

THE RELATIONSHIP BETWEEN NURSING KNOWLEDGE AND  
NURSING INTERVENTIONS USED IN THE CARE  
OF PATIENTS WITH DISSEMINATED CANCER

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We hereby recommend that the Thesis prepared under  
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## CHAPTER I

### INTRODUCTION

The incidence of chronic illness is ever increasing in the United States. Cancer, the most dreaded of all diseases, now ranks second as a cause of death among Americans. In 1976 approximately 370,000 Americans will die of cancer and more than 1 million will be under medical treatment (Cancer Facts and Figures 1976). For this reason the President's Commission on Health has named cancer a chronic disease and will allocate funds for research to determine the cause and cure for this devastating illness.

The term cancer means that an uncontrollable growth is present in the patient's body that is destroying normal cells, organs, and body systems. If this growth is not halted, metastasis will occur and the cancerous lesions will be spread or disseminated to different areas of the body and the disease will become incurable. The final months or weeks of an incurable illness such as disseminated cancer can bring about unpleasant symptoms. These symptoms can be caused or intensified by current therapy used to arrest or alleviate symptoms of the disease. The effects of the metastasis and the emotional reactions of the patient and

his family to the diagnosis of terminal cancer can also contribute to disagreeable symptomatology..

The role of the professional nurse is to implement interventions that will decrease or alleviate persistent symptoms of disseminated cancer. Each plan of care should be individualized and reflect the nurse's awareness of current treatments and nursing care of the disseminated cancer patient. For these reasons, this study will be undertaken to find common symptomatology listed by disseminated cancer patients and registered nurses and to determine the relationship between the nurse's knowledge and nursing interventions used to decrease or eliminate persistent nursing care problems in the hospital setting.

#### Statement of Problem

The problem in this study will be to determine the nurse's knowledge of patient care for the patient with disseminated cancer.

#### Purposes

The purposes of this study will be the following:

1. To determine the five most common symptoms of disseminated cancer as identified by patients and registered nurses in the hospital setting

2. To determine the nurse's knowledge of interventions utilized to decrease patient care problems of the disseminated cancer patient

3. To identify nursing interventions that are used by registered nurses to decrease the five most common symptoms identified by patients with disseminated cancer

4. To determine the relationship of the nurse's knowledge of interventions for the five most common symptoms of disseminated cancer to the nurse's length of professional experience

#### Background and Significance

Cancer is an illness that presents many symptoms for "cancer is not one but many diseases " (Bouchard and Owens 1972, p. 6). Barckley sums up the seriousness of this chronic disease by stating that "few other illnesses combine so tragically the wearing qualities of a long illness with the tearing qualities of an acute one" (1967, p. 278).

The metastasis of cancer to different areas of the body can produce unpleasant symptoms. These include gradual or rapid weight loss, muscular weakness, anorexia, pain, insomnia, and elimination problems. Further symptoms may be caused by over activity of an enlarged organ, pressure exerted by tumor cells on organs and necrosis, ulceration

and depletion of nutrients at the neoplasm site (Mozden 1969, Perry and Miller 1971, Taylor 1970).

The spread of cancerous cells and the emotional problems associated with carcinomas can cause difficult problems for the cancer patient. The emotional components of the diagnosis of cancer can exacerbate the physical symptoms. Palpitations, nausea, insomnia, diarrhea, and irritability are often intensified by anxiety. Depression can cause fatigue, lethargy, decreased appetite, and an inability to concentrate in a disseminated cancer patient (Murphy 1973).

In a study by Wilkes (1974) of 296 terminally-ill cancer patients, it was found that 58 percent complained of pain as the chief symptom. Other symptoms listed by frequency include incontinence (21 percent), dyspnea (17 percent), nausea (16 percent), bedsores (15 percent), vomiting (13 percent), open wounds (13 percent), cough (5 percent), and dysphagia (3 percent). Wilkes stated that the nursing personnel in this study made a vital contribution by assessing interventions that control or alleviate these symptoms. The nurses graded their quality of care and only 3 percent of the cases were graded as poor. The group of patients that received the grade of poor did not respond to interventions used to alleviate or reduce symptoms for the

other patients in this study. No "common factor" was found except that many of these patients had prior histories of emotional problems (Wilkes 1974).

Great advances have been made in the last fifty years in the treatment of cancer. In the early part of this century an individual's chances of survival were greatly reduced if he received a diagnosis of disseminated cancer. However, new concepts in the treatment of cancer are being constantly discovered which increase an individual's chances of survival. Treatments for cancer now include surgery, irradiation, and chemotherapy. Surgery, the oldest form of treatment of cancer, can eliminate diseased tissue from the body or alleviate intractable pain caused by disseminated cancer. Radical procedures include hemicolectomy and anterolateral cordotomy (Murphy 1973). Surgery, especially in its radical form, can cause disfigurement and alterations in the patient's life style. Symptoms such as pain, anorexia, delayed wound healing, and fluid and electrolyte disturbances can be caused by surgical interventions. A second form of treatment, irradiation, is used by itself or in combination with surgery and chemotherapy in treating the cancer patient. Symptoms that the patient may experience from radiation therapy are malaise, hair loss, hemorrhage, diarrhea, and inflammation of the mouth and throat. Relief of pain and bone healing are major goals

of radiation therapy (Bouchard and Owens 1972, Hickey 1967). Finally, chemotherapy is used to alleviate or control symptoms of cancer. This is the "new frontier" of cancer research since many authorities believe that surgery and irradiation will not result in any major discoveries in the near future. Unfortunately, these drugs can cause nausea, vomiting, diarrhea, bone marrow depression, and drowsiness (Donovan and Pierce 1976).

Many of the symptoms presented will depend on the location of the cancer and the areas of metastasis. Each patient is an individual and will see the priority of their symptomatology differently. Therefore, it is the nurse's responsibility to keep abreast of the latest knowledge concerning patient care interventions utilized in cancer nursing and to personalize each patient's care plan around the symptomatology that is reported. This study is undertaken to determine what symptoms are common in the patient with disseminated cancer in the hospital setting and to determine the relationship between the nurse's knowledge and the actual nursing interventions that are utilized to reduce or alleviate these symptoms.

### Hypotheses

For the purposes of this study the following hypotheses will be tested:

1. There is no relationship between the five most common symptoms as identified by disseminated cancer patients and the five most common symptoms as identified by registered nurses in the hospital setting

2. There is no relationship between the nurse's knowledge of nursing interventions utilized for the five most common symptoms of disseminated cancer and length of professional experience.

#### Definition of Terms

For the purposes of this study the following terms will be defined:

Registered nurse--a staff nurse with responsibilities for direct inpatient care who is licensed in and currently practicing in the State of Texas.

Nursing intervention--methods used by the registered nurse to reduce or alleviate nursing problems.

Disseminated cancer--a carcinoma that has metastasized from a primary site to another area or areas of the body.

Priority of symptoms--the importance or severity of the symptom as determined by disseminated cancer patients and registered nurses.

### Delimitations

For the purposes of this study, the following delimitations will be made:

1. Only those nursing interventions used in the care of disseminated cancer patients in the hospital setting will be evaluated in this study
2. Only the five most common symptoms listed by the disseminated cancer patients and registered nurses will be considered in this study

### Assumptions

For the purposes of this study, the following assumptions were made:

1. Disseminated cancer causes unpleasant symptoms
2. Some symptoms of disseminated cancer can be decreased through nursing interventions

### Summary

This study was undertaken to determine the five most common symptoms of disseminated cancer as identified by patients and nurses in the hospital setting. It further proposed to determine the nurse's knowledge of interventions utilized to decrease patient care problems of the disseminated cancer patient and to identify nursing interventions that are used by registered nurses to decrease the

five most common symptoms of disseminated cancer. The relationship of the nurse's knowledge of interventions for the five most common symptoms of disseminated cancer to the nurse's length of professional experience will also be assessed.

Chapter II presents a review of the literature concerning symptoms of disseminated cancer. Common nursing interventions used to reduce these symptoms will also be discussed. Chapter III discloses the procedures for collection and treatment of data. The analysis of the data is depicted in Chapter IV. A summary, the conclusions, implications, and recommendations for this study are presented in Chapter V.

## CHAPTER II

### REVIEW OF LITERATURE

Chapter II presents a review of the nursing problems and interventions associated with disseminated cancer. The major patient care problems of pain, infection, nutrition and hydration disorders, elimination difficulties, skin care problems, inactivity and the emotional aspects of disseminated cancer are presented. The causes, treatment, and nursing interventions used to reduce or alleviate them are also discussed.

#### Nursing Problems and Interventions Associated With Disseminated Cancer

##### Pain

Most people associate disseminated cancer with uncontrollable suffering and pain. Pain is rarely seen as a primary symptom in the early stages of cancer and is not listed as one of the seven warning signals by the American Cancer Society. In fact, pain is usually viewed as a symptom which appears in the latter stages of the disease. Many cancers never produce pain, even in the terminal stages of the disease (Rogers 1967). When pain develops in carcinoma, however, it is not prevalent in cancer of the cervix, lung, rectum, and prostate (Turnball 1971).

Research has demonstrated that cancerous lesions do not cause the pain commonly associated with malignancy. Frequent causes of pain in advanced cancer are secondary effects of complications of the lesions which spread uncontrollably and invade tissues and organs (Bouchard and Owens 1976). When the tumor metastasizes, it causes compression on tissues, which, in turn, creates ischemia, obstruction, and distention of surrounding areas. Invasion of nerve roots, trunks, and plexus, even the spinal cord produces pain described as "well-localized, projected pain typical of neuralgia" (Murphy 1973, p. 188). Early symptoms of cord compression include dysuria, sensation of "pins and needles" and weakness and numbness of the lower extremities. If this condition is not reversed, it can lead to paralysis (Rogers 1967). Common sites of bone involvement are the vertebrae, pelvis, femur, ribs, skull, sternum, and humerus (Pories and Morton 1970). Metastasis to these areas may cause painful pathological fractures. Intestinal obstruction can also occur with cancer of the pancreas, colon, uterus, and ovaries which result in a cramping abdominal pain (Donovan and Pierce 1976). A dull, diffuse, poorly localized pain is often used to describe malignant obstructions in the esophagus, stomach, and ureters. Invasion of the lymphatic

system may induce painful engorgement, ischemia, and edema of surrounding areas which causes pain that is described in many ways (Murphy 1973, Rogers 1967). Infection, inflammation, ulceration, and necrosis are other known causes of pain in cancer patients (Donovan and Pierce 1976).

A patient's reaction to pain may be influenced by not only physiological reactions but psychosocial environmental factors. Mastrovito writes that:

pain differs from other perceptions in that it is accompanied by emotional responses of varying degrees. . . . Thus, the appreciation of pain is influenced by such psychological factors as one's emotional state, personality, past experiences and psychological defense mechanisms (1974, p. 514).

She lists the following physical and emotional variables to consider when a patient says, "I'm in pain":

- (1) quality, intensity and duration of pain,
- (2) site of origin of pain, (3) the patient's personality and characterological make-up,
- (4) the patient's emotional state, (5) the mental associations and the symbolic meaning of a specific pain syndrome, (6) memories of pain and past experiences with it, (7) the transactional aspects of pain: what is the patient communicating when he complains of pain, and what are the reactions of those to whom he complains (1974, p. 514).

Thus, the intensity of one's pain is conditioned by factors which range from actual physical deterioration to one's

threshold of pain which is influenced by psychological reactions.

In a study about mechanisms used by patients to deal with pain, Copp (1974) found sixteen patients (11 percent) were able to talk about their pain and accept it as a challenge. Thirty-three patients (22 percent) described "struggling, fighting, and overcoming their suffering," but fifteen (10 percent) blamed themselves and saw pain as a punishment. Four patients (3 percent) saw it as a loss due to surgery, hospitalization, or body function. Thirty-three (22 percent) of the patients used the pain experience for self-expression and self-searching. Four patients (3 percent) found they wanted to be in touch with personal possessions during a pain experience (Copp 1974, pp. 492-3).

The effects of pain may be either physically or emotionally debilitating to the patient. Immediate responses to acute cutaneous pain include increased perspiration and muscle tension, and an elevation of pulse, respirations, and blood pressure (Donovan and Pierce 1976). Reactions to severe visceral pain may slow the pulse, decrease blood pressure, delay emptying of the stomach which results in nausea and/or vomiting and causes a "costal type of respiration" (Donovan and Pierce 1976, p. 59).

Chronic pain may cause immobility which leads to pressure sores, muscle weakness, decreased circulation, constipation, and contractures. Conditions of the mouth, skin, and perineum may develop due to poor hygienic practices and be further complicated with weakness, apathy, and immobility (Donovan and Pierce 1976). Thus, pain can create an endless cycle of interrelated problems for the terminally-ill cancer patient.

Emotional reactions to pain may also greatly disrupt personal and family relationships. A lack of unity within the family may result in the inability to cope with stresses such as finances, role, and value changes (Mastrovito 1974). The nurse must include the family or significant persons in a plan of care to alleviate pain.

There are many forms of treatment to control or alleviate pain caused by carcinomatosis. The treatment utilized is usually dependent upon the cause, location, and type of pain the patient is experiencing (Mozden 1969). Comfort for the terminally-ill cancer patient is directly related to the relief of pain: "Pain becomes unbearable when it seems to have no purpose and is only a reminder of an advancing disease process" (Drummond 1970, p. 60). Gunn and Posnikoff (1969) believe treatment of

pain should be immediate and include minimal disturbances during treatment and a short stay in the hospital. There are now various surgical methods utilized to alleviate pain caused by disseminated cancer.

Many types of neurosurgical and neurologic treatments have been developed to manage pain. Neurosurgery is generally employed when "the cause of pain cannot be treated directly and when the intensity and chronicity of the pain justify this form of treatment" (Donovan and Pierce 1976, p. 75). These procedures do not offer a cure for pain, but relief from compression, obstruction, pressure, ulceration, and necrosis (Derrick 1973).

The cordotomy is a procedure used to relieve intractable pain by utilizing percutaneous, unilateral, and bilateral techniques. The percutaneous cordotomy, considered a nonsurgical procedure, is now widely used by neurosurgeons.

In a study of 100 patients who underwent a bilateral percutaneous cervical cordotomy, 73 percent experienced chronic pain in the abdomen, perineum, back, and lower extremities. These patients who had neck, upper extremity, or thoracic disease obtained some relief of pain when surgery was carried out at the cervical levels. Eighty-one percent of these patients obtained pain relief for at least

two years following surgery or until their death. Nine percent had to undergo another cordotomy but most all of these patients obtained pain relief (Rosomoff 1969). In an earlier study done by Rosomoff and his associates (1969) on 100 patients, 92 percent of the patients obtained pain relief. Complications of the procedure included transient bladder dysfunction in seven patients, motor weakness in eight, and permanent paresis in one patient. Rosomoff (1969) believes that the unilateral cordotomy is the preferred procedure since complications are reduced, and it is performed in one stage at the thoracic level. Respiratory failure and sleep apnea are the most serious complications along with minimal bladder and sexual impairments. A bilateral cordotomy, for example, will result in permanent loss of sexual function. Murphy also feels that a closed percutaneous cordotomy is a low risk procedure and is ". . . one of the most important advances in treating cancer pain" (1973, p. 192).

A new method used to increase the success of percutaneous cordotomy includes anterolateral quadrant stimulation. Mayer and his associates carried out a study with thirteen patients undergoing high cervical percutaneous cordotomy. They found that:

. . . if the threshold for pain elicited by the stimulation electrode was less than 300  $\mu$ A, a

5-sec radiofrequency lesion of 50  $\mu$ A would produce complete contralateral analgesia with no weakness. When the pain threshold exceeded 300  $\mu$ A, incomplete or no analgesia would result with the standard single lesion. The results further suggested that the fibers in the anterolateral quadrant that transmit pain are discretely rather than diffusely localized (Mayer et al. 1975, p. 445).

The results of this study conclude that the anterolateral quadrant stimulation is a successful predictor of the size of the lesion necessary to eliminate fibers that produce pain in this region.

The open cordotomy is performed when other procedures are unsuccessful. During this procedure the spinal cord is exposed so that the spinothalamic tract can be incised. Complications from bilateral open surgery include a 20 percent chance of weakness and paralysis in the lower extremities; a 40 percent chance of loss of control of bowel and bladder sphincters; and a 50 percent chance of abdominal disturbances, orthostatic hypotension and loss of sexual function (Murphy 1973). High open cervical cordotomies also present a high risk of respiratory failure. Friedberg (1975) stated that even though Rosomoff has had encouraging results, he and his associates were still reluctant to perform this procedure due to the risk of respiratory failure.

The dorsal rhizotomy is used to interrupt and divide the sensory root of spinal nerves. This procedure produces

permanent sensory loss and is used primarily with patients who have perineal and genital pain caused by rectal and bladder cancer. The advantages of this procedure are the low morbidity and the rate and ease of performing the procedure (Friedberg 1975). Murphy, however, stated that disadvantages include ". . . the need for craniotomy or laminectomy and the fact that the lesion usually spreads and pain reoccurs outside the denervated area" (1973, p. 192).

In patients who cannot withstand major neurosurgery, the nerve blocks offer an alternative form of therapy for intractable pain. Peripheral nerve blocks are used to relieve pain in a localized area by the injection of neurolytic drugs which may affect the senses including position, temperature, and touch that are interrupted by this procedure. Pain can be relieved up to six months but can recur. Subarachnoid blocks, which entail the injection of alcohol or phenol, help control intractable pain and include motor nerves which can affect bowel and bladder function and produce weakness in the extremities (Derrick 1973). In a study done by Lifshitz and his associates (1976), ninety gynecologic patients received a subarachnoid phenol block. Of the patients, 77 percent had moderate to excellent pain relief, 52 percent were relieved of pain

for one month and 27 percent for two months. Complications included urinary and rectal incontinence which occurred in 71 percent of these patients. No special facilities are required for this procedure and most trained anesthesiologists can perform it without difficulty.

Electrical stimulation is now being used successfully to treat intractable pain in cancer patients. The discovery of electrical stimulation to control pain developed from the gate control theory for pain. Sweet and Wall (1967) first reported a "numbing effect" produced by applying electrical current to peripheral nerves. The concept of localizing control of pain with an implanted electrical device was first employed by Shealy and his associates (1974).

The three devices commonly employed are (1) transcutaneous devices that utilize skin electrodes, (2) implanted peripheral nerve stimulators, and (3) dorsal column stimulators

with electrodes placed either into the subdural space or within the leaves of the dura over the thoracic or cervical cord. The latter two devices require the insertion of a subcutaneous receiver antenna (Kirsch et al. 1975, p. 217).

Gaumer explained that:

among the several methods of electrical stimulation the transcutaneous method is the safest and

easiest. It relieves pain by delivering a charge through electrodes applied to the surface of the skin. This electrical charge causes a tingling or buzzing sensation, and ideally, blocks the pain impulses by stimulating the gating mechanism (1974, p. 504).

Johnson (1975) agrees that the transcutaneous nerve stimulator (TNS) is a "versatile, therapeutic method" and is used successfully with cancer patients. In a study done by Clark and his associates (1975), TNS produced pain relief in 10 to 20 percent of patients with chronic pain. Clark agreed with Gaumer that TNS is a safer and easier procedure to perform than the other two stimulating implants. Kirsch and his associates (1975) found that about 80 percent of their patients obtained some pain relief and 25 percent obtained long-term relief with his method.

The peripheral nerve implants are comparatively safe but do carry a risk of loss of peripheral nerve function. Kirsch and his associates (1975) found they had greater pain reduction with the upper extremity implantation. In a total of twenty-one patients with upper extremity implants, thirteen (62 percent) sustained long-term relief. In the lower extremity implants four of eleven (36 percent) implants resulted in long-term pain relief. Kirsch felt that peripheral nerve implants had a place in upper extremity pain but lower extremity pain relief remains uncertain using this method. In another study 120 patients

sustained definite relief and twenty obtained complete relief. The other sixty-two patients received no pain relief from the procedure (Cauthen and Renner 1975). It is clear from these studies that more experimentation is needed with this form of pain therapy.

The dorsal column implants and the peripheral nerve implants involve spinal surgery to insert the receiver and the lead. Twenty-seven patients had this procedure done and were followed for a three-year period. It was found that placement of electrodes and the type of unit used correlated with the amount of pain relief the patient experienced. A greater amount of pain relief was also sustained when the psychological outlook of the patient was good (Shelden et al. 1975). Nelson and his associates (1975) support this and feel that preoperative psychiatric evaluation can pinpoint patients who will have unsatisfactory results from this method. Kirsch and his associates (1975) obtained long-term relief in 40 percent of their patients using this method. In another study conducted on six cancer patients, two of the patients sustained instant pain relief. Two patients obtained pain relief for one year until their death, and the remaining two patients received little pain relief (Long and Erickson 1975).

In a comparison study between anterior and posterior implants that included four disseminated cancer patients,

application of current through electrodes placed on the anterior surface of the cord produced analgesia and pain relief below the level of implant without the development of paresthesias (Larson et al. 1975, p. 180).

