoid excessive exposure to the sun if receiving certain chemotherapeutic agents. See drug handout sheets for various side effects associated with each agent.

## APPENDIX B (continued)

7. Good mouth care is important. Inspect your mouth daily and use a soft toothbrush after every meal. Rinse well after brushing with salt and soda rinses at least 4x per day (1 tsp. of salt plus one tsp. of baking soda in 8 oz. to one pint of water). This can prevent and/or help heal mouth sores that sometimes accompany chemotherapy treatment. Please call if the following occurs:
  - a. Mouth sores which do not improve with salt and soda rinses.
  - b. Severe mouth sores that limit or prevent you from eating or drinking.
  - c. White patches in your mouth.
8. Avoid alcoholic drinks on the day of chemotherapy. Alcohol dehydrates your body of fluids needed to help flush out the chemotherapy. Unless contraindicated by your doctor for other health reasons, increasing your fluid intake while on chemotherapy is beneficial.
9. Your weight will be checked on each visit. Do not begin any weight loss diet without consulting your oncologist. A well balanced high protein diet is very important to help normal cells repair themselves.
10. Diarrhea can occur with chemotherapy. You may try over-the-counter Kaopectate as directed. Call if diarrhea persists or if you are having greater than 2-3 loose stools per day.
11. Pain pills may constipate you. Drinking a lot of fluids and eating a high fiber and roughage diet is important. Call if constipation persists.
12. We have numerous pamphlets and materials free of charge for you. Ask if you would like to read some information about your cancer and treatment.
13. If you receive some of your chemotherapy in the hospital and the doctor tells you to go to the Regional Cancer Center for labs or a follow-up appointment, CALL Shirley and make an appointment at 774-6714.
14. ~~If you need to refill your prescriptions, call the R.C.C. between 8:00 am and 6:30 pm, Monday through Friday, (Gordon, RPh. 774-6648). If it is an emergency and after hours or the weekend, call your oncologist.~~
15. For Dr. Sobong/Yost/Scott patients: Once you have completed your chemotherapy treatments you will be seen at the Ramona office (315 Lakeside Dr. S.E.). After your first appointment there, all calls should be made to 774-8200. If you are unable to get shold of someone, we are always happy to assist you in any way we can.
16. If you have now or at anytime have financial problems, please let us know, we may be able to offer some assistance. Also, do not be embarrassed to ask questions regarding your sexuality (intimate relationships, role changes, impotence, fertility menstrual periods, etc). Privacy and confidentiality will be maintained.

# Doxorubicin (Injection)



A commonly used brand name is *Adriamycin RDF*.

## NATIONAL CANCER INSTITUTE Office of Cancer Communications

### About Your Medicine

Doxorubicin (dox-oh-ROO-bi-sin) belongs to the general group of medicines known as antineoplastics. It is given by injection to treat some kinds of cancer.

If any of the information in this leaflet causes you special concern or if you want additional information about your medicine and its use, check with your doctor, nurse, or pharmacist.

### Before Using This Medicine

Discuss with your doctor the possible side effects that may be caused by this medicine. Some of them may be serious and/or long-term.

Tell your doctor, nurse, and pharmacist if you . . .

- are allergic to any medicine, either prescription or non-prescription (OTC);
- are pregnant or intend to have children;
- are breast-feeding an infant;
- are taking any other prescription or nonprescription (OTC) medicine;
- have any other medical problems, especially chicken pox (including recent exposure), heart disease, herpes zoster (shingles), infection, or liver disease;
- have ever been treated with x-rays or cancer medicines.

### Proper Use of This Medicine

While you are using this medicine, your doctor may want you to drink extra fluids so that you will pass more urine. This will help prevent kidney problems and keep your kidneys working well.

Doxorubicin often causes nausea and vomiting. However, it is very important that you continue to receive it, even if you begin to feel ill. Ask your doctor, nurse, or pharmacist for ways to lessen these effects.

### Precautions While Using This Medicine

It is very important that your doctor check your progress at regular visits to make sure this medicine is working properly and to check for unwanted effects.

