

RE-ESTABLISHMENT OF NORMAL BOWEL HABITS OF THE
POST-HOSPITALIZED CARDIOVASCULAR CLIENT

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CHAPTER I
INTRODUCTION

CHAPTER I

Introduction

Decreased activity, a change in dietary habits, and increased stress are a few of the many factors that may predispose to alterations in the normal functioning of the human body. Virtually all systems are affected to some degree by these factors, including the integumentary system, the musculoskeletal system, the circulatory system, the respiratory system, the gastro-intestinal system, the genito-urinary system, and the sensory-motor system.

A common result of these factors in relation to changes in the gastro-intestinal system is an alteration in the individual's usual pattern of bowel elimination which may result in constipation or fecal impaction. As every student of nursing and medicine is aware, this problem is of major concern to hospitalized clients.

There are other elements in the situation that may predispose to alterations in the hospitalized client's maintaining his normal pattern of bowel elimination. These elements may include the busy atmosphere of the hospital and personnel, the limited amount of privacy in the hospital situation, a change in the daily routine, the unfamiliar environment, and the physical condition of the patient.

The hospitalized cardiovascular client is subjected to many of the above-mentioned factors. It is common practice in the management of these clients to include stool softeners, mild laxatives or other means of catharsis to decrease the physical exertion required for the defecation process. Little attention has been directed to the post-hospital effects of these interventions and the determination of whether or not the post-hospitalized client has any difficulties in re-establishing his normal pattern of bowel elimination. Since little, if any, previous research has been conducted in this area of patient care, this exploratory study was undertaken to determine if a problem exists.

Statement of Problem

The problem of this study was to determine if hospitalized cardiovascular clients experience difficulty in re-establishing normal bowel habits following discharge from the hospital.

Purposes

The purposes of this study were:

1. To determine the normal bowel habits of individuals prior to hospitalization
2. To determine if alterations in bowel habits occur during hospitalization

3. To determine if provisions are made during hospitalization which have an effect on the bowel habits.
4. To determine when normal bowel habits are re-established during the post-hospitalization period
5. To identify the difficulties which are encountered during the transition process of re-establishing normal bowel routine during the post-hospitalization period

Background and Significance

Elimination, according to Maslow (1954), is a basic human need meaning that it is a necessary physiological function in maintaining life. In addition to maintaining homeostasis, basic human needs are those all people must satisfy to enhance their images of themselves as persons (Yura and Walsh 1973). Smith (1967) relates that there is probably no organ in the body of which people are more conscious than the colon. Miner (1956) reflects on body image in relation to elimination and describes hospital excretory acts as being very painful psychologically. He describes the American bathroom as a shrine where many ritualistic acts are performed in privacy. The transition from the privacy of a person's home where he performs his daily rituals to a hospital environment may be very

devastating to the body image of a patient.

Mitchell (1973) states that discussion of bowel habits is not socially acceptable in the American middle class, and this may cause difficulties when attempting to gather data for a nursing history. Yet other authors contend that Americans are a very bowel-conscious nation. Thompson (1966) describes bowel care as being essential to all patients and a segment of care about which patients and expatients seem to complain the most. Ratcliff (1962) described Americans as fast becoming a nation of bowel neurotics. Common situations in nurse-patient interactions described by Patterson (1963) indicate that Western man is indeed bowel conscious.

Thompson (1966) states that if bowel function is impaired it can cause physical and emotional discomfort and may even lead to serious complications. The most common problem associated with bowel elimination is constipation and this problem, according to Steigmann (1962), complicates the nursing care of the patient whether he be ambulatory, requiring a wheelchair, or confined to bedrest. Painter (1973) contends that constipation is a problem of Western man and Western woman and that a tendency to constipation is made worse by the immobilization of hospitalization. Olsen and McCarthy (1967) concur with Painter that immobility can affect the psychological components and mechanical functioning ability of the colon. The elimination process

depends on the integration of smooth and skeletal muscle activity and a complicated visceral reflex pattern. A diminished expulsive power or loss of the defecation reflex may cause constipation.

Common misconceptions in regard to elimination are documented throughout the literature. Smith (1967) discusses several misconceptions, including the feeling among individuals that there is merit in regularity and if regularity is not maintained this will result in absorption of bacterial toxins or other poisonous matter into the general system. Patterson (1963) describes the elderly individual who believes that a daily bowel movement is essential to good health. Furlong (1972) states that ninety million Americans believe that a bowel movement every day is necessary for good health. Another fallacy is that defecation is associated with cleanliness (Smith 1972). Furlong (1972) cited a report of a study conducted by the Department of Health, Education, and Welfare, which stated that in a sample of 2,800 people, one-third believed that it is appropriate to do something regularly to help with bowel movements.

The bowel habits of normal persons were defined in the findings of a study by Connell et al (1965) in England. The two populations studied were: 1) the industrial community, and 2) those people seen in general practice. Ninety-nine percent of the people sampled had a range of three or more

bowel movements weekly and up to three bowel movements daily. These findings suggest that fewer than three bowel actions weekly and more than three bowel actions daily can be considered abnormal.

Several authors enumerated that causative factors which result in a change of bowel habits. Smith (1967) stated that nearly any alteration of bowel function can be caused by disease, and delay can be caused by changes in diet, habit, surroundings, climate, or time spent in bed. Browse (1965) concurred with Smith in relating that an alteration of bowel habits is a common complication of rest in bed. Causes may be attributed to changes in diet, activity, or habitual routines. The posture required of the hospitalized client to use a bedpan alters the position of the muscles of the pelvic floor which in turn decreases the effectiveness of elimination.

The social embarrassment induced by the act of defecation, along with the odors and noises that accompany the act may also contribute to altered bowel habits as the patient may voluntarily subdue his desire to defecate. Trulove, Weeks, and Almy (1966), following a clinical observation study, related that colonic motor activity is powerfully influenced by the emotional state. Rectal constipation usually arises as a result of faulty bowel habits. The desire to defecate may be resisted, especially if it

comes at a socially inconvenient time. In addition to the emotional component which can cause constipation, the bland diet of the cardiac patient contributes to the promotion of constipation. (Steigmann 1962). Smith (1972) relates that heart damage produces a physically invisible change in an individual's body image. This statement may explain Steigmann's (1960) contention that the cardiac patient may be afraid that defecation is too strenuous a process.

Cathartics are frequently used to prevent or cure constipation, thus promoting strain-free evacuation. Results of a survey in England (1969) indicate that the frequency of taking laxatives increases with age. Women seem to suffer more from constipation than men, and this may be attributed to hormonal differences or the upsetting of the pelvic floor reflex following childbirth. In an interview Dr. Mendeloff (1972) stated that the continued use of laxatives tends to promote trouble. Those people who abuse laxatives usually do not organize their time for proper eating or for elimination.

The abuse of cathartics can be detrimental. Smith (1967) divulged that frequent dosing of purgatives results in a colon dependent upon stimulation and the drugs themselves become the main cause of constipation. Ratcliff (1962) agrees with Smith that laxatives (if used regularly) overstimulate the intestinal muscles to a point of flaccid

exhaustion, and normal activity is then no longer possible; thus causing the constipation for which they are used to treat. The adult who has regularly taken laxatives may lose the sensation signaling the need to defecate and therefore strain in attempting to defecate because he does not know whether or not his rectum is full (Nursing Times 1969).

Patterson (1963) states that the excessive use of laxatives is an important cause of many unexplained gastro-intestinal symptoms and can lead to unnecessary and harmful treatment including unneeded surgery. Steigmann (1962) reports that the enema, used in place of the laxative, serves to exhaust the patient and takes up a great deal of nursing time.

Cathartics do serve a useful purpose if used properly. Smith (1967) believes that they are often needed in the hospital for patients who have been confined to bed for long periods and to overcome the constipating effects of drugs such as morphine, codeine, and the ganglion-blocking anti-hypertensive agents. Steigmann (1962) contends that the judicious use of an appropriate laxative not only reinforces the effectiveness of dietary and hygienic measures to restore bowel function, but as soon as these measures help to free the patient from constipation, he should automatically decrease and/or abstain from the further use of any laxatives.

The act of defecation may be critical to the cardiovascular client. Trulove (1966) related that the straining

movements of defecation include forced expiration against a closed glottis (the Valsalva maneuver) which results in a considerable rise in intrathoracic pressure and consequent cardiovascular responses. Halpern et al (1960) concur that straining at stool may be a dangerous exertion; constipation and the use of the bedpan produce stresses that mitigate against strain-free evacuation. Bedpan deaths according to Halpern et al (1960) are a hazard among patients with serious organic heart disease. Steigmann (1960) cites the results of a study which found that use of the bedpan by constipated patients increases the frequency of straining from three to six times compared with unconstipated individuals and that this difference disappears after the use of suitable laxative. Shaftel et al (1960) in an exploratory study of the aspects of drug-induced constipation of the vascular system have related that the most common circulatory disturbances encountered, during or immediately after bowel action, were: the circulation through the heart, cerebral circulation, pulmonary circulation, and peripheral vascular system accidents.

Bowel elimination is a basic human need - a common act of all individuals. The act of defecation is considered to be a potential hazard for the cardiovascular client. During a period of hospitalization, this potential danger is minimized through the use of cathartics. The use of

cathartics may affect the patient long after discharge from the hospital. No documented studies have been found in the literature which deal with the problem of bowel elimination in the post-hospitalized cardiovascular client. The apparent absence of this type of study indicates a need to determine if a problem exists in this area of patient care.

Definition of Terms

For the purposes of this study, the following terms were defined:

1. Normal bowel habits - the defecation process which the patient describes as being usual for him prior to hospitalization.
2. Cathartics - any medicinal agent used to facilitate the defecation process (Bergerson 1973).
3. Period of decreased activity - an interval of time, at least forty-eight hours in length, during which the individual is initially confined to bed with bathroom privileges only, followed by a gradual increase in activity level daily until discharge from the hospital.
4. Alterations in bowel habits - any changes that the patient describes as being deviations from the patterns which he has considered normal for him.

Limitations

For the purposes of this study, the following limitations were identified:

1. Each subject was able to identify his normal pattern of bowel elimination.
2. Each subject was frank and honest in his response to the questionnaire.
3. The types and amounts of prescribed drugs which affected the eliminatory patterns of the clients sampled.

Delimitations

For the purposes of this study, the following delimitations were identified:

1. The sample consisted of individuals who had been diagnosed as having cardiovascular disease and who were subjected to decreased activity during the acute phase of illness.
2. Each individual in the sample received some form of cathartic during his hospitalization.
3. Each individual was able to communicate verbally and in writing in the English language.

Summary

This chapter presented an introduction to the problem of determining if hospitalized cardiovascular clients

experience difficulty in re-establishing their normal patterns of elimination post-hospitalization. The purposes of the study were identified. Current literature regarding elimination was reviewed and served as background information for exploring the problems. Significant terms relating to the problem were defined. Limitations and delimitations for conducting the study were identified.

Chapter II, the Review of Literature, presents a review of the anatomy and physiology of bowel elimination, factors that may affect elimination, and the hazards of elimination to the cardiovascular client. The chapter concludes with a discussion of the nursing responsibilities in regard to assisting the patient to maintain or regain his normal elimination pattern. Chapter III, Procedure for Collection and Treatment of Data, is a description of the setting, sample, and tools utilized to determine if post-hospitalized cardiovascular clients experience difficulty in re-establishing their normal patterns of bowel elimination. The method of data collection and analysis is included. The analysis and interpretation of the findings are presented in Chapter IV. Chapter V presents the summary, conclusions, recommendations, and implications derived from this investigation.

CHAPTER II
REVIEW OF LITERATURE

CHAPTER II

REVIEW OF LITERATURE

Introduction

Bowel elimination is a taboo subject in our present society (Minor 1956). Open discussion of the elimination of body wastes remains socially unacceptable. Yet, elimination is inevitable and universal. This very natural act of defecation, however, may be hazardous to the cardiovascular client and can result in death. A survey of the literature revealed that a dearth of research has been attempted in the past fifteen years in the area of elimination relating to the cardiovascular client. The recent studies that have been conducted are concerned with the relationship between dietary fiber and elimination.

The subject matter for this study includes a review of the anatomy and physiology of the colon with special emphasis on the process of defecation. Factors that may affect elimination in the cardiovascular client, such as inactivity, diet, fluids, and drugs are discussed. Studies regarding the hazards of the elimination process to the cardiovascular client are also included. Nursing responsibilities in regard to maintaining or re-establishing eliminatory patterns conclude the chapter.

Anatomy and Physiology of the Large Intestine

The lower portion of the alimentary canal bears the name large intestine because its diameter is noticeably larger than that of the small intestine, although its length is much less, about five or six feet long. The divisions of the large intestine include the cecum, colon, and anus. It begins at the ileocecal valve, which separates the colon from the terminal loop of the ileum. The average diameter of the large intestine is two and one-half inches but decreases in diameter toward the lower portion of the descending colon and rectum (Greisheimer and Wiedman 1972).

The cecum is a large, blind pouch located in the lower right quadrant of the abdomen, and extends from the ilio-cecal valve to the ascending colon. Attached to the cecum is a coiled, twisted tube called the vermiform appendix, an appendage that serves as the site for the bacterial digestion of cellulose in many animals, but in man it serves no known function (Peery and Miller 1971).

