

A STUDY OF THE EXPRESSED OPINIONS OF 145 REGISTERED
NURSES CONCERNING THE RESPONSIBILITIES OF THE
NURSE IN THE HEMODIALYSIS UNIT

by

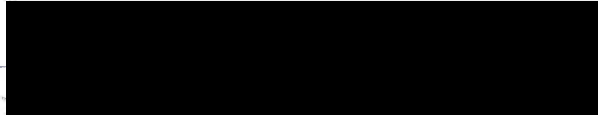
JUDITH MARLENE SANDILANDS, B. S.

A THESIS

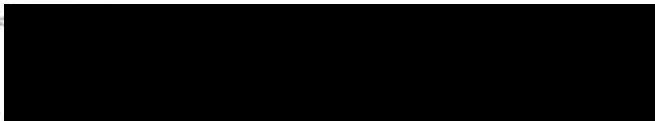
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APPROVED:



Lucile Gregerson, Associate Professor in Charge of Thesis



Steven G. Goldstein, Ph. D., Assistant Professor;
Instructor in Research



Chairman, Graduate Council

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j. m. s.

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CHAPTER I

INTRODUCTION

Introduction to the Problem

Although extracorporeal hemodialysis had been conceived by Abel, Rowntree, and Turner (1) as early as 1913, it remained for Dr. Kolff 30 years later to develop the first successful rotating drum dialyzer. In 1943 in the Netherlands, under the harsh circumstances of the German occupation, a young Dutch physician named Willem Johan Kolff performed the first practical treatment of a patient with an artificial kidney. (30) From his work has stemmed the dialyzing programs that today are being carried out the world over. (39)

Early attempts to treat chronic uremic patients by repeated hemodialysis were generally unsuccessful because of the limited number of blood vessel cannulation sites. It was not until a practical method of permanent cannulation was developed by Quinton, Dillard, and Scribner in 1960 that the problem was largely solved. (48, 49, 55)

As a result of Dr. Kolff's pioneering work first in the Netherlands and then in the United States as well as the major contributions of Quinton, Dillard, and Scribner, the artificial kidney became an

effective mode of treatment for acute renal failure. But the problem of the patient with total and permanent renal failure has remained, and prolongation of the life of such patients has rapidly become a major challenge to the medical and nursing professions. (6, 17)

One of the most specialized areas in nursing today is hemodialysis in nursing. The literature reveals that there is much dissension regarding the role and responsibilities of the nurse in the hemodialysis unit. (27, 30, 43)

The recent trend of transference of nursing service and responsibility from the physician to the nurse seems most difficult for the nurse, herself, to accept. It is suggested by Reissman (58) that the nurse herself does not seem favorably disposed toward accepting this redefinition.

Willem Kolff (41), inventor of the Kolff dialyzer, comments that "there is a strange trend. . .to resist, resent, and even prevent the establishment of a chronic dialysis program. "

It is accepted practice for most of the hemodialysis units in the country to employ well-trained nurse-technician dialysis teams. Although a high premium is placed on the technical skills of the nurse in the dialysis program, the nurse must also be prepared to give comprehensive nursing care to her patients.

Statement of the Problem

It appears that both medical and nursing personnel feel that the nurse in this specialized area does not have the legal right to make judgments--that is, assume dependent nursing functions based on her own decisions. Rufus Rorem comments about independent and dependent nursing functions:

There must be certain areas of action where a professional person is completely independent, and is authorized to act without approval by some other individual. Nursing does not meet this standard. To be sure there are many occasions when the nurse does use her own judgment in dealing with a patient under her care or supervision, but these exceptions are condoned by the fact that there was an emergency, or there had been an expressed or implied previous delegation of authority by a licensed physician. (60)

There should be developed specific areas in which the nurse can act independently within the limits of a definite legislation and accepted professional ethics. (61) It appears to be the consensus in the medical profession that too many doctors are spending part of their time performing functions that are within the competence of the registered nurse, and that too many registered nurses are holding on to duties which should be assigned to other hospital personnel. (17, 18, 40, 50) Those physicians also suggest that nursing education and practice should be revised if nurses are to be accepted as a professional group, and if the public interest is to be served to

the greatest possible degree.