While you are being treated with doxorubicin, and for several weeks after you stop treatment, do not have any immunizations without your doctor's approval. Doxorubicin lowers your resistance and there is a chance you might get the infection the immunization is meant to prevent. Other people in your household should also avoid immunizations since they could pass the infection on to you. Also, avoid people with colds or other infections.

### Side Effects of This Medicine

#### Side Effects That Should Be Reported To Your Doctor Immediately

- Fast or irregular heartbeat
- Fever, chills, or sore throat
- Redness, pain, or swelling at the place of injection
- Shortness of breath
- Swelling of feet and lower legs
- Unusual bleeding or bruising
- Wheezing

#### Side Effects That Should Be Reported As Soon As Possible

- Darkening or redness of the skin (after x-ray treatment)
- Joint pain
- Side or stomach pain
- Skin rash or itching
- Sores in the mouth and on the lips

#### Side Effects That Usually Do Not Require Medical Attention

These possible side effects may go away during treatment; however, if they continue or are bothersome, check with your doctor, nurse, or pharmacist.

- Darkening of the soles, palms, or nails
- Diarrhea
- Nausea and vomiting

Doxorubicin causes the urine to turn reddish in color, which may stain clothes. This is not blood. It is to be expected and lasts for 1 or 2 days after each dose is given.

This medicine often causes a temporary and total loss of hair. After treatment with doxorubicin has ended, normal hair growth should return.

Other side effects not listed above may also occur in some patients. If you notice any other effects, check with your doctor, nurse, or pharmacist.

After you stop receiving doxorubicin, it may still produce some side effects that need attention. During this period of time, check with your doctor immediately if you notice shortness of breath, swelling of feet and lower legs, or fast or irregular heartbeat.

The information in this leaflet has been selectively abstracted from USP DI for use as an educational aid and does not cover all possible uses, actions, precautions, side effects, or interactions of this medicine.

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Special Instructions: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

For more information call the  
 Cancer Information Service toll-free at:  
 1-800-4 CANCER

6/88-344

# Fluorouracil (Injection)



Some commonly used brand names or other names are *Aducril* and *5-FU*.

## NATIONAL CANCER INSTITUTE Office of Cancer Communications

### About Your Medicine

Fluorouracil (floo-oh-YOOR-ah-sill) belongs to the group of medicines known as antimetabolites. It is given by injection to treat some kinds of cancer.

If any of the information in this leaflet causes you special concern or if you want additional information about your medicine and its use, check with your doctor, nurse, or pharmacist.

### Before Using This Medicine

Discuss with your doctor the possible side effects that may be caused by this medicine. Some of them may be serious and/or long-term.

Tell your doctor, nurse, and pharmacist if you . . .

- are allergic to any medicine, either prescription or non-prescription (OTC);
- are pregnant or intend to have children;
- are breast-feeding an infant;
- are taking any other prescription or nonprescription (OTC) medicine;
- have any other medical problems, especially chicken pox (including recent exposure), herpes zoster (shingles), infection, kidney disease, or liver disease;
- have ever been treated with x-rays or cancer medicines.

### Proper Use of This Medicine

Fluorouracil often causes nausea and vomiting. However, it is very important that you continue to receive the medicine, even if you begin to feel ill. Ask your doctor, nurse, or pharmacist for ways to lessen these effects.

### Precautions While Using This Medicine

It is very important that your doctor check your progress at regular visits to make sure this medicine is working properly and to check for unwanted effects.

While you are being treated with fluorouracil, and for several weeks after you stop treatment, do not have any immunizations without your doctor's approval. Fluorouracil lowers your resistance and there is a chance you might get the infection the immunization is meant to prevent. Other people in your household should also avoid immunizations since they could pass the infection on to you. Also, avoid people with colds or other infections.