The colon forms a rough frame around the twisted loops of small intestine. Beginning at the terminal end of the cecum, the ascending colon extends up the right side of the abdominal cavity until it reaches the under surface of the liver. At the hepatic flexure, it turns abruptly to the left to become the transverse colon which runs from right to left across the abdominal cavity where it terminates in the left

flexure opposite the spleen. Another turn is made at the splenic flexure and the colon descends down the left side of the abdominal cavity to the pelvic cavity, hence, it is called the descending colon. On entering the pelvic cavity, it assumes an S-like shape and is called the sigmoid colon. This portion extends downward and slightly to the left into the rectum and anal canal (Anthony and Kolthoff 1971).

The rectum is about six inches long in the adult and is continuous with the sigmoid colon and anal canal. The anal canal is about one to one and one-half inches in length. The anus or external aperture is guarded by circular muscle bands, the internal and external sphincters, which are kept closed except during the process of defecation. The internal sphincter is involuntary in its action, being under the influence of the autonomic nervous system (Grollman 1974). The external sphincter is under voluntary control and is responsible for the retention of fecal contents until defecation is desirable.

The muscularis is composed of smooth muscle and consists of an external layer of longitudinal muscles and an internal layer of circular muscles. Contraction of the longitudinal layer shortens the gut and contraction of the circular layer constricts it (Guyton 1976). The longitudinal muscles are present in three distinct bands known as taenia coli. The taenia coli are equidistant from each other and give the

impression of being shorter than the colon giving the colon its characteristic puckered appearance. The combined contraction of the longitudinal and circular muscle bands cause the unstimulated portion of the large intestine to bulge outward into bag-like sacs or pocket-like areas called haustrations (Guyton 1976). These haustrations are absent in the sigmoid and anal areas of the intestine as the taenia coli spread out and form a layer which encircles this portion (Mountcastle 1974).

Mucous membrane of cuboidal cells, which contain crypts but no villi, form the epithelium of the colon. Scattered throughout the mucosa are large numbers of goblet cells (Glass 1968). These goblet cells secrete small amounts of mucous which serves as a protective lubricant to facilitate the movement of colonic materials and as a protective covering for mucosa (Grollman 1974).

Constant friction in the lumen of the colon causes large numbers of epithelial cells to be sloughed off and eliminated in the feces. They are replaced by cell multiplication in the bottom of the crypts. New cells continuously migrate upward from the crypts to the surface of the lumen (Mountcastle 1974).

Innervation of the large intestine is effected by fibers from both divisions of the autonomic nervous system. Sympathetic stimulation originates from the sympathetic

outflow of the cord segments from L₁ to L₄. This divides into two hypogastric nerves which are joined by the celiac plexus. Such stimulation inhibits the motor activity of the colon. Conversely, parasympathetic stimulation increases motor activity. The proximal half, to about the middle of the transverse colon, is supplied by the vagus nerve. Pelvic nerves which come from the S₂ to S₄ segments of the spinal cord supply the distal portion (Glass 1968). Neurogenic and myogenic factors are equally important in the initiation and regulation of contractile activity. Neurogenic control of intestinal contractions is exerted primarily via the neurons of the mesenteric plexus. Myogenic control occurs by way of the slow, cyclical electrical activity which is generated by muscle cells of the longitudinal layer. When colinergic tone is high, the level of excitability is increased and contraction frequency is maximal for that area of intestine. When adrenergic tone is high, the contractile activity may be reduced to a minimum (Bortoff 1969).

The blood supply to the large intestine arises mainly from branches of the superior mesenteric artery which supply the cecum, appendix, and the ascending and transverse colon. The descending colon and the rectum are supplied by branches of the inferior mesenteric artery (Glass 1968).

The colon may be considered to be a large storage bin or waste can for the body. The residue of a meal

is generally turned into feces and ready for expulsion twelve to thirty-six hours after ingestion (Langley 1971). This figure varies and the time may be lengthened or shortened depending on the type of food eaten. The effects of different foodstuffs upon motility varies with individuals (Nordmark and Rohweder 1975). The sympathetic system inhibits the whole of the large intestine and closes the sphincter ani, hence the motility of the large intestine is readily modified by the emotional state (Keele and Neil 1971). Not all of the residue of any one meal is excreted at the same time. The quantity of feces formed each day varies with the type and amount of food ingested. The color of the feces is determined by its content of bilirubin (Langley 1971).

Langley (1971) states that digestion in the small intestine is so efficient that practically no usable food reaches the large intestine. Thus, the functions of the large intestine are primarily absorption of water and electrolytes back into the circulation and the storage of waste products until they can be expelled during the process of defecation (Guyton 1976). In addition, the large intestine manufactures some vitamins (Tortora and Anagnostakos 1975).

Approximately 400 to 500 cc. of chyme enters the bowel from the ileum. Since the total fecal output is only about 150cc. per twenty-four hours, anywhere from 25-350 cc.

must be absorbed. Although this amount is insignificant when compared to the large volume of fluid absorbed in the small intestine, it does serve to transform the colonic contents from semi-liquid chyme to the solid fecal mass excreted from the anus and is most important in maintaining the water balance of the body (Grollman 1974). Intestinal water absorption is greatest in the cecum and ascending colon (Tortora and Anagnostakos 1975). Sodium Chloride is absorbed along with the water. In exchange, bicarbonates and potassium are excreted into the lumen to be evacuated in the feces (Mountcastle 1974). The bicarbonate helps to neutralize the acidic end products of bacterial action in the colon (Guyton 1976). Relatively large amounts of calcium are also present in the feces, probably derived from the small intestine. Calcium absorption is controlled by parathyroid hormone (Guyton 1976).

The colon serves as the site for the production of several essential vitamins. Notable among these are several B vitamins (B₁₂, riboflavin, nicotinic acid, biotin, and folic acid) and vitamin K, which is necessary for normal clotting of the blood. The production of these vitamins is dependent upon the presence of certain bacteria. As long as the bacteria remain in the colon, they are harmless to man and are referred to as normal intestinal flora (Grollman 1974).

The main micro-organisms present in the feces are those belonging to the groups of *Escherichia coli*, *Aerobacter aerogenes* and *Lactobacillus*. In addition, persons who have received broad spectrum antibiotics also might have yeasts and fungi present in the feces (Glass 1968). The micro-organisms present in the feces can degrade any usable food reaching the colon. These micro-organisms are either ingested with the food or enter the colon via the rectum. They act by splitting complex substances into simpler components, a process of fermentation, which is associated with the production of gas (Langley 1971). Any cellulose ingested with fruits and vegetables is digested in the large intestine by these bacteria (Grollman 1974).

In addition to being present in fruits and vegetables, cellulose also is a component of whole grain coarsely milled flour and whole grain breads and cereals. The bulk of the feces is increased when the cellulose content is increased by the ingestion of whole grain cereals, and the feces contain more water and solids. In contrast to fruits and vegetables, the cellulose present in whole grain cereals is not digested by the intestinal micro-organisms, thus more of the ingested food is undigested, and more food nitrogen is lost to the body (Keele and Neil 1971).

Gases can enter the gastrointestinal tract from swallowed air, formed as a result of bacterial action, or

diffusion from the blood into the gastrointestinal tract. In the large intestine, the greatest proportion of the gases is derived from bacterial action. Certain foods - beans, cabbage, onions, cauliflower, corn, and vinegar - serve as a suitable medium for gas-forming bacteria and cause greater expulsion of flatus from the colon (Guyton 1976). These gases are largely composed of nitrogen, approximately seventy-five percent, with smaller amounts of carbon dioxide, methane, and hydrogen (Guyton 1976).

Putrefaction is a process similar to fermentation whereby protein is converted into smaller molecules, indole and skatole, liberating compounds which give feces its characteristic odor (Langley 1971). These vary from one person to another depending on each person's colonic bacterial flora and on the type of food he has eaten (Guyton 1976).

Movements in the colon are of two types: mixing movements, and mass movements (Langley 1971). The haustral contractions are responsible for the mixing movements of the colon, exposing the fecal content to the surface of the large intestine thus permitting absorption of fluid. These contractions are also responsible for propelling the fecal contents of the cecum and ascending colon into the transverse colon (Guyton 1976).

Fecal material in the transverse and descending colon is propelled toward the rectum by a series of mass movements (Nordmark and Rohweder 1975). These movements usually occur a few times each day but they are more prominent for about ten minutes in the first hour following breakfast via the following series of events. First, a constriction appears at some point in the colon, and then about twenty centimeters of colon distal to the constriction contracts as a unit propelling the feces en masse down the colon. This series of contraction followed by a longer period of relaxation continues until a mass of feces is moved into the rectum and the desire for defecation is felt (Guyton 1976).

Two specific reflexes may initiate the mass movements. The first is the gastrocolic reflex which occurs when the stomach is distended. The second is the duodenocolic reflex which results from filling of the duodenum and which initiates a reflex from the duodenum to the colon and thereby increases the excitability of the entire colon (Guyton 1976).

The neural pathways of these reflexes are unknown. They are not destroyed by bilateral vagotomy or by sympathectomy. Neither are they interfered with when destruction of the communication between the intrinsic nerve plexus of the small and large intestine occurs (Glass 1968). Irritation in the colon, stimulation of the parasympathetic nervous system,

and overdistention of a segment of the colon may initiate mass movement (Guyton 1976). The hormone gastrin also plays some role in this effect as gastrin has an excitatory effect on the colon (Guyton 1976).

The act of defecation occurs via a reflex mechanism which can be controlled voluntarily under most circumstances (Langley 1971). The defecation reflex results from the presence of an accumulation of fecal material in the rectum which distends the rectum and increases the intra-rectal pressure. This distention of the rectal wall initiates afferent signals that spread through the mesenteric plexus to initiate peristaltic waves in the descending colon and sigmoid forcing feces toward the anus (Guyton 1971). If the external anal sphincter is relaxed, defecation will occur. The process of defecation can be controlled voluntarily by vigorous contraction of the external anal sphincter muscles. These sphincter muscles are composed of skeletal muscle and are therefore under voluntary control (Langley 1971).

The defecation reflex is a weak reflex and must be fortified by another reflex mechanism which involves the sacral segments of the spinal cord. When afferent fibers in the rectum are stimulated, signals are transmitted into the spinal cord and reflexly back to the descending colon, sigmoid, rectum, and anus via parasympathetic nerve fibers. Peristaltic waves are intensified by these parasympathetic

signals and thus enhance the process of defecation (Guyton 1976).

Voluntary efforts may initiate and assist the defecation process. This is accomplished by contracting the abdominal muscles which results in an increase in intra-abdominal pressure. Concurrently the epiglottis is closed and the thoracic muscles are contracted resulting in an increase in intra-pleural pressure - the Valsalva maneuver. The increased intra-pleural pressure forces the dome of the diaphragm into the abdominal cavity resulting in squeezing of the viscera and a rise in intra-abdominal pressure (Langley 1971). Healthy men who strain at stool can exert a pressure of 240 to 280 mm Hg. Healthy women may exert a pressure of only 100 to 150 mm Hg. (Halpern et al 1960). These forces serve to force the fecal contents downward in the colon while at the same time they cause the pelvic floor to pull outward and upward on the anus to evaginate the feces downward (Guyton 1976).

The defecation process can be suppressed until a socially acceptable time presents itself. When this urge is ignored, it remains present for a time and then disappears due to adaptation of the stretch receptors and may not reappear for several hours. The individual may initiate the urge to defecate by taking a deep breath and contracting the abdominal muscles. However, reflexes initiated in this

manner are not as effective as those that arise naturally (Guyton 1976). Established regular habits for elimination are essential for maintaining effective bowel elimination, which means that the act should be undertaken at the same time or times each day (Langley 1971).

In addition to voluntary control, defecation may be inhibited by pain, fear, diet, inactivity, medications, or elevated temperature. Not to be forgotten are the various psychogenic inhibitory impulses which may exist. Finally, cultural customs may proscribe defecation under certain circumstances (Guyton 1976).

Thus, the whole mechanism of defecation is a neatly coordinated process. The urge to defecate is initiated by distention of the rectum resulting from a mass peristaltic movement. The anal sphincters relax, the rectum shortens, and the muscular contraction raises the pelvic floor. At the same time, the anterior abdominal wall is drawn in and the diaphragm flattens, initiating the forces leading to defecation (Bockus 1976).

Factors Which May Affect Elimination

There are numerous factors which can cause bowel problems. These problems may result from poor bowel hygiene, prolonged bed rest or inactivity, the aftereffects of surgery, disease entities, emotional upsets, diet, and drugs

(Gragg and Rees 1970). Mitchell et al (1968) report that bowel evacuation may occur regularly until an emotional upset occurs, in which case there may be either an increased number of bowel movements, almost a diarrhea, or retention of the feces for a day or two resembling constipation. The overstimulation of the parasympathetic nervous system due to stress results in diarrhea. The overstimulation of the sympathetic nervous system results in constipation (Ellis and Nowlis 1977). Elderly patients may suffer from constipation because muscle tone is relaxed, the dietary intake is inadequate for nutritional needs, and activity is diminished (Nordmark and Rohweder 1976). Those factors affecting elimination that are discussed in this paper include poor bowel hygiene, prolonged bed rest or inactivity, emotional upsets, diet, and drugs.

Constipation means slow movement of feces through the large intestine, and it is often associated with large quantities of dry, hard feces in the descending colon which accumulate because of the long time allowed for absorption of fluid (Guyton 1976). Steigmann (1960) defines constipation as a condition in which none of the residue of a meal ingested eight hours after defecation is excreted within forty-eight hours. Any factor which causes undue delay in the passage of feces is a cause of constipation. DuGas (1972) lists three origins for these factors; disturbances to

the central nervous system, disturbances in reflex peristalsis, and mechanical disturbances. The central nervous system origin is the cause when there is a breakdown in the conditioned reflex for defecation. This common phenomena occurs when the urge to defecate is denied by voluntary muscle contraction and the rectum becomes adjusted to this increased tension or the rectum may even return stools to the sigmoid. If this is habitually done, the normal conditioned reflex is lost. In adults this may be due to failure to respond to the normal defecation urge because of the pressures of time and alterations of daily activities. An imbalance of the autonomic nervous system may result in excessive tone of the circular muscle of the intestine. This may be produced by factors such as strong emotion which results in an increased production of epinephrine leading to inhibition of peristalsis. In addition to strong emotion, drugs, such as morphine or codeine, may effect the same response (Goodman and Gilman 1975).