Electrodes placed on the dorsal columns relieved pain to a lesser degree and the patients developed paresthesias. Larson and his associates (1975) believe that although it is simpler to implant electrodes over the dorsal columns, their study showed that the "anterior location may be superior when currents are to be applied for the pain relief in the lower lumbar and sacral dermatomes (1975, p. 180). Electrical stimulation is now being used frequently to relieve intractable pain in disseminated cancer patients. More research in this area will lead to even better methods of pain relief in the near future.

Acupuncture is another relatively new method used to reduce chronic pain, especially in the United States. Melzack (1973) stated the most important advantages of acupuncture include the relief of pain without drugs, and the relief of difficult pain syndromes such as neuralgias and phantom-limb pain. He further declared that "the critical factor in the effectiveness of acupuncture is

fairly intense continuous stimulation of tissues by needles or passing an electric current between them" (Melzack 1973, p. 28).

Eighteen cases of chronic pain were treated with acupuncture in Liverpool, England, by Mann and associates. Ten of the patients experienced partial to total pain relief, and eight others sustained little or no relief. Mann summarizes his view of this method:

although there is considerable clinical evidence that long-lasting changes (usually, but not always, in the direction of promoting rather than alleviating pain) can be brought about by stimuli of short duration, their physiological basis remains to be demonstrated. Acupuncture may afford an opportunity for studying these important mechanisms (1973, p. 60).

Lloyd and Wagner (1976) in a study using the signal detection theory (SDT), which separates sources of variance, found that acupuncture significantly decreased the ability of discriminate between extremely low levels of thermal stimulation. They also found that acupuncture did not have a significant effect as the pain stimuli became more intense. The authors concluded that more structured research must be carried out in order to determine whether acupuncture "produces its effects by altering physiologic rather than psychologic processes" (Lloyd and Wagner 1976, p. 150). Groups of researchers have now banded together in the United States to conduct more experimentation on this

method of pain control. Many researchers feel that acupuncture can be used effectively with selected patients and utilized in conjunction with more conventional forms of pain relief such as drug therapy (Armstrong 1972).

Another effective treatment to control pain is the use of radiation therapy. This form of treatment relieves pain by destroying tumor lesions, healing of ulcerations, controlling hemorrhage, healing pathologic fractures, reducing cough and dyspnea, and retardation of metastasis (Murphy 1973). Irradiation is most effective when used in metastasis of cancer to the bone and glandular organs, since these are localized areas of disease (Donovan and Pierce 1976, Murphy 1973).

Allen and his associates (1976) conducted a study on cancer patients with metastasis to the bone in which radiation therapy was used to alleviate pain. Of the patients 70 percent received initial pain relief, 20 percent sustained delayed pain relief, 13 percent had a recurrence of pain, and 78 percent received permanent pain relief from irradiation. The researchers noted that ". . . there was no real difference between the high, middle, and low range of treatment in terms of achieving successful pain relief" (Allen et al. 1976, p. 985).

The patient's reaction to radiation therapy will depend upon the dosage given, area of the body treated, and the individual's tolerance level to the radiation. Local effects include itching, tingling, burning, blister formation, and alopecia (St. Andrew 1975). Generalized effects of this form of treatment include nausea, vomiting, anorexia, malaise, and diarrhea. If symptoms become too severe, irradiation can be discontinued in order to allow the body to regain homeostasis (St. Andrew 1975).

The use of cytotoxic drugs is less effective than surgery and irradiation in relieving pain. One reason for this is that pain is reduced by controlling the metastasis and not from the effects of drugs. These drugs are classified according to their action and include polyfunctioning alkalating agents, antimetabolites, plant alkaloids, steroids, radioactive isotopes, and antibiotics.

Non-narcotic analgesics, hypnotics, and tranquilizers can be used alone or in combination to relieve mild or moderate pain caused by disseminated cancer. Generally medical practice follows the rule that the smallest amount of non-narcotic analgesics required to control pain will be given to the patient by mouth when possible (Donnovan and Pierce 1976). When this rule can no longer be maintained

due to chronic pain from disseminated disease, narcotic analgesics are used. Usually the narcotic to be used is chosen according to the degree of pain experienced, the condition of the patient, and the route of administration (Derrick 1973, Murphy 1973).

Murphy (1973) suggested that a choice of narcotics can be made by selecting four or five narcotics and giving each one for two days. During this time varying doses of a placebo are also given to the patient at random. The narcotic that best relieves the pain is documented by both patient and nursing observations. The physician then can choose an individual course of drug therapy to relieve pain. Murphy also believes that narcotics should be given to the patient at regularly spaced intervals rather than as needed since this "reduces behavioral implications and may even delay addiction since the patient is unable to use his pain as operant behavior to obtain narcotics as a reinforcement" (Murphy 1973, p. 191).

In a study done in England with 297 terminal cancer patients, the drug diamorphine was given at a regular four-hour interval. This drug was also supported with phenothiazines, night sedatives, tranquilizers, and anti-depressants. The results of this study showed that:

Most patients with severe pain associated with terminal cancer can be kept alert, unaddicted and

pain free with oral diamorphine for all but the final phase of their disease; parenteral diamorphine is usually needed only during the last 12-24 hours of life (Narcotic Analgesics in Terminal Cancer 1975, p. 695).

This study agreed with Murphy that the drug selected should be given at regular intervals.

Self-medication is now available for many disseminated cancer patients. Isler (1975) describes a study involving terminally-ill cancer patients in which narcotics were regulated by the patients through an I.V. hookup. At first, the patients gave themselves large doses of medication, but within four to five days the dosages were lessened and a spaced interval became evident. The patients became more alert, tolerated more pain, showed appetite improvement, and were able to become more active.

Another technique used to alleviate intractable pain utilizing local anesthetics is the use of an Ommaya shunt connected to an epidural catheter. In a study using this method terminal cancer patients received immediate pain relief. Unfortunately, the pain relief was for only two to three hours. The dosage of the drug was designed to produce sensory block without motor paralysis (Pilon and Baker 1976). Research is continuing on this method of pain alleviation to remove the present limitations. Donovan and Pierce summarized the concept of pain relief:

The heart of the matter lies in adequately evaluating the pain and then using the most direct, the most effective, and the least harmful measures to obtain the level of pain relief desired by the patient (1976, p. 90).

Various methods of mind control to alleviate chronic pain are now being utilized in many cancer hospitals. The main goal of this type of therapy is a consistency in technique until patterns that relieve pain are established (Russell 1976).

Biofeedback is a new form of therapy in the treatment of chronic pain. Ryan (1975) stated that most people can control unconscious body mechanisms by using this method. Several pain control principles are incorporated in biofeedback training. These include the use of distraction for relaxation and the development of voluntary control over pain (Siegele 1974). Melzack's research in this area also led him to state that distraction, suggestion, relaxation, and a sense of control are all a part of the biofeedback procedure. Twenty-four patients with long-term chronic pain, including cancer patients, were split into three training groups by Melzack. Six received the alpha training, six received the hypnotic training, and twelve of the patients received alpha-feedback training in conjunction with hypnotic training. The conclusions of the study showed

a 33 percent reduction in pain when using the combination of alpha-feedback training and hypnotic training. A high degree of pain relief was also exhibited by patients receiving only hypnotic training which "indicates that the strong suggestion, the instructions for relaxation and the ego-strengthening techniques that comprised the training procedure are able to influence chronic pain" (Melzack 1975, p. 81). Melzack stated that a great deal more experimentation is needed to perfect this form of therapy and to substantiate that biofeedback can be used on a daily basis in the clinical setting and have lasting results.

Other methods which help reduce pain include hypnosis and wake-imagined analgesis (WIA) which make use of distraction and lowered anxiety levels. Hypnosis has been used in a variety of clinical situations to control pain. When using WIA, the patient perceives that uncomfortable sensations are not painful (McCaffery 1972). Both procedures require patients to be susceptible to suggestion. Severe intractable pain cannot be alleviated with this method due to the density of pain and the state of lassitude which hinders the ability of the patient to use distraction.

Copp (1974) wrote about six means of coping with pain used by patients in a study about distraction. The patients focused on counting objects, use of control words such as "I can stand this," deep thinking, and visualization

of "sounds, smells, textures." When asked how people affected their pain, more than one-half of the patients stated their roommate "increased the pain." No reasons were given why the roommates increased the patient's pain. Fourteen percent of the patients stated they hid pain from their roommates because they were sick. Another 10 percent stated their roommates had been helpful in alleviating pain. Three-fourths of the patients surveyed in Copp's study emphasized that a particular significant person could alleviate their pain (Copp 1974, pp. 494-95).

Operant conditioning is another method that is being currently utilized. With this method the patient no longer controls when a drug is administered and does not experience the highs and lows of short duration pain relief. Patients stay in the hospital five to seven weeks and sign a contract stating their responsibilities. The program is designed to help "reduce the amount of learned pain and to decrease functional impairment caused by pain" (Isler 1975, p. 21). The program includes the use of praise whenever the patient functions according to his contract which reinforces not having pain. The nurse will respond to the patient according to the patient's behavior. Results have been very encouraging. More research needs to be done in this area in order to show results statistically (Isler 1975).

Pain is an individualized experience, therefore, nursing interventions must be based upon the person's physical and emotional responses to pain. Nursing assessment plays a vital role in formulating plans of care to alleviate pain. McCaffery (1972) wrote that factors that cause an increase in pain sensation have a direct bearing on those factors that increase the patient's behavioral reactions to pain. For example, physical strain on an incision site causes pain; therefore, nursing interventions should be devised to lessen or alleviate the physical strain to reduce pain.

Nursing assessment of behavioral response to pain is very important. If a procedure is unavoidably painful and the patient cries, the nurse may decide to leave the patient alone, ignore the crying but remain with the patient or encourage the patient to cry (McCaffery 1972). Other factors that may influence behavioral responses to pain are fear of losing control of one's emotions, the nurse's attitude toward the care and medications she administers, fear of being alone, especially at night, and guilt about being absent from home (Nursing Grand Rounds 1974). Scalzi (1973), writing on the care of cardiac patients, stated that the level of anxiety in a patient is significant because it forms the basis for the other behavioral responses, especially pain. She explains that there are three

predictable high periods of anxiety in a hospitalized cardiac patient. These are admission, transfer to another unit, and preparatory period before discharge. With the cancer patient, this would also include the initial diagnosis and each form of new treatment.

Nursing interventions that can help physical and behavioral responses to pain include developing a relationship with the patient. The nurse can establish concern by use of eye contact, compliance with the patient's expectations of medical care and discussion of painful treatments. The nurse must always remember that all personnel must respect the right of the patient to respond to pain in his own unique way (McCaffery 1972). Scalzi (1973) promoted the idea of a constant nurse assigned to the patient on each shift during the hospitalization. The patient and family can then relate to the same nurse. The nurse can then also assess, coordinate, and institute a plan of care based on accurate knowledge of the patient, not on heresay.

When using behavioral modification for terminally-ill patients, Whitman (1975) believed the nurse should first define the problems in the patient's care. The program for pain relief should then be completely explained to the patient and family. The nurse should not react to undesirable behavior by the patient and family and not waiver in designated approaches defined in the care plan. The nurse

should also realize that behavior may get worse instead of better and praise all positive behavior and accomplishments immediately (Whitman 1975).

McCaffery (1972) agreed with Whitman that teaching the patient about pain is a prime responsibility of the nurse. Areas to be discussed with the patient are the frequency of pain, the variety of sensations, fears about personal safety, and the use of "sensory modalities" and methods of pain relief to be used.

The registered nurse also has the responsibility to keep abreast of the untoward reactions of drugs and modes of pain treatment used in the treatment of disseminated cancer. The immediate assessment of untoward effects can reduce complications which will enable the patient to cope more effectively with this debilitating illness. A nurse should seek additional education when administering an unfamiliar drug or when she is unfamiliar with a particular mode of pain treatment.

Many nursing interventions designed to reduce or alleviate pain have been under study. An exploratory study done by McBride (1967) sought to measure the effectiveness of interaction between the nurse and the patient by assessing the patient's verbal and non-verbal behavior to pain through the use of closed-circuit television. Although there were

limitations to this study, her findings seemed to indicate that a "nursing approach based on psychomatic view of man is more effective than one which equates treatment of pain with the giving of medication" (McBride 1967, p. 340). Moss and Meyer (1966) also conducted an exploratory study on pain which focused on reducing the patient's pain without the use of medications. The conclusions of the study were that moderate pain can be reduced by nursing interaction which "initiates the interaction and engages the patient in decision-making behavior" (Moss and Meyer 1966, p. 306).

McCaffery (1972) stressed that research and observation substantiate the fact that nursing intervention is limited to administering medications, even though, physician's state that they expect nurses to utilize other interventions to decrease pain. She believes that patient-centered goals to reduce pain should be formulated and reflect the means by which the pain was relieved. This procedure will help to insure that the intervention will be repeated by nursing personnel if the pain returns. The nurse has the responsibility to make all the personnel on the health team aware of measures that can alleviate pain for each patient in her care. The nurse should also institute basic forms of nursing care to alleviate pain.

These include heat and cold applications, massage such as a comforting back rub, change of position, and therapeutic baths.

Nursing goals and procedures which are utilized to reduce pain include a variety of psychosocial and medical methods. Those methods include the establishment of interpersonal relationships with the patient in which he is taught about pain. Other procedures which may be effective include diversionary activities, rest and relaxation, medications, and hypnosis. But, as McCaffery (1972) has clearly written, the key is to have nursing personnel assess and direct personalized care of the patient experiencing pain.

### Infection

A complication such as infection in a disseminated cancer patient can be a life-threatening situation. It is estimated that 5 percent of all patients who are admitted to hospitals in the United States will develop an infection that did not exist at the time of admission (Brackman 1970). Eickhoff (1969), in a report on a survey of infections in community hospitals, stated that 36 percent were nosocomial infections of the urinary tract, 25 percent involved surgical wounds, 15 percent involved the respiratory tract, 7 percent involved the skin and subcutaneous tissues, and

16 percent were classified as other types of infections. These statistics reveal the importance of knowing the causes, treatment, and nursing interventions that control and reduce the spread of infections to disseminated cancer patients.

The severity of the infection depends upon the virulence of the infective organism, the number of invading organisms, and the condition of the host immune defenses. The immune defenses in metastatic disease are automatically lowered due to obstructions, effusions, abscesses, and ulcerations due to chemotherapy and irradiation (Armstrong et al. 1971, Donovan and Pierce 1976). Obstructive and ulcerative lesions cause most of the infections in disseminated cancer (Bodey 1970). If death occurs, the cause is usually normal gram negative bowel flora, fungi, parasites, or virus (Armstrong 1971).

A major cause of many infections in cancer is the Gram-negative bacilli. *Escherichia*, *Klebsiella*, and *Pseudomonas* have been isolated at the M. D. Anderson Hospital in Houston in patients who developed septicemia. Bodey and Rodriguez (1975) found that most infections in cancer patients are the direct result of gram-negative bacteria. In a study conducted on infections in a protected

environment-prophylactic antibiotic program, 70 percent of the septicemia cases were caused by *Escherichia* and *Klebsiella*. *Pseudomonas* infections were greatly increased in patients with neutropenia.

Fungal infections caused by candidal organisms are frequently found in patients with acute leukemia and lymphoma. These organisms produce 70 percent of systemic fungal infections in patients with acute leukemia and 30 percent in lymphoma patients (Bodey 1970). Bodey (1970) stated that cryptococcosis creates 25 percent of the fungal infections in Hodgkin's disease. In a study done by Bodey and Rodriguez (1975) it was found that fungi were the greatest source of organisms in the stools and throat cultures of patients they studied in protected environmental units. These researchers also established that during antibiotic therapy fungi were responsible for most of the newly-acquired organisms found in blood cultures.

Protozoal and viral infections are prevalent in lymphoma and chronic lymphocytic leukemia. Generalized herpes simplex and zoster are commonly discovered in these cancers. Chickenpox and measles in children and elderly cancer patients can also cause serious infectious complications (Bodey 1970).

Fever is a symptom that is associated with infection and is often present when the disease is disseminated and of long duration (Armstrong 1971). Bodey (1970) states that only 5 percent of fever episodes are the result of the neoplastic disease. Cultures of the throat, urine, and sputum and blood should be taken when the patient's temperature reaches 101° Fahrenheit. and continued until the diagnosis is made. Infectious processes can occur without fever. Clinical signs that should alert practitioners are unexplained leukocytosis, leukopenia, thrombocytopenia, tachycardia, hyperventilation, hypotension, and subtle mental changes (Armstrong et al. 1971).

In disseminated disease, cell-mediated and humoral immunity are decreased. Radiation therapy and chemotherapy are causes of severe depression of the immune system in instances of metastatic disease (Harris and Bagar 1972). When large portions of the bone marrow are exposed to radiation, severe bone marrow depression with neutropenia results. Excessive radiation can lead to infections caused by fistula formation in cancer of the cervix, bladder, and intestinal tract (Donovan and Pierce 1976). Use of drugs such as antimetabolites, antibiotics, and corticosteroids can bring about both humoral and cellular immunity depression and contribute to the cause of infection (Armstrong et al. 1971).

Surgery, though not immunosuppressive, itself can increase the threat of postoperative wound infection in the cancer patient because of the following factors:

bacterial contamination during surgery, (dirty surgery), older age, lengthy procedures, long pre-operative hospital residence, previous adrenal steroid therapy and infection remote from the infection site (Andriole 1966, p. 1118).

A study on postoperative wound infections in one hospital in 1972 revealed three postoperative wound infections in gastrointestinal surgery for carcinoma. In one patient a heavy silk tie slipped and allowed bowel spillage into the operative field. *Escherichia* was cultured from the wound fifteen days postoperatively. In another cancer patient, carcinoma perforated through the cecum, and a wound infection developed fourteen days after surgery. The third case received heavy cortisone therapy prior to a right colectomy for cancer. Hemolytic streptococcus was cultured from the surgical wound after ten days. Mason (1974) suggested that all wounds should be cultured at the time of surgery and that existing bacteria be removed or contained.

The health team has a primary responsibility to prevent infections from the beginning of hospitalization and to prevent the spread of existing infections in

patients with disseminated cancer. Kretzer and Engley stressed the importance of aseptic conditions:

Every registered nurse from staff nurse to supervisor serves as the first line of defense against the spread of infection in the hospital. The nurse protects not only herself and other personnel through her meticulous observance of safeguards such as proper handwashing technique, strict aseptic care of surgical dressings, being certain that sterile supplies and equipment are being used are actually sterile and rigorous adherence to isolation technic (1969, p. 48).

The use of antiseptics and disinfectants can be helpful in the prevention and treatment of infections in the cancer patient. Care must be taken to use correct dilutions that will inhibit or kill the offending organism. Kretzer and Engley (1969) stated that wounds should be completely cleansed, irrigated, and/or scrubbed, then rinsed and dried before antibacterials are applied. It is important that the area be dried before the antiseptic is applied so that dilution does not occur.

Bodey (1970) stated there is an increase in the incidence of tuberculosis in cancer patients suffering from lymphoma. Tuberculosis prophylaxis is another means of reducing infections, especially among patients with leukemia or a lymphoma. Armstrong (1973) recommended that Isoniazid 30 milligrams be given daily to any cancer

patient with leukemia or a lymphoma, patients who have positive skin test and patients who are receiving immunosuppressive drugs especially for prolonged periods.

Reduction of long hospitalizations can reduce or prevent infections in cancer patients. Home may be a safer environment for the patient who is a susceptible recipient. If care is to be rendered in the home, both the patient and family need to be taught that the patient is very susceptible to infections, what measures can be used to prevent infections, and signs and symptoms to report immediately to the physician (Brachman 1970).

The registered nurse needs to be aware of antibiotics used in the treatments of bacterial infections and their untoward effects. Bodey and Rodriguez found that ". . . during 90 percent of our 102 studies, potentially pathogenic organisms persisted despite antibiotic prophylaxis" (1975, p. 504). Donovan and Pierce (1976) stated that overuse of antibiotics can do more harm than good, especially, in leukopenic patients where antibiotics are often ineffective. Furthermore, many broad-spectrum antibiotics and the use of multiple antibiotics may lead to super-infections. If the nurse is knowledgeable about the classification of antibiotics, observation and prevention of super-infections can occur. The cephalosporins,

tetracyclines, and streptomycins are well known groups of antibiotics that cause super-infections in certain body systems (Donovan and Pierce 1976). Turck and Petersdorf (1966) reported that a combination of antimetabolites, corticosteroids, and tetracycline therapy can produce a situation where severe infections develop particularly in patients with malignant disease. Nurses need to be cognizant of the serious side effects of antibiotic therapy. Literature is freely available in most hospitals about commonly-used antibiotics and nurses are urged to read about new antibiotics before administering them to a patient.

Cancer patients who must receive corticosteroid therapy should be placed on minimal dosages of cortisone until infections are brought under control. Corticosteroids suppress and mask symptoms of infection, and Weinberg and Austin (1966) believed that the infection intensifying effects of steroid therapy are dose related. Nurses need to be alert and closely observe patients who are receiving steroids for prolonged periods.