### Side Effects of This Medicine

#### Side Effects That Should Be Reported To Your Doctor Immediately

- Black tarry stools
- Diarrhea
- Fever, chills, or sore throat
- Heartburn
- Nausea and vomiting (severe)
- Sores in the mouth and on the lips
- Stomach cramps
- Unusual bleeding or bruising

#### Side Effects That Should Be Reported As Soon As Possible

- Chest pain
- Cough
- Difficulty with balance
- Shortness of breath

#### Side Effects That Usually Do Not Require Medical Attention

These possible side effects may go away during treatment; however, if they continue or are bothersome, check with your doctor, nurse, or pharmacist.

- Loss of appetite
- Nausea and vomiting (mild)
- Skin rash and itching
- Weakness

This medicine often causes a temporary loss of hair. After treatment with fluorouracil has ended, normal hair growth should return.

Other side effects not listed above may also occur in some patients. If you notice any other effects, check with your doctor, nurse, or pharmacist.

After you stop receiving fluorouracil, it may still produce some side effects that need attention. During this period of time, check with your doctor immediately if you notice fever, chills, or sore throat or unusual bleeding or bruising.

The information in this leaflet has been selectively abstracted from USP DI for use as an educational aid and does not cover all possible uses, actions, precautions, side effects, or interactions of this medicine.

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Special Instructions: \_\_\_\_\_

For more information call the  
Cancer Information Service toll-free at:  
**1-800-4 CANCER**

6/85-144

## **APPENDIX C**

### **Fatigue Pamphlet--Nursing Intervention**



# Fatigue



What It Is &  
What to do about it



## ♦ WHAT IS FATIGUE?

Fatigue is when a person feels tired sooner than usual after a physical, mental, or emotional activity. It can make you feel as if you have lost energy. You may find that you are not able to do as much during the day as usual. Many people describe fatigue as feeling tired or weak. Most of the time it goes away with rest or sleep. Fatigue can range from feeling "pretty good" to feeling like you are "ready to drop." People have called it being "worn out," "weary," "listless," or "pooped" or having "no energy." Fatigue can affect how much energy you have for life's daily tasks, and it can affect how well you do those tasks.

## ♦ HOW DO YOU KNOW YOU ARE FATIGUED?

Not everyone feels the same way when she or he is fatigued; however, there are some common ways people look or act when they feel tired. Fatigue can affect a person's outlook by changing his or her drive or interest in life. Sometimes a fatigued person may feel like crying, or he or she may want to sleep more often. Talking more slowly is common, and a fatigued person may give short answers to questions because he or she just may not feel like talking. Fatigue may cause someone to look pale or shaky; she or he may not smile as often. Paying attention to concentrating may also be difficult. Normal tasks such as housework or yard work could be difficult to start or finish. People may have all or none of these common signs of fatigue; they are simply things to watch for.

## ♦ WHO FEELS FATIGUE?

Most people with cancer will be fatigued at some time during their illness. Radiation, chemotherapy, surgery, and treatment with biological response modifiers have been shown to cause fatigue. Fatigue is also a common problem for other types of patients: those with kidney or heart disease, food poisoning, chronic fatigue syndrome, or long-term illnesses, as well as those having surgery.

## ♦ WHAT CAUSES FATIGUE?

Fatigue can be caused by physical problems, mental stress, or difficulties in a person's daily life. Physical problems that might cause fatigue are tumors, stress, medications, anemia, or a hormone imbalance. Tumors can cause fatigue by competing with the body for nutrients. A person who has nausea or is vomiting may not take in the food needed to keep up his or her energy. Surgery, infections, or fever cause the body to need more energy. Without enough energy, a person will feel fatigued. Some patients find that it takes a long time for their energy to return after treatment; however, most find that it returns quickly once treatment is finished.

How someone thinks or feels can affect fatigue as well. Some patients feel fatigue as a symptom of anxiety or depression. Feelings of grief or loss can also make a person feel tired or listless.

Emotional stress in a patient's daily life may increase feelings of fatigue. Conflict, worry, sadness, or tensions among family members or others will require energy to work out. Times of crisis, such as recurrence of cancer, are hard to cope with for both patients and their families. More energy is needed to handle these crises.