Disturbances in reflex peristalsis may occur due to lack of sufficient bulky foods in the diet, or to excessive use of laxatives. Long term use of laxatives result in a "wearing out" effect on the nerves initiating bowel action (DuGas 1972).

Weakness of the intestinal muscles causes mechanical disturbances and occurs as a result of disease, the aging

process, lack of essential vitamins (especially the B group) or a loss of electrolytes (especially potassium). Weakness of the accessory muscles of the abdomen, pelvis, and diaphragm are contributing factors classed as mechanical disturbances. An obstruction in the gastrointestinal tract is also included as a mechanical disturbance leading to constipation (DuGas 1972).

In regard to bowel hygiene as a factor affecting elimination, Feurst, Wolff and Weitzel (1974) state that the establishment of bowel habits begin in childhood. These habits have psychological implications depending upon accepted practices in various cultural groups. These practices are concerned with a consideration for privacy, cleanliness, and frequency of bowel action. DuGas (1972) concurs that cultural practices influence bowel action. The ability to control the act of defecation leads to independence. This independence is important in certain cultural groups.

Gragg and Rees (1970) state that the chief cultural pattern influencing the establishment of eliminatory patterns is that of privacy. Flath (1975) describes the court of Louis XIV when the establishment of privacy was not important during the defecation process. This monarch received cleansing enemas in the presence of courtesans and this was an accepted practice during his reign.

According to Fuerst, Wolff, and Weitzel (1974) the ability to relax aids the defecation process. It is necessary for the individual to learn to assume a way of life that allows time for relaxation. The individual must be relaxed both physically and mentally; depressing mental conditions cause a slowing of peristalsis (Nordmark and Rohweder 1975).

During illness or hospitalization, the individual is often required to use the bedpan in place of the familiar commode. The use of a bedpan may be an embarrassment to the patient. The unnatural lying position and the presence of others make elimination difficult (Gragg and Rees 1970). Bockus (1976) states that the normal physiological position for defecation is the squatting position. Modern day man attempted to improve upon this position and provided a seat to sit upon; this change in position alters the position of the muscles of the pelvic floor. The use of the traditional bedpan in the hospital still further alters the normal position for defecation. In addition, the stress of being away from the usual home environment may further disturb defecation habits in the hospitalized client (Fuerst, Wolff, and Weitzel 1974).

Prolonged bed rest is a factor that may deter bowel elimination (Luckmann and Sorensen 1974). DuGas (1972) states that lack of exercise is an important factor in causing constipation, particularly in the sick patient. Browse (1965)

concurr with DuGas and reports that constipation is a common complication of rest in bed. Olson (1967) states that the process of elimination depends upon the integration of smooth and skeletal muscle activity and complicated visceral reflex patterns. Immobility may interfere with these mechanisms, resulting in a diminished expulsive power or the loss of the defecation reflex. Muscular atrophy and loss of muscle tone occur in the immobilized, the debilitated, or the malnourished patient. Lack of exercise brings about a generalized weakening of the muscles which may interfere with the mechanical expulsive control system.

There were discrepancies in the literature regarding the term "bed rest" and all that it entails. Beland (1975) states that rest is more than limited physical activity; the term encompasses calmness, ease, peace, repose, and tranquility. She says that true rest implies a state in which the individual is physically, mentally, and socially at ease. Carnevali and Brueckner (1970) in reassessing the concept of rest, describe physical immobility as any limitation to the patient's physical movement or physiologic process. The restriction of movement may occur either within the patient or the environment.

Initially, enforced bed rest is a need for the patient suffering from an embarrassment to the circulatory

system. Kernicki (1970) states that the client with coronary artery disease must have rest until adjustment has been made in the circulatory system and healing of the infarcted area has occurred. A decrease of activity is desirable to enable body cells to restore themselves. Armington and Creighton (1971) cite the purpose of maximum rest as a means of decreasing the body's demand for cardiac output by lowering metabolic requirements. They state that the client with congestive heart failure should resume physical activity gradually when he is free from symptoms. Peery and Miller (1971) state physical inactivity is accompanied by wastage of cellular substance and loss of strength. Beland et al (1975) state that while activity is important to the recovery of the cardiac patient, he should avoid those activities which place a strain on the heart; the most dangerous are those that cause a sudden or great increase in work.

Carroll and Becker (1972) contend that the policy of limited physical activity previously permitted to patients in the coronary care unit is changing and becoming more liberal. They advocate short periods of chair rest as a method of improving pulmonary function and also the morale of the patient. The use of bedside commodes and permitting the patient to stand for weighing activities require less energy than bedpans and bed scale weights. These patients may be permitted bed baths, shaving, linen changes, and back

care. The patients are generally allowed to feed themselves and perform oral hygiene.

Olson (1967) states that the dietary regimen is an important aspect of bowel hygiene. Foods have varying effects on each person and therefore it is imperative to learn what foods have a natural laxative effect for each person. Prune juice is universally considered the most effective laxative. Fluids and fruit juices stimulate reflex activity and assure water to the feces. The diet must contain sufficient amounts of bulk and cellulose materials.

A diet low in roughage often leaves so little residue that the fecal amount is small and becomes dry before sufficient quantity is present to stimulate the defecation reflex. Heavy residue foods pass through the large intestine quickly while low residue foods are moved more slowly. Water increases the rate of movement of residue (Fuerst, Wolff, and Weitzel 1974).

Mitchell et al (1968) state that cellulose, a polysaccharide of glucose found in the framework of plants as the chief constituent of wood, stalks, and leaves of all plants and the outer covering of seeds and cereals, is an important substance of the non-constipating diet. No known enzyme secreted in the human intestine can digest cellulose because it cannot break the linkage between the glucose units. The

Indigestibility of cellulose is its main asset, since the undigested fiber furnishes the bulk necessary for efficient and normal peristaltic action. Research has demonstrated that the normal colon performs better when a reasonable amount of bulk or residue is present. Painter, Almeida, and Colebourne (1972) conducted a study utilizing unprocessed bran to supplement the diet of normal individuals. They concluded that the amount of bran needed to prevent straining at stool varied greatly among individuals from three to forty-five grams per day. A high residue diet should include fresh fruit, vegetables, and whole wheat bread and flour. Unfortunately most people's diet depends upon the availability of food at prices they can afford. Retired people or people on a fixed income can afford only cheap, processed foods.

Galton (1974) and Bockus (1976) listed fruits and vegetables that are high in fiber content. These included: string beans, broccoli, brussels sprouts, cabbage, cauliflower, beets, carrots, sweet potatoes, peas, parsnips, berries, tomatoes, egg plant, winter squash, pears, apples, and figs. Mitchell et al (1968) contend that most fresh fruits contain some cellulose. This type of bulk, along with fruit acids, serves as a stimulant to intestinal motility for many people. Cereal fiber, whole grain and bran, is the best source of fiber. White bread or pure white wheat flour

contain none of the bran or germ. Some of the bran is processed for use as high roughage breakfast cereals. A small portion of wheat is milled as whole wheat or Graham flour and some as semolina for the manufacture of macaroni, spaghetti, vermicelli, and noodles. Oat products carry more of the virginal kernel than do most of the processed cereals. Bran is the fiber rich outer coat of the seed of cereal grain and is contained in those commercially packed cereals which include bran in their name.

Burkitt, Walker, and Painter (1974) reported in their studies regarding dietary fiber and disease that those people consuming high residue diets tend to pass large, soft, often unformed stools. Refining of foods leads to fewer and smaller stools. They reported that the low fiber diets of the astronauts resulted in constipation with five or six days elapsing between bowel actions.

Burkitt, Walker, and Painter (1974) cite diseases that may owe their origin to straining at stool. Those diseases affecting the cardiovascular client include varicose veins and coronary heart disease. They believe that varicosities arise due to the increased intra-abdominal pressure occurring during the straining process of bowel elimination which results in damage to the proximal valves of the leg veins. Since valva incompetence is followed by dilatation and varicosity, it seems probably that changes occur in deep

veins leading to thrombosis during recumbency. The removal of fiber from the diet raises serum cholesterol levels, a process that predisposes to coronary heart disease (Burkitt 1974). Studies done by Painter and Burkitt (1974) indicate that the incidence of ischemic heart disease is rare in all African tribal groups, but rising in urban areas, among Africans who adopt Westernized diets. In Great Britain, ischemic heart disease mortality had been increasing since 1939. Then war time rationing led to the use of wheat flour with a greater fiber content and the trend was arrested. The mortality resumed its rise after the war.

Steigmann (1960) relates that the dietary regimen for the cardiac patient must be modified. These people should not have large amounts of fruits and vegetables, butter, cream, bacon or oil, coarse bread and dry cereals, large amounts of fluids, or a high caloric intake. Sanderson (1972) states that prescribed diets may vary from regular to low caloric, low salt, low cholesterol, or pureed diets. Coffee and tea are prohibited due to their caffeine and xanthine effect. Only tepid liquids are allowed since extremes of temperature can cause a vagal response resulting in arrhythmias (Sanderson 1972). Iced liquids should be avoided since cold precipitates myocardial ischemia in some patients (Hurst 1974). Houser (1976) disagrees with Sanderson and Hurst in their contention that ice water should be restricted for all cardiac

patients. She conducted a study of ten post-myocardial infarction patients and the physiological effects of ice water ingestion. She concluded, as a result of her study, that in the uncomplicated myocardial infarction patient who is free of stressors, the ingestion of ice water does not significantly alter cardiac status. Kernicki (1970) reports that the dietary restrictions of the patient with coronary artery disease depend upon the condition of the patient. In the acute phase of his illness, the patient may receive only intravenous fluids and he is gradually started on a soft, bland diet which is slowly increased to regular, often low cholesterol or low caloric diet. Sodium restriction is usually only imposed in the presence of heart failure. Armington and Creighton (1971) discuss the dietary restrictions of the hypertensive client, which include a low caloric and low fat diet that may also include sodium restriction. Kernicki, Bullock, and Matthews (1970) state that the cardiac patient in congestive heart failure may be placed on a low sodium diet to reduce the edema-forming salts in the body. Raw fruits and vegetables are usually poorly tolerated for the patient in congestive heart failure because they cause gastric distention and heartburn (Luckmann and Sorensen 1974).

Shaftel et al (1960) report that the bland diet given to patients with cardiovascular disease usually does not contain enough roughage to stimulate effective

peristaltic contractions or to permit sufficient material to reach the rectum. The low sodium diet may curb the individual's inclination to ingest the quantity of fluids necessary for proper bowel function. Ellis and Nowlis (1976) state that the lack of roughage in bland or liquid diets usually causes diarrhea as such substances pass through the intestinal tract very rapidly. After a short time, the individual develops constipation due to stagnation of the diet in the gastro-intestinal tract.

Waller, Misciewicz, and Kiley (1972) studied the effect of eating on the motility of the colon in constipation. Constipated patients show no consistent response during a meal and very little response after it. The stimulation of eating may not be accompanied by any marked increase in propulsive activity in the colon as a whole.

Shaftel et al (1960) studied the aspects of drug-induced constipation of cardiovascular clients. They contend that the most important influence in the development of constipation in cardiac patients is the drugs used to treat the main disease. They found that in a population sample of fifty patients treated with narcotics for a two to four day period, 100 per cent developed constipation. In thirty patients treated with ganglionic blocking agents for a period of four to six days, ninety-three per cent developed constipation. Sixty per cent of twenty-five patients treated with

sympathomimetic agents for a period of one to two weeks, developed constipation. Of fifty patients treated with antacids for a period of one to two weeks, forty per cent developed constipation. Other drugs contributing to constipation in a lesser degree included the anticholinergics, barbiturates, and tranquilizers.

Shaftel et al (1960) state that drug-induced constipation may arise from three basic mechanisms; local neuroperistaltic depression may be brought about by ganglionic blocking agents which interrupt the transmission of nerve impulses to the intestinal tract. Certain opiates exert a direct spasmodic action on the gastrointestinal musculature. The use of bulk containing diets and nonabsorbed antacid medications may depress the local neuroperistaltic mechanism by overstimulation, with resultant tachyphylaxis, whereby a fatiguing effect results which interrupts the transmission of the sensory stimuli to the motor center.

Bergerson (1973) cites the rationale for resultant constipation in patients receiving opiate narcotic analgesics. Gastric, biliary, and pancreatic secretions are decreased, and the digestion of food in the small intestine is delayed. The tone of smooth muscle in the sphincters is increased, and this delays the emptying of the stomach and small intestine. Although the nonpropulsive type of rhythmic contractions in the intestine are increased, propulsive peristalsis

is decreased. The tendency to increased tone extends also to the biliary ducts and the sphincter of oddi. The defecation reflex is depressed as a result of diminished sensitivity of the bowel and rectum and increased tone and spasticity of the muscle of the colon.