The infusion of white blood cells is used with patients who have leukemia. In one study it was reported that all patients who received leukocyte transfusions and antibiotic therapy over a four-day period recovered from

their infections in contrast to a 29 percent recovery in patients who were given only antibiotics (Levine 1975). The effectiveness of this therapy needs to be proven since problems arise because of the difficulty in getting donors and the short life span of the granulocytes. The nurse should be knowledgeable about this procedure's effect upon the patient (Armstrong 1973).

Cancer patients may develop severe sepsis during episodes of acute infection. These patients are usually transferred to intensive care units, so that they can be continuously monitored. A central venous pressure line is inserted and if the CVP falls below 11 centimeters of water, plasma expanders are given and fluids forced. Urinary output is closely observed and should not fall below 50 milliliters per hour. The vital signs are closely monitored and blood pressure should be maintained at 100 millimeters systolic (Donovan and Pierce 1976, Sanford 1966).

The nurse should closely monitor all vital signs every two hours, especially if the fever is at or above 101° Fahrenheit. Nursing measures which can be employed to reduce the fever include tepid sponge baths, alcohol baths, or a cooling mattress. The cooling mattress should be set at 75° to 70° Fahrenheit to prevent chilling. Fluids that need to be encouraged include high caloric, high protein

beverages, and fluids high in sodium and potassium. Popsicles are a pleasant means of encouraging hydration. Infusions may be given if severe nausea and vomiting persist.

If the patient is not chilly, a cool room and little clothing will encourage heat conduction. If chills occur, warmth needs to be increased by adding blankets to the bed. Frequent change of bed linens should be carried out if the patient is diaphoretic. Antipyretic drugs like tylenol are also used, which is effective because of its increased gastrointestinal tolerance. Suppositories may be given if the patient cannot tolerate drugs orally (Donovan and Pierce 1976, Schumann and Patterson 1972). Throat, urine, sputum, and blood cultures need to be taken if the patient's temperature remains at 101° Fahrenheit or above (Bodey 1970). A new technique has been discovered to predict bacterial growth before it has a chance to spread. A slide is specially prepared with a specimen from a wound and stained. If a single organism is found, the bacterial level is significant enough to declare a wound infection (Slide Technique Used to Predict Bacterial Growth 1974).

The Life Island and Laminar flow units came into existence to protect patients from infections which often develop during chemotherapy treatments. The Life Island at

M. D. Anderson Hospital in Houston consists of a bed enclosed in a plastic tent.

Sufficient space is provided for the patient to stand or sit beside the bed, but the tent can be deflated to permit easy access to the patient. Procedures are performed through plastic sleeves on the sides of the tent. Items are passed into and out of the unit through locks equipped with ultraviolet lights for surface decontamination (Bodey et al. 1971, p. 215).

Laminar air flow units at M. D. Anderson Hospital in Houston consist of:

two patient isolation rooms separated by an access corridor. The rooms are equipped with a bed, over-bed table and beside table especially constructed to provide minimum obstruction to air flow. Bathing facilities and a bedpan seat are provided. Items entering the room are passed from the corridor through locks containing ultraviolet lights. The entrance door into the patient's room is located at the downstream end of the room. A "dirty" area, demarcated by darker floor tiling is located inside the door where personnel may enter without wearing sterile apparel. The patient does not enter this area (Bodey et al. 1971, pp. 215-16).

All supplies and food are sterilized before entering the unit. Prophylactic topical and oral antibiotics are administered to patients entering the units to eliminate microbial flora. Culture specimens are taken from the nose, ears, throat, urine, stool, and skin prior to the beginning of antibiotic therapy and subsequently on a weekly basis to assess the success of the treatment.

Eighty-eight patients with acute leukemia were involved in a controlled study done on laminar air-flow

rooms to determine the efficiency of the system in preventing infection. Group I was placed in the air-flow rooms and received a comprehensive antimicrobial treatment, Group II received "oral nonabsorbable antibiotics only," and Group III was used as the control group and received "no prophylactic maneuvers." The results of the study showed the patients in Group I had one-half as many severe infections as the other two groups. One-fourth of the patients in Groups II and III died of infection while participating in the study. None in Group I died due to infection (Levine 1975).

Nursing responsibilities in these protected environments include knowledge about aseptic and sterile technique including when they should be utilized. Patient and family education about visitation and rules about restrictions to prevent infection should be explained in detail. The patient and family will need constant reassurance and emotional support to prevent feelings of loneliness and isolation and aid to cope with them when they occur.

Special care should be taken to prevent infection among disseminated cancer patients. Any break in the skin should be avoided. Injections and intravenous infusions should not be used unless absolutely necessary. The patient's fingernails and toenails should be kept short and manicured to prevent scratches from occurring (Bouchard and

Owens 1976). Rectal temperatures, enemas, and bladder catheterizations should also be avoided. The strictest aseptic and sterile technique should be used when carrying out these procedures (Donovan and Pierce 1976). Signs should be posted on the doors of patients' rooms limiting visitors with colds or other infections. When possible, visitors should be screened by the professional staff and explanations be given about protective isolation of the patient.

Simple protective measures such as washing hands before and after contact with each patient should be carried out by the hospital staff. Female patients should also be taught to carry out perineal care and the proper technique to wipe after bowel movements to prevent urinary infections (Donovan and Pierce 1976).

Cancer patients are very susceptible to infections and must depend on the nursing staff to protect and prevent infections from beginning. Limiting the spread and treating existing infections are vital nursing functions when caring for the patient with disseminated cancer.

#### Nutrition and Hydration Disorders

Nutrition and hydration disorders occur readily in disseminated cancer patients. Many of these patients require additional calorie intake due to increased metabolic

requirements caused by the trauma of treatments such as radiation chemotherapy and surgery. Infection can also cause an increase in metabolic needs that are the result of fever (Bouchard and Owens 1976). Nurses need to be aware of the patient's food and fluid preferences and the causes of nutrition and hydration problems that occur in terminal cancer.

Anorexia is one of the many basic nutritional problems which appears in disseminated cancer patients.

Mayer stated that:

severe anorexia may appear long before any obvious contributing cause, such as intestinal obstruction, endocrine disorder, anatomic lesion of sepsis. It is frequently accompanied by mental depression, often with fear or guilt feelings, which further complicates treatment. Anorexia occurs during a period of active progression of the disease, when the drain from tumor growth increases the urgency of excellent nutrition (1971, p. 65).

Other subjective symptoms of anorexia that are reported in a study of fifty patients with metastatic disease were a loss of taste for food and an aversion for red meats in particular (DeWys and Walters 1975). Twenty-five patients in the study had decreased taste which correlated with an increased taste threshold for sweets. The sixteen patients who reported an aversion to red meats exhibited a decreased taste threshold for bitter foods. The remaining patients in this study did not show these correlations. Taste

abnormalities and weight loss also increased significantly with the extent of the malignancy in this study when compared with patients with normal taste. This comparison suggests that faulty taste patterns may be one factor in determining anorexia in disseminated cancer (DeWys and Walters 1975).

Anorexia is often associated with an increased basal metabolic rate and negative nitrogen balance. The basal metabolic rate may be lowered, normal, or elevated. However, most patients with "rapidly growing carcinomas" exhibit a very high metabolic rate. After the tumor is removed, the metabolic rate will return to normal in some patients (Bodey 1970). Patients with an active tumor may also show a negative, positive, or nitrogen equilibrium which suggests that the growing tumor retains nitrogen even while the host tissue is losing it. Many researchers consider a growing tumor to be a "nitrogen trap" (Mayer 1971).

Bodey (1970) wrote that some patients can be in positive nitrogen balance even though they exhibit a negative caloric balance and weight loss; he emphasized that diets which maintain metabolic balance in undernourished patients without cancer may create a caloric deficit in cancer patients.

When cancer patients have been placed on high calorie, high protein diets, their improved nutritional status has been shown to be temporary in two clinical studies that were carried out on disseminated cancer patients. In Parien's study sixty-four terminal cancer patients were placed on tube feedings and forced alimentation. They gained weight and strength, but Parien found no evidence that these procedures prolonged the patient's life. The malignancy continued to spread despite the weight gain and increased nitrogen retention (Hickey 1967). Terepha and Waterhouse conducted research in which patients were "force-fed." Their weight gain was the result of increased intracellular fluid. In some patients the malignancy actually appeared to increase during these feeding periods (Mayer 1971).

Another theory about the cause of anorexia in cancer patients "proposes that the tumor produces a lipid-mobilizing factor which acts upon deposits, mobilizes lipids, and thus frees nutrients for tumor utilization" (Donovan and Pierce 1976, p. 135). The increase in lipids causes a rise in serum lipid levels which, in turn, stimulates the hypothalamus to respond to these increased lipids by causing anorexia. Donovan and Pierce (1976) felt this theory explains why tiny tumors that do not appear to effect nutrition can cause anorexia.

Anorexia can also be caused by treatment of the tumor with chemotherapy and radiation. The alkylating agents, antimetabolites, and corticosteroids can cause severe anorexia. Irradiation applied in the oropharyngeal region can result in loss of taste which complicates existing anorexia (Mayer 1971).

Malnutrition can also be caused by impaired food ingestion. The most common cause is lesions or obstructions of the alimentary and gastrointestinal tract (Mayer 1971). Treatment to remove the tumor and obstruction can cause difficulties in food ingestion. For example, surgery may cause difficulties in chewing and swallowing from formation of adhesions or radical procedures such as partial or total glossectomy and mandibulectomy. Excessive irradiation may cause edema, and decreased salivation when the oropharynx and esophagus are exposed. Chemotherapy may cause stomatitis which makes chewing and swallowing difficult for the patient. Antibiotic therapy may also alter normal flora in the mouth and cause candidiasis which can prevent normal food intake (Mayer 1971, Shils 1970).

Malabsorption in the gastrointestinal tract can be caused by treatment of cancer and the malignancy itself. Chemotherapy agents such as 5-Fluorouracil and Antinomycin D. used on solid tumor of the gastrointestinal mucosa, can

result in stomatitis, fluid loss, diarrhea, and hemotologic changes in the lining of the tract. The application of radiation therapy to the intestinal lining can produce inflammation in the small vessels. The intestinal wall may show fibrosis, stenosis, necrosis, and ulceration, which over an extended period may result in hemorrhage, obstructive fistula, diarrhea, and malabsorption (Mayer 1971). Surgery of the digestive tract can also cause malabsorption problems. Malabsorption of fat is brought about by bilateral vagotomy which is performed as part of the esophagectomy procedure. The dumping syndrome, hypoglycemia and malabsorption of fat occur after a gastrectomy. Deficiencies in fat-soluble vitamins, B<sup>12</sup> and steatorrhea may result following this procedure. Effects of intestinal resection depend upon the extent of surgery. If the jejunum is removed, a vitamin B<sup>12</sup> deficiency results and bile salts are lost. If a massive bowel resection is initiated, malabsorption of all nutrients will result and malnutrition is a constant problem. Pancreatectomy results in loss of digestive enzymes, proteins, fats, minerals and vitamins, and diabetes mellitus (Mayer 1971, Taif 1975). Malabsorption of nutrients regardless of the cause leads to serious nutritional problems in the cancer patient.

Another area that many cancer patients consider a problem is nausea and vomiting. This condition usually is a result of treatment of cancer. Most of the chemotherapeutic agents can cause these symptoms. These include the alkylating agents, antimetabolites, steroids, plant alkaloids, and antibiotics.

Radiation therapy when applied to the upper gastrointestinal tract can also cause nausea and vomiting. Manipulation and trauma from surgical intervention may produce nausea and vomiting in the first twenty-four to forty-eight hours (Bouchard and Owens 1976). This problem can lead to serious fluid and electrolyte deficiencies.

Fluid electrolyte balance in a patient with disseminated cancer can present grave problems for the health team. Vomiting, diarrhea, gastrointestinal suction, draining wounds, hemorrhage, infection, as well as surgery may all contribute to the cause of this problem (Givens 1975). Since terminal cancer patients are in a debilitated state, they are more susceptible to acid-base balance problems and multiple fluid and electrolyte problems such as hyponatremia, hypernatremia, hyperkalemia, and hypokalemia. Hyponatremia, due to water excess, exhibits vague symptoms such as fatigue, weakness, anorexia, vomiting, and muscle cramps. Fluid and electrolyte losses which accompany this

condition leave the body from the gastrointestinal system and kidneys. Sodium deficit usually results from vomiting, gastrointestinal suction, small bowel, and biliary fistulas or diarrhea (Takacs 1975).

In hypernatremia (dehydration) "water deficiency is the primary problem and hypertonic dehydration is the result" (Takacs 1975, p. 451). Intake of fluids in an advanced cancer patient may be limited because of dysphagia, nausea, and vomiting, sore throat or cerebral involvement. Electrolyte and high protein tube feedings given without additional amounts of water may cause the excretion of "large solute loads" which causes hypernatremia (Takacs 1975).

Hyperkalemia (acidosis) is another common electrolyte problem of the terminal cancer patient. Obstructive uropathy is the most frequent cause of this condition in the cancer patient. Prerenal failure is often found in advanced cancer patients and is usually caused by salt depletion, dehydration, hypoalbuminemia, congestive heart failure, circulatory collapse from sepsis and hemorrhage all which reduce glomerular filtration. The primary danger of potassium excess is cardiac muscle toxicity and the electrocardiogram should be monitored frequently (Takacs 1975). Hyperkalemia is also frequently seen in breast cancer and cancers that spread to the bone (Mayer 1967).

Hypokalemia or alkalosis can be found in patients with cancer, especially intestinal malignancies. The primary loss of potassium is through small intestinal fistulas, diarrhea, gastric suction, and vomiting. Enema and laxative abuse may also lead to this condition (Takacs 1975, Mayer 1971).

Drugs may significantly alter potassium in the body. The thiazides and "loop diuretics," often used indiscriminately among elderly carcinoma patients to treat hypertension and edema, can cause severe alkalosis if not closely supervised. Adrenal steroids, used to alter the endocrine system, can also produce losses of protein, calcium, and potassium from the renal system (Matheney and Snively 1974, Takacs 1975).

Respiratory alkalosis contributes to potassium loss especially in the cancer patients who suffer from liver disease and gram-negative sepsis (Takacs 1975). Fluid and electrolyte problems in the terminally-ill cancer patient can be minor or cause extensive alterations in all body systems. The health team must be alert for the signs and symptoms of fluid and electrolyte deficiencies.

Anemia is often associated with many cancers and is present in 60 percent of patients with disseminated cancer. The causes of anemia include anorexia, malabsorption of

vitamins and proteins, hormonal imbalances, suppressed prothrombin synthesis, increased hemolysis, peptic ulcers of the Zollinger-Ellison syndrome, gastrointestinal fistulas, hemorrhage, and myelophthisis are due to chemotherapy (Bodey 1970, Mayer 1967). Irradiation may also be a cause of anemia, particularly in patients who receive total pelvic irradiation. Thus, these patients may never again produce normal supplies of red blood cells (Donovan and Pierce 1976).

A major cause of hemorrhage, which leads to anemia, is thrombocytopenia commonly seen in patients with both blood and bone marrow malignancies. Platelet transfusions have now reduced episodes of fatal hemorrhage from 70 to 30 percent (Bodey 1970).

The release of tissue thromboplastic elements from cancer cells due to chemotherapy can initiate disseminated intravascular coagulation. This disorder includes "prolonged clotting time with poor clot formation, prolonged prothrombin, thrombocytopenia, hypofibrinogenemia, and clotting factor deficiencies V through VIII" (Coleman et al. 1974, p. 789). Heparin is considered the best treatment for disseminated intravascular coagulation and the prolongation of clotting times two to three times longer than normal. Coleman et al. (1974) stress that heparin therapy should be maintained three to seven days in most patients.

Cancer can stimulate the progress of other diseases that cause further nutritional problems. For example, bronchial adenoma and other argentaffinomas may cause carcinoid syndrome (serotonin excess), which produces symptoms of nicotinic acid deficiency. Research has also established the fact that renal carcinomas alter systemic thrombosis and cause bleeding. Thyromas can depress erythropoiesis while malignant lymphocytotic plasma cells cause macroglobulinemia (Mayer 1971). These nutritional problems can seriously affect patients with disseminated cancer. The whole health team must cooperate in order to reduce nutritional hazards that cause additional anguish to the terminally-ill cancer patients.

The nurse must be knowledgeable about the treatment and medications that the patient is receiving which may interfere with his food and fluid intake. A plan of care can then be formulated to individually suit each patient.

There are six questions the nurse should ask about a patient who is having eating and drinking difficulties:

- (1) Is there present any disease state that can disrupt body fluids?
- (2) Is the patient receiving any medications or treatments that can disrupt body fluid balance?
- (3) Is there an abnormal loss of body fluids, if so, from what source?
- (4) Have any dietary restrictions been imposed?
- (5) Has the patient taken adequate amounts of water and other nutrients?
- and, (6) How does total intake of fluids compare with total fluid output? (Matheney and Sniveley 1974, pp. 57-58).

Based upon the answers to these questions, the nurse should be able to pinpoint problem areas.

The nurse's observation skills are an important asset in the detection of nutritional problems. Listed below are steps that can be taken by the conscientious nurse to assess the nutritional status of the patient.

1. Weigh the patient daily at the same time, same clothing, same scale. Have the patient empty his bladder before weighing

2. Maintain an accurate intake and output record of fluids. Teach the patient and his family to record intake and output

3. Record stool number and consistency daily.  
Avoid prolonged use of laxatives or enemas

4. Monitor vital signs at least every four hours. An increase in vital signs can indicate dehydration, fluid volume excess, and loss

5. Monitor the level of consciousness of the patient to indicate sodium and water imbalances

6. Check other neurological signs such as muscle weakness and cramping, seizures, and headache

7. Record episodes of thirst to stop dehydration

8. Check the skin for elasticity and mucous membranes for moisture. To check mucous membranes for

moisture pull out the patient's lower lip and note moisture and thickness of secretions. A normal mucous membrane appears moist and glistening. Skin turgor can be checked by pinching skin over the clavicle, releasing it, and noting how long it takes to return to normal. Normal skin turgor produces an immediate return to the prepinched state

9. Check vein filling because flat neck veins are associated with sodium depletion; peripheral vein engorgement is associated with an increase in extra-cellular fluid

10. Check phonation. Hoarseness indicates extra-cellular fluid volume excess; hyperactive irrelevant speech may indicate potassium deficit

11. Check for signs of weakness and fatigue that can indicate deficits in potassium, sodium, and protein

12. Note facial appearance. A drawn facial expression with sunken eyes may indicate a fluid volume deficit. The patient may have puffy eyelids and fuller cheeks with excess extra-cellular fluid

13. Note changes in sensation such as numbness in extremities that may indicate a calcium deficiency

14. Check laboratory tests that measure hydration status--serum osmolality, serum sodium, blood urea nitrogen, hematocrit, and urine osmolality (Grant and Kubo 1975, pp. 1309-11, Metheney and Snively 1974).

Nursing measures to promote eating and hydration are listed below. These interventions were found to be very effective in reducing or alleviating these problems.

1. Give oral hygiene before and after meals. Sour balls and breath fresheners can help reduce unpleasant tastes and odors
2. Serve foods that the patient likes as attractively as possible. Permit choices of foods when possible
3. Assess any chewing and swallowing difficulties such as mouth lesions and denture problems. Order soft or toothless diet or other appropriate diet when possible. Non-tiring foods should also be taken into consideration
4. Provide pleasant environment free from unpleasant sights and odors
5. Minimize strong emotional crisis such as incidents that are irritating to the patient and delay unpleasant procedures sixty minutes before and after meals. Incidents that irritate patient should be noted on care plans
6. Place the patient in a comfortable position either sitting up in bed or in a chair when possible
7. Medications can be used to alleviate pain and nausea and promote food intake. Anti-emetics can be given for nausea. Corticosteroids and vitamins can increase

appetite and tranquilizers can be used to promote relaxation and decrease anxiety. Mood elevators can also help combat depression. Discretion should be used when giving opiates that the patient is not too drowsy to eat

8. The size of the food serving should be appropriate to the patient's appetite. The meal can be served in several courses or small frequent feedings can be given. Fresh fruit and high protein snacks can also be kept at the bedside to eat between meals. Cream, butter, and milk can be added to soups and gravies to increase protein

9. Allow sufficient time for eating. If the patient is fatigued, he may be fed to conserve strength to chew the food properly

10. The patient should rest after meals and not participate in strenuous activity in order to decrease chances of nausea and vomiting

11. Assess actual amount of food eaten and record amount of foods eaten on chart

12. Consult with a dietician about cultural and religious differences in diet and other problems that arise concerning changes in the diet

13. Encourage families to bring favorite foods from home when possible

14. Encourage companionship at mealtime if patient is not used to eating alone

15. Patients who have dysphagia should be instructed about aspiration of foods into the lungs

16. If the patient is having loose stools, raw fruits and vegetables, whole grain foods, coffee, tea, and alcohol should be avoided (Donovan and Pierce 1976, p. 145; Hickey 1967, p. 550; Metheney and Sniveley 1974, pp. 92-93).