Changes in daily schedules or routines can cause fatigue. In a hospital, many tests can be given, sometimes within a short time span. Sleep routines may be different at night; this can often cause feelings of being worn out. Many patients with cancer need to change their routine with respect to how they get from one place to another. Don't forget that if you need a walker or crutches to move, you will use extra energy.

## ♦ HOW CAN I CONTROL MY FATIGUE?

Knowing what is causing your fatigue will help you decide how to make it less severe. Think very hard about what activities tire you the most. Try making a list with two columns. Write the things that must be done today in the first column and the things that can wait until tomorrow in the second column. Then rank activities by listing them in order from

most important to least important. Use this list to make a plan that you can stick to, starting with the most important activities; try to use the suggestions listed below. Many of them are based on the idea of using less energy so that you can save what energy you do have for the most important activities. This idea could be thought of as putting energy "into the bank" to later "withdraw" when you need it. Keep in mind that setting easy goals that you can really achieve may help to lessen your feelings of fatigue. Most of these ideas have come from other patients with cancer who have used them to cope with their fatigue.

#### ◆ SPECIFIC SUGGESTIONS

◆ **Sit or lie down often.** Short periods of rest are better than long ones. This is because the heart rate slows down very quickly at the beginning of a rest period, but more slowly at the end of a rest period. Many short rests, then, give the heart more chances to beat slower and thus tire less.

◆ **Take naps.** Naps can be helpful as long as they don't cause you to have problems falling asleep at night.

◆ **Plan activities.** Limit the energy used on planning activities. Do the important activities first, and decrease the number of less important activities. Most people have more energy for the things that they enjoy and feel best when doing them. Let others help you by telling them what they can do for you. Try to keep your daily life simple.

◆ **Read.** Many people find that reading helps them keep their mind off fatigue.

◆ **Walk/exercise.** Regular, light exercise such as walking has been shown to decrease fatigue, as well as nausea and vomiting, in some patients.

◆ **Use distraction.** People use many routines to keep their mind off how tired they are. These routines might include: going to work, taking car rides, listening to soft music or relaxation tapes, doing yoga, or anything else that helps you to relax after a hard day. A hopeful outlook on the problem of fatigue will also help.

◆ **Sleep.** Start or follow a normal sleeping routine.

◆ **Eat a balanced diet.** Eating the right foods to give you energy is important. The National Cancer Institute publishes a free booklet called *Eating Hints*, which may be helpful. You may ask your nurse or doctor for this booklet. You may also ask for a referral to a dietitian, who also can give you helpful ideas.

◆ **Make sure you're comfortable.** When you are too cold or too hot you may tire more quickly. Avoid temperatures greater than 75 degrees F and humidity greater than 60%.

◆ **Maintain your social life.** To lessen fatigue, many people limit their social life and other fun activities first. Try to keep a balance between the activities you must do and those that make you happy in daily life.

◆ **Talk to your doctor or nurse practitioner.** Some patients have gotten relief from fatigue by taking medications, so ask your doctor or nurse practitioner if these or other methods might be used to treat your fatigue.

#### ◆ CONCLUSION

For many people, fatigue can be a hard problem to manage. What works for one person may not work for another. Finding out what works best takes time and effort, so keep trying to find out which methods work best for you. The American Cancer Society and the National Cancer Institute can provide you with more information about various kinds of cancer and cancer treatments, as well as the side effects of these treatments.

*Created by Karen A. Skalla & Cheryl Lacasse*

## **APPENDIX D**

### **Piper Fatigue Scale--Baseline**

# APPENDIX D

For each of the following questions, circle the number which best describes the fatigue you are experiencing now.