The role of the central nervous system in the initiation and maintenance of the peristaltic reflex is expressed both through the cholinergic vagal system and the adrenergic sympathetic nerves. Drugs which either depress the cholinergic system (anticholinergic agents) or stimulate the adrenergic system (sympathomimetic agents) diminish the peristaltic movement and can cause constipation in predisposed individuals (Shaftel et al 1960). Drugs which are capable of exerting a depressant action on the medullary center or on transmission across the spinal centers will adversely affect colonic movements. Drugs that produce this action include the barbiturates, hypnotics, and tranquilizers (Bergerson 1973).

An excess of solids in the feces may produce constipation by mechanical interference with downward propulsion and evacuation of intestinal contents, as well as by repeated pressure stimulation of the sensory centers with resultant tachyphylaxis. The use of bulk containing diets and non-absorbed antacid medications may, in addition to presenting

mechanical difficulties, result in the interruption of transmitted stimuli with consequent constipation (Shaftel et al 1960).

Effect of Constipation on the Cardiovascular System

The major studies done in relation to the effect of constipation on the cardiovascular system were reported in the early 1960's. A review of the literature for the past fifteen years reveals that there have been no recent studies done concerning this topic.

Steigmann (1960) reports that straining at stool is a danger to the cardiovascular patient or those people with impaired circulatory status. Death has been recorded as well as precipitation of anginal attacks and hemorrhage at the base of the brain. There is an increase in the frequency of straining at stool from three to six times of that in non-constipated individuals. During strain-produced evacuation there is an increase in intrathoracic pressure and in arterial and venous pressures, prolongation of circulation time, reduced blood flow through the extremities, and an ectopic rhythm. Avoidance of straining will avert possible cerebral hemorrhage, anginal attacks, and sudden death during defecation. McGuire (1949) studied bedpan deaths and contended that cardiac arrhythmias, vascular collapse, and embolism were the mechanisms responsible for the death of subjects

while straining during the act of defecation.

Olson (1967) states that during the process of defecation the individual usually employs the Valsalva maneuver. The Valsalva maneuver is a factor which increases the work load of the heart. The maneuver is effected when an individual fixes his thorax and holds his breath. In so doing, the breath is pressed forcibly against the closed glottis. During this period of thoracic fixation without expiration, the intrathoracic pressure is elevated and interferes with entry of venous blood into the large veins. With release of the breath there is consequent fall in intrathoracic pressure and a large surge of blood is delivered to the heart at one time. This can result in tachycardia which may lead to cardiac arrest if the heart is not functioning optimally.

Halpern et al (1960) report that the intra-abdominal pressure during defecation may increase from 25 to 200 mm Hg by violent, explosive efforts. The marked effect of these pressures upon the circulation may decrease venous return to the heart. The Valsalva criteria is defined as an elevated intrathoracic pressure of 40 mm Hg or more, sustained for at least eight seconds.

Halpern et al (1960) studied the bowel function of normal, non-constipated individuals and they found that twelve per cent experienced the Valsalva during the use of the bedside commode and twenty-eight per cent experienced

Valsalva using the bedpan. They concluded that the use of the bedpan and the presence of constipation markedly increase the frequency, intensity, and duration of straining during the defecation process.

Halpern et al (1960) conducted another study concerning the effect of straining at stool on heart rate, electrocardiogram (EKG), heart sounds, pulmonary circulation, and circulation time. They determined that during the onset of the straining process, the pulse rate was unchanged, but as the straining forces were sustained and intrathoracic pressure was elevated, a tachycardia resulted.

Straining affected the electrocardiogram in 22.5 per cent of 209 subjects. The EKG abnormalities elicited were a depression of the T wave, depression of the ST segment, and rhythm disturbances such as PVC's or incomplete heart block. The subjects also demonstrated a slowing of the QRS complex and T-P fusion. These changes were greater in women than in men. They concur that shortly after onset of the Valsalva maneuver, blood is pooled in the extremities and cardiac filling is reduced. Consequently the cardiac output is quite low and the arterial systolic and pulse pressure are minimal, resulting in "empty pulses". They feel that a minimal coronary perfusion occurs with a resultant worsening of the myocardial nutrition.

Straining produces an effect on heart sounds. S_1 and S_2 are diminished during straining. Murmurs that are present in the pre-strain period are also diminished in intensity (Halpern et al 1960). Systolic murmurs that increase in intensity after Valsalva release include those of aortic stenosis, mitral regurgitation, and pulmonic stenosis. The diastolic murmurs that increase in intensity after Valsalva release include those of aortic regurgitation, pulmonary regurgitation, mitral stenosis, Austin Flint and patent ducts (Hurst 1974).

Halpern et al (1960) state that straining produces an effect on the pulmonary circulation. During the period of onset of straining, the venous blood pressure becomes elevated. As the strain is continued, the arterial blood pressure becomes elevated with resultant vasoconstriction occurring in the systemic arterial system. The release of the strain results in an increase of both systemic and pulmonary arterial pressure.

Straining also affects the circulation time. Performance of the Valsalva maneuver delays the circulation time by an interval approximately equal to the strain period (Halpern et al 1960). In studies done by Halpern et al (1960) they concluded that there is no cumulative effect exerted by individual short strains. Neither multiple exertions for short periods of time, nor individual strains

of less than six seconds' duration will grossly affect the circulation time. Sustained efforts exerted at pressures in excess of 10 mm Hg for more than six or eight seconds will prolong circulation time in rough approximation to the duration of the strain.

Halpern et al (1960) studied the peripheral vascular dynamics of bowel function and determined that even minor changes in the velocity of the components of the flowing blood stream tend to produce disturbances or eddies. The straining forces of bowel function may explain the dislodgment of fragments of a blood thrombus. The extreme fluctuation in caliber of peripheral vessel walls during the vasoconstriction and vasodilation contributes to the freeing of loosely attached clots. They conclude that hazards can be eliminated by reducing the magnitude and duration of the straining efforts.

Berman et al (1960) conducted studies in regard to the cerebrovascular dynamics of bowel function and discovered that with a rise in intrathoracic pressure, as evidenced during performance of the Valsalva maneuver, there is a fall in systemic blood pressure occurring as a result of reduction in cardiac output due to the marked impairment of venous return. Sufficient stasis occurs in the cerebral vessels to produce anoxic changes in the cortical cells which leads to

mycope. Transient fall in cerebral blood pressure, resulting in fluctuations in cerebral oxygen supply, may be hazardous to patients with cerebrovascular disease.

It has been shown by these studies that performance of the Valsalva maneuver can be hazardous to the client with many types of cardiovascular disease. The individual performs these straining forces both consciously and unconsciously while carrying out his daily activities. Batson (1960) states that defecation, micturition, vomiting, and parturition result from increasing the abdominal pressure and at the same time relaxing the proper sphincter. Common unconscious uses of the Valsalva maneuver are those of lifting, pressing, pushing, coughing, and sneezing. He contends that many of these functions, excluding vomiting, pressing and pushing, can be performed in normal persons without straining, as evidenced in laryngectomized patients who can perform these functions.

Littler and Honour (1974) recently conducted a study of eleven patients who demonstrated a Valsalva response during defecation and often repeated the response several times during the event. They concluded that very large swings in the level of arterial pressure and heart rate occur during everyday life and that patients, whether normotensive or hypertensive, showed no qualitative differences.

Nursing Responsibilities in Relation to
Bowel Habits in Patients

The nursing responsibilities in relation to the bowel habits of cardiovascular patients encompass two major categories. These include the prevention of constipation and the treatment of constipation.

Olson (1967) states that the prevention of constipation in the immobilized patient is a nursing responsibility and includes these three areas: history taking, teaching the patient in regard to the physiology of elimination, and planning a course of action to maintain and to promote normal colonic function.

In the area of history taking, Fuerst, Wolff, and Weitzel (1974) state that in our society it is not generally acceptable to discuss body elimination freely, thus this area is often neglected in nursing care. They suggest that the nurse should handle this topic in a direct but objective manner. Minor (1956) concurs in that Americans consider elimination to be a ritualistic act that is carried out in secrecy. DuGas (1972) lists the items that should be included in the history of a patient's bowel habits as follows: frequency of defecation, description of consistency of stools, usual color and odor of stools, and a description of foreign matter that may be present. Beland (1975) states

that the size of the stool is significant because the patient may pass a small amount of feces while retaining and accumulating feces in the lower bowel. The patient may also be questioned in regard to headache, a bloated feeling, laxative use (include frequency and type), the use of enemas, and normal food habits, especially those foods which are low in residue and predispose to constipation (DuGas 1972).

Thompson (1966) emphasizes the importance of recording the patient's normal pattern of elimination on the nursing care plan. She states that the nurse should have a knowledge of the specific medicine, treatment, or food requested by the patient for maintaining normal habits. The record should reflect the patient's ease in discussing bowel difficulties with the nurse or the doctor.

Educating the patient in regard to the physiology of elimination is important to the success of any program designed to prevent constipation (Olson 1967). Flath (1975) states that nine-tenths of the prevention and control of constipation and related bowel disorders rests in comprehending the anatomical and physiological functioning of the gastrointestinal tract: what the gastrointestinal tract is, what the gastrointestinal tract does, how the gastrointestinal tract performs, and what the individual must do to keep the gastrointestinal tract performing the way nature intended.

He believes that if the individual understands the physiology of the colon and rectum then the habits that contribute to gastrointestinal tract malfunctioning can be changed and proper steps can be taken to bring it back to normal.

Patterson (1963) discusses specific information that the patient should be made aware of in terms of bowel function. According to Patterson, the individual should know: that there must be stool in the sigmoid and the rectum before a natural bowel movement occurs; anger and tension affect the intestinal tract's performance; muscle tone also affects the performance of the gastrointestinal tract and adequate physical exercise is needed to maintain good muscle tone; adequate amounts of fluids and bulks are necessary to keep regular; a definite daily time should be reserved for evacuation.

The third area in regard to prevention of constipation is that of planning a course of action to maintain and promote normal colonic functioning (Olson 1967). DuGas (1972) states that constipation may be a result of poor muscle tone so that a program to prevent constipation should include exercise, especially that of tightening the abdominal muscles. Fuerst, Wolff, and Weitzel (1974) concur and further state that exercise will also stimulate peristalsis. Bockus (1976) describes two exercises that hospitalized clients with weak muscles may perform as a method of

tightening these muscles: 1) recline on the bed with arms folded across the chest and rise to a sitting position without allowing the heels to be raised; 2) assume a supine position with shoulders flat and raise both legs without bending the knees. These exercises should be performed twice daily. To further develop this area, the nurse who is planning care for this client must take into consideration the patient's history and then attempt to simulate his normal bowel habits in the hospital environment (Fuerst, Wolff, and Weitzel 1974).

If constipation cannot be prevented, then it must be treated. DuGas (1972) lists these objectives for nursing intervention of the constipated patient: reestablishment of normal bowel functioning, relief of distressing symptoms, maintenance of fluid and electrolyte balance, maintenance of adequate nutritional status, and maintenance of comfort and hygiene.

The reestablishment of normal bowel habits may be difficult for the hospitalized client. Minor (1956) states that during hospitalization the individual must relinquish his right of performing excretory acts in private and is subjected to being assisted by members of the opposite sex which serve to destroy his dignity. DuGas (1972) also claims that the establishment of privacy is important to successful completion of this act.

Mitchell et al (1968) state that the nurse should assist the patient to accept a more regular mode of living, including a diet that meets all his nutritive requirements and a reasonable amount of exercise. Olson (1967) states that the gastrocolic reflex is stimulated by mass peristalsis action which occurs most frequently after meals and is believed to be strongest after breakfast, which is a good time to encourage bowel movement.

DuGas (1972) reminds the nurse to allow time for the process of elimination. Do not hurry the patient. She states that if the patient's condition permits, allow him to go to the bathroom or to use the bedside commode. She advocates the ingestion of hot fluids, tea, coffee or water, which activate mass peristalsis. The patient should be encouraged to respond promptly to the urge to defecate. If his condition permits, the abdomen may be massaged in a circular motion, moving downward and over the descending colon. Pressure on the side or posterior to the anus sometimes helps to expel feces. These measures should be repeated at the same time every day until regular habits are established (DuGas 1972). Gragg and Rees (1970) also advocate massage to the abdominal muscles. In addition to massage, they claim that proper positioning of the body in walking, standing, and sitting is important, as good posture gives room for the abdominal

organs to function and improves muscle tone.

DuGas (1972) affirms that the second objective in treating constipation is the relief of distressing symptoms. Observation of symptoms is an important nursing function as the patient may not be able to communicate verbally his distress. Objective symptoms the nurse may observe are absence of bowel movement, abdominal distention, and the passage of large amounts of flatus by rectum and by mouth. If the patient is alert, he may complain of a bloated feeling, headache, anorexia, and nausea.

DuGas (1972) defines abdominal distention as an abdomen that feels hard and unyielding, and occurs as a result of air remaining in the colon and fluid which moves back into the colon when waste products have been there a long time. She states that flatus results from swallowed air and the consumption of gas-forming foods or bacterial action on undigested food particles. Air accumulates and causes generalized discomfort and cramp-like pain. Tenesmus may occur and is defined as frequent straining in attempts at defecation which are unproductive of stool (DuGas 1972). DuGas (1972) states that these symptoms are reflex in nature and are due to the increased pressure in the lower colon, a fact that has been proven experimentally by packing the rectum with cotton.

When constipation occurs, Nordmark and Rohweder (1975) cite nursing measures to assist the patient to defecate: encourage foods that tend to have a laxative effect for the individual, encourage fluids, recognize and handle emotional components, and administer enemas effectively as frequently as ordered and needed. DuGas (1972) lists additional measures used to relieve constipation: the use of a rectal suppository, and cathartics. Steigmann (1960) advocates the use of cathartics in the cardiovascular patient and gives two purposes for their use; prevention of constipation by assuring a daily bowel movement of soft stool, and the production of a more rapid evacuation with less straining and less time spent in a more or less uncomfortable position or abnormal position.