When cancer patients are unable to receive adequate calories orally, intravenous feedings should be implemented. Shils (1972) stated that conventional parenteral feeding cannot improve the condition of an undernourished patient unless very large quantities of water are infused to furnish sufficient calories to permit utilization of administered amino acids. The chief goal of total parenteral nutrition is to maintain or promote a stabilized nutritional state. Its application is justified only when oral or tube feeding cannot be utilized and when conventional parenteral support can no longer provide nutritional needs of the patient (Shils 1972). In preliminary studies on disseminated cancer patients Dudrick (1971) found that anorexia, nausea, vomiting, and pain were reduced and that patients achieved positive nitrogen balance and gained weight in a parenteral hyperalimentation program. He emphasized that such therapy should be instituted "to prolong life and not merely to prolong death" (1971, p. 945).

The nurse plays a vital role in the success of hyperalimentation. Caution must be exercised so that drugs such as steroids, digitalis, or antibiotics are not added to the hyperalimentation fluid because of unknown interactions within the fluid or between each other. Electrolyte studies should be done daily in order to judge the amount of electrolyte that may need to be added to the solution (Grant 1969).

The nurse may assist the physician in inserting the subclavian catheter which is directed into the superior vena cave. Once inserted the catheter site must be kept free of infection. This can be done by cleansing the site with acetone, followed by a scrubbing of the area with tincture of iodine, applying an antibiotic ointment to the site and covering it with a sterile dressing every two to three days. The same person should dress the catheter site in order to observe changes in the skin, catheter, and catheter insertion site (Grant 1969).

The intravenous set should be changed at the same time the catheter site is cleansed or more frequently if needed to prevent infection. The solution should also be protected from contamination by adding solutions under the protection of a laminar air-flow hood. Other nursing

measures that should be carried out are daily weigh-ins, recording of intake and output, and fractional urines to detect glycosuria. The patient should also be encouraged to ambulate when possible to prevent phlebitis and cardio-pulmonary complications (Grant 1969).

Emotional considerations should be attended to by the nurse. Support of the patient and family through this difficult period is needed to help with financial problems, depression, fear of death, and loss of self-esteem. The nurse can listen to the needs of the patient and family and call on other members of the health team to assist in solving these difficulties (Grant 1969).

Effective nursing interventions to reduce problems of anemia and hemorrhage are summarized. The nurse should be knowledgeable about these interventions.

1. Assess complete blood count, hemoglobin, and hematocrit continually
2. Observe for reactions to blood transfusions and patient replacement
3. Avoid use of injections and use the smallest gauge possible, if injection is necessary
4. Caution the patient not to blow his nose or sneeze forcefully in order to prevent nasal bleeding

5. Check stools, urine, skin, sputum, vomitus, and nasal secretions for blood
6. Caution patients not to strain when having a bowel movement
7. Encourage patients to relax and rest to decrease bleeding
8. Monitor vital signs closely for signs of increased bleeding. Tachycardia may reflect cardiac irregularities and the physician should be notified
9. Encourage patients to reserve their energy for important activities (Bouchard and Owens 1976, Brunner 1975)

A schedule of activities can be worked out on a daily basis for the nursing staff and patient (Donovan and Pierce 1976). Nutritional problems in the disseminated cancer patient are varied and many. The nurse must assess the patient as an individual and the care plan must reflect his personal needs.

#### Elimination Difficulties

Patients with disseminated cancer often have urinary and bowel problems. These problems are frequently caused by therapies used to prevent further metastasis such as chemotherapy and irradiation. Chemotherapeutic agents such as the alkylating agents, antimetabolites,

plant alkaloids, and steroid therapy may all cause gastrointestinal disturbances. Mayer (1971) stated that radiation therapy administered to the intestinal tract may cause fibrosis, stenosis, necrosis, ulceration, fistula formation, and diarrhea.

Problems with bladder control and function in cancer patients result from

pelvic surgery and interference with the innervation of the bladder, invasion or compression of peripheral nerves, metastasis to the vertebrae with spinal compression, cordotomy for pain control and brain lesions (Donovan and Pierce 1976, p. 198).

Urinary incontinence is usually the direct result of stress incontinence, weakness, bed rest, and sedation. These are among the many reasons why incontinence becomes a nursing care problem.

Nursing goals should be aimed at creating eventual bladder continence, if possible. The first goal is for collaboration between the medical and nursing staff to investigate and find the causes of the condition. During the period of urinary frequency and incontinence the nursing staff should keep an accurate intake and output record. Hygiene is also a very important nursing function. The perineal area should be kept clean and dry to prevent excoriation. Observation for a vesicovaginal or rectal-vaginal fistula, especially, if the patient has received

radiation therapy to these areas, is important. A urinary catheter can be inserted if other measures fail. There is now a reluctance to insert an in-dwelling catheter, especially in cancer patients, due to the introduction of bacteria and opportunities for infection. Catheter care should be given at least twice daily and the use of aseptic technique is mandatory when in contact with the catheter. Fluids should be constantly used to maintain urinary output (Brunner and Suddarth 1975, Donovan and Pierce 1976).

Bladder training should be instituted when the patient's physical condition improves. Saxon (1962) described an excellent program to establish urinary continence. The nursing staff began the program by taking the patient to the toilet on a regular schedule. If problems developed and the patient could not void, the patient was urged to drink a glass of water and female patients had slight digital pressure applied to the meatus. Other measures included placing the patient's hands in water, pouring water over the perineum and listening to running water. Patients with weak musculature were helped to void by applying external pressure over the bladder with the patient leaning forward. Waterproof panties can be worn to help the patient feel safe against occasional

accidents. If the catheter must be reinserted, clamping the catheter two or three times daily helps the patient regain bladder tone. The catheter should be removed as soon as possible (Brunner 1975).

The patient who must remain in bed due to chronic illness such as disseminated cancer should have the bed protected with rubber sheeting. Disposable pads can also be used to help keep the bed linens dry. Both pads and sheets should be changed whenever wet or wrinkled to prevent skin breakdown. Constant nursing attention is needed with urinary and bowel incontinence to prevent infection and excoriation of the skin (Donovan and Pierce 1976).

Bowel incontinence, especially when accompanied with diarrhea, can cause much patient discomfort. Diarrhea is often seen in patients taking antibiotics and anti-metabolites. Prolonged diarrhea can also result in a potassium deficit and metabolic acidosis (Marino and LeBlanc 1975, Mayer 1971). Symptoms of potassium deficiency include muscle weakness with cramping, apathy, confusion, fatigue, anorexia, polyuria, and sudden hypotension. Metabolic acidosis produces deep rapid labored respirations, restlessness, headache, drowsiness, acetone odor to the breath, cherry-red lips, and abdominal pain (Dickens

1974). A history of the patient's personality, daily bowel patterns, and exposures to chemicals, drugs, and foods may lead to rapid solutions for this problem (Givens 1975).

The nurse should keep an accurate record of the consistency and frequency of the stools. By ascertaining the time and relationship to meals, pain or activity, and stool frequency, the nursing staff performs an important assessment.

The patient should be helped to regain bowel continence as soon as possible. Techniques that can be employed are "digital pressure (with fingers protected by toilet tissue or finger cot) to the side or front of the anus," and the application of gentle circular motion to the abdomen while the patient is on the toilet (Saxon 1962, p. 71). If the patient has diarrhea, initial intake should be limited to tea, toast, puddings, and custards. Opiates and antidiarrhetics can be used to reduce peristalsis. After each stool the rectal area should be cleansed, dried, and powdered. Mineral oil and A and D ointment can be used if the rectal area becomes irritated (Givens 1975). The patient should be observed for signs and symptoms of potassium deficiency and metabolic acidosis. Laboratory

tests should be closely monitored to detect these conditions before they become pronounced.

One of the most important and difficult nursing and medical problems in disseminated cancer is constipation. The patient may complain of "infrequency of bowel movements, difficulty in defecation, or unusually hard or small stools" (Sklar 1972, p. 82). The patient may also complain of headache, vertigo, tachycardia, anorexia, and oral taste especially in cases of prolonged constipation (Sklar 1972).

Constipation can result from many causes. The strange hospital environment, fear of noise, and odor caused by defecation may result in disruption of normal bowel habits. Atony can also be caused by malnutrition, cachexia, anemia, and opiates that decrease intestinal motility (Givens 1975). A history of laxative and enema abuse is also a contributing cause of constipation.

The nurse needs to assess the normal bowel patterns of the patient in order to establish when the patient is accustomed to having a bowel movement. Sklar (1972) recommended that a diet therapy be instituted to improve elimination. A bland diet is given to the patient with two servings of cooked vegetables and two servings of cooked fruit daily. The patient then consumes four ounces of

prune juice each morning and evening followed by a glass of water. Fluid intake is encouraged and should be at least two quarts a day. A standard time is usually established for the patient to have a bowel movement, usually after breakfast or the evening meal. If constipation continues to be a problem, glycerin suppositories, oil retention enemas, bulk-producing agents, and stool softeners may have to be used. If hemorrhoids or fissures complicate constipation, sitz baths, creams, and suppositories may help control these problems (Sklar 1972). Exercise may also aid in promoting normal elimination. The patient should be encouraged to exercise the abdominal muscles by doing situps when possible (Donovan and Pierce 1976).

The disseminated cancer patient, who requires regular dosages of narcotics may need a stool softener on a "prophylactic rather than therapeutic basis" (Donovan and Pierce 1976, p. 198). The nurse should remind the physician to order a stool softener when necessary.

In the terminal stages of cancer the primary care of ostomies may again become the responsibility of the nursing staff. The patient, however, should be encouraged to care for himself as much as possible in order to maintain his actual independence, and sense of self-worth.

Colostomies may have to be irrigated daily due to stress of disseminated cancer and treatment such as chemotherapy and irradiation that affect the gastrointestinal motility. The nursing staff needs to constantly monitor the drainage and change drainage bags when necessary. Any change in consistency of color and odor of the stool or urine should be brought to the attention of the physician (Bouchard and Owens 1976).

Elimination problems are a constant nursing responsibility when dealing with advanced cancer patients. Much patience and encouragement must be given to the patient on a daily basis in an effort to alleviate this problem.

#### Skin Care Problems

The patient with disseminated cancer requires excellent skin care in order to avoid skin breakdown. The effects of radiation therapy on the skin must also be evaluated and brought to the attention of the physician by the nurse.

Decubitus ulcers are usually "defined as ulcerations produced by prolonged pressure in a patient confined to bed for a long period of time" (Merlino 1969, p. 119). Moolten (1972) stated that pressure precipitates the initial break in the skin but the "rate of development and alternate

severity depend largely on secondary factors" (p. 430). Decubiti occur mainly in the immobilized patients regardless of the diagnosis. Merlino (1969) reported that 75 percent of all decubiti occur over the sacrum, greater trochanters, ischial trochanters, ischael tuberosities; the remainder are found over bony prominences such as knees, tibial crests, malleoli, heels, anterior superior liliac spines, spinous processes, and elbows.

Moolten (1972) studied fifty patients in an eighteen-month period who developed bedsores during their hospitalization. During this study skin breakdown was found to be closely related to weight loss, low serum albumin level, and malnutrition. The range of development and depth of the bedsore was also directly related to the tissue vitality, defined as the ability to "undergo healing and resist infection" and the serum albumin level which reflect protein deficiency (Moolten 1972, p. 432). Other factors found by Merlin (1969) that caused ischemia and eventual necrosis are friction, edema, moisture, and shearing force (when the head of the bed is raised over thirty degrees) and spasticity.

Berecek (1975) added other contributing factors such as heat in the form of fever as a cause of pressure sores. Fever increased "cellular metabolic deficiency by

increasing the metabolic rate of the body" (Berecek 1975, p. 164). Poor hygiene also contributes to bacterial contamination of any break in the skin. Poor nutrition reduces subcutaneous tissue and muscle bulk. Anemia and mobility are also mentioned as contributing causes in the development of decubitus ulcers. Berecek cited a study that was carried out on geriatric patients to discover the relationship between spontaneous body movements and the formation of decubiti. Exton, Smith, and Sherwin found that most patients made spontaneous movements that brought about change in position during their sleep. Patients who had a high score in movement did not develop pressure sores. Those patients who moved very little for a consistent amount of nights developed decubiti.

It is estimated that a decubitus ulcer can cost the patient \$5,000 for additional medical care during his hospitalization (Merlino 1969). Therefore, economic necessity as well as patient discomfort make the prevention and early treatment of skin breakdown a necessary nursing responsibility with the disseminated cancer patient.

Constant nursing attention is needed to prevent skin breakdown. Nursing interventions include turning the patient at least every two hours, positioning the patient in proper alignment with pillows, avoiding elevating the

head of the bed more than thirty degrees and keeping the skin clean and dry. A non-alcoholic skin lotion should be used to massage bony prominences. Other preventive measures include the maintenance of sheets in a clean, soft, dry smooth state, strict avoidance of rubber rings or "donuts," and frequent inspection of the skin by all health personnel (Merlino 1969).

Mechanical devices are available to aid the registered nurse in her efforts to prevent decubitus ulcers. The alternating pressure mattress is an example of such a device. The mattress equalizes the pressure over the entire body with air currents and is operated with a motor. In a study conducted by Lilla and his associates (1975) ten patients with spinal cord injuries were randomly selected to examine the benefits of floatation mattresses in preventing skin breakdown. Three types of mattresses were used: (1) a regular inner-spring hospital mattress, (2) a rib-constructed camping mattress filled with water, (3) a box mattress filled with water, (4) a box constructed camping mattress filled with water and air, and (5) a hospital water bed. The results revealed that the partially filled camping mattress with air and water was the best in reducing pressure over body prominences. A disadvantage in using this device is that a plastic mattress can cause

patient discomfort due to diaphoresis caused by excess body heat and moisture. The circoelectric bed is another nursing aid utilized to prevent skin breakdown. The patient can be rotated in a full circle or from front to back with ease. The Stryker frame is also used in many hospitals. The patient can be rotated from front to back with a mattress support placed over the patient as he is turned. The Stryker frame is often used with the alternating-pressure mattress. Moolten stated "the patient is doubly protected against bedsores and nursing efforts are simplified, particularly wound cleansing and bathing (1972, p. 435).

A sheepskin is utilized to prevent bedsores in many institutions. The advantages of this device are

their softness and resilience, which results in an even distribution of pressure, their freedom from wrinkles and friction, and their spongy, airy consistency, which permits them to absorb and dissipate moisture (Merlino 1960, p. 120).

The nurse and other personnel must remember that nothing should be placed between the patient's skin and the sheepskin since the advantage of this device would be defeated.

Another nursing aid designed to prevent friction and to protect bony prominences is an antiseptic plastic spray dressing. The dressing is placed on susceptible areas

in layers and changed daily (Merlino 1969). Other devices applied directly to the skin such as doughnuts and cotton wool padding are strongly discouraged by Moolten (1972) since even crumbs and wrinkled bed linens can cause skin breakdown.

Topical hyperbaric oxygen therapy for decubitus ulcers is a relatively new form of therapy. Intermittent oxygen exposure is applied to the area of skin breakdown for a total of four to eight hours daily. A "bootlike" device is used on the feet with a "controlled sealing pressure" (Torelli 1973, p. 496). The procedure itself can be carried out by a registered nurse.

The patient is instructed to lie supine or prone depending on the site of the pressure area. Before and after application of localized hyperbaric oxygen therapy, the nurse carefully examines the skin surface for signs of erythema, irritation, excoriation or infection. Before attaching the cup device, the nurse prepares the skin area surrounding the decubitus with tincture of benzoin. This protects the epithelial tissue and aids in maintaining a closed seal, which will prevent the escape of oxygen and loss of pressure (Torelli 1973, p. 496).

The bootlike device is applied, and the device is filled with oxygen until 22 millimeters Hg. is maintained. The patient is placed in a Fowler's position and supported with pillows along the spine. Between oxygen treatments the lesions are dressed with sterile gauze sponges soaked with a solution of normal saline and glacial acetic acid

(Torelli 1973). No other drugs are applied during the treatment.

Several devices have been developed by registered nurses to aid in the care of patients with decubiti. An example of a device constructed by a registered nurse is foam leg supports. These can be used under both legs or under one arm and one leg.

It elevates the extremity to alleviate pressure on the heel or elbow while allowing air to circulate under it. At the same time, it keeps the limb in good alignment by keeping it in a stable comfortable position (Yentzer 1975, p. 624).

The screen box also developed by a registered nurse is another means of exposing the decubitus ulcer to sunlight and at the same time preventing infection. A simple box, gauze, sponge padding, and adhesive tape are the only supplies needed to construct this box. Air and sunlight will penetrate the fine gauze screen when the box is in proper position. Because the gauze does not touch the patient's skin, it prevents friction and further skin breakdown (Griffin 1975).

Maintenance of the patient's nutritional status is very important in preventing decubiti. Moolton (1972) recommended that the patient be placed on a high carbohydrate, high protein low fat diet, and supplemented with an anabolic steroid, either an estrogen-androgen combination

or synthetic anabolic steroid. He also recommended six smaller feedings be given daily instead of three large meals. Merlino (1969) preferred a high protein diet supplemented with vitamins, protein, and iron preparations. He felt that the major goals are to maintain positive nitrogen balance and a hemoglobin level of at least twelve grams. Suggestions for food supplements that provide protein and calcium are skim milk, cottage cheese, or skim milk powder, all of which can be added to other foods (Moolten 1972). The nurse should also monitor the hemoglobin, hemacrit, and blood sugar levels frequently.

A problem facing many cancer patients with a predisposition for bedsores is a lack of appetite. Many cancer patients have an aversion to meat (DeWys and Walters 1975). When these patients exhibit a lack of appetite all nursing interventions discussed under nutritional problems in this study should be used. In addition pyridoxine, thyroid extract, and insulin therapy can be used to improve appetite with good results (Moolten 1972).

The patient should also be encouraged to be as active as possible. Twice daily massage of bony prominences and active and passive exercises by the nursing staff can promote muscular, skin, and vascular tone (Merlin 1969).

Cleansing of a decubiti ulcer is an important nursing intervention. The ulcer should be cleansed daily with an antiseptic solution, such as hydrogen peroxide. After the cleansing, a variety of treatments are utilized. These include local debriding agents and antibiotics, tincture of benzoin, antiseptic sprays, exposure to air, light, and daily whirlpool baths, streptomycin-egg mixtures, and granulated sugar mixtures (Merlino 1969).

Protecting the ulcer from infection is another important nursing responsibility. The ulcer should be observed continually for signs of infection. One recommended treatment to prevent infection is the use of sponges soaked in normal saline and glacial acetic acid. The ulcer is cleansed and then dressed with fixed sponges at least twice daily (Bouchard and Owens 1976). Greene (1975) cited success with the application of karaya powder to the ulcer. She recommended a culture of infected areas bi-weekly, measurement of lesions for a comparison in healing and the encouragement of a high protein diet to rebuild tissue.

Surgical treatment of the decubitus ulcer may be necessary to remove necrotic tissue. Surgical therapy is used only when other forms of treatment are unsuccessful and the ulcer is large. Therapy may include "radical excision of the skin and underlying bone and full

thickness-skin graft closure" (Merlino 1969, p. 123). Skin breakdown may also be caused by other forms of treatment for cancer.

Early reactions to radiation therapy include erythema caused by the release of histamine from irradiated cells. Desquamation follows the erythema which is caused by destruction of the rapidly multiplying basal columnar cells of the germinal layer of the epidermis (Bouchard and Owens 1976). Finally pigmentation results from increase melanin formation.

Late reactions occur usually months to years following exposure. Atrophy, which is caused by thinning of the epidermis layer, can occur. Telangiectasis, depigmentation, and subcutaneous fibrosis can develop. Ulceration and cases of skin cancer have also been reported by patients who have undergone irradiation (Bouchard and Owens 1976).

The nurse should look for immediate signs of skin irritation following irradiation. If erythema does occur, the physician will order a moisturizing agent. The patient should be instructed how and when to apply the medication to the skin. The nurse should also caution the patient to avoid extreme temperatures near the irradiated site and not to wear tight clothing that would constrict the area.

Strong soaps should not be used and the patient should be instructed to lightly cleanse the area with a mild soap, rinse it thoroughly and pat it dry (Bouchard and Owens 1976, Brunner and Suddarth 1975).

Good hygienic care of the patient and the control of odors are synonymous nursing care functions when caring for the disseminated cancer patient. Bouchard and Owens (1976) suggested irrigations, douches, frequent baths, changing soiled dressings, and the use of spray deodorants to help alleviate odors.

Surgery that necessitates the formation of a stoma may cause hygienic and odor problems for the cancer patient. For example, the patient with a colostomy should be instructed how to cleanse and care for his stoma before being discharged from the hospital. The patient also needs knowledge about gas-forming foods, cleansing and changing colostomy bags, and the use of odor-absorbing tablets such as chlorophyll preparations (Bouchard and Owens 1976). Patient education concerning hygiene and odor control is a primary nursing responsibility in the care of the disseminated cancer patient.

### Inactivity

Nurses know that "body systems function most efficiently during activity and tend to function abnormally

when a person is required to be inactive" (Brower and Hicks 1972, p. 1250). Cumulative effects of this deterioration can prolong and compound a patient's basic illness. In too many cases the physical, emotional, and financial consequences of bed rest are more serious than the original illness or injury.