Therefore, the problem presented in this study may be stated as follows: It seems the nurse, herself, does not understand the role and responsibilities of the nurse in hemodialysis nursing. Neither does she know if the activities carried out by the nurse in the hemodialysis unit are within the scope of present accepted standards of nursing practice.

Nurses have satisfactorily proved to be of great assistance to the physician in the dialysis units. Since it appears that the nurse will be allotted more and more responsibility by the physician, she should be prepared to accept that responsibility.

The apparent questions, then, are:

1. Do nurses know what activities are performed in a hemodialysis unit? That is, how much knowledge, in general, do nurses have about the operation and activities of a hemodialysis unit?
2. Do nurses believe the activities carried out in the hemodialysis unit are within the scope of present accepted standards of nursing practice?

Purposes of the Study

The study was made for the following reasons:

1. To determine the specific classifications (group) of registered nurses most knowledgeable on the subject of hemodialysis

nursing.

2. To determine the expressed opinions of the 300 registered nurses regarding the role and responsibilities of the nurse in the hemodialysis unit.

3. To ascertain the significance of the year-range in which the nurse received her basic nursing preparation, and her basic knowledge of hemodialysis nursing as evidenced by her stated opinions.

4. To ascertain the type of basic nursing preparation of the participants and its effect on their opinions of the scope of hemodialysis nursing.

5. To determine whether there is a need to formulate guidelines for nursing practice in the hemodialysis unit.

6. To determine by which organization or organizations the guidelines for nursing practice in the hemodialysis unit should be formulated.

7. To determine the need for educational experience in hemodialysis nursing in the nursing school curriculum.

Hypotheses

1. Nurses ordered according to year of graduation from nursing school show no differences in their stated opinions of hemodialysis nursing techniques.

2. Nurses ordered according to highest credential in nursing

show no differences in knowledge of hemodialysis nursing techniques.

3. Nurses ordered according to years of nursing experience show no differences in expressed opinions regarding the scope of practice in hemodialysis nursing techniques.

4. Nurses ordered according to present position in nursing show no differences in expressed opinions regarding the scope of practice in hemodialysis nursing techniques.

5. Nurses ordered according to clinical experience in hemodialysis nursing during their basic nursing preparation show no differences in expressed opinions regarding the scope of practice in hemodialysis nursing techniques.

6. There is no difference between nurses who have observed the operation of a hemodialysis unit and those who have not and their expressed opinions regarding the scope of practice in hemodialysis nursing.

7. There is no difference between nurses who have worked in a hemodialysis unit and those who have not and their expressed opinions regarding the scope of practice in hemodialysis nursing.

8. There is no difference between nurses who have work in a hospital which contained a hemodialysis unit and those who have not and their expressed opinions regarding the scope of practice in hemodialysis nursing.

9. There is no difference between nurses who have read current literature on hemodialysis nursing and those who have not and their expressed opinions regarding the scope of practice in hemodialysis

nursing.

10. There is no difference between nurses who have read about hemodialysis nursing in medical journals and nurses who have read about hemodialysis nursing in nursing journals and their expressed opinions regarding the scope of practice in hemodialysis nursing.

11. There is no difference between nurses who have attended classes or conferences on hemodialysis nursing and those who have not and their expressed opinions regarding the scope of practice in hemodialysis nursing.

Justification of the Study

The nurse in the hemodialysis unit plays an important role in the success or failure of the proper operation of the hemodialysis unit. It is the nurse who is responsible for the management of physical, emotional, and psychological problems of the renal patient on hemodialysis. It is the nurse on whom the patient depends to meet his personal needs, whether consciously or unconsciously recognized, and for the management of the equipment on which the patient's life is dependent. The nurse must be prepared to perform, not only independent nursing functions, but also dependent nursing functions which previously may have been performed only by the physician.