Goodman and Gillman (1975) classify cathartics according to their mechanism of action into four main groups. These include the stimulant cathartics, those that act directly to increase the motor activity of the intestinal tract; saline cathartics, those salts that are slowly absorbed from the digestive tract and retain water in the intestinal lumen by osmotic forces; bulk-forming cathartics, the indigestible, hydrophilic colloids that enhance peristalsis secondarily to an increase in the bulk of the intestinal contents and also form an emollient mass or viscous solution that lubricates the feces; and the lubricant cathartics,

drugs that do not enhance peristalsis either directly or indirectly but merely facilitate defecation by softening and lubricating the feces.

Smith (1972) advocates the use of cathartics for the hospitalized patient who is confined to bed as a method of overcoming the constipating effects of drugs such as morphine, codeine, and the ganglionic blocking agents. Olson (1967) believes that the lubricant cathartics are indicated for the hypertensive patient as a method to decrease straining at stool. She warns against the use of other cathartics and stated as her rationale that the abuse and misuse of these agents may lead to an interruption of normal colonic activity and to cathartic habituation. Halpern et al (1960) advocate the early use of a constipation corrective in which the number of strains exceeding 40 mm Hg was reduced from a pre-treatment level of 93.9 per cent to 38.8 per cent. The incidence of exertions lasting longer than eight seconds was reduced from 63.3 per cent to 12.2 per cent.

In regard to the maintenance of fluid and electrolyte balance, Fuerst, Wolff, and Weitzel (1974) state that fluid intake has a relationship to stool consistency. It is a responsibility of the nurse to teach the patient the importance of drinking adequate fluid and to supply those fluids that the patient will consume. DuGas (1972) recommends that fluid intake be at least 2000 cc. every twenty-four

hours.

Dietary treatment of constipation according to Mitchell et al (1968) can be accomplished by the increase of roughage in the diet through the ingestion of fresh and cooked fruit and vegetables, and the inclusion of whole grain breads and cereals. These patients can include stewed fruit and fruit juices in their diet. Prune juice taken at bedtime or the first thing in the morning may be of benefit. Mitchell et al (1968) cautions against the use of foods with a high bran content for elderly patients for fear of impaction. Elderly patients will tolerate stewed or canned fruit better than raw fruits, except for bananas. Other dietary remedies that may be helpful include lemon juice in hot water, or a cup of hot coffee before breakfast.

The nurse must be aware of several factors in relation to nursing responsibilities regarding the hygienic and comfort measures of the patient in the treatment of constipation. DuGas (1972) affirms that the sight and odor of fecal material is repugnant. The nurse is responsible to regulate the environment in such a way as to make the act of defecation more acceptable to the patient. Remove soiled linen promptly and ventilate the room if possible. The high bacterial count of feces is a possible source of contamination, thus the nurse must provide for handwashing and

cleansing of the anal area.

The assistance of the nurse in aiding the patient to maintain or to regain his normal patterns of bowel elimination has been documented as a nursing responsibility. The factors that have been stressed in regard to prevention of constipation include: history-taking, education of the patient in regard to the physiology of defecation, and planning a course of action to promote normal functioning. If constipation cannot be prevented, then it must be treated. Those factors discussed in regard to treatment of constipation include: the reestablishment of normal bowel habits, the relief of symptoms, maintenance of fluids, dietary management, and comfort and hygiene measures.

Summary

This chapter presented an overview of the anatomy and physiology of the large intestine with emphasis placed on the defecation process. The stresses of bowel elimination and its relationship to the cardiovascular client were discussed. Emphasis was placed on those factors that may affect bowel elimination in these clients; inactivity, diet, fluids, drugs, and strong emotions. The chapter was concluded with nursing responsibilities in regard to maintaining or reestablishing eliminatory patterns.

Chapter III, Procedure for Collection and Treatment of Data, is a description of the setting, population, and development of the tool for the study. The use of a pilot study to determine improvement in the research design is included. Concluding the chapter is the description of methodology and the procedure for treatment of the data. The analysis and interpretation are presented in Chapter IV. Chapter V presents the summary, conclusions, implications and recommendations derived from this study.

CHAPTER III

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

CHAPTER III

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

Introduction

This investigation was an exploratory approach conducted for the purpose of determining if hospitalized cardiovascular clients experience difficulty in reestablishing their normal bowel habits following discharge from the hospital. This chapter, Procedure for Collection and Treatment of Data, discusses the setting and population of the study and methods used in collecting and analyzing the data.

Setting

The geographical location for this study was the southwestern United States. Two hospitals were utilized: a 275-bed city-owned hospital, and an equivalent sized Veteran's Administration hospital. In phase I of the study patients sampled from the medical units of both hospitals were interviewed in the hospital setting. In the second phase of the study mail-out questionnaires were used to interview the patient in the home setting.

Population

The population of this study was composed of hospitalized cardiovascular clients who consented to participate in the study. These clients were selected by

convenience sampling of individuals who met the criteria for the study. The target population were selected according to the following criteria: the patients were diagnosed as having cardiovascular disease, were subjected to decreased activity during the acute phase of their illness, received some form of cathartic during hospitalization, and were able to communicate verbally and in writing in the English language.

Written consent of each participant was obtained prior to initiation of the study (Appendix C). An explanation was given to the client with assurance that his anonymity would be preserved. There were several occasions in which permission was not obtained. These clients, therefore, were not included in the study.

The protocol for the study was approved by the Human Research Review Committee of Texas Woman's University and the Human Experimentation Committee of the University of Oklahoma Health Sciences Center. Agency approval was obtained from the administration of the two hospitals involved in the study.

Development of the Tool

The study was designed so that data collection occurred in two phases: 1) an interview guide was used during the convalescent phase of the hospitalization when initial contact was made with the client, and 2) following

discharge from the hospital, the client received a mail-out questionnaire, which he completed at home and returned by mail. The rationale for collecting data in two phases was that it was felt that during the initial contact with the client in the health care facility, a rapport could be established that would ensure a higher percentage of return of the mail-out questionnaires post-hospitalization. Fox (1966) reports that the percentage of returned questionnaires from a mail-out may vary between ten and thirty per cent or more.

A standard interview guide and a questionnaire were designed since no standardized tools that were appropriate for the purposes of this study had been found in the literature. The content of the research tools was derived from a review of the literature and from informal interviews with health-care personnel.

The interview guide was constructed in a structured manner and developed to be used during the initial contact with the client in the health-care facility. The structured format was chosen so that each interview followed a set pattern of questioning. Notter (1974) states that data obtained from a structured interview is more objective than that obtained from an unstructured interview and can be more easily tabulated. The format of the mail-out questionnaire was constructed similar to that of the interview guide to

allow for familiarity of question format and ease of the client in answering the questions at home. Both check-list type and open-ended questions comprised the format of the interview guide and the questionnaire. The questionnaire contained a face sheet (Appendix 2) with instructions to the client for completion and assured his anonymity and voluntary participation. The tools were constructed and submitted to a panel of experts to establish content validity. Content validity is established when the instrument is submitted to a panel of experts who estimate validity on the basis of their experience (Treece and Treece 1973).

A panel of judges with expertise in the areas of cardiology, education, and clinical nursing practice was chosen. The panel of judges consisted of:

1. a cardiovascular specialist who is a Professor at Southwestern Medical School, Dallas, Texas, the chief staff member of the Ischemic Heart Center, and an initiator and member of many research projects;
2. a nursing educator, an Associate Professor of Nursing, Harris College of Nursing, Texas Christian University, Fort Worth, Texas;
3. a cardiovascular clinical nurse specialist of the Veteran's Administration Hospital, Dallas, Texas.

The panel members were given an explanation of the study which included the five purposes of the study and a copy of the research tools. They were asked to evaluate the items in the tools according to the purposes of the study and to respond to each item.

It was arbitrarily decided that agreement of a majority of the judges' responses would constitute acceptance of the research instruments. Two of the three judges accepted the tools as written. The third judge felt that some meaningful variables such as diet and activity also should be included because the fifth purpose would be dependent upon these factors. After reviewing the comments of the third judge in regard to the interview guide, six additional items were incorporated into the tool, and three additional items were included in the mail-out questionnaire for the sake of clarity and validity. The final drafts of the interview guide and the questionnaire were then submitted to the researcher's faculty advisor for final approval (Appendices A and B).

Pilot Study

A pilot study of five patients was initiated over a four-week period in order to determine any areas in the research design in which improvement or change might be needed before the major study was begun (Treece and Treece 1973).

The five patients who consented to participate in the study and who met the criteria for the study were interviewed during the first week. Ten days following their discharge from the hospital, they were sent the mail-out questionnaire. All five patients (100 per cent) returned their questionnaires during the fourth week. The participants responded to each item on the questionnaire so that all questionnaires were valid. As a result of the pilot study, no revisions of the tool or the research design were deemed necessary.

Methodology

For each patient in the sample, a two-phase procedure was followed to obtain the desired information. The two phases involved were: 1) interviewing -- initial contact was made with the hospitalized convalescing patient to enlist his consent to participate in the study, and to collect data regarding his bowel habits pre-hospitalization and during hospitalization; and 2) use of a mail-out questionnaire -- ten days to two weeks following discharge from the hospital, the patient was sent a mail-out questionnaire to determine any difficulties which he may have had in reestablishing his normal bowel habits post-hospitalization. The data for the study were collected between December 15, 1975 and July 26, 1976, the time period needed to obtain a sample of thirty-one patients.

Each of the participants was selected from the daily census report of the hospital. This report listed his name, established diagnosis, age, and name of the attending or admitting physician. Only patients who were in the convalescent phase of their hospitalization were requested to participate in the study. In the city hospital, only those patients whose private physician gave consent for his patients to be included in the study were approached. At the veteran's hospital, consent was obtained from the attending physician that the patient's physical condition was improved to the extent that participation in the study was permissible (Appendix G). It was established that each individual met the criteria for the study either by conferences with the head nurse or a check of the patient's medical record.

The individual was then approached and the general nature of the study was explained to him. If he consented to participate, he then selected the time and the date for the interview to occur. Each patient was advised both orally and in writing (Appendices C and D) that no risk was involved, that participation in the study was strictly voluntary, and that the identity of each participant would be kept confidential. Written consent for voluntary participation was obtained before interviewing each patient.

The interviews were obtained in the privacy of the patient's hospital room. Each patient was asked to answer

the questions as honestly as he could according to his ability to remember the facts. After completion of the interview, the patient was instructed again that he would receive a questionnaire in the mail from twelve to fourteen days post-hospitalization. He was told that the questions would be similar in nature to those asked during the interview. He was asked not to sign his name to the questionnaire or to identify himself in any way. Each questionnaire and return envelope carried a numerical code which was used to establish that each patient returned the questionnaire.

Ten to eleven days following discharge from the hospital each patient was mailed the questionnaire. If the questionnaire was not returned during the next two-week period, a second questionnaire was mailed to the client. The second questionnaire carried a face sheet (Appendix F) enlisting his continued cooperation.

Procedure for Treatment of Data

This study was concerned with determining if hospitalized cardiovascular clients experience difficulty in re-establishing their normal bowel habits post-hospitalization. Since no previous studies were done in this area of patient care, the survey approach was used to determine if a problem existed. The tools devised were an interview guide and a mail-out questionnaire.

According to Fox (1970) data obtained by use of an interview or by questionnaire are almost always nominal data, appropriate for analysis of the response patterns to the separate questions. They can also be ordinal, permitting frequency-of-response analyses. Data obtained from the interview guide and the return questionnaire were tabulated using frequency tables and percentages. Much of the data were described in narrative form for this exploratory study.

Summary

This chapter was concerned with the procedure used in the collection and treatment of data to meet the purposes of this study. An interview guide and a mail-out questionnaire were developed and found to be valid measuring devices to determine if cardiovascular clients experience difficulty in reestablishing their normal bowel habits post-hospitalization. The data were collected by the survey approach and were analyzed using frequency tables and percentages. Much of the data were described in narrative form.

CHAPTER IV
ANALYSIS AND TREATMENT OF DATA

CHAPTER IV

ANALYSIS AND TREATMENT OF DATA

Introduction

An exploratory study was conducted for the purpose of determining if hospitalized cardiovascular clients experience difficulty in reestablishing their normal bowel habits following discharge from the hospital. This study was conducted in two phases. In Phase I, a structured interview guide designed to determine normal bowel habits was used to gather bowel-habit data from a sample of hospitalized cardiovascular patients during the convalescent phase of their illness. In Phase II, approximately two weeks following each client's discharge from the hospital, a questionnaire designed to determine the time required and difficulties encountered in restoring normal bowel habits was sent to each of the previously-interviewed patients. This chapter, Analysis and Treatment of Data, is concerned with the analysis and interpretation of data collected during each phase of the study.

Description of the Sample

The sample for this study was composed of thirty hospitalized cardiovascular clients. Thirty-eight patients had consented to participate in the study and were

interviewed during Phase I. Of these thirty-eight patients, thirty-one (81 per cent) returned the mail-out questionnaire in Phase II, but one individual had filled out the questionnaire incorrectly and was not included in the study.