Immobilization can cause many serious complications for the disseminated cancer patient. Common physical complications include decubiti, phlebitis, orthostatic hypotension, pneumonia, oxygen-carbon dioxide imbalance, muscle atrophy, constipation, anorexia, and renal calculi. Psychological reactions such as anger, frustration, apathy, and a sense of worthlessness also occur (Young 1975). Nursing interventions must be instituted from the day of admission to prevent these serious consequences.

Brower and Hicks (1972) emphasized that in any exercise program instituted by the nursing staff that attention be given to the evaluation of the patient's total health status and regimen; then, criteria be set for the type or types of exercise utilized and finally assessment of available resources for exercise be instituted. In a study on ten patients who sustained traumatic fractures and were immobilized for two weeks, two tools were designed to show the affects of planned exercise. The first tool was

an "exercise sheet" that the residents used to specify which exercises were contraindicated for the patient. The nurses used this sheet to document exercises performed by the patient and for the evaluation of the patient's improvement. The second tool was an assessment sheet which would include the patient's health status before and after the exercise program concluded. The assessment sheet included categories such as appetite and four statements that evaluated the patient's appetite on a scale of one to four. Improvement in the patient's condition was shown by increases in the points. The nurses participating in the exercise program visited the patient six times during the two-week period. On each day the patient conducted the exercises designed to help him. Since the nurses evaluated the patient's progress, revisions in the exercises could be made. The patients were given careful instructions on how many times a day to perform the exercises and not to perform them more than ten times each exercise period. Most of the patients in this study showed steady progress and none of them developed complications (Young 1975).

In another study Muller and his associates (1970) discovered that the most effective method for increasing muscle strength was a daily schedule of five maximal isometric contractions, each lasting six seconds, with

two-minute rest periods between each contractions. They also found that one isometric contraction performed daily at half the maximum strength was enough to prevent loss of muscle strength in the immobilized muscle.

Griffen (1971) wrote that a nurse should not neglect an exercise program simply because there is not enough staff on the unit. A group exercise program can be instituted and a demonstration of exercises such as deep breathing, range of motion, and stretching. The patients can then perform the exercises and be evaluated for signs of improvement.

The nursing staff should encourage the patient to move about in bed as much as possible. The program should include the following items whether the nurse or patient performs the exercises: (1) do the exercises in the same sequence each time, (2) do the exercises gently, (3) never force any part of the body to move to a point of pain, (4) work slowly and carry out each exercise in the same number of times, (5) remember there are two range of motions--the patient's range and full range of motion, (6) encourage the patient and family to maintain range of motion by teaching the exercise program to them when they are ready to learn, (7) be sure the patient understands how to do the exercises, does the exercise as many times as he

is supposed to, and asks questions to prevent misunderstandings (Cireca et al. 1973). A record should be kept on the patient's range of motion, performance limitations, and daily improvement (Keely 1966).

The nurse has a responsibility to help the patient achieve maximum rehabilitation during hospitalization. If the nurse fails to assume this responsibility, prolonged hospitalization with complications may result.

#### Emotional Aspects of Disseminated Cancer

Disseminated cancer is considered a chronic illness which leads in many instances to emotional conflicts, especially when radical surgery, irradiation, or chemotherapy has brought about a change in body image. Leonard (1972) stated that nurses must shift their focus of attention in order to better understand body image implications for those with chronic illness. It is imperative that nurses be aware of changes that chronic illness imposes on the patient, family, their interaction together, and the relationship between the patient and nurse. Chronic illness and concomitant body image changes call for an honest evaluation by team members of their feelings regarding the patient and his bodily changes. Only then can they help the patient accept himself as he is and give him the highest quality of nursing care possible. Murray (1972)

believed that if the patient feels that he has been cheated in life, then he will fear death and feel disgust about changes in body functions. "Despair and self-disgust are enhanced by society's emphasis on youth, beauty, strength, and success" (Murray 1972, p. 78).

Gallagher (1972) stated there are two basic components to consider when making intermediate and long-range nursing goals. The first component is that there is no "typical" response to a body image change such as a colostomy. Secondly, the individual will resist the reality of mutilation and think of his body "in terms of his previous intact body image" (Gallagher 1972, p. 670). Gallagher also feels that the nursing team must assist the patient to slowly move toward an acceptable altered concept.

When a disseminated cancer patient has undergone mutilating surgery, the skill of the whole nursing team must be employed to help him through this emotional period. This can be done by allowing the patient to ventilate his feelings at every opportunity. The nursing staff can emphasize what the patient has left, not what he has lost (Gallagher 1972). The patient must also be given an opportunity to mourn the loss of a body part and not be made to feel guilty because he displays his grief. The

incurable cancer patient has not only lost a member of his body but "has suffered an amputation of the future" (Brennan 1970, p. 99).

The terminal cancer patient in the general hospital setting often finds cues that tell him death is near. The location of his room may be moved closer to the nurse's station, or he may be moved to a private room even though he enjoys the companionship of a roommate (Mervyn 1971).

Nurses, physicians, and family all tend to withdraw physically and psychologically when the patient is judged to be dying (Burns 1974). The medical team in many instances limits the time spent with the patient as does the nursing staff. When the nurse enters the room she may avoid eye contact and touching the patient. The patient may have to wait longer to have his light answered or for pain medication. The family often behaves as if the patient's illness is not serious.

Often a situation called 'pre-mortum burial' is established in which the patient is kept heavily sedated; the windows covered; the room dark, and all conversation is carried on in a whisper (Burns 1974, p. 1).

Patients often suffer isolation that stems from loss of control over their lives. Some families in an effort to reduce feelings of guilt and loss "move too close to the patient and try to take over, telling him and the doctor

what to do and not to do" (Schnaper 1969, p. 751). Brennan stated that it is

. . . no wonder then, that hapless apathy, anxious suspicion, burning hostility, fawning subservience, wary intrigue, susceptibility to rumor, gullibility to charlatans, resort to drug overuse, and return to superstition are so much with us in cancer (Brennan 1970, p. 100).

Brennan makes a strong plea to help the patient live until he dies.

There are many reasons terminally-ill cancer patients are subjected to these social barriers. First, our society focuses on the young and healthy individual who is a contributing member. The dying patient reminds many people that life is not endless. Second, general hospitals are committed to restoring health and life, not dealing with death. One only has to tour a hospital to see all the sophisticated equipment to maintain and prolong life. Nursing education contributes to nonsupportive care of the dying patient. Additional emphasis should be placed on the student's learning, about their attitudes toward death, and how to be a confident listener (Mervyn 1971).

Cancer patients experience many fears including a basic death anxiety. This anxiety is derived from many sources that stem from guilt. In one study of terminally-ill cancer patients, 93 percent experienced guilt. In another

study forty out of sixty patients felt that illness was their fault (Schnaper 1969). Other fears that cancer patients have are fear of the unknown and fear of loss of identity (Hertzberg 1972). Nurses must be aware of both the patient's and families' feelings concerning the physical and emotional care during the dying process.

The nurse must first establish a trusting relationship with the patient and his family. The patient and family must feel free to express emotions and have questions answered honestly.

Behavior modification has been tried with patients who have problems facing death. Patients do not alter their ways of coping when dying, but "merely enlarge on behavior that has been effective for them in the past" (Whitman and Lukes 1975, p. 98). The first goal of behavior modification is to define major problems. Basic problems are stated in terms which allow progress to be measured and establish whether the therapy has been successful. Progress is rewarded with verbal reinforcement and all undesirable behaviors are disregarded (Whitman and Lukes 1975). The second goal is for the patient to have honest, complete, and accurate information about diagnosis, prognosis, and estimated life span in order to make important, realistic short- and long-range decisions (Whitman and Lukes 1975).

It is unrealistic to expect a patient to behave in a certain manner if vital information is kept from him.

The third goal is that the family must be told about the patient's health status and be involved in planning the patient's care. To be effective, behavior modification must include the medical and nursing staff as well as the family. When effective the program can be continued at home by the family (Whitman and Lukes 1975).

Klagburn (1970) cited an experiment in self-care that enabled terminal cancer patients to once again feel like they were needed and worthwhile. Many of the cancer patients on a hospital unit stayed in bed most of the day. But there were no medical reasons for these patients to stay in bed. The nursing staff began to encourage the patients to leave the unit on passes and to participate in sewing and art work. The patients were encouraged to make their own beds and get their own ice water. Soon some patients began caring for other patient's needs such as writing letters and taking ice water to the bedside. A communal dining room was instituted to provide an area for socialization and patients began organizing evening activities such as slide shows. The nurses on the unit found that there was an increased will to live and the rate

of turnover in staff on the unit was greatly reduced (Klagburn 1970).

The nurses must be sensitive and be able to give of themselves when necessary. An example of this is an experience of a nurse with a dying patient. An old woman called a nurse to her room and stated, "I am dying. I feel it is the end, isn't it?" The nurse looked at her and said quietly, "yes." The nurse sat down and took the old woman's hand. "I don't want to die alone," the woman said. "I'll stay with you. You won't be alone," the nurse answered. The woman said, "That's good." And she died in ten minutes with the nurse holding her hand (Klagburn 1970, p. 1240). It would be wonderful if all nurses could have the insight, devotion, and compassion this nurse showed in this situation.

The nurse should draw upon all of the members of the health team in her efforts to support the patient and his family during the terminal stages of illness. The clergy, social worker, psychiatrist, and many others can use their expertise to make this period more comfortable for the patient and his family. The nurse should never forget that she is "in the key position to make or break the morale of the patient in the terminal state of his illness" (Bouchard and Owens 1976, p. 293).

Summary

Chapter II has presented a review of the literature concerning the major symptoms of disseminated cancer and common nursing interventions used to cope with and reduce these symptoms.

Medical treatments used to treat cancer metastasis, such as radical surgery, irradiation, and chemotherapy, may produce unpleasant symptoms. These symptoms often complicate the short- and long-term nursing goals utilized in the care of cancer patients. Nurses have to be aware of the causes and effects of disseminated cancer and the common interventions that reduce these symptoms. The application of this knowledge to alleviate symptomatology will help the patient to live relatively independent of problems, anxieties, and fears before death.

## CHAPTER III

### PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

This study was a non-experimental study conducted for the purpose of determining the nurse's knowledge of patient care for the patient with disseminated cancer. This chapter discusses the setting, population, and techniques used in collecting the data.

#### Setting

The setting for this study was an oncology unit and three medical-surgical units in a 540-bed proprietary hospital located in a metropolitan city in the Southwest. The oncology unit had a capacity of twenty-eight beds, and each medical-surgical unit had a thirty-bed capacity. There are ten registered nurses working on the oncology unit, and each medical-surgical unit had eight to ten registered nurses practicing on the units at the time of the study. Each patient interviewed in the study was in a semi-private or private room since there were no rooms with more than two patients on the oncology unit.

#### Population

There were two target populations in this study. The first sample population included thirty hospitalized

patients with a diagnosis of disseminated cancer. The second target population consisted of thirty registered nurses currently giving direct in-patient care to cancer patients and who were currently licensed in the State of Texas.

#### Development of the Tools

Tools were designed to determine symptoms of disseminated cancer identified by patients and registered nurses and to test the nurse's knowledge of interventions used to reduce symptoms.

The first tool used in this study included a demographic data sheet and an interview guide, tool A (see appendix B). The interview guide was developed so that the patient's symptoms could be listed by priority by the researcher.

The second tool included a demographic data sheet, a questionnaire on symptoms, tool B, and a questionnaire on interventions, tool C (see appendix C). The first questionnaire, tool B, requested that the registered nurse list the symptoms of disseminated cancer in order of priority. The second questionnaire, tool C, required the nurses to list nursing interventions used to reduce or alleviate the five most common symptoms listed by the thirty disseminated

cancer patients. These tools were submitted to a panel of judges to establish content validity. "Someone must judge if the content of the instruments is appropriate, and in this case a jury opinion is better than a single individual" (Treece and Treece 1973, p. 183).

#### Panel of Judges

A panel of judges was selected for their expertise in the area of oncology. The panel members included:

1. R.N., M.S.--Clinical Specialist in Oncology for a hospital in the Dallas area
2. R.N., M.S.--Assistant Professor of Nursing at a large university in the Dallas area
3. R.N., B.S.--Head Nurse on Oncology Unit in a hospital in the Dallas area

The panel members were given an explanation of the study, and the problem, purposes, and hypotheses. They were then asked to review the patient demographic sheet and the interview guide for pertinence, clarity and conciseness.

Suggestions for improvements, eliminations, and additions were also requested. It was decided that a two-thirds agreement of the judges would be acceptable. The judges suggested adding a diagnosis, the stage of illness (diagnostic, recurrent, supportive), and whether a member

of the family had or has cancer to the demographic sheet. No suggestions were made for improvement on the interview guide. All three judges stated the tool had pertinence, clarity, and conciseness (see appendix B).

Because the second tool for the nurses could not be formulated until the data had been collected from the patients, it was submitted to a new panel of judges. Because of an extremely differing opinion by one member of the original panel, it was decided to add a clinical specialist in oncology to get a second expert opinion on the validity of the questionnaire. Another panel member who had experience in questionnaire construction was also added to the panel. The following persons served on the second panel:

1. R.N., M.S.--Assistant Professor of Nursing at a large university in the Fort Worth area
2. M.A., Ph.D.--Division Head of Social Sciences at a small college in the Dallas area
3. R.N., M.S.--Clinical Specialist in Oncology for a hospital in the Dallas area
4. R.N., M.S.--Assistant Professor of Nursing at a large university in the Dallas area

The panel of judges was given a description of the study and the problem, purposes, and hypotheses. They were then asked to review the second tool for pertinence, clarity

and conciseness. Suggestions for improvements and additions to the tool were also requested (see appendix C). It was arbitrarily decided that a three-fourths agreement by the panel was acceptable.

The responses from the judges included a recommendation that the length of time as a professional nurse be added to the demographic sheet. All members felt that the demographic data sheet was acceptable. The questionnaires on symptoms and interventions were acceptable to three judges on the panel.

Pretests were conducted with both tools to gain a working knowledge of the tools, to determine if the data could be collected practically, and to be sure directions and explanations were clear and complete.

#### The Pretest

Five patients were selected by convenience sampling to participate in the first pretest. The patients were hospitalized on an oncology unit in a 540-bed hospital in a large metropolitan city in the State of Texas. All five patients had a diagnosis of disseminated cancer and were in various stages of their illness. The information for the demographic sheet was obtained from the patient's chart. Each patient was asked to sign the Texas Woman's Human Rights' Form B after a complete explanation of the

project was given (see appendix D). This was witnessed by a family member or staff nurse. The patient was then asked to list the current symptoms of his illness. Following this, the patient was requested to list symptoms that he was currently experiencing in order of priority. The researcher wrote the symptoms on the interview guide.

The second pretest was conducted with three registered nurses, currently licensed in Texas and caring for disseminated cancer patients. They were selected from a medical-surgical unit in a 540-bed hospital in a large metropolitan city in the State of Texas. A specific unit was chosen so that these same registered nurses would not participate in the study again. Each nurse read the instructions that accompanied the questionnaires, signed the Texas Woman's University Human Rights' Form B, and proceeded to answer the questionnaires within ten minutes. The nurses stated they had no difficulty with the instructions or with completing the questionnaires.

#### Selection of the Population

The selection of the thirty hospitalized patients with disseminated cancer was done on a convenience basis. All the patients were hospitalized on an oncology unit in a large hospital in a metropolitan area in the State of Texas.

The final sample consisted of thirty disseminated cancer patients hospitalized on an oncology unit.

Also included in the study were thirty registered nurses who practiced on an oncology unit or general medical-surgical units in a large metropolitan area in the State of Texas. The medical-surgical units chosen consisted of disseminated cancer patients with less frequency than the oncology unit. The nurses were selected on a convenience basis.

#### Method of Data Collection

Methods used for the collection of data in this study were the interview and the questionnaire approach. An interview guide was used to collect data from thirty patients with the diagnosis of disseminated cancer patients hospitalized on an oncology unit. Demographic information was obtained from the patient's chart. The patient and family, if present, were given a written and verbal explanation of the purposes of the study by the researcher. After the patient or family member signed the Texas Woman's University Human Rights' Form B, the patient was requested to prioritize the symptoms of his illness orally. These symptoms were then recorded by the researcher. Each questionnaire was completed within fifteen to thirty minutes, depending upon the condition of the patient. The

data collecting period extended from October 15, 1976 to December 3, 1976.

The first questionnaire that was completed by the nurses asked them to list the symptoms of disseminated cancer by priority. The second questionnaire was designed by tabulating the results of the interview guide the patients completed and identifying the five most common symptoms listed by the patients. The nurses were asked to list interventions they used to reduce or alleviate the five most common symptoms listed by the cancer patients.

In collecting data from the thirty registered nurses, it was decided by the hospital administration that the head nurse on each unit should be responsible for circulating and administering the questionnaires to the nurses so that hospital routine would not be disturbed. It was also felt that a better return of the questionnaires could be prompted by the head nurses. A conference was held with each head nurse and the purposes of the study were explained. The questionnaires were distributed to the nurses during team conferences and before unit reports. The head nurses were asked to have the questionnaires completed in one session and without collaboration among the nurses. The researcher was present when possible at the conferences. Each nurse was able to complete the questionnaires within fifteen

minutes. When the researcher was present, the questionnaires were collected immediately. The rest of the questionnaires were returned by the head nurse in a folder to the researcher at the end of one week. This enabled the head nurses to ask nurses who were ill, on vacation, or working different shifts to complete the questionnaires. The data collecting period extended from March 26, 1977 to April 19, 1977. Thirty-three questionnaires were returned. Three questionnaires were deleted because two nurses were not registered in Texas, and one questionnaire was returned with a portion of the tool missing.

#### Summary

This chapter presented the procedures used in collecting data in order to meet the purposes of the study. The data were collected using the interview and questionnaire methods.

## CHAPTER IV

### ANALYSIS OF DATA

This study was concerned with determining the five most common symptoms of disseminated cancer as identified by patients and registered nurses in the hospital setting. The nurse's knowledge of interventions utilized to decrease patient care problems of the disseminated cancer patient was also determined. The study further proposed to identify nursing interventions that are used by registered nurses to decrease the five most common symptoms identified by patients with disseminated cancer and to determine the relationship between the nurse's knowledge of interventions and the length of the nurse's professional experience.

#### Description of the Sample Population

The first sample presented in this study consisted of thirty patients with a diagnosis of disseminated cancer. These patients were hospitalized on an oncology unit in a large metropolitan city in the State of Texas.

In Table 1 the race and sex of the patients interviewed are presented. Of the thirty patients 43.33 percent were white females, 3.33 percent were black females, 46.67 percent were white males, and 6.67 percent were black males.

As the table indicates the largest percentage of patients interviewed were white males.

TABLE 1  
SEX AND RACE OF DISSEMINATED CANCER PATIENTS

Sex and Race	Number in Each Group	Percent of Total
White Female	13	43.33
Black Female	1	3.33
White Male	14	46.67
Black Male	<u>2</u>	<u>6.67</u>
Total	30	100.00

Table 2 presents the distribution of the patients by age group. Of the thirty patients, four were in the age group of twenty-four to forty-five, seven were in the age group of forty-eight to sixty years, and nineteen were in the sixty-one to ninety-four age group. The mean age was sixty-three years, the youngest was twenty-four, and the oldest ninety-four.

Table 3 depicts the marital status of the thirty disseminated cancer patients. Of these patients 66.67 percent were married, 3.33 percent were single, 20.00 percent were widowed, and 10.00 percent were divorced.

TABLE 2

## DISTRIBUTION OF PATIENTS BY AGE GROUPS

Age Group in Years	Number in Each Group	Percent of Total
24 - 45	4	13.33
48 - 60	7	23.33
61 - 94	<u>19</u>	<u>63.33</u>
Total	30	100.00

TABLE 3

## MARITAL STATUS OF DISSEMINATED CANCER PATIENTS

Marital Status	Number in Each Group	Percent of Total
Married	28	66.67
Single	1	3.33
Widowed	6	20.00
Divorced	<u>3</u>	<u>10.00</u>
Total	30	100.00

Table 4 presents the occupational status of the thirty patients interviewed. Of these patients 26.67 percent were homemakers, 36.67 percent were retired, and 36.67 were actively employed at the time of their illness.

The next set of data shows the percent of patients with metastasis to one or more sites. The patients with

TABLE 4

OCCUPATIONAL STATUS OF DISSEMINATED  
CANCER PATIENTS

Occupation	Number in Each Group	Percent of Total
Homemaker	8	26.67
Retired	11	36.67
Actively employed	<u>11</u>	<u>36.67</u>
Total	30	100.00

generalized metastasis are also listed in Table 5. Of these patients 56.67 percent had metastasis to one or more sites and 43.33 percent had generalized metastasis of their disease.

TABLE 5

## SITES OF METASTASIS OF CANCER

Site of Cancer	Number in Each Group	Percent of Total
One or more sites	17	56.67
Generalized	<u>13</u>	<u>43.33</u>
Total	30	100.00

The stage of cancer was described as diagnostic, recurrent, and supportive or terminal in this study. The next table shows that 20.00 percent were in the diagnostic

stage of illness, 63.33 percent were in the recurrent stage, and 16.67 percent were in the supportive or terminal stage of their illness.