This study was undertaken in an attempt to obtain opinions regarding the need for increased knowledge on the part of the nurse regarding hemodialysis nursing, and also to seek opinions as to whether there is or is not a need for guidelines which will clarify the nurse's

role and responsibilities in hemodialysis nursing and place them within the scope of present nursing practice. Few studies have been done on this aspect of hemodialysis nursing. It is hoped that a study such as this one will be a part of an on-going investigation of factors relating to the establishment of satisfactory guidelines for nurses in hemodialysis nursing, and better education of nurses in knowledge and practice of hemodialysis nursing, thus, allowing the nurse to provide the best comprehensive nursing care possible for the patient receiving hemodialysis therapy.

Definitions

For the purposes of this study the following definitions were adopted:

Cannula: Plastic or silastic tubing inserted into an artery and a vein forming an arterio-venous shunt which may be disconnected to allow the patient to be attached to the artificial kidney machine; commonly referred to as a "shunt."

Dependent Nursing Function: Activity the nurse may perform only by delegation of authority and/or supervision by a licensed physician or dentist.

Dialysate: Isotonic solution similar to extracellular fluid necessary for the purification of blood to take place during renal dialysis.

Dialysis Team: The personnel trained in all aspects of the operation of the Hemodialysis Unit; team is composed of the doctor who is available when needed, the nurse, and the technician.

Extracorporeal Hemodialysis: Purification of the blood by artificial means outside the body; dialysis, i. e., by artificial kidney machine.

Independent Nursing Function: Activity the nurse may perform independently without the order of a licensed physician or dentist.

Responsibilities: Activities performed by the nurse in the hemodialysis unit necessary to carry out the performance of the dialysis procedure. These responsibilities may include both dependent and independent nursing functions.

Role: The relationship of the nurse to the personnel and the patient; how the nurse sees her position in the hemodialysis unit.

Specialization: New era of nursing brought about by the introduction of automated devices into nursing to aid in patient monitoring; areas of specialization commonly referred to are the Intensive Care Unit, the Coronary Care Unit, and for the purposes of this study, the Hemodialysis Unit.

Assumptions

Several assumptions were made for purposes of this study.

1. Hemodialysis nursing as a specialized area of nursing is an area where more and more nursing responsibility will be given, and therefore is worthy of being studied.

2. Each nurse participating in the study is licensed to practice

nursing in the State of Oregon.

3. There were no unusual factors operating within the setting at the time of data collection which would exert an unusual influence upon the individuals responding.

4. The sample nurse population was not significantly different from the total nurse population in this situation. In other words, those nurses who responded to the questionnaire would not in any way respond differently than those nurses who did not choose to respond. It was further assumed that those nurses participating in the study would respond conscientiously and discriminatingly to the best of their ability.

Limitations

This study utilizes only the information obtained through the use of a questionnaire distributed to the sample population. The findings subsequently reflect the sensitivity, reliability, and validity of the measuring instrument. Further limitations are as follows:

1. Data were collected from a population of nurses randomly sampled from the membership of the Oregon Nurses Association, District #1.

2. Three hundred nurses from the general nursing population were selected. This was done for two reasons. First, the population of only nurses employed in hemodialysis nursing was not large

enough to provide a significant N. Second, the general nursing population was selected to provide a significant number of participants, and because opinions about hemodialysis nursing were desired from a cross-section of nurses.

3. No attempt was made to validate the responses of the participants.

Research Design

Sources of Data

The primary sources of data were responses obtained from the 145 registered nurses who responded to a questionnaire.

The secondary source of data was that information obtained from the literature related to hemodialysis nursing and the scope of present nursing practice.

Procedure for the Study

The steps involved in the development of this study are described as follows:

1. The literature was searched for references related to hemodialysis nursing, role of the nurse in specialized areas, scope of nursing practice, and related statistics, studies, and designs in all areas. From the literature, it was anticipated that a frame of reference would be established. The newest areas of specialized nursing were reviewed to ascertain the past, present, and possible future

responsibilities of the nurse, and to determine whether or not there, in fact, was a difference. The literature was also reviewed to ascertain whether or not there was a need for more definite guidelines for the nurse in hemodialysis nursing.