The distribution of the sample by sex and age is summarized in Table 1. By sex, the sample consisted of twenty-four males and six females. The high percentage of

TABLE 1

AGE AND DISTRIBUTION OF THE SAMPLE

Age in years	Men		Women	
	No.	%	No.	%
40-59	6	20.0	1	3.3
50-59	9	30.0	0	-
60 or older	9	30.0	5	16.7
Total	24	80.0	6	20.0

males in the sample (83 per cent) was due, in part, to the fact that thirteen of the participants (43 per cent of the sample) were men selected from a Veteran's Administration (VA) Hospital. However, of the seventeen participants obtained from a private hospital, eleven (65 per cent) were males and only six (35 per cent) were females. The ages of the participants ranged from forty-two years to eighty-two years. Nearly half the sample (47 per cent) were sixty years or older, and more than three-quarters of the participants (77 per cent) were fifty years or older.

Table 2 is a tabular description of the total sample in regard to sex, age, diagnosis and occupation prior to hospitalization. Categorizing the occupations of the participants, sixteen (53 per cent) were retired or disabled, four (13 per cent) were employed in high-stress occupations, and five (17 per cent) were employed in jobs requiring much physical exertion. Four (13 per cent) were housewives, and one (3 per cent) was employed as a clerk.

Analysis of Pre-Hospitalization Bowel Habits in Phase I

Phase I of this study involved determining the pre-hospitalization bowel habits of the clients in the sample as a basis for comparison, subsequently (in Phase II), with data obtained after the patients had been discharged from the hospital and returned home. In Phase I, data were collected by interviewing the participants, individually, using the research tool developed for this purpose, the Interview Guide for In-Hospital Clients (see Appendix A).

The pre-hospitalization frequency of bowel actions for each client was determined in response to items 2a and 2b of the interview guide; the data for the sample are summarized by age groups in Table 3.

TABLE 2

SOCIAL DATA FOR THE SAMPLE

Subj. No.	Sex	Age (years)	Diagnosis	Occupation
1	M	48	Myocardial Infarction	Terminal Manager
2	M	52	Myocardial Infarction	Welder
3	M	64	Bradycardia-Pacemaker	Retired
4	M	56	Myocardial Infarction	Railroad Engineer
5	F	69	Congestive Heart Failure	Housewife
6	F	75	Bradycardia-Pacemaker	Housewife
7	M	49	Coronary Artery Disease	Disabled
8	M	51	Myocardial Infarction	Truck Driver
9	M	66	Coronary Artery Disease	Retired
10	M	66	Congestive Heart Failure	Retired
11	F	45	Myocardial Infarction	Business Woman
12	M	60	Coronary Artery Disease	Retired
13	M	55	Myocardial Infarction	Retired
14	M	54	Myocardial Infarction	Retired
15	F	67	Myocardial Infarction	Retired
16	F	62	Coronary Artery Disease	Housewife
17	M	53	Myocardial Infarction	Farmer
18	M	62	Myocardial Infarction	Retired
19	M	58	Myocardial Infarction	Disabled
20	M	69	Myocardial Infarction	Retired
21	M	57	Myocardial Infarction	Disabled
22	M	44	Myocardial Infarction	Construction
23	M	73	Myocardial Infarction	Retired
24	M	42	Myocardial Infarction	Station Manager
25	F	82	Coronary Artery Disease	Housewife
26	M	60	Myocardial Infarction	Mechanic
27	M	67	Myocardial Infarction	Retired
28	M	49	Myocardial Infarction	Retired
29	M	58	Myocardial Infarction	Retired
30	M	45	Myocardial Infarction	Clerk

TABLE 3

RESPONSES IN PHASE I TO ITEMS 2a AND 2b OF THE
INTERVIEW GUIDE FOR IN-HOSPITAL CLIENTS:

2a) "HOW MANY BOWEL MOVEMENTS DO YOU USUALLY HAVE
 EACH DAY?"

2b) "HOW MANY BOWEL MOVEMENTS DO YOU USUALLY HAVE
 IN A WEEK?"

Responses to items 2a and 2b (Bowel-evacuation Frequencies)	Age Groups (in years)							
	40-49		50-59		60 or older		All ages	
	No.	%	No.	%	No.	%	No.	%
less than 2 per wk.	0	-	0	-	0	-	0	-
2 per wk.	0	-	1	3.3	2	6.7	3	10.0
3 or 4 per wk.	0	-	0	-	1	3.3	1	3.3
5-7 per wk.	5	16.7	5	16.7	6	20.0	16	53.3
2 per day	2	6.7	3	10.0	4	13.3	9	30.0
3 per day	0	-	0	-	0	-	0	-
4 or more per day	0	-	0	-	1	3.3	1	3.3
All frequencies	7	23.3	9	30.0	14	46.7	30	100.0

Table 3 indicates that only three of the participants normally had bowel movements as infrequently as twice a week, and two of the three in this category were in the oldest age group (i.e., sixty years or older). A large majority of the sample (83 per cent) indicated they usually had a bowel movement once or twice a day. Only one client, in the oldest age group, regularly had a pre-hospitalization bowel-evacuation frequency as high as four or more per day.

During the interview, each participant was asked to describe the consistency and amount of his normal stools prior to hospitalization. The majority (63 per cent)

described the consistency of their normal stools as medium, 26 per cent described the consistency of their normal stools as soft, and 10 per cent described the consistency of their normal stools as hard. The majority (73 per cent) described the amount of their normal stools as moderate, 13 per cent described the amount of their normal stools as small, and 13 per cent described the amount of their normal stools as large.

The second section of the interview (item 2e) also dealt with the pre-hospitalization use of laxatives. Table 4 summarizes the frequency of laxative usage, by age group. "Frequent" laxative use was defined to be in the range of from one every other day to one every two weeks. Laxative usage of from one dose per month to one dose every three months was considered "occasional". "Seldom" laxative use was interpreted as generally less than one dose every six months. Table 4 indicates that "frequent" use of laxatives was limited to participants in the oldest age groups, and only 33 per cent of the sample used laxatives more often than once or twice a year.

TABLE 4

RESPONSES IN PHASE I TO ITEM 2e OF THE INTERVIEW
GUIDE FOR IN-HOSPITAL CLIENTS:

2e) "HOW OFTEN DO YOU TAKE A LAXATIVE?"

Responses to item 2e (laxative usage)	Age Groups (in years)							
	40-49		50-59		60 or older		All ages	
	No.	%	No.	%	No.	%	No.	%
Frequently	0	-	0	-	5	35.7	5	16.7
Occasionally	3	42.9	2	22.2	0	-	5	16.7
Seldom	1	14.3	4	44.4	4	28.6	9	30.0
Never	3	42.9	3	33.3	5	35.7	11	36.7
All responses	7	100.0	9	99.9	14	100.0	30	100.0

In questioning the laxative users concerning their reasons for taking laxatives, the following reasons were provided:

1. habit
2. constipation
3. sluggish/gassy feeling
4. dietary indiscretions
5. lack of better methods

When asked how long they had been taking laxatives, the replies ranged from one year to life. The most commonly-used cathartic was milk of magnesia, and 29 per cent of those individuals who used laxatives stated that they had used this preparation. Sal HepaticaTM, ExlaxTM, and mineral oil were the next most used preparations. Other preparations used for cathartics included MetamucilTM, CorrectolTM, FeenamintTM, Carter's PillsTM, Epsom Salts, 36 Tonic MalariaTM, and MaaloxTM.

TABLE 5

RESPONSES IN PHASE I TO ITEM 2f OF THE INTERVIEW
GUIDE FOR IN-HOSPITAL CLIENTS:

2f) "WOULD YOU SAY THAT YOU HAVE A REGULAR SCHEDULE
 FOR BOWEL ELIMINATION?"

Responses to item 2f (regular schedule)	Age Groups (in years)							
	40-49		50-59		60 or older		All ages	
	No.	%	No.	%	No.	%	No.	%
Yes	5	16.7	6	20.0	9	30.0	20	66.7
No	2	6.7	3	10.0	5	16.7	10	33.3

Table 5 indicates that two-thirds of the sample had had a regular daily routine for bowel evacuation. Some of the respondents (13 per cent) stated that their bowel actions had usually occurred in the morning after being up and about for awhile and having performed their morning routines of bathing, shaving, or exercise. Most (37 per cent) stated that they usually had had bowel actions each morning after breakfast. Ten per cent had had bowel actions following their morning coffee and cigarette. The remaining 40 per cent had either had their bowel actions following the evening meal, or they had not established regular times for elimination.

When questioned (item 2g) as to what methods other than laxatives they had used to assist in having bowel movements, twenty-two (73 per cent) described activities they had used to promote bowel functioning. Responses to this question are listed in Table 6.

TABLE 6

RESPONSES IN PHASE I TO ITEM 2g OF THE INTERVIEW
GUIDE FOR IN-HOSPITAL CLIENTS:

2g) "IS THERE ANYTHING THAT YOU DO TO ASSIST
 YOURSELF IN HAVING A BOWEL MOVEMENT?"

Responses to item 2g (self-assistance methods)	Number of responses
Hot coffee, tea or Sanka	16
Prune juice	4
Bathroom reading material	2
Additional liquids	2
Cigarette smoking	2
Bran cereals	1
Peaches	1
Prunes or figs	1
Increased exercise	1

In item 2h of the interview, the participants described their activity levels at home prior to hospitalization as being very active (33 per cent), moderately active (47 per cent), or sedentary (20 per cent). In addition to the daily activities associated with out-of-the-home work, they included walking, gardening, and housework as additional methods of exercise.

Each participant was asked (in item 2i) to describe his menu for a typical day prior to his hospitalization. The menu he described was then analyzed, with regard to fiber content, based on criteria provided by Krause (1972) and Bockus (1976). Prior to hospitalization, the majority of respondents (57 per cent) had eaten a diet containing

moderate fiber, 17 per cent had had a diet containing high fiber, and 27 per cent had had a low-fiber diet. In regard to the usual daily consumption of liquids, 40 per cent stated they usually drank more than ten cups of liquid per day, 33 per cent stated they drank eight to ten cups of liquid per day, and 27 per cent stated they drank less than eight cups of liquid per day.

In response to item 2j concerning any difficulty with bowel elimination at home, prior to hospitalization, the majority of respondents (70 per cent) stated that they had had no prior difficulties. Twenty per cent had experienced pre-hospitalization problems, and the remaining ten per cent replied "seldom" or "sometimes". Additional statements in response to this question included the following comments: "can't have a bowel movement without taking a laxative", "took a trip recently and became constipated", "occasional constipation if not active", and one respondent stated that if she did not have a bowel action every day, then the consistency of the stool would be hard and require straining.

Analysis of Hospitalization-Caused Bowel-Habit Alterations

Section three of the Interview Guide for In-Hospital Clients dealt with alterations to the clients' normal bowel habits that were caused by the hospitalization experience. Item 3a of the interview procedure addressed observed changes

in bowel habits, in general, and item 3b concerned the frequency of bowel actions, relative to pre-hospitalization rates. Responses to these two items are presented in Table 7.

TABLE 7

RESPONSES IN PHASE I TO ITEMS 3a AND 3b OF THE
INTERVIEW GUIDE FOR IN-HOSPITAL CLIENTS:

- 3a) "HAVE YOU NOTICED ANY CHANGE IN YOUR NORMAL BOWEL HABITS (WHILE HOSPITALIZED)?"
- 3b) "WOULD YOU SAY THAT YOUR BOWEL MOVEMENTS ARE: MORE FREQUENT, LESS FREQUENT, OR ABOUT THE SAME?"

Responses to question 3a (Bowel habits changed?)	Responses to question 3b (bowel-action frequencies)							
	More <u>frequent</u>		About <u>the same</u>		Less <u>frequent</u>		All <u>responses</u>	
	No.	%	No.	%	No.	%	No.	%
Yes	5	16.7	4	13.3	17	56.7	26	86.7
No	0	-	4	13.3	0	-	4	13.3
Both responses	5	16.7	8	26.6	17	56.7	30	100

Table 7 indicates that the majority (87 per cent) had experienced changes in their normal bowel habits during hospitalization. The inability to use the bedpan or bedside commode, contributing to constipation in the Intensive Coronary Care Unit, was cited as the major reason for observed changes in bowel habits. A majority (57 per cent) also stated that their bowel actions during hospitalization were less frequent than prior to hospitalization, 27 per cent considered their frequency of bowel actions to be about

the same as before, and only 17 per cent stated that their bowel actions were more frequent during hospitalization.

For the patient, the Intensive Coronary Care Unit generally is a high-stress area. This might be the first time in his life that he has had to face the possibility of his own death. He has been separated from his family and friends and stripped of personal belongings which are familiar to him. He has been placed in a very dependent position in a frightening and unfamiliar environment. All of these factors considered, it is not surprising that the patients studied had experienced changes in bowel habits during their hospitalization.

The patients sampled reported that their diets gradually were increased to regular diets, with some reductions in fat, salt, and calorie intake. However, there were no increases in the amount of high-fiber foods included in the diets. Neither of the hospitals in which this study was conducted provided whole-grain breads, and few of the patients received cereals containing bran or other whole grains. Few fresh fruits were served in either institution, bananas and orange juice being the exception. Krause (1972) states that 800 grams of fruits and vegetables should be provided daily to facilitate normal bowel movements.

The sample reported that activity levels gradually were increased during hospitalization, generally, but few of

the patients were able to perform at the same activity level as they had prior to hospitalization. Bockus (1976) describes two exercises (sit-ups and leg-raises) that the patient can perform, even in bed, to tighten the abdominal musculature and to facilitate bowel peristalsis.

Those participants (13 per cent) who reported changes in bowel habits during hospitalization but who said the frequency was about the same as prior to hospitalization generally experienced smaller amounts of stool and stools of abnormal consistency. Those individuals (13 per cent) who observed no changes in bowel habits during hospitalization attributed their success to being able to use the bedside commode in place of the bedpan.