TABLE 6  
DISTRIBUTION OF STAGE OF CANCER

Stage of Cancer	Number in Each Group	Percent of Total
Diagnostic	6	20.00
Recurrent	19	63.33
Supportive	<u>5</u>	<u>16.67</u>
Total	30	100.00

Family history of cancer is an important item to include when studying patients with a diagnosis of disseminated cancer. Table 7 depicts the percentage found in this study. Of these patients 46.67 percent had a family history of cancer, and 53.33 percent denied a family history of cancer.

Questions seven and eight on the patient's demographic sheet asked whether the patient was taking chemotherapy or radiation therapy at present. This could have bearing on the symptoms these patients listed. Table 8 shows that seven patients, or 23.33 percent, were taking radiation therapy, and 76.67 percent of the patients were

not. No patients were currently taking chemotherapy at the time of the study.

TABLE 7

## DISTRIBUTION OF FAMILY HISTORY OF CANCER

History of Cancer in Family	Number in Each Group	Percent of Total
Yes	14	46.67
No	<u>16</u>	<u>53.33</u>
Total	30	100.00

TABLE 8

## DISTRIBUTION OF PATIENTS UNDER RADIATION TREATMENT FOR METASTASIS

Response	Number in Each Group	Percent of Total
Yes	7	23.33
No	<u>23</u>	<u>76.67</u>
Total	30	100.00

The second sample consisted of thirty registered nurses who practiced nursing on an oncology or medical-surgical unit. The hospital was located in a metropolitan city in the State of Texas.

All of the nurses in this study were female. Twenty of the registered nurses were in the age range of twenty to twenty-nine, six in the range of thirty to thirty-nine, and four in the range of forty-two to fifty-four. The mean age was 29.36. Table 9 displays this age range.

TABLE 9  
DISTRIBUTION OF THE NURSES BY AGE GROUP

Age Group in Years	Number in Each Group	Percent of Total
20 - 29	20	66.67
30 - 39	6	20.00
42 - 54	<u>4</u>	<u>13.33</u>
Total	30	100.00

The next part of the demographic sheet included the category of the nurse's race. Table 10 reveals that twenty-four nurses, 80 percent, listed their race as white, and six, 20 percent, listed their race as black.

The year of first licensure was placed on the demographic sheet in order to assess the importance of length of professional experience. The mean was 5.13 years. Table 11 shows the number of years since first licensure, the frequency and the percent of nurses in each category.

TABLE 10

## DISTRIBUTION OF NURSES BY RACE

Race	Number in Each Group	Percent of Total
White	24	80.00
Black	<u>6</u>	<u>20.00</u>
Total	30	100.00

TABLE 11

## NUMBER OF YEARS SINCE FIRST LICENSURE

Number of Years	Number of R.N.'s	Percent of Total
1 - 5	22	73.33
6 - 8	4	13.33
11 - 15	<u>4</u>	<u>13.33</u>
Total	30	100.00

The nurses were then asked to check the highest degree held. Table 12 summarizes the type of nursing educational program the nurses attended and the degree status of the nurse. Of these nurses 23.33 percent held an associate degree, 13.33 percent a diploma, and 63.33 percent held a baccalaureate degree in nursing.

The next group of data depicts the shift on which the thirty nurses practice nursing. Of these nurses 46.67

TABLE 12

DISTRIBUTION OF THE NURSES BY  
HIGHEST DEGREE HELD

Type of Program	Number in Each Group	Percent of Total
Associate Degree	7	23.33
Diploma	4	13.33
Baccalaureate	<u>19</u>	<u>16.33</u>
Total	30	100.00

percent worked the seven to three shift, 40.00 percent worked the three to eleven shift, 3.33 percent worked the eleven to seven shift, and 10.00 percent stated they worked all three shifts. Table 13 shows the shift, and the number and percent of the nurses' working hours.

TABLE 13

## NUMBER AND PERCENT OF NURSES WORKING EACH SHIFT

Shift	Number in Each Group	Percent of Total
7 - 3	14	46.67
3 - 11	12	40.00
11 - 7	1	3.33
All shifts	<u>4</u>	<u>10.00</u>
Total	30	100.00

Length of current employment was the next item on the demographic sheet. These data were important to assess the influence of the length of the nurse's professional experience. The mean was 2.07 years. Table 14 shows the length of current employment in months, the frequency, and the percent of the total.

TABLE 14  
LENGTH OF CURRENT EMPLOYMENT OF REGISTERED NURSES

Months of Employment	Number of R.N.'s	Percent of Total
3 - 12	15	50.00
16 - 36	7	23.33
42 - 60	7	23.33
84	<u>1</u>	<u>3.33</u>
Total	30	100.00

Question seven asked the nurses the date of the last workshop or seminar on cancer they had attended. This information could improve interventions that were listed by the nurses. Seventeen, or 56.67 percent, stated they had attended a cancer workshop in the last year (see table 15).

In table 16, information on the nurse's previous personal experiences with cancer is presented. It was felt

TABLE 15

DISTRIBUTION OF NURSES ATTENDING A CANCER  
WORKSHOP IN LAST YEAR

Attended Workshop	Number in Each Group	Percent of Total
Yes	17	56.67
No	<u>13</u>	<u>43.33</u>
Total	30	100.00

that personal experiences may influence the nurses' responses on interventions. Three nurses, or 10.00 percent, responded that a family member has cancer, seven, or 23.33 percent, stated a family member had cancer, and the remaining twenty, or 66.67 percent, responded they or a family member had no personal experience with cancer.

TABLE 16

## NURSES' PERSONAL EXPERIENCE WITH CANCER

Personal Experience	Number in Each Group	Percent of Total
Family member has cancer	3	10.00
Family member had cancer	7	23.00
No personal experience	<u>20</u>	<u>66.67</u>
Total	30	100.00

The next question on the demographic sheet asked what percentage of the nurse's time was spent caring for disseminated cancer patients. Two nurses indicated that they spent more than 75 percent or more, nine spent 51 to 75 percent, five spent 26 to 50 percent, fourteen spent 1 to 25 percent, and one nurse indicated she spent no time caring for disseminated cancer patients but did care for cancer patients undergoing diagnostic studies. Table 17 displays this information.

TABLE 17

PERCENTAGE OF TIME SPENT CARING FOR  
DISSEMINATED CANCER PATIENTS

Time Spent with Patients	Number in Each Group	Percent of Total
75% or more	2	6.67
51 - 75%	9	30.00
26 - 50%	5	16.67
1 - 25%	<u>14</u>	<u>46.66</u>
Total	30	100.00

One oncology unit and three medical-surgical units were used to collect the above information from the nurses. General medical-surgical patients are admitted to the oncology unit when the census of cancer patients is low.

Cancer patients are also placed on medical-surgical units when the oncology unit's census is high. This could be a possible reason for the percentage of time that the nurses stated they cared for disseminated cancer patients.

Question ten asked on what type of unit the nurse currently practiced nursing. Nine, or 30.00 percent, of the nurses responded they worked on a medical unit, three, or 10.00 percent, on a surgical unit, eight, or 26.67 percent, on an oncology unit, and ten, or 33.33 percent, stated they worked on other units. The other units consisted of a combination medical-surgical unit, a gynecology unit, and a medical unit specializing in renal problems. The nurses working on the other units were currently working on the oncology or medical units used in this study (see table 18).

TABLE 18

## HOSPITAL UNIT ON WHICH NURSES PRACTICED

Hospital Unit	Number in Each Group	Percent of Total
Medical	9	30.00
Surgical	3	10.00
Oncology	8	26.67
Other	<u>10</u>	<u>33.33</u>
Total	30	100.00

Presentation of the Findings

One purpose of this study was to determine the five most common symptoms of disseminated cancer as identified by patients and registered nurses in the hospital setting. Thirty disseminated cancer patients were interviewed and requested to list the symptoms of their present illness. The patients were then asked to place the symptoms in order of importance. Table 19 displays the five most common symptoms that the thirty disseminated cancer patients listed. The first five symptoms listed by priority were pain, nausea and vomiting, shortness of breath, weakness, and loss of appetite.

TABLE 19

## DISTRIBUTION OF SYMPTOMS LISTED BY PATIENTS

Symptom	Patients Who Listed Symptom	
	Number	Percent
Pain	21	70.00
Nausea and vomiting	10	33.33
Shortness of breath	10	33.33
Weakness	11	36.67
Loss of appetite	11	36.67

N = 30.

A scoring system was used to isolate the five most common symptoms and to weigh the importance of priority. The symptom that was listed first was assigned a score of five points, the second four points, the third three points, the fourth two points, and the fifth one point. A total of thirty-five symptoms were listed by the patients in this study. Table 20 shows the order of priority that the patients listed the symptom and the total score that the symptom received.

TABLE 20  
ORDER OF PRIORITY OF SYMPTOMS LISTED  
BY PATIENTS WITH TOTAL SCORE

Symptom	Order of Priority						Total Score
	1	2	3	4	5	6 or More	
Pain	17	2	0	1	0	1	95
Nausea and vomiting	3	3	1	3	1	0	35
Shortness of breath	3	2	1	3	1	0	33
Weakness	1	5	1	1	2	1	32
Loss of appetite	0	2	4	2	3	0	27

The nurses were also requested to list symptoms of disseminated cancer in order of importance. The first five symptoms listed by the nurses were pain, weakness, loss of appetite, nausea and vomiting, and weight loss. The same

scoring system was applied to weigh the importance of priority as with symptoms listed by the cancer patients. A total of thirty-six symptoms were listed by the registered nurses. Table 21 depicts the nurses' responses on the questionnaire.

TABLE 21  
DISTRIBUTION OF SYMPTOMS LISTED BY NURSES

Symptom	Nurses Who Listed Symptom	
	Number	Percent
Pain	30	100.00
Weakness	17	56.66
Loss of appetite	19	63.33
Nausea and vomiting	19	63.33
Weight loss	8	26.66

N = 30.

The nurses also listed the symptoms in order of priority and received a total score for the symptoms. Table 22 depicts this information.

The second purpose was to determine the nurse's knowledge of interventions utilized to decrease patient care problems of the disseminated cancer patient. The registered nurses were requested to list at least three nursing

TABLE 22

ORDER OF PRIORITY OF SYMPTOMS LISTED  
BY NURSES WITH TOTAL SCORE

Symptom	Order of Priority						Total Score
	1	2	3	4	5	6 or More	
Pain	22	3	3	1	1	0	129
Weakness	1	6	5	4	1	0	55
Loss of appetite	1	2	6	8	2	0	49
Nausea and vomiting	2	3	2	0	4	8	40
Weight loss	1	2	3	2	0	0	31

interventions they used to reduce or alleviate the five most common symptoms stated by the disseminated cancer patients. A score was given to each intervention: 0 for non-effective, 1 for useful, and 2 for very effective. If the current literature supported the intervention, it was given a 2 or 1, depending on the nurse's phrasing. The more effective the intervention, the higher the score. A zero was given to an intervention that was not appropriate for the symptom or was considered non-effective. Five blanks appeared on the questionnaire and each blank was worth a maximum of two points so that the highest possible score was ten. In order to be fair in grading, since five blanks were given but the written instructions called for "at least three,"

the number of answers was divided into the total to obtain an average score. Thus, if a nurse listed three interventions and all received a score of two points, she would receive the highest average score of a two. Table 23 displays the symptoms, the intervention scores and the number of nurses who received each score and the average score for each symptom. From the table, the symptoms nausea and vomiting and pain had fairly even frequency distributions. Shortness of breath, weakness, and loss of appetite all showed a skewed distribution toward the highest end which indicated the nurses used interventions that were very effective. The importance of this purpose was displayed in scoring the interventions which reflected the general knowledge of the nurses for interventions used to reduce or alleviate these five symptoms.

The next purpose of this study was to identify nursing interventions that were used to decrease the five most common symptoms identified by patients with disseminated cancer. This was determined by counting the number of nurses who listed a specific intervention for each symptom and listing them in order with the effectiveness score and the number and percentage of nurses who selected a specific intervention.

TABLE 23

INTERVENTION SCORE, NUMBER OF NURSES, AND  
AVERAGE SCORE FOR EACH SYMPTOM

Symptoms*	Intervention Scores	Number of Nurses	Average Score For Each Symptom
Pain	1.00	3	1.59
	1.33	2	
	1.40	1	
	1.50	3	
	1.60	3	
	1.67	8	
	1.75	5	
	1.80	4	
	2.00	1	
Nausea and vomiting	1.00	1	1.61
	1.33	3	
	1.50	4	
	1.60	5	
	1.67	9	
	1.75	4	
	1.80	4	
Shortness of breath	1.00	1	1.88
	1.60	2	
	1.67	3	
	1.75	2	
	1.80	2	
	2.00	20	
Weakness	1.40	1	1.91
	1.50	2	
	1.67	1	
	1.75	3	
	2.00	20	

\*Listed in order of priority by patients.

TABLE 23 (Continued)

Symptoms*	Intervention Scores	Number of Nurses	Average Score For Each Symptom
Loss of appetite	1.00	1	1.87
	1.33	1	
	1.50	2	
	1.67	2	
	1.75	1	
	1.80	1	
	2.00	22	

\*Listed in order of priority by patients.

Table 24 reveals twenty-two interventions that the nurses listed for nausea and vomiting which received a score of 2 for effectiveness. The number and percentage of nurses are also depicted in the table. Most of the interventions listed dealt with food or beverages, positioning of the patient, and environmental factors.

Table 25 displays the three interventions listed by the nurses that received a score of 1 (useful). Thirty of the nurses, 100 percent, mentioned the use of antimetics, which in many cases, was listed as the first intervention. The literature emphasizes that drugs should be used as a last resort. Therefore, this intervention was rated a 1 as being useful.

TABLE 24

EFFECTIVE INTERVENTIONS LISTED BY NURSES  
FOR NAUSEA AND VOMITING

Intervention	Score for Effectiveness	R.N.'s	
		Number	Percent
1. Offer sips of fluid or ice chips	2	7	23.00
2. Give oral hygiene	2	7	23.00
3. Offer carbonated beverages	2	7	23.00
4. Provide quiet environment	2	6	20.00
5. Prevent aspiration	2	5	17.00
6. Offer small quantities of food	2	5	17.00
7. Remove odor-producing materials	2	4	13.00
8. Teach breathing exercises	2	3	10.00
9. Cool cloth to head	2	2	0.07
10. Give non-milk products	2	2	0.07
11. Give bland foods	2	2	0.07
12. Remove food from room	2	2	0.07
13. Assess environmental factors	2	1	0.03
14. Keep G-U tube patent if ordered	2	1	0.03
15. Serve appealing meals	2	1	0.03

TABLE 24 (Continued)

Intervention	Score for Effectiveness	R.N.'s	
		Number	Percent
16. Complete tiresome tasks before meals	2	1	0.03
17. Serve food patient can tolerate	2	1	0.03
18. Stay with patient	2	1	0.03
19. Treat mouth ulcers	2	1	0.03
20. Consult with dietitian to plan meals	2	1	0.03
21. Check for signs of dehydration	2	1	0.03
22. Place patient in comfortable position	2	1	0.03

TABLE 25

USEFUL INTERVENTIONS LISTED BY NURSES  
FOR NAUSEA AND VOMITING

Intervention	Score for Effectiveness	R.N.'s	
		Number	Percent
23. Administer antimetics	1	30	100.00
24. Give nausea meds 30 minutes before meals	1	3	0.7
25. Suction prn unless contraindicated	1	1	0.3

The eight interventions listed in Table 26 were given a score of zero for non-effectiveness. There was a total of thirty-three interventions listed for nausea and vomiting.

TABLE 26

NON-EFFECTIVE INTERVENTIONS LISTED  
BY NURSES FOR NAUSEA AND VOMITING

Intervention	Score for Effectiveness	R.N.'s	
		Number	Percent
26. Decrease body temperature	0	1	0.3
27. Keep emesis basin available	0	1	0.3
28. Call doctor	0	1	0.3
29. Crackers if allowed	0	1	0.3
30. Administer IV fluids	0	1	0.3
31. Suggest N-G tube if excessive	0	1	0.3
32. Place bed in flat position	0	1	0.3
33. Administer pain meds	0	2	0.7

The next symptom to be rated was shortness of breath. There were fifteen interventions listed that received a score of two for being very effective. Table 27 displays these interventions with the number and percentage of nurses who chose a specific intervention. These interventions were

mainly concerned with maintaining a patent airway, positioning the patient, and teaching the patient.

TABLE 27

EFFECTIVE INTERVENTIONS LISTED BY NURSES  
FOR SHORTNESS OF BREATH

Intervention	Score for Effectiveness	R.N.'s	
		Number	Percent
1. Oxygen as ordered	2	24	80.00
2. Raise head of bed	2	24	80.00
3. Stay with patient to decrease anxiety	2	11	37.00
4. Encourage deep breathing exercises	2	9	30.00
5. Place patient in comfortable position	2	7	23.00
6. Keep activity to a minimum	2	7	23.00
7. Check and decrease anxiety level	2	5	17.00
8. Rest periods between activity	2	3	10.00
9. Teach how to breath	2	2	0.07
10. Take vital signs frequently	2	2	0.07
11. Reduce restrictive clothing	2	2	0.07
12. Maintain clear airway	2	2	0.07
13. Encourage fluids	2	1	0.03

TABLE 27 (Continued)

Intervention	Score for Effectiveness	R.N.'s	
		Number	Percent
14. Maintain quiet environment	2	1	0.03
15. Check skin color	2	1	0.03

In table 28 interventions for shortness of breath that received a score of one for useful are presented. The number and percentage of nurses who chose the intervention are also depicted.

TABLE 28

USEFUL INTERVENTIONS LISTED BY  
NURSES FOR SHORTNESS OF BREATH

Intervention	Score for Effectiveness	R.N.'s	
		Number	Percent
16. IPPB if ordered	1	5	17.00
17. Give medication for shortness of breath	1	4	13.00
18. Fresh air if helps breathing	1	1	0.03

Table 29 shows that only two interventions received a score of zero for being non-effective for shortness of breath. Twenty interventions were listed for this symptom.

TABLE 29

NON-EFFECTIVE INTERVENTIONS LISTED BY NURSES  
FOR SHORTNESS OF BREATH

Intervention	Score for Effectiveness	R.N.'s	
		Number	Percent
19. Administer pain medication to slow respirations	0	1	0.03
20. Call doctor	0	1	0.03

Pain was the next intervention that was graded. This symptom had a fairly even distribution of scores. In table 30 sixteen interventions are listed that received a score of two for being effective. The number and percentage of nurses who chose a specific intervention are also displayed. Assessment of pain, positioning, nursing treatments, and diversional activities were among the interventions selected by the nurses.

TABLE 30

EFFECTIVE INTERVENTIONS LISTED BY NURSES  
FOR PAIN

Intervention	Score for Effectiveness	R.N.'s	
		Number	Percent
1. Reposition patient	2	23	77.00
2. Talk with patient	2	7	23.00
3. Use diversional activities	2	6	20.00

TABLE 30--Continued

Intervention	Score of Effectiveness	R.N.'s	
		Number	Percent
4. Massage area	2	5	17.00
5. Assess type, severity, location, and frequency	2	5	17.00
6. Support area with pillows	2	4	13.00
7. Restful environment	2	3	10.00
8. Stay with patient to decrease anxiety	2	3	10.00
9. Encourage deep breathing	2	3	10.00
10. Use K-pad	2	2	0.07
11. Check for relief of pain and evaluate	2	2	0.07
12. Warm or cold compresses	2	2	0.07
13. Emotional support	2	1	0.03
14. Plan care around periods of pain	2	1	0.03
15. Provide rest between activities	2	1	0.03
16. Give mood elevators and tranquilizers to potentiate narcotics	2	1	0.03

Table 31 displays the interventions that received a score of one for useful. The number and percentage of nurses who chose a particular intervention are depicted.

Ninety-three percent of the nurses listed pain medications to alleviate pain. The literature points out that narcotics are useful but should be used minimally or in conjunction with other nursing interventions. A total of twenty-two interventions were listed by the nurses. There were no non-effective scores.

TABLE 31  
USEFUL INTERVENTIONS LISTED BY NURSES FOR PAIN

Intervention	Score for Effectiveness	R.N.'s	
		Number	Percent
17. Give pain meds	1	28	93.00
18. Give pain meds on regular schedule	1	3	10.00
19. Report when medication is no longer effective	1	3	10.00
20. Avoid painful tasks when possible	1	1	0.03
21. Make no excessive demands on patient	1	1	0.03
22. Let family stay with patient	1	1	0.03

Table 32 describes twenty-one interventions used to reduce or alleviate weaknesses that were effective. The nurses scored the highest on those interventions used to alleviate or reduce weakness. Most of the interventions

were concerned with conservation of energy, safety, and encouraging foods and fluids.