1. To what degree are you experiencing fatigue now? (23-24)

No fatigue

A great deal of fatigue

0 1 2 3 4 5 6 7 8 9 10

2. How severe is the fatigue which you are experiencing now? (25-26)

No fatigue

Worst fatigue ever experienced

0 1 2 3 4 5 6 7 8 9 10

3. How long have you been feeling fatigued? (check one response only) (27)

A. \_\_\_\_\_ minutes

B. \_\_\_\_\_ hours

C. \_\_\_\_\_ days

D. \_\_\_\_\_ weeks

E. \_\_\_\_\_ months

F. \_\_\_\_\_ Other (Please describe)

4. How would you describe the fatigue which you are feeling now?

A. Intermittent

Continuous (28-29)

0 1 2 3 4 5 6 7 8 9 10

B. Acute

Chronic (30-31)

0 1 2 3 4 5 6 7 8 9 10

C. Localized

(To a specific muscle group/extremity)

Generalized (32-33)

(Whole body is fatigued)

0 1 2 3 4 5 6 7 8 9 10

Adapted from Piper 1992.

APPENDIX D (continued)

5. To what degree has your fatigue changed in the past week? (34-35)
 

Decreased											Increased
	0	1	2	3	4	5	6	7	8	9	10
6. To what degree is the fatigue you are feeling causing you distress?(36-37)
 

No distress											A great deal of distress
	0	1	2	3	4	5	6	7	8	9	10
7. To what degree is the fatigue you are feeling interfering with your ability to clean your house/home? (38-39)
 

None											A great deal
	0	1	2	3	4	5	6	7	8	9	10
8. To what degree is the fatigue you are feeling interfering with your ability to cook for yourself? (40-41)
 

None											A great deal
	0	1	2	3	4	5	6	7	8	9	10
9. To what degree is the fatigue you are feeling interfering with your ability to bathe or wash yourself? (42-43)
 

None											A great deal
	0	1	2	3	4	5	6	7	8	9	10
10. To what degree is the fatigue you are feeling interfering with your ability to read? (44-45)
 

None											A great deal
	0	1	2	3	4	5	6	7	8	9	10
11. To what degree is the fatigue you are feeling interfering with your ability to dress yourself? (46-47)
 

None											A great deal
	0	1	2	3	4	5	6	7	8	9	10
12. To what degree is the fatigue you are feeling interfering with your ability to complete your work or school activities? (48-49)
 

None											A great deal
	0	1	2	3	4	5	6	7	8	9	10
13. To what degree is the fatigue you are feeling interfering with your ability to visit or socialize with your friends? (50-51)
 

None											A great deal
	0	1	2	3	4	5	6	7	8	9	10

APPENDIX D (continued)

14. To what degree is the fatigue you are feeling interfering with your ability to engage in sexual activity? (53-54)

None											A great deal
0	1	2	3	4	5	6	7	8	9	10	

15. Overall, how much is the fatigue which you are experiencing now interfering with your ability to engage in the kind of activities you enjoy doing? (55-56)

None											A great deal
0	1	2	3	4	5	6	7	8	9	10	

16. How would you describe the degree of intensity or severity of the fatigue which you are experiencing now? (57-58)

Mild											Severe
0	1	2	3	4	5	6	7	8	9	10	

17. To what degree would you describe the fatigue which you are experiencing now as being:

A. Pleasant											Unpleasant (59-60)
-------------	--	--	--	--	--	--	--	--	--	--	--------------------

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

B. Agreeable											Disagreeable (61-62)
--------------	--	--	--	--	--	--	--	--	--	--	----------------------

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

C. Protective											Destructive (63-64)
---------------	--	--	--	--	--	--	--	--	--	--	---------------------

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

D. Positive											Negative (65-66)
-------------	--	--	--	--	--	--	--	--	--	--	------------------

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

E. Normal											Abnormal (67-68)
-----------	--	--	--	--	--	--	--	--	--	--	------------------

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

APPENDIX D (continued)

People feeling fatigued may experience certain feelings/sensations which indicate to them that they are fatigued. For each of the following questions, circle a number that best indicates the degree to which each feeling/sensation is being experienced by you now.