The sample was asked (in item 3d) if they had had to assume unnatural positions for bowel movements while in the hospital. The thirty per cent who responded "yes" stated that they had had to use the bedpan rather than the bedside commode, due to heart monitors or other equipment which limited their freedom of movement. Suggestions of the patients concerning things which might be done to facilitate having bowel movements during hospitalization included the following items:

1. Flexibility of diet
2. Increased inclusion of foods normally eaten
by patients

3. Encouragement to drink more liquids
4. Use of bedside commode
5. Increased physical activity
6. Recreational activities
7. Use of bathroom for bowel movements

The remaining items in the interview pertained to provisions made during hospitalization which had effects on bowel habits. Enemas were administered to 23 per cent of the respondents. In response to item 4a, they stated that enemas were given to relieve impaction or constipation and as preparation for diagnostic tests. In an attempt to decrease straining at stool, so as not to further stress an already strained heart, each respondent received laxatives or stool softeners during hospitalization. In addition, one client had his wife bring him FeenamintTM which he had taken without the staff's knowledge.

When questioned regarding the availability of privacy and relaxation (item 4c), the majority (93 per cent) stated that privacy was provided for the purpose of having a bowel movement. The establishment of privacy was considered important to 77 per cent of the respondents. One client stated that an orderly remained with him while he was having a bowel movement, and this did not bother him, but another reported that he could not have a bowel action when someone remained in the room with him. One patient stated that he

could not have a bowel action when the female nurse was present in the room. Another client stated that he was affected by the patient in the next bed and by the door that was open to the hall, suggesting the possibility that someone could enter the room at any time.

The respondents were asked if relaxation was important in facilitating bowel action (item 4d). The majority (77 per cent) agreed that relaxation was important. Those who replied in the affirmative were asked to describe how they managed to relax for the purpose of bowel elimination. Their responses included the following methods:

1. Pulled the curtains to obtain privacy
2. Diverted my attention away from problems
3. Tried not to be hurried
4. Went to the bathroom alone
5. Asked visitors to leave my room
6. Eliminated pain
7. Used minor tranquilizers

In interview item 4e, the clients were asked to describe provisions that had been made by the hospital staff to aid them in having bowel movements. Their responses were varied and included the following suggestions:

1. Private rooms with bath
2. Stool softeners
3. Laxatives and enemas

4. Threats of enemas
5. Dietary changes to include Cream of Wheat or other hot whole-grained cereals
6. Assistance to and from the bathroom
7. Coffee or other hot liquids in the morning
8. Increased physical activity
9. A regular daily schedule
10. A bedside commode

Many patients expressed appreciation that the nurses were concerned about their eliminatory patterns and checked with them frequently regarding their success in having bowel actions.

ANALYSIS OF POST-HOSPITALIZATION BOWEL HABITS IN PHASE II

Phase II of this study involved determining the time and assistance required and the difficulties encountered by each patient in reestablishing his normal bowel habits following discharge from the hospital. Ten to fourteen days after being discharged, each patient in the sample was mailed a Post-Hospital Bowel-Elimination Questionnaire (see Appendix B), the research tool developed for the purpose of collecting data needed for Phase II.

The first few items in Section 1 of the questionnaire concerned the patient's first bowel movement following discharge from the hospital. In response to these items, the

majority of respondents (77 per cent) stated they had no difficulty with their first post-hospitalization bowel actions. The remaining 23 per cent replied that the consistency of their first stools were hard and difficult to expel; they reported straining to assist in passing these stools; and they encountered weakness during and after the defecation process. In addition to straining and weakness, they reported symptoms of pain and a fluttering feeling in the chest, shortness of breath, vertigo, and diaphoresis.

Items 13 and 14 of the questionnaire dealt with the type of assistance and time required to reestablish each patient's normal (pre-hospitalization) bowel elimination pattern. The samples' responses to these items are grouped in Table 8. Responses to the remaining questionnaire items are discussed, subsequently, in conjunction with the analysis of data summarized in Table 8.

Table 8 indicates that one-third of the patients were able to resume their normal bowel habits within the first week following discharge from the hospital without assistance from drugs, diet, or other means. At the other extreme, 17 per cent of the respondents had been unable to resume their normal eliminatory patterns more than two weeks following hospitalization, despite the use of cathartics and enemas. Forty-three per cent of the sample had to resort to the regular use of cathartics or enemas to promote

TABLE 8

RESPONSES IN PHASE II TO ITEMS 1e AND 1f OF
POST-HOSPITAL BOWEL-ELIMINATION QUESTIONNAIRE

1e) "DID YOU REQUIRE ANY ASSISTANCE TO HAVE BOWEL
 MOVEMENTS AFTER HOSPITALIZATION? (IF SO,
 PLEASE DESCRIBE) "

1f) "HOW SOON AFTER HOSPITALIZATION DID YOU RESUME
 YOUR NORMAL BOWEL-ELIMINATION PATTERN?"

Responses to item 1e (Assistance required)	Responses to item 1f (normal pattern resumed)											
	0-1 days		2-4 days		5-9 days		10-14 days		Over 14 days		All responses	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
No assistance	4	13.3	5	16.7	1	3.3	0	-	0	-	10	33.3
Special diets	1	3.3	1	3.3	0	-	0	-	0	-	2	6.7
Non-cathartics	4	13.3	1	3.3	0	-	0	-	0	-	5	16.7
Cath/enemas	3	10.0	0	-	2	6.7	3	10.0	5	16.7	13	43.3
All responses	12	40.0	7	23.3	3	10.0	3	10.0	5	16.7	30	100.

elimination, and an additional 17 per cent had been taking medications for their cardiovascular problems which could, as side effects, increase intestinal peristalsis. The remaining 7 per cent added prunes or prune juice to their diets as means of promoting elimination.

Twelve participants (40 per cent) had resumed their normal bowel habits immediately (within one day) following hospitalization. Of these twelve, four patients (13 per cent) required no assistance (drugs or other methods), and the consistency and amounts of their stools were reported to be the same as that prior to hospitalization. These four

were able to resume normal activities and usual dietary patterns. One patient (3 per cent) had required a special diet and had experienced a decreased activity level. Four (13 per cent) resumed normal bowel habits immediately by using non-cathartic drugs. One of these had been taking propranolol hydrochloride, and another had been taking furosemide and digoxin; in either case, the drugs can increase bowel activity. The other two users of non-cathartic means stated that they had resumed normal bowel habits immediately post-hospitalization by eating prunes or drinking prune juice; these respondents experienced a change in diet and decreased post-hospitalization activity. The remaining three patients (10 per cent) who also had resumed their normal bowel habits immediately following hospitalization were taking daily doses of ColaceTM or ModaneTM to promote their usual patterns of elimination. One of these three patients also had resumed his usual activity level and diet pattern.

Seven participants (23 per cent) stated they had resumed normal bowel habits within two or three days after hospitalization. All of them had experienced decreased activity levels and/or changes in diet. One individual had assisted his bowel elimination by drinking prune juice; he was also taking furosemide which can cause diarrhea (Loebel et al 1977). A third individual who was taking CardraseTM,

which can also cause diarrhea (Loebel et al 1977), did not note a change in stool consistency. A fourth individual who had had small amounts of hard stool stated that this was normal for him.

Three of the participants (10 per cent) reported that they had resumed normal bowel habits approximately one week after being discharged. All three had described activity and/or diet changes and reported that their stools were harder and smaller than usual. Two of these patients stated that they had had much difficulty with bowel elimination and were using cathartics. In Phase I, the sample had not been questioned in regard to the teaching aspects of bowel hygiene during hospitalization -- an area that was neglected in the research design. However, in consideration of this aspect, one individual in this group had volunteered that he frequently used magnesium sulfate at home (three doses per week) to promote elimination. His diagnosis was congestive heart failure. It was not determined if he had impaired renal function; however, this particular preparation could result in electrolyte loss due to the increased loss of fluids via the colon. He obviously could have benefitted from teaching in this area.

Three of the participants (10 per cent) had resumed their normal bowel habits in from one and one-half to two weeks following hospitalization. All three had reported

having difficulty with bowel elimination and were taking cathartics to promote elimination. The preparations they were taking included CorrectolTM, FeenamintTM, ExlaxTM, and milk of magnesia.

Five of the participants (17 per cent) had not resumed their normal bowel habits at the time that they returned their questionnaires, two weeks or more following discharge from the hospital. All of the participants in this group were taking some cathartic preparation to promote elimination. One individual who returned his questionnaire after being home for five weeks had not resumed his normal bowel habits at that time. It is interesting to note that this individual was in the youngest (40-49 year) age-group; he had continued to take ModaneTM at least twice per week to promote elimination.

In response to item 11 of the questionnaire, 37 per cent of the sample reported changes in their usual diet after returning home. These changes generally included a reduced intake of cholesterol, triglycerides, sodium, and calories. However, changes in diet might not have been the cause of eliminatory problems as there were many high-fiber foods which had been allowed on these diets. A majority of the sample (73 per cent) had not resumed their normal activity levels at home, and that could have contributed to their bowel problems.

Item 2d of the post-hospitalization questionnaire mailed to the sample concerned any difficulties or problems they might have experienced in having bowel movements since discharge from the hospital. Fifteen respondents (50 per cent) reported that they had experienced problems with elimination after returning home. These problems included symptoms of constipation (33 per cent), diarrhea, weakness, tightness and pain in the chest during defecation, shortness of breath and pain associated with flatulence.

Summary

This chapter, Analysis and Treatment of Data, has been concerned with the analysis and interpretation of data collected from a sample of thirty cardiovascular clients to determine if they experienced difficulties in reestablishing normal bowel habits following hospitalization. It was determined that two-thirds of the sample required the assistance of diet, drugs, enemas, or other treatment modalities to aid in bowel elimination and the reestablishment of normal bowel habits. One-sixth (17 per cent) of the sample had not resumed normal patterns of bowel elimination within two weeks following discharge from the hospital. Half of the patients had experienced post-hospitalization difficulties with bowel elimination and reported symptoms which indicated that already-strained cardiovascular systems were being stressed.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Summary

An exploratory research study was conducted to determine if hospitalized cardiovascular clients experience difficulty in resuming their normal bowel habits following hospitalization. The purposes of the study included determining normal pre-hospitalization bowel habits, alterations in bowel habits experienced during hospitalization, the factors which had an effect on bowel habits during hospitalization, the length of time required to reestablish bowel habits after hospitalization, and difficulties encountered during the transition process of reestablishing normal post-hospitalization bowel routines.

Data for this study were obtained from thirty cardiovascular clients who had been selected by a convenience sampling of individuals who met the criteria for this study. The initial phase of the study was conducted while the participants were hospitalized in a 275-bed city hospital and a Veteran's Administration hospital of similar size in the southwestern United States. The second phase of the study was conducted ten days to two weeks following discharge from the hospital.

In Phase I, each client was interviewed during the convalescent phase of his hospitalization. A structured interview guide was employed to determine each client's bowel habits prior to and during hospitalization. In Phase II, each client was mailed a questionnaire ten to fourteen days following his discharge from the hospital. He was instructed to complete the questionnaire and return it in an attached self-addressed envelope.

From the Phase I interviews, it was determined that 67 per cent had had an established regular schedule or routine for bowel elimination prior to hospitalization. According to the data obtained by interviews, 63 per cent of the sample had taken laxatives, but only 17 per cent reported using laxatives as frequently as once every other day. Analysis of post-hospitalization bowel-routine data indicated that only 33 per cent of the sample had resumed their normal bowel function, unaided by drugs or other treatment modalities, within two weeks after hospitalization. Most of the patients sampled had had to resort to diets, drugs or enemas to promote bowel function. Cathartics or enemas had been employed on a regular basis by 43 per cent of the sample following discharge from the hospital, as compared to 17 per cent pre-hospitalization usage.

During interviews, 87 per cent of the sample had claimed that they had experienced alterations in bowel habits

while hospitalized. These changes were identified as changes in frequency of bowel action, amount of stool expelled, or consistency of the stools.

Factors which had had positive effects on bowel habits during hospitalization were identified by the patients as being enemas, cathartics, privacy, relaxation, bedside commodes, bathroom privileges, and pain elimination. Assistance provided by nursing personnel to facilitate bowel actions during hospitalization took the following forms: substitutions in diet, provision of coffee or other hot liquids early in the morning, opportunities for increased activity, assistance to and from the bathroom, provision of a bedside commode, and indications of concern regarding the patient's progress in establishing normal eliminatory patterns.

Conclusions

Based on the findings of this study, the following conclusions are offered:

1. A majority of cardiovascular clients have an established routine or schedule for bowel elimination prior to hospitalization.
2. Most people can describe their normal bowel habits when interviewed during hospitalization.
3. Hospitalized cardiovascular patients generally

are not able to continue their established eliminatory patterns during hospitalization.

4. During the acute and convalescent phases of hospitalization, nursing care usually includes providing the patients with stool softeners, laxatives or enemas as a means of promoting strain-free evacuation, rather than using data from the patient's history to provide nursing measures which the patient previously has found to be successful.

5. Cardiovascular clients have difficulty reestablishing their normal bowel habits following hospitalization.

6. Potentially dangerous side effects such as weakness, pain and fluttering in the chest, and faintness are experienced by patients when having bowel movements at home following discharge from the hospital.

7. The nursing and medical staff are not always aware of the problems patients encounter in reestablishing their normal bowel routine after being discharged from the hospital.

8. The check-list and open-ended format of the interview guide and questionnaire were found to be valuable tools to determine pre-and post-hospitalization bowel habits.