TABLE 32  
EFFECTIVE INTERVENTIONS LISTED  
BY NURSES FOR WEAKNESS

Intervention	Score of Effectiveness	R.N.'s	
		Number	Percent
1. Offer support when walking or up	2	21	70.00
2. Encourage food and fluid intake	2	17	57.00
3. Encourage active and passive range of motion exercises	2	10	33.00
4. Place objects within reach	2	9	30.00
5. Keep side rails up--ask patient to call for assistance	2	7	23.00
6. Ambulate gradually	2	7	23.00
7. Allow rest periods between activity	2	6	20.00
8. Between meal nourishments	2	5	17.00
9. Do not over exert patient	2	4	13.00
10. Stress importance of calling nurse for assistance	2	2	0.07
11. Work toward achieving activities of daily living	2	2	0.07

TABLE 32--Continued

Intervention	Score for Effectiveness	R.N.'s	
		Number	Percent
12. Encourage patient to do small things for self	2	2	0.07
13. Frequent observation	2	1	0.03
14. Take time to meet needs of patient	2	1	0.03
15. Assess level of activity	2	1	0.03
16. Arrange activities around weakness	2	1	0.03
17. Check CBC and notify doctor if abnormal	2	1	0.03
18. Use walker when walking patient	2	1	0.03
19. Family assist patient to bathroom	2	1	0.03
20. Teach importance of diet	2	1	0.03
21. Try to alleviate unnecessary movement	2	1	0.03

Table 33 displays interventions used for weakness that received a score of one for useful. The number and percentage of nurses are also depicted.

TABLE 33

USEFUL INTERVENTIONS LISTED BY  
NURSES FOR WEAKNESS

Intervention	Score for Effectiveness	R.N.'s	
		Number	Percent
22. Vitamins as ordered	1	3	10.00
23. Check I & O for dehydration	1	1	0.03
24. Have P.T. work with patient	1	1	0.03
25. Bedrest if ordered	1	1	0.03

Only one intervention under weakness received a score of zero and was listed by one nurse. The intervention was "change linen to make patient comfortable." Twenty-six interventions were listed by the nurses.

The last symptom identified by the thirty disseminated cancer patients was loss of appetite. A total of thirty interventions were listed by the nurses for this symptom. Table 34 shows that twenty-four of the interventions received a score of two for being effective. The number and percentage of nurses are also depicted. These interventions were mainly concerned with diet, environment, and teaching.

TABLE 34

EFFECTIVE INTERVENTIONS LISTED BY NURSES  
FOR LOSS OF APPETITE

Intervention	Score for Effectiveness	R.N.'s	
		Number	Percent
1. Small frequent feedings	2	16	53.00
2. Appetizing meals	2	10	33.00
3. Encourage high protein liquids	2	8	27.00
4. Check likes and dislikes of foods	2	6	20.00
5. Consult dietitian when necessary	2	5	17.00
6. Encourage foods patient can tolerate	2	5	17.00
7. Give supplemental feedings	2	5	17.00
8. Let patient select foods	2	5	17.00
9. Let family bring food from home and eat with patient	2	4	13.00
10. Remove odor-producing materials from room	2	3	10.00
11. Pleasant surroundings during meals	2	3	10.00
12. Assist with diet	2	3	10.00
13. Oral hygiene before and after meals	2	2	0.07
14. Offer cool foods	2	2	0.07

TABLE 34--Continued

Intervention	Score for Effectiveness	R.N.'s	
		Number	Percent
15. Prevent exhaustion before meals	2	2	0.07
16. Encourage patient to eat	2	2	0.07
17. Teach importance of diet	2	1	0.03
18. Talk with patient while eating	2	1	0.03
19. Change place of eating	2	1	0.03
20. Administer diet doctor orders	2	1	0.03
21. Play music during meals	2	1	0.03
22. Treat mouth ulcers	2	1	0.03
23. Hard candy for stimulation of saliva	2	1	0.03
24. Clear bedside of undesirable items	2	1	0.03

Table 35 reveals that six interventions received a score of one as useful. There were no non-effective interventions listed for loss of appetite. A total of thirty interventions were listed for this symptom.

TABLE 35

USEFUL INTERVENTIONS LISTED BY  
NURSES FOR LOSS OF APPETITE

Intervention	Score for Effectiveness	R.N.'s	
		Number	Percent
25. Give IV fluids, vitamins and KCL as ordered by doctor	1	4	13.00
26. Give antiemetics 20 minutes before meals	1	2	0.07
27. Give nausea medications	1	2	0.07
28. Don't force food on patient	1	1	0.03
29. Give appetite stimulators	1	1	0.03
30. Administer pain medication if patient in pain	1	1	0.03

The effectiveness of all the interventions listed by the nurses was graded based on current literature. The third purpose of this study depicted the number and percentage of nurses who chose specific interventions to alleviate or reduce the five symptoms listed by disseminated cancer patients.

There were two hypotheses in this study. The first hypothesis was that there is no relationship between the

five most common symptoms as identified by disseminated cancer patients and the five most common symptoms as identified by registered nurses in the hospital setting. Tables 19 and 21 show a comparison of symptoms listed by both groups and reveal a relationship between symptoms listed. Four out of the five symptoms are listed by both patients and nurses. The exceptions are shortness of breath which appeared third on the patient's list and which the nurses placed as sixth priority. Ten nurses listed this symptom, giving it a total score of eighteen. Weight loss appeared fifth on the nurse's list, and appeared in the eleventh category on the patient questionnaire. Ten patients listed this as a symptom giving this a score of twelve. The nurses identified four out of five symptoms listed by the hospitalized cancer patients in this study. Therefore, this hypothesis was rejected.

The second hypothesis was that there is no relationship between the nurse's knowledge of nursing interventions utilized for the five most common symptoms of disseminated cancer and the length of professional experience. The Pearson Correlation coefficient was used to test this hypothesis. There was a relationship of borderline significance ( $p < .10$ ) between the length of employment and the score for interventions used to alleviate or reduce

weakness. No correlations significant at the 0.05 level were found. Table 36 presents this information. None of the Pearson correlations showed a significant relationship between the nurse's knowledge of nursing interventions utilized for the five most common symptoms of disseminated cancer and the length of the nurse's professional experience. Therefore, this hypothesis was accepted.

TABLE 36

CORRELATIONS OF AGE, TIME SINCE LICENSURE, AND LENGTH OF EMPLOYMENT WITH INTERVENTION SCORES

Symptoms	Age	Licensure	Employment
Nausea and vomiting	.183	0.92	.149
Shortness of breath	.183	.214	.211
Pain	.178	.193	.183
Weakness	-.146	-.249	-.309*
Loss of appetite	.073	.051	.166

\*Borderline significance ( $p < .10$ ).

Relationships between demographic information such as race and attendance at a workshop to intervention scores were also investigated. The Point Biserial correlation was used because one variable was continuous (intervention scores) and provided interval data and the other variable

provided dichotomous data (workshop and race). Table 37 relates the scores using this correlational procedure.

TABLE 37  
CORRELATIONS OF RACE AND WORKSHOP  
WITH INTERVENTION SCORES

Interventions	Race	Workshop
Nausea and vomiting	0.164	0.299*
Shortness of breath	0.741	0.097
Pain	-0.232	0.393**
Weakness	-0.098	-0.062
Loss of appetite	-0.033	-0.129

\*Borderline significance ( $p < .10$ ).

\*\*Significant at 0.05 level.

A relationship of borderline significance was shown between the interventions for nausea and vomiting listed by the nurses and their attendance at a workshop. A significant relationship was found between workshop attendance and the pain intervention score ( $p < 0.05$ ). The nurses scored higher on their interventions listed if they had attended a workshop on cancer.

Additional information was obtained when some of the demographic data were compared with the intervention scores. The year of licensure, current licensure, and the level of

nursing education did not influence the productiveness of the intervention scores. The length of current employment and the hours the nurses were working also did not increase the productiveness of the intervention scores. Previous personal experiences with cancer showed little relationship to the intervention scores.

It was found that nurses who spend more than 25 percent of their time caring for disseminated cancer patients did have higher intervention scores. Also nurses currently working on the oncology unit tended to have higher intervention scores than those working on medical-surgical units and other units described previously. However, nurses who routinely did not work on the oncology unit had reduced intervention scores but scored higher if they had attended a cancer workshop in the last year. Also nurses attending a cancer workshop in the last year, regardless of what unit they practiced, obtained higher intervention scores.

#### Summary

Chapter IV has presented an analysis and interpretation of the findings of this study. An analysis of the data revealed that there is a relationship between symptoms of disseminated cancer identified by patients and registered nurses in the hospital setting. The data also

indicated that there was not a significant relationship between any of the intervention scores and the length of professional experience. Additional findings revealed a relationship of borderline significance between the intervention score for weakness and the length of employment. There was a significant relationship ( $p < 0.05$ ) between the pain intervention score and workshop attendance and a borderline significant relationship score for nausea and vomiting and attendance at a workshop on cancer.

It was also found that current licensure, level of nursing education, working hours, and previous personal experiences with cancer showed little relationship to the productiveness of intervention scores. Nurses who spent more than 25 percent of their time with cancer patients and the nurses currently working on the oncology unit had higher intervention scores. Those nurses not working on an oncology unit but who attended a cancer workshop in the last year obtained higher intervention scores.

## CHAPTER V

### SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

#### Summary

A non-experimental study was conducted for the purposes of (1) determining the five most common symptoms of disseminated cancer as identified by patients and registered nurses in the hospital setting, (2) determining the nurse's knowledge of interventions utilized to decrease nursing care problems of the disseminated cancer patient, (3) identifying nursing interventions that are used by registered nurses to decrease the five most common symptoms identified by patients with disseminated cancer, and (4) determining the relationship of the nurse's knowledge of interventions for the five most common symptoms of disseminated cancer to the nurse's length of professional experience.

There were two hypotheses in this study. The first was that there was no relationship between the five most common symptoms as identified by disseminated cancer patients and the five most common symptoms as identified by registered nurses in the hospital setting. The second hypothesis was there was no relationship between the nurse's

knowledge of nursing interventions utilized for the five most common symptoms of disseminated cancer and length of professional experience.

Two tools were developed to collect data for this study. Both tools were evaluated by a panel of judges. The first tool consisted of an introductory letter, a demographic data sheet, and an interview guide. The demographic data sheet was completed from information on the patient's record. Each disseminated cancer patient was then asked to list the symptoms of their present illness and place them in order of importance. The researcher then listed the symptoms on the interview guide. The data collection period extended from October 15, 1976 to December 3, 1976. The sample was composed of thirty disseminated cancer patients hospitalized on an oncology unit in a metropolitan city in Texas.

The second questionnaire consisted of an introductory letter, a demographic sheet, a symptomatology sheet, and an intervention sheet. Thirty registered nurses were requested to complete this questionnaire. The symptomatology sheet asked that they list the symptoms of disseminated cancer by order of importance. The intervention sheet then provided space for the nurses to list at least three interventions they used to reduce or alleviate the five most common symptoms identified by the thirty

disseminated cancer patients. The data collecting period extended from March 26, 1977 to April 17, 1977.

A comparison study between the symptoms identified by the thirty disseminated cancer patients and the thirty registered nurses revealed that there was a relationship in the symptoms listed by both groups. Four out of the five symptoms listed by the patients were also listed by the nurses.

Using a scoring system, the interventions listed by the registered nurses were graded according to the effectiveness of the intervention. A review of the literature was used to evaluate the effectiveness of the interventions identified by the nurses. Specific interventions were also identified according to the number and percentage of nurses who chose them.

The Pearson Correlation coefficient was then used to show there was no relationship between the intervention scores and the length of professional experience. A borderline significance ( $p < .10$ ) was found between the intervention score for weakness and the length of employment. These data showed that the length of employment and interventions used to reduce symptoms in disseminated cancer was not related.

Additional findings occurred when the Point Biserial correlation was used. A significant relationship ( $p < .05$ ) between the pain intervention score and attendance at a cancer workshop was found. A borderline significant relationship ( $p < .10$ ) between the nausea and vomiting intervention score and attendance at a workshop on cancer was also established.

Other significant findings were that the level of nursing education, working hours, and previous personal experience with cancer did not increase the amount of effectiveness in the intervention scores. Nurses who were currently working on the oncology unit and who spent at least 25 percent of their time with cancer patients scored higher on the nursing interventions. Those nurses who were not working on the oncology unit but who attended a workshop on cancer in the last year also scored higher on the nursing interventions.

### Conclusions

This study was conducted to determine the nurse's knowledge of symptomatology and interventions used to reduce or alleviate symptoms of disseminated cancer. The study concludes there is a relationship in the symptoms listed by patients and registered nurses. Four out of the five symptoms listed by the patients were also listed by

the nurses. This reveals that nurses in this study are aware of common symptoms associated with disseminated cancer. In Wilkes' (1974) study, ten major symptoms were listed by disseminated cancer patients. The symptoms listed in order of frequency of occurrence are pain, incontinence, confusion, dyspnea, nausea, bedsores, vomiting, open wounds, cough, and dysphagia. Wilkes' sample size included 296 patients, and, therefore, is more representative of patients who listed the symptoms. Three of the symptoms listed in Wilkes' study were listed by the patients in this study--pain, nausea and vomiting, and shortness of breath. Symptoms of disseminated cancer depend upon the areas of metastasis, stage of illness, treatment, and the physical and emotional responses of the patient to the illness. However, when patients are interviewed about existing symptoms of disseminated cancer, a list of common patient problems can be compiled. These problems are significant to nurses when they try to reduce or alleviate symptoms by using effective interventions.

The study further concludes there is not a relationship between the nursing intervention scores and the length of professional experience. With adequate educational preparation, a nurse can employ effective interventions to reduce or alleviate symptoms of disseminated cancer. The

nurse can also use these interventions to alleviate symptoms in other patient populations in the hospital setting. The level of nursing education did not influence the effectiveness of the intervention scores in this study.

Therefore, many nurses should be able to choose effective and successful interventions to alleviate or reduce symptoms of disseminated cancer no matter what their level of educational preparation has been.

Nurses who spent more than 25 percent of their time with cancer patients obtained higher intervention scores. Sixteen of the nurses in this study stated they spent more than 25 percent of their time caring for disseminated cancer patients. Twenty-two of these nurses also worked on a general medical-surgical unit. Nurses working on the oncology unit received higher intervention scores than those working on the medical-surgical units. The more association a nurse has with disseminated cancer patients, the more opportunities there are to test interventions and establish which interventions are the most effective in alleviating or reducing symptoms.

Nurses who routinely did not work on the oncology unit had reduced intervention scores but scored higher if they had attended a cancer workshop in the last year. Nurses attending a workshop on cancer in the last year,

regardless of what unit they practiced, obtained the highest intervention scores. This stresses the importance of continuing education in the form of workshops, seminars, and team conferences. All of these educational opportunities can promote the sharing of effective and successful interventions used by individual nurses. Not all disseminated cancer patients will be placed on an oncology unit so that all nurses who come in contact with these patients should be encouraged to pursue additional education when possible.

Many of the interventions listed by the nurses in the study were scored as being very effective. When the number of nurses who selected a specific intervention was assessed, it was apparent that they depended heavily upon medications to reduce or alleviate pain and nausea and vomiting. Although medications are useful, other nursing interventions should be implemented before their administration or other interventions used in conjunction with medications. Nurses should be reminded of the importance of establishing a trusting relationship, formulating realistic patient-centered goals, and teaching the patient about symptoms. The assessment of vital signs and laboratory data also appeared to be missing in many instances. Nurses are now becoming more knowledgeable about the

significance of physical assessment and laboratory data and should be encouraged to place more emphasis on these items in order to prevent complications that can arise in disseminated cancer.

### Implications

The findings of this study have implications for nursing education and nursing practice.

#### Nursing Education

1. Nursing students should be encouraged to attend staff conferences, seminars, and workshops on cancer
2. Nursing students should be made aware of the differences between effective, useful, and non-effective interventions utilized to reduce or alleviate symptoms of disseminated cancer
3. Nursing students should learn common symptoms associated with disseminated cancer
4. Nursing students should be aware of current drugs and treatment therapy of cancer
5. Nursing students should have experiences in directly caring for disseminated cancer patients

#### Nursing Practice

1. Registered nurses should be encouraged to conduct hospital in-service education programs and unit

seminars on the symptomatology and effective interventions used in disseminated cancer

2. Registered nurses should be encouraged to sponsor area workshops that help nurses to share effective interventions used to alleviate symptoms of disseminated cancer

3. Registered nurses should produce care plans on the hospital units that reflect successful interventions used by nurses for different symptoms of disseminated cancer. A space for evaluation of the effectiveness of the intervention should also be included on the care plan

4. Registered nurses should be encouraged to spend time caring for cancer patients and be able to adequately assess the physical and emotional needs of these patients

5. Registered nurses should continually assess the symptoms exhibited by the disseminated cancer patient and document successful effective interventions so they can be used by all nurses on the hospital unit

#### Recommendations

Based on the findings of the study, the following recommendations for further research have been made:

1. More investigation be made into means of evaluating interventions that are used to reduce or alleviate symptoms of disseminated cancer

2. Research studies be conducted to determine the effectiveness of interventions used by registered nurses in the care of disseminated cancer patients

3. Replication studies be conducted in similar environments to determine if the findings are consistent

4. A larger population of nurses and patients be included in future studies to determine if there is a difference in symptomatology listed and interventions utilized by the nurses

5. A comparison study be made between staff nurses on medical-surgical units and oncology units to determine if the knowledge of interventions for disseminated cancer is uniform

6. Further studies be made to determine interventions used for the five symptoms listed by disseminated cancer patients in this study and how they apply to other patient populations in the hospital setting

7. Further studies should be conducted using registered nurses outside the hospital setting to assess their knowledge of interventions used in disseminated cancer

Nurses in this study were familiar with common symptoms of disseminated cancer and listed effective interventions especially if they attended a workshop on cancer in the last year.

**APPENDIX A**

TEXAS WOMAN'S UNIVERSITY  
RESEARCH INSTITUTE  
DENTON, TEXAS 76204



BONE METABOLISM LABORATORY  
Box 28546, TWU STATION  
PHONE (817) 887-5305

August 27, 1976

Ms. Karen Gardner  
Texas Woman's University  
Dallas Campus  
Dallas, Texas

Dear Ms. Gardner:

The Human Research Review Committee has reviewed and approved your program plan, "The relationship between nursing knowledge and nursing interventions used in the case of patients with disseminated cancer".

Sincerely yours,

A handwritten signature in cursive script, appearing to read 'George P. Vose'.

George P. Vose, Chairman  
Human Research Review Committee

cc Ms. Goosen  
Dr. Bridges

**APPENDIX B**

155

4525 Wood Hollow #312  
Dallas, Texas 75237  
August 10, 1976

Dear Panel of Judges:

I am a graduate student in medical-surgical nursing at Texas Woman's University here in Dallas. As partial fulfillment for a Master of Science in Nursing, I am conducting a study to seek pertinent information on the common symptoms of disseminated cancer.

There will be two target populations in this study. The first sample population will include thirty hospitalized patients with a diagnosis of disseminated cancer. The patients will be interviewed to gain information for the demographic sheet and be requested to verbally list symptoms of their illness by priority. The researcher will then write the symptoms on a questionnaire. The second sample population will consist of thirty registered nurses who work on general medical-surgical units and an oncology unit. They will also be requested to list symptoms of disseminated cancer by priority. A comparison will be made between the patient's and nurse's responses. The nurses will also be given a multiple-choice examination and a situation, which includes the five most common symptoms listed by the disseminated cancer patients in the first survey. These tools will be used to determine the relationship between the nurse's knowledge and the utilization of nursing care interventions to decrease symptoms.

Since the questionnaires for the second population cannot be formulated until the first survey is conducted, I will ask that you review the nurse's questionnaires at a later date.

Please review the patient demographic information and patient questionnaire for pertinence, clarity, and

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conciseness. You are also requested to make suggestions for improvements and to eliminate or add information or items that you feel will improve the study.

Your cooperation and participation in this study is greatly appreciated.

Sincerely,

Mrs. Karen Gardner, R. N.

KG

157

4524 Woodhollow #312  
Dallas, Texas 75237

Dear Patient:

I am a graduate student in medical-surgical nursing at Texas Woman's University in Dallas, Texas. As partial fulfillment for a Master of Science Degree in Nursing, I am conducting a study to seek pertinent information on the common symptoms of your present illness. This information will be used to improve your nursing care and will remain strictly confidential.

Your cooperation and participation in this study is greatly appreciated.

Sincerely,

Mrs. Karen Gardner, R.N.

KG

DEMOGRAPHIC INFORMATION

Current Date \_\_\_\_\_ Admission Date \_\_\_\_\_

1. Sex \_\_\_\_\_ Race \_\_\_\_\_
2. Age \_\_\_\_\_
3. Marital Status \_\_\_\_\_
4. Occupation \_\_\_\_\_
5. Diagnosis \_\_\_\_\_  
Site of Cancer \_\_\_\_\_  
Stage of Illness \_\_\_\_\_
6. Family members who had or have cancer \_\_\_\_\_
7. Taking radiation therapy at present \_\_\_\_\_
8. Taking chemotherapy at present \_\_\_\_\_

INTERVIEW GUIDE--TOOL A

Current Symptoms of Illness

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

## APPENDIX C

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4524 Woodhollow #312  
Dallas, Texas 75237  
December 15, 1976

Dear Panel of Judges:

I am a graduate student in medical-surgical nursing at Texas Woman's University here in Dallas. As partial fulfillment for a Master of Science in Nursing, I am conducting a study to obtain pertinent information on the common symptoms of disseminated cancer.