18. To what degree are you now feeling: (69-70)

Refreshed										Exhausted
0	1	2	3	4	5	6	7	8	9	10

19. To what degree are you now feeling: (71-72)

Strong										Weak
0	1	2	3	4	5	6	7	8	9	10

20. To what degree are you now feeling: (3-4)

Awake										Sleepy
0	1	2	3	4	5	6	7	8	9	10

21. To what degree are you now feeling: (5-6)

Lively										Listless
0	1	2	3	4	5	6	7	8	9	10

22. To what degree are you now feeling: (7-8)

Alert										Drowsy
0	1	2	3	4	5	6	7	8	9	10

23. To what degree are you now feeling: (9-10)

Refreshed										Tired
0	1	2	3	4	5	6	7	8	9	10

24. To what degree are you now feeling? (11-12)

Energetic										Unenergetic
0	1	2	3	4	5	6	7	8	9	10

25. To what degree are you now feeling: (13-14)

Vigorous										Sluggish
0	1	2	3	4	5	6	7	8	9	10

26. To what degree are you now feeling: (15-16)

Interested										Bored
0	1	2	3	4	5	6	7	8	9	10

27. To what degree are you now feeling: (17-18)

Calm										Nervous
0	1	2	3	4	5	6	7	8	9	10

APPENDIX D (continued)

28. To what degree are you now feeling: (19-20)

Patient											Impatient
0	1	2	3	4	5	6	7	8	9	10	

29. To what degree are you now feeling: (21-22)

Motivated											Unmotivated
0	1	2	3	4	5	6	7	8	9	10	

30. To what degree are you now feeling: (23-24)

Happy											Sad
0	1	2	3	4	5	6	7	8	9	10	

31. To what degree are you now feeling: (25-26)

Relaxed											Tense
0	1	2	3	4	5	6	7	8	9	10	

32. To what degree are you now feeling: (28-29)

Exhilarated											Depressed
0	1	2	3	4	5	6	7	8	9	10	

33. To what degree are you now feeling: (30-31)

Able to concentrate											Unable to concentrate
0	1	2	3	4	5	6	7	8	9	10	

34. To what degree are you now feeling: (32-33)

Able to remember											Unable to remember
0	1	2	3	4	5	6	7	8	9	10	

35. To what degree are you now feeling: (34-35)

Able to think clearly											Unable to think clearly
0	1	2	3	4	5	6	7	8	9	10	

36. Overall, what do you believe is most directly contributing to or causing the fatigue you are now experiencing? (36-37)

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APPENDIX D (continued)

37. Overall, when you experienced fatigue today, the best thing you found which relieved your fatigue was: (38-39)

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---

---

38. Is there anything else you would like to add that would describe your fatigue better to us? (40-41)

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---

---

39. Are you experiencing any other symptoms right now?

No \_\_\_\_\_

Yes \_\_\_\_\_ (42) Please describe \_\_\_\_\_ (43)

27.75N

## **APPENDIX E**

### **Demographic Information Sheet**

## APPENDIX E

This survey is divided into 2 sections. The first is the information section that asks you some basic questions about yourself, your diagnosis, and your treatment. The second section is the main part of this survey. Please follow the directions provided and answer all of the questions to the best of your ability. Thank you for your time.

### SECTION 1-- Information

1. Age: \_\_\_\_\_
2. Sex: M \_\_\_\_\_ F \_\_\_\_\_
3. Type of cancer: \_\_\_\_\_
4. Chemotherapy regimen (name of chemotherapy drugs you are receiving): \_\_\_\_\_  
\_\_\_\_\_ (if you are unsure, please ask a nurse to fill in this information for you)
5. Previous history of cancer? Yes \_\_\_\_\_ No \_\_\_\_\_  
If yes, were you treated with (circle all that apply):  
a. chemotherapy b. radiation c. surgery
6. Where do you live? in a house \_\_\_\_\_ in an apartment \_\_\_\_\_ in a nursing home \_\_\_\_\_  
other (please specify) \_\_\_\_\_
7. How many people live with you? \_\_\_\_\_ (please include all adults and children)
8. Of those living with you, how many can you rely on for some type of support? \_\_\_\_\_  
(for example, help you with housekeeping, meals, errands, etc.)
9. Do you have any type of home care? Meals on wheels \_\_\_\_\_ Nursing services \_\_\_\_\_  
Hospice \_\_\_\_\_ Oxygen \_\_\_\_\_ Other \_\_\_\_\_
10. Do you have any other medical condition? If so, please specify \_\_\_\_\_