Implications

This study was concerned with determining if hospitalized cardiovascular clients experience difficulty in

reestablishing their normal bowel habits following hospitalization. The findings of the study indicate that cardiovascular patients do encounter difficulties with elimination in the transition period between discharge from the hospital and such time as they manage to reestablish normal bowel routines. Based on these findings are implications for health-care personnel in practice and in education.

Health Care Practice

Those health-care personnel who are in positions to provide services which help promote the eliminatory function of hospitalized cardiovascular clients and effect smooth transitions to the post-hospitalization setting and the reestablishment of normal bowel routines must first become aware that problems exist in this area of patient care. This section is directed primarily to nurses and physicians who care for these clients in the hospital setting and who see these clients in offices, clinics, or in the home following discharge from the hospital.

Physicians, nurses, and other health-care personnel involved directly or indirectly in patient care must become more involved in preventing disruption of the normal bowel routine of cardiovascular patients during hospitalization. If disruption of normal bowel routine cannot be prevented, then an organized plan of care should be constructed to

include interventions which the patient easily can follow in the home situation following discharge from the hospital.

Physicians should direct referrals to the community health nurse for patient follow-up in the home situation, and the community health nurse should be prepared to discuss the patient's eliminatory patterns and any elimination difficulties he might be having. The community health nurse must be aware that the patient might require assistance in broaching this subject, as the discussion of bowel habits is not socially acceptable in our Western society. During home visits the nurse must be prepared to instruct the patient regarding the importance of the following factors: re-establishment of a regular routine for bowel actions, dietary changes or modifications which might facilitate defecation, and exercises which the patient can perform to improve muscle tone.

Physicians and nurses who work in out-patient clinics or physicians' offices should be prepared to assist the cardiovascular client to employ preventative measures to maintain normal bowel elimination. These health-care providers must be knowledgeable in treatment modalities which can be employed to assist patients in resuming normal bowel functions. Knowledge can be acquired through inservice education programs designed to meet the eliminatory needs of

patients through discussion of the following topics: prevention, treatment, nursing measures, and teaching aspects.

Nursing Education

Those nursing educators who are in a position to provide instruction to nursing students regarding the preventive aspects of bowel-elimination problems must first become thoroughly conversant with the problems. Nursing educators must continue to impress upon nursing students the need for careful assessment of cardiovascular clients to determine the bowel status of these patients.

Nursing students must be prepared to deal with problems of constipation and to develop an awareness of the potentially dangerous side effects that can occur when the cardiovascular client becomes constipated. Schools of nursing should require that students develop comprehensive nursing care plans for cardiovascular clients with planned nursing interventions to meet the immediate and long-term needs of these patients in regard to bowel elimination.

Nursing students should be encouraged to make home visits to cardiovascular clients following discharge from the hospital to evaluate the effectiveness of planned interventions for promoting bowel elimination. The student also should be prepared to modify or continue the plan, as indicated.

Recommendations

The findings of this study give impetus to other areas of nursing research. It is recommended that:

1. A similar study be conducted with a sample of immobilized clients other than cardiovascular patients to determine if they also develop problems in reestablishing their normal post-hospitalization bowel routine.

2. An hypothesis-testing study be conducted to verify that the inclusion of high-fiber foods in the diet of hospitalized patients reduces the incidence of constipation and the time required for reestablishment of normal bowel habits.

3. A similar study be conducted with hospitalized cardiovascular clients to determine if the teaching of methods to promote normal bowel function decreases the difficulties encountered with post-hospitalization bowel elimination.

4. A similar study be conducted in three phases, the third phase to include sufficient time for follow-up of those individuals who do not resume normal bowel function within two weeks following hospitalization.

5. Studies be conducted to determine if registered nurses teach methods to promote normal bowel function to cardiovascular patients, and if nurses do not, to determine

reasons why they do not provide such teaching.

6. A study be conducted to determine if nurses provide patients with individualized methods to promote elimination prior to dosing them with cathartics or enemas (as opposed to giving the cathartics first and then providing other modalities to promote elimination).

7. A study be conducted to develop and test a checklist type research tool which could be used by post-hospitalized clients to record side effects which they might experience during the defecation process.

APPENDICES

APPENDIX A

INTERVIEW GUIDE FOR IN-HOSPITAL CLIENTS

1. Social data

Age _____ Sex _____ Diagnosis _____

Occupation _____

2. Normal bowel habits prior to hospitalization

a. How many bowel movements do you usually have each day? _____

b. How many bowel movements do you usually have in a week? _____

c. What is the consistency of your normal stool?
Liquid _____ Soft _____ Medium _____ Hard _____

d. What is the amount of your normal stool?
Small _____ Moderate _____ Large _____

e. How often do you take a laxative?
Frequently _____ Occasionally _____ Seldom _____
Only as preparation for tests _____ Never _____
Why do you take a laxative? _____

How long have you been taking laxatives? _____

When you take a laxative, what preparation do you usually take? _____

f. Would you say that you have a regular schedule for bowel elimination? Yes _____ No _____
If you answered Yes to the above question, would you please describe your normal schedule for bowel elimination. _____

g. Is there anything that you do to assist yourself in having a bowel movement?

1. Drink hot coffee, tea, sanka
2. Attempt to relax
3. Have a glass of prune juice
4. Take a newspaper or other reading material to the bathroom

- h. In relation to your activity level at home, would you say that you are:
 Very active_____ Moderately active_____ Sedentary_____
- i. Describe your menu for a day including the common or usual type of food that you eat:
Breakfast Lunch Dinner Snacks

What kinds of breads and cereals do you eat most often?

What kinds of fruits and vegetables do you eat most often?

What kinds of liquids do you usually drink? _____

How much liquid do you usually drink in a day? _____

- j. Do you have any difficulty with your bowel elimination?
 Yes_____ No_____. If you answered yes to this question, please describe your difficulties.

3. Alterations in bowel habits during hospitalization

- a. Have you noticed any change in your normal bowel habits while you are in the hospital? Yes___ No___
- b. Would you say that your bowel movements are:
 More frequent___ Less frequent___ About the same___
- c. How would you describe the consistency of your stool?
 Liquid___ Soft___ Medium___ Hard___
- d. Do you have to assume an unnatural position while in the hospital for the purpose of having a bowel movement? Yes___ No___ If your answer was yes to the above question, would you please describe this position. _____

- e. What do you think might be done while you are in the hospital that could help you in having a bowel movement?
4. Provisions made during hospitalization which had an effect on the bowel habits
- a. Did you receive an enema during this hospitalization?
 Yes No
 Why did you have an enema? _____
- b. Have you received laxatives or stool softeners during this hospitalization? Yes No
- c. Was privacy provided for your bowel elimination during your hospitalization? Yes No
 Do you think that privacy is important to your having an effective bowel movement during your hospitalization?
 Yes No
- If you answered yes to the above question, how did you manage to accomplish relaxation in the hospital?
- e. Describe any other provisions that were made which aided in your being able to have a bowel movement.

APPENDIX B

POST-HOSPITAL BOWEL ELIMINATION QUESTIONNAIRE

Instructions: Please place a () check mark in the appropriate blank or write in answer.

1. Re-establishment of normal bowel habits post-hospitalization

a. How many days passed after you left the hospital until you had your first bowel movement? _____ days.

b. How would you describe the consistency of this stool?
Liquid _____ Soft _____ Medium _____ Hard _____

c. How would you describe the amount of this stool?
Small _____ Moderate _____ Large _____

d. Did this bowel movement differ in any way from what you consider to be a normal bowel movement for you?
Yes ___ No ___ If you answered yes to this question, would you please describe the differences: _____

e. Did you require any assistance to allow you to have a bowel movement after hospitalization? (This assistance could have included: laxatives, stool softeners, enemas, special types of food or beverages, increased exercise etc.). Yes ___ No ___ If you answered yes to this question, would you please describe what you did to assist yourself in having a bowel movement. _____

f. How soon after you came home from the hospital did you resume your normal pattern of bowel elimination?
_____ days _____ weeks

g. Please list all of the medications that you are routinely taking now.

h. Have you resumed your normal activity level since coming home from the hospital? Yes ___ No ___. If your activity level has changed from that of pre-hospitalization, please describe how it has changed: _____

i. Have you resumed your usual diet? Yes ___ No ___
 Describe any differences in your diet: _____

2. Difficulties encountered in re-establishing normal bowel habits

a. Did you have any difficulty with having your first bowel movement post-hospitalization? Yes ___ No ___
 If you encountered difficulty in having your first bowel movement post-hospitalization, would you please describe these difficulties: _____

b. Did you have to strain to pass the stool? Yes ___ No ___

c. Did you notice any weakness, faintness, shortness of breath, or chest pain during the elimination of the stool? Yes ___ No ___ If you answered Yes to this question, would you please describe what you felt: _____

d. Describe any difficulties or problems that you have had in having bowel movements since discharge from the hospital. (This may include constipation, diarrhea, pain, shortness of breath, or any other difficulties). _____

e. Have you taken laxatives, stool softeners, or enemas since you have been home from the hospital?
 Yes ___ No ___

With what frequency do you take any of the above to assist you in having a bowel movement?

Once a day_____

Once a week_____

Once every two weeks_____

What preparation do you take?_____

APPENDIX C

CONSENT FOR PARTICIPATION IN A RESEARCH PROJECT

.....
.....

(Date)

.....
.....

(Institution)

I, _____, hereby voluntarily consent to participate in the following investigation: Reestablishment of Normal Bowel Habits in the Post-hospitalized Cardiovascular client, and understand that I may withdraw my consent and discontinue participation at any time.

The nature and purposes of the study have been explained to me by Faith Marlene Smith, R.N. and I understand that the investigation has been approved by the participating institution.

I am assured by Faith Marlene Smith that I will remain an anonymous participant in this project and that my name will not appear in the written report of this study.

.....
.....

(Investigator)

.....
.....

(Client's Signature)

APPENDIX D

PART I-AGREEMENT TO PARTICIPATE IN RESEARCH
BY OR UNDER THE DIRECTION OF THE VETERAN'S ADMINISTRATION

DATE

1. I, _____ voluntarily consent to participate as a subject
(Type or print subject's name)
in the investigation entitled Re-establishment of Normal Bowel Habits of the Post-hospitalized
(Title or study)
Cardiovascular Client.

2. I have signed one or more information sheets with this title to show that I have read the description including the purpose and nature of the investigation, the procedures to be used, the risks, inconveniences, side effects and benefits to be expected, as well as other courses of action open to me and my right to withdraw from the investigation at any time. Each of these items has been explained to me by the investigator in the presence of a witness. The investigator has answered my questions concerning the investigation and I believe I understand what is intended.

3. I understand that no guarantees or assurances have been given me since the results and risks of an investigation are not always known before hand. I have been told that this investigation has been carefully planned, that the plan has been reviewed by knowledgeable people, and that every reasonable precaution will be taken to protect my well-being.

4. Nevertheless, I wish to limit my participation in the investigation as follows:

VA FACILITY	SUBJECT'S SIGNATURE
WITNESS'S NAME AND ADDRESS <i>(Print or type)</i>	WITNESS'S SIGNATURE
INVESTIGATOR'S NAME <i>(Print or type)</i> Faith Marlene Smith, R. N.	INVESTIGATOR'S SIGNATURE

Signed information Sheets attached. Signed information Sheets available at:

SUBJECT'S IDENTIFICATION *(I. D. plate or give name - last, first, middle)*

SUBJECT'S I. D. NO.

WARD

AGREEMENT TO PARTICIPATE
IN RESEARCH BY OR UNDER
THE DIRECTION OF THE
VETERAN'S ADMINISTRATION

APPENDIX E

Dear Client:

Congratulations on your return home from the hospital. As you recall, during your recent hospitalization you consented to participate in the research project "The Reestablishment of Normal Bowel Habits of the Post-hospitalized Cardiovascular Client." There are two phases to the study and while you were a patient in the hospital, you completed phase one by answering my questions.

Phase two of the study requires you to fill out the attached questionnaire. Please answer each question carefully and to the best of your ability to remember. Do not sign your name on the questionnaire. All information will be kept confidential and all respondents will remain anonymous. A stamped, self-addressed envelope is enclosed for your convenience in returning the questionnaire.

At the completion of this study, I will be happy to share the final results with you. I can be reached at 687-5583.

Thank you for your participation and assistance in this research endeavor.

Yours truly,

Marlene Smith, R.N.
Graduate Student
Texas Woman's University

APPENDIX F

Dear _____,

As of this date I have not received your returned questionnaire which I mailed to you on_____. Realizing that letters get lost in the mail, and that you may not have received the previous questionnaire, I have enclosed another questionnaire for your use.

Thank you for any inconvenience that this may have caused you.

Yours truly,

Marlene Smith

APPENDIX G

AUTHORIZATION BY PHYSICIAN

I, Dr. _____ do hereby acknowledge that
(physician's name)

_____ is in a sufficiently improved condition
(patient's name)

so as to permit him/her to participate in the study: "Re-
establishment of Normal Bowel Habits in the Post-Hospitalized
Cardiovascular Client".

(physician's signature)

(date)

TEXAS WOMAN'S UNIVERSITY

COLLEGE OF NURSING

May 14, 1975

Faith Marlene Smith
Texas Woman's University
1810 Inwood Road
Dallas, Texas 75235

Dear Ms. Smith

The Human Research Review Committee has approved your protocol.

"Re-establishment of Normal Bowel Habits in the Post-hospitalized
Cardiovascular Client".

Sincerely,



Lois Hough, Chairman
Human Research Review Committee
Dallas Center

LH/lrc

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