As you recall, there are two target populations in this study. The first sample population was thirty hospitalized patients with a diagnosis of disseminated cancer. The patients were interviewed to gain information for a demographic sheet and were requested to verbally list symptoms of their illness by priority. The researcher then wrote these symptoms on the questionnaire. The second sample population will consist of thirty registered nurses who work on general medical-surgical units and an oncology unit. They will also be requested to list symptoms of disseminated cancer by priority. A comparison will be made between the patients' and nurses' responses. The nurses will then be asked to list interventions that they use to reduce or alleviate the five most common symptoms listed by the disseminated cancer patients in the first survey. This tool will be used to determine the relationship between the nurse's knowledge and the utilization of nursing care interventions to decrease symptoms.

Please review the nurse's demographic sheet, list of symptoms, and the questionnaire on nursing interventions for pertinence, clarity, and conciseness and check the appropriate responses. You are requested to make suggestions for improvements and to eliminate or add information or items that you feel will improve this study.

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Your cooperation and participation in this study is greatly appreciated.

Sincerely,

Mrs. Karen Gardner, R.N.

KG

PANEL OF JUDGES RATING SHEET

	Concise	Clear	Pertinent	Recommendation for Change
1. Demographic Information Sheet	Yes _____ No _____	Yes _____ No _____	Yes _____ No _____	
2. List of Symptoms	Yes _____ No _____	Yes _____ No _____	Yes _____ No _____	
3. Questionnaire on Symptoms	Yes _____ No _____	Yes _____ No _____	Yes _____ No _____	

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4524 Woodhollow #312  
Dallas, Texas 75237

Dear Staff Nurse:

I am a graduate student in medical-surgical nursing at Texas Woman's University in Dallas, Texas. As partial fulfillment for a Master of Science Degree in Nursing, I am conducting a study to seek pertinent information from registered nurses on what they feel are the common symptoms exhibited by patients with disseminated cancer. Information is also sought on nursing interventions that you would use to alleviate some of the common symptoms identified by patients with disseminated cancer.

Read the directions on each questionnaire. Please do not sign your name on the questionnaire as all information will remain strictly confidential. This investigator is only interested in pooled information.

Your cooperation and participation in this study is greatly appreciated. At the completion of this study I will share the final results with you by placing a copy of the study in the Texas Woman's University Library here in Dallas.

Sincerely,

Mrs. Karen Gardner, R.N.

KG

## DEMOGRAPHIC INFORMATION

Fill in the Blanks:

1. Age \_\_\_\_\_ Sex \_\_\_\_\_ Race \_\_\_\_\_
2. Year of first licensure \_\_\_\_\_
3. Current licensure (state or states) \_\_\_\_\_
4. Check degrees held  
A.D. \_\_\_\_\_, Diploma \_\_\_\_\_, B.S. \_\_\_\_\_  
M.S. \_\_\_\_\_, Ph.D. \_\_\_\_\_, Other \_\_\_\_\_
5. Shift currently working \_\_\_\_\_
6. Length of current employment \_\_\_\_\_
7. Date of last workshop or seminar on cancer you  
attended \_\_\_\_\_

Circle appropriate response(s):

8. Previous personal experiences with cancer:
  - a. Family member had cancer.
  - b. Family member has cancer.
  - c. I, myself have cancer.
  - d. I, myself had cancer.
  - e. No personal experience with cancer.
9. What percentage of your time do you spend caring for disseminated cancer patients?
  - a. More than 75%
  - b. 51-75%
  - c. 26-50%
  - d. 1-25%
  - e. None

10. On what type of hospital unit do you presently practice?
- a. Medical
  - b. Surgical
  - c. Oncology
  - d. Other \_\_\_\_\_

LIST OF SYMPTOMS  
Tool B

Please list at least five of what you feel are the symptoms of disseminated cancer (a carcinoma that has spread from a primary site to another area or areas of the body) in order of priority. For example, if you feel that itching is the chief symptom experienced by terminal cancer patients, list this symptom as number one.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

QUESTIONNAIRE ON SYMPTOMS  
Tool C

Please list at least three nursing interventions that you use to reduce or alleviate the following symptoms exhibited by disseminated cancer patients.

Nausea and Vomiting

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

Shortness of Breath

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

Pain

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

Weakness

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

Loss of Appetite

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

## APPENDIX D



## REFERENCES CITED

- Acupuncture, Pain and Signal Detection Theory. 1975.  
Science. 189: 65-6.
- Allen, Kirby; Johnson, Tom; and Hibbs, George. 1976.  
Effective Bone Palliation as Related to Various  
Treatment Regimens. Cancer. 37: 984-87.
- American Cancer Society. 1976. Cancer Facts and Figures.
- Andriole, V. 1966. Treatment of Opportunistic Infections  
Complicating Surgery. Modern Treatment. 3: 1116-28.
- Armstrong, Donald, et al. 1971. Infectious Complications  
of Neoplastic Disease. Medical Clinics of North  
America. 55: 729-45.
- Armstrong, Donald. 1973. Life Threatening Infections in  
Cancer Patients. Ca-A Cancer Journal for  
Clinicians. 23: 138-150.
- Barckley, Virginia. 1967. The Crisis in Cancer. American  
Journal of Nursing. 67: 278-80.
- Bodey, Gerald. 1970. Supportive Care of the Cancer Patient.  
Postgraduate Medicine. 48: 203-210.
- Bodey, Gerald, et al. 1971. Protected Environment Units  
for Cancer Patients. Ca-A Cancer Journal for  
Clinicians. 21: 214-219.
- Bouchard, Rosemary and Owens, Norma. 1976. 3rd ed.  
Nursing Care of the Cancer Patient. St. Louis:  
The C. V. Mosby Company.
- Brackman, Philip. 1970. Symposium on Infection and the  
Nurse. Nursing Clinics of North America. 5: 85-88.
- Brennan, Michael. 1970. The Cancer Gestalt. Geriatrics.  
25: 96-101.
- Brower, Phillis and Hicks, Dorothy. 1970. Maintaining  
Muscle Function in Patients on Bedrest. American  
Journal of Nursing. 72: 1250-53.

- Brunner, Lillian and Suddarth, Doris. 1975. 3rd ed. Textbook of Medical-Surgical Nursing. Philadelphia: J. B. Lippincott Company.
- Burns, Nancy. "Nurse Patient Communication with Advanced Cancer Patients." Master's thesis, Texas Woman's University, Denton, Texas, 1974.
- Carney, Carol. "Selected Avoidance Behaviors Employed by the Nurse While Caring for a Dying Patient." Master's thesis, Texas Woman's University, Denton, Texas, 1975.
- Cauthen, Joseph and Renner, Elisabeth. 1975. Trancutaneous and Peripheral Nerve Stimulation for Chronic Pain States. Surgical Neurology. 4: 102-4.
- Cireca, Rudy; Bradish, Jennie; and Trombly, Suzanne. 1973. Range of Motion Exercises Active and Passive: A Handbook. Nursing '73. 3: 25-37.
- Clark, Kemp. 1975. Electrical Stimulation of the Nervous System for Control of Pain. Surgical Neurology. 4: 164-66.
- Coleman, Robert; Minna, John; and Robboy, Stanley. 1974. Disseminated Intravascular Coagulation: A Problem in Critical-Care Medicine. Heart and Lung. 3: 789-795.
- Colley, Rita and Phillips, Karen. 1973. Helping with Hyperaliamentation. Nursing '73. 3: 6-17.
- Copp, Laurel. 1974. The Spectum of Suffering. American Journal of Nursing. 74: 491-495.
- Deitz, J. Herbert. 1969. Rehabilitation of the Cancer Patient. Medical Clinics of North America. 53: 607-624.
- Derrick, William. 1973. The Management of Chronic Pain. Ca-A Cancer Journal for Clinicians. 23: 269-74.
- DeWys, William and Walters, Karen. 1975. Abnormalities of Taste Sensation in Cancer Patients. Cancer. 36: 1888-96.

- Donovan, Maulee and Pierce, Sandra. 1976. Cancer Care Nursing. New York: Appleton-Century-Crofts.
- Dudrick, Stanley. 1970. Intravenous Feeding as an Aid to Nutrition in Disease. Ca-A Cancer Journal for Clinicians. 20: 198-211.
- Dudrick, Stanley and Rhoads, Jonathan. 1971. New Horizons for Intravenous Therapy. Journal of American Medical Association. 215: 939-49.
- Eickhoff, Theodore, et al. 1969. Nosocomial Infections in Community Hospitals. Journal of Infectious Disease. 120: 305-317.
- Fagerhaugh, Shizoko. 1974. Pain Expression and Control on A Burn Unit. Nursing Outlook. 22: 645-50.
- Falconer, Mary; Patterson, H.; and Gustafson, Edward. 1972.. Current Drug Handbook, 1972-74. Philadelphia: W. B. Saunders Company.
- Friedberg, Stephen. 1975. Neurosurgical Treatment of Pain Caused by Cancer. Medical Clinics of North America. 59: 481-85.
- Gallagher, A. M. 1972. Body Image Changes in Chronic Illness. Nursing Clinics of North America. 7: 687-95.
- Gaumer, William. 1974. Electrical Stimulation in Chronic Pain. American Journal of North America. 7: 687-95.
- Given, Barbara and Simmons, Sandra. 1975. Gastroenterology in Clinical Nursing. St. Louis: The C. V. Mosby Company.
- Grant, JoAnn; Moir, Elizabeth; and Fago, Mary. 1969. Parenteral Hyperalimentation. American Journal of Nursing. 69: 2392-95.
- Grant, Marcia and Kubo, Winifred. 1975. Assessing a Patient's Hydration Status. American Journal of Nursing. 75: 1306-11.
- Green, Ruth. 1975. Ostomy Skin Barriers for Decubitus Ulcers. The Canadian Nurse. 71: 34-5.

- Griffin, Winnie; Anderson, Sara, and Passos, Joyce. 1971. Group Exercise for Patients with Limited Motion. American Journal of Nursing. 71: 1742-43.
- Gunn, Walter and Posnikoff, Jack. 1969. Palliation of Pain in Cancer Patients. GP. 40: 125-32.
- Hanken, Albert. 1966. Pain and Systems Analysis. Nursing Research. 15: 139-43.
- Harris, Jilles and Bagar, Ramesh. 1972. Immune Deficiency States Associated with Malignant Disease in Man. Medical Clinics of North America. 56: 501-14.
- Hertzberg, Leonard. 1972. Cancer and the Dying Patient. American Journal of Psychiatry. 12: 1237-44.
- Hickey, Robert, ed. 1967. Palliative Care of the Cancer Patient. Boston: Little Brown and Compan-.
- Isler, Charlotte. 1975. New Approaches to Intractable Pain. R.N. 38: 17-21.
- Johnson, Inie. 1975. Transcutaneous Electrical Stimulation. Journal of Neurosurgical Nursing. 7: 87-90.
- Keely, Mary. 1966. Exercises for Bedrest Patients. American Journal of Nursing. 66: 2209-12.
- Kirsch, Wolff; Lewis, James; and Simon, Richard. 1975. Experiences with Electrical Stimulation Devices for the Control of Chronic Pain. Medical Instrumentation. 9: 217-20.
- Klagsburn, Samuel. 1970. Cancer, Emotions and Nurses. American Journal of Psychiatry. 12: 1237-44.
- Kneisl, Carol. 1968. Thoughtful Care for the Dying. American Journal of Nursing. 68: 550-53.
- Kretzer, Marion and Engley, Frank. 1969. Effective Use of Antiseptics and Disinfectants. R.N. 32: 48-53.
- Larson, Sanford, et al. 1975. A Comparison Between Anterior and Spinal Implant Systems. Surgical Neurology. 4: 180-86.
- Leonard, Barbara. 1972. Body Image Changes in Chronic Illness. Nursing Clinics of North America. 7: 687-95.

- Levine, Arthur. 1975. Support Systems for the Patient with Cancer. Future Prospects. Cancer. 48: 316-19.
- Lifshitz, Samuel; Debaker, Leo; and Buchsbaum. 1976. Subarachnoid Phenol Block for Pain Relief in Gynecologic Malignancy. Obstetrics and Gynecology. 48: 317-19.
- Lilla, James; Fredrichs, Robert; and Vistnes, Lars. 1975. Flotation Mattresses for Preventing and Treating Tissue Breakdown. Geriatrics. 30: 71-5.
- Lloyd, Mary and Wagner, Mervyn. 1976. Acupuncture Analgesia and Radiant-Heat Pain: A Signal-Detection Analysis. Anesthesiology. 44: 147-50.
- Long, Don and Erickson, Donald. 1975. Stimulation of the Posterior Column of the Spinal Cord for the Relief of Intractable Pain. Surgical Neurology. 4: 134-141.
- Mann, Felix. 1973. Treatment of Intractable Pain by Acupuncture. The Lancet. 2: 57-60.
- Marino, Elizabeth. and LeBlanc, Dona. 1975. Antineoplastic Drugs. Nursing '75. 5: 26-31.
- Mason, Bobbie. 1974. Research and Investigation of Postoperative Wound Infections. AORN. 19: 64-8.
- Mastrovito, Rene. 1974. Psychogenic Pain. American Journal of Nursing. 74: 514-19.
- Mayer, David, et al. 1975. Treshold for Pain from Antero-lateral Quadrant Stimulation as a Predictor of Success of Percutaneous Cordotomy for Relief of Pain. Journal of Neurosurgery. 43: 445-47.
- Mayer, Gloria. 1973. Disseminated Intravascular Coagulation. American Journal of Nursing. 73: 2067-69.
- Mayer, Jean, ed. 1971. Nutrition and Cancer I: Problems Due Directly to Tumors and Associated Diseases. Postgraduate Medicine. 50: 57-9.
- McBride, Mary. 1967. Nursing Approach Pain and Relief: An Exploratory Experiment. Nursing Research. 16: 337-41.

- McCaffery, Margo and Moss, Fay. 1967. Nursing Interventions for Bodily Pain. American Journal of Nursing. 67: 1224-27.
- McCaffery, Margo. 1972. Nursing Management of the Patient with Pain. Philadelphia: J. B. Lippincott Company.
- Melzack, Ronald. 1973. How Acupuncture Works. Psychology Today. 7: 28-38.
- Merlino, Anthony. 1969. Decubitus Ulcers. Geriatrics. 24: 119-24.
- Mervyn, Frances. 1971. The Plight of Dying Patients in Hospitals. American Journal of Nursing. 71: 1888-90.
- Metheney, Norma and Snively, W. D. 1974. 2nd ed. Nurse's Handbook of Fluid Balance. Philadelphia: J. B. Lippincott Company.
- Michaelis, Lawrence; Horsley, J.; and Fairweather, William. 1972. Bypass Surgery: Nutritional Palliation for Alimentary Tract Cancer. Ca-A Cancer Journal for Clinicians. 22: 74-9.
- Moolten, S. E. 1972. Bedsores in the Chronically Ill Patient. Archives of Physical Medicine and Rehabilitation. 53: 430-38.
- Moss, Fay and Meyer, Burton. 1966. Effects of Nursing Interactions Upon Pain Relief in Patients. Nursing Research. 15: 303-6.
- Mozden, Peter. 1969. The Management of the Patient with Advanced Cancer. Ca-A Cancer Journal for Clinicians. 19: 211-17.
- Muller, Erick A. 1970. Influence of Training and of Inactivity on Muscle Strength. Archives of Physical Medicine. 51: 449-62.
- Murphy, Terence. 1973. Cancer Pain. Postgraduate Medicine. 53: 187-94.
- Narcotic Analgesics in Terminal Cancer. 1975. Lancet. 11: 694-5.

- Neilson, Karl; Adams, John; and Hosobuchi, Yoshio. 1973. Experience with Dorsal Column Stimulation for Relief of Chronic Intractable Pain: 1968-1973. Surgical Neurology. 4: 148-52.
- Newton, Marjorie; Beal, Mary; and Strauss, Anselm. 1967. Nutritional Aspects of Nursing Care. Nursing Research. 16: 46-9.
- Nursing Grand Rounds. 1974. How Nursing Can Help Intractable Pain. Nursing '74. 4: 55-1085-1108.
- Pain, Part I, 1966. Basic Concepts and Assessment. American Journal of Nursing. 66: 1085-1108.
- Perry, Thomas and Miller, Frank. 1971. 2nd ed. Pathology. Boston: Little Brown and Company.
- Pilon, Robert and Baker, Alan. 1976. Chronic Pain Control by Means of an Epidural Catheter. Cancer. 37: 903-05.
- Pories, Walter and Morton, John. 1970. Solitary and Selected Multiple Metastasis. Postgraduate Medicine. 48: 107-13.
- Posner, Jerome. 1971. Neurological Complications of Cancer. Medical Clinics of North America. 55: 625-46.
- Rogers, Ada. 1967. Pain and Cancer Patients. Nursing Clinics of North America. 55: 625-46.
- Rosomoff, Hubert. 1969. Bilateral Percutaneous Cervical Radiofrequency Cordotomy. Journal of Neurosurgery. 31: 451-55.
- Rosomoff, Hubert; Sheptak, Peter; and Carroll, Fred. 1966. Modern Pain Relief: Percutaneous Chordotomy. Journal of American Medical Association: 196: 108-12.
- Russell, Rosemary. 1976. Use Mind Control to Ease Your Patients' Ills. R.N. 39: 32-33.
- Ryan, Betty Jane. 1975. Biofeedback Training: The Voluntary Control Over Body and Mind. Nursing Forum: 14: 48-54.

- Saxon, Jean. 1962. Techniques for Bowel and Bladder Training. American Journal of Nursing. 62: 69-71.
- Scalzi, Cynthia. 1973. Nursing Management of Behavioral Responses Following an Acute Myocardial Infarction. Heart and Lung. 2: 62-9.
- Schnaper, Nathan. 1969. Management of the Dying Patient. Modern Treatment. 6: 674-59.
- Schumann, Delores and Patterson, Phyllis. 1972. The Adult with Acute Leukemia. Nursing Clinics of North America. 7: 743-61.
- Shealy, C. N. and Maurer, D. 1974. Transcutaneous Nerve Stimulation for Control of Pain. Surgical Neurology. 2: 45-7.
- Sheldon, Hunter; Frances, Paul; and Pudenz, Robert. 1975. Electrical Stimulation of the Nervous System. Surgical Neurology. 4: 127-132.
- Shils, Maurice. 1970. Nutritional Problems Arising from the Treatment of Cancer. Ca-A Cancer Journal for Clinicians. 20: 188-96.
- Shils, Maurice. 1972. Guidelines for Total Parenteral Nutrition. Journal of American Medical Association. 220: 1721-29.
- Siegele, Dorothy. 1974. The Gate Control Theory. American Journal of Nursing. 74: 498-502.
- Sklar, Manuel. 1972. Functional Bowel Distress and Constipation in the Aged. Geriatrics. 27: 79-85.
- Slide Technique Used to Predict Bacterial Growth. 1974. AORN. 20: 692-93.
- St. Andrew, Mary Sister. 1975. The Nurse's Relationship with the Patient. Nursing Times. 71: 73-77.
- Tair, Betty. 1975. Nutritional Considerations in Radiation and Chemotherapy. Journal of Practical Nursing. 25: 16-17.
- Taylor, Samuel. 1970. Common Medical Problems in Disseminated Cancer. Geriatrics. 70: 102-05.

- Toperrelli, Michael. 1973. Topical Hyperbaric Oxygen for Decubitus Ulcers. American Journal of Nursing. 73: 494.
- Treece, Eleanor and Treece, James. 1973. Elements of Research in Nursing. St. Louis: The C. V. Mosby Company.
- Turck, M. and Petersdorf, R. 1966. Treatment of Opportunistic Infections Complicating Antibiotic Therapy. Modern Treatment. 3: 1107-15.
- Turnball, Frank. 1971. Pain and Suffering in Cancer. Canadian Nurse. 67: 28-30.
- Wall, P. D. and Sweet, W. H. 1969. Temporary Abolition of Pain in Man. Science. 155: 108-09.
- Warner, Glenn. 1973. Immunotherapeutic Approaches to Cancer Control. AORN. 17: 71-4.
- Weimberg, A. and Austin, K. 1966. Treatment of Opportunistic Infections Secondary to Corticosteroid and Anti-metabolite Therapy. Modern Treatment. 3: 1147-61.
- Whitman, Helen and Lukes, Shelby. 1975. Behavior Modification for Terminally Ill Patients. American Journal of Nursing. 75: 98-100.
- Wilkes, Eric. 1974. Some Problems in Cancer Management. Proceedings of Royal Society of Medicine. 67: 1001-05.
- Yentzer, Mary Ann. 1975. Conquering Those Obstinate Decubiti. Nursing '75. 5: 24.
- Young, Sister Charlotte. 1975. Exercise to Decrease Complications in Immobilized Patients. Nursing '75. 5: 81-2.