## **APPENDIX F**

### **Consent Form for Subject Participation**

## APPENDIX F

### Information and Informed Consent for Research Project Participation

The study in which you are being asked to participate is titled “Assessment of chemotherapy-induced side effects.” The purpose of this study is to evaluate the effectiveness of nursing techniques used to help patients with side effects brought on by chemotherapy treatments. As a participant you will be asked to give permission to the researcher to gather and use data from your records which include age, sex, primary and secondary diagnoses and type of chemotherapy treatment. You will also be asked to fill out two scales. The first one will be filled out today and takes approximately 15 minutes. The second scale will be filled out on the first day of your third treatment. This form also takes approximately 15 minutes.

Every attempt will be made to maintain your confidentiality. Each form will be numerically coded so that only the researcher can identify which subject filled out which forms. After all data are collected the list of names and numbers will be destroyed. Your name will never appear on the research materials. All final reports and papers will never discuss individual findings and will include only group data.

Risks associated with participation in the study include confidentiality issues (see previous paragraph), time loss (time involved in entire study should not exceed 1 hour) and additional stress by having to participate in a study on your first day of chemotherapy treatment. Every attempt will be made to facilitate and expedite the research process. The researcher or an RN will be available to answer any questions you may have. You

also retain the right to withdraw from the study at any time without any change in the services or care provided to you at the clinic. While there are limited personal risks associated with participation in the study, there are also limited personal benefits. The indirect benefit of the project is its impact on nursing practice provided to you and other patients undergoing similar treatment.

This study is being conducted by Jennifer Shane, RN, and is a partial fulfillment of requirements for the master's degree program at Grand Valley State University. It is understood that the researcher is in charge of this study and with your welfare as a basis, may decide at any time that you should no longer participate in the study. If you choose, you may also withdraw from the study at any time. If you have any questions about the study, please feel free to contact Mrs. Shane at 361-0946-H or 774-6218-W.

I have read and understand the above information and have been given the opportunity to question and clarify the information reviewed. I consent to participate in the research study described. I also authorize the researcher to include the information in reports or nursing literature while maintaining confidentiality. A summary of the results will be made available to me upon my request.

Participant	date
-------------	------

Witness \_\_\_\_\_ date \_\_\_\_\_

## **APPENDIX G**

### **Outline of Nursing Inservice**

## **APPENDIX G**

### **Outline of Nursing Inservice**

- I. Introduction to research project**
- II. Background information**
  - a. Literature review**
  - b. Conceptual framework**
- III. Research question and hypothesis**
- IV. Procedure of study**
- V. Criteria for patient eligibility**
- VI. How to offer participation and obtain consent**
  - a. Script**
  - b. Case scenarios**
- VII. Interventions**
  - a. Control vs Experimental group**
- VIII. Questions and Answers**



## **APPENDIX H**

### **Script for Offering Participation**

## APPENDIX H

### Script for Offering Participation

One of our former chemotherapy nurses is working on her thesis. She is trying to impact cancer patients' quality of life by exploring more about what nurses can do to alleviate side effects associated with chemotherapy. We are assisting her with this project. All you need to do is read and sign the consent form (which explains more about the study) and then fill out a questionnaire today and again when you come in for your third cycle of chemotherapy. The form only takes 10-15 minutes to fill out and you can do it while you wait. By all means, if you do not care to participate, that's OK. It will not affect the care you receive here at all. If you have any questions today ask me otherwise the consent form lists the researchers' phone number. Would you care to read the consent form?

## LIST OF REFERENCES

## LIST OF REFERENCES

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