2. Several unstructured discussions with personnel in hemodialysis nursing were undertaken for the purpose of ascertaining their opinions concerning the role and responsibilities of the nurse in the hemodialysis unit.

3. The purpose and the scope of the study were formulated.

4. The hypotheses were established.

5. The limitations and assumptions were determined.

6. The questionnaire was constructed incorporating statements or questions based on principles found in the literature.

7. A pilot study was conducted by administering the questionnaire to 20 registered nurses from various areas of nursing practice. The purpose of the pilot study was to determine the reliability of the statements utilized in the measuring device. The chi square statistic was employed to test the reliability of the items. Reliable items were those where the null hypothesis was found to be tenable.

8. The names of 300 registered nurses were randomly selected from the total membership of District #1 of the Oregon Nurses Association.

9. The main study was then initiated by mailing the data-collecting device with accompanying cover letter to each of the 300 registered nurses. A stamped self-addressed envelope was enclosed and the participants were requested to return the questionnaire whether or not they desired to participate in the study. A period of three weeks was allotted between the initial date of mailing and the cut-off date.

10. The study was described.

11. The data were tabulated and interpreted. Tables were constructed from the tabulated data.

12. The findings were summarized, conclusions were drawn, and recommendations for further study were made.

Overview of the Report

Chapter I contains an introduction to the general problem, a statement of the problem researched, and the purposes of the study. This chapter also sets forth the assumptions and definitions for the study as well as the procedure used to carry out the study.

Chapter II includes a review of the related research and the current literature on hemodialysis for patients with chronic renal failure. The scope and standards of present nursing practice as well as research studies related to specialization in nursing, hemodialysis as a specialty, and the role and responsibilities of the

nurse in hemodialysis nursing are also discussed.

Chapter III describes the methodology and findings of the study with an interpretation of those findings.

Chapter IV of this study includes a summary of the study, the conclusions drawn, and recommendations for further study.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

The literature was searched for articles and research reports concerning the role and responsibilities of the nurse in hemodialysis nursing. The role of the nurse in hemodialysis nursing is relatively new, and therefore, the review of the literature available was not extensive. Several studies have been done concerning the physiological and psychological factors pertaining to hemodialysis as a therapy for renal failure. However, very little has been said about the nurse's role in the specialized area of hemodialysis nursing. Two unpublished Master's theses by Fitzgerald (21) and Cotter (11) of the Catholic University of America in Washington, D. C. delve into the nurse's role for caring for the patient with chronic renal failure. Neither of these pertains specifically to the nurse's role and responsibilities in hemodialysis nursing. The search for related literature was then broadened to secure information concerning the changing role of the nurse and her new relationship to the physician, and for information regarding the present accepted standards of nursing

practice as it relates to the relatively new area of hemodialysis nursing. Each of these topics included the patient and patient problems in some manner. Available published reports included such topics as automation and specialization in nursing, psychological aspects of the patient receiving hemodialysis, physiological problems of the patient with renal failure, and changing nursing practice standards brought about by automation and specialization. It is hoped that as the area of specialized nursing expands, the nursing literature will include greater quantity and better quality of information concerning the nurse's position in the hemodialysis unit and her relationship to the physician. It is also hoped that there will be additional research undertaken concerning the nurse's role and responsibilities in hemodialysis nursing.

The Changing Nurse Role

Radical shifts and changes are already occurring in roles and functions of physicians and nurses. (6, 17, 42) Helen Nahm comments in "Nursing Dimensions and Realities," appearing in the December, 1965 issue of International Nursing Review, that these "shifts and changes are a direct outgrowth not only of scientific advances in the fields of medicine and public health, but also of the vast social, political, and economic changes which have taken place in every part of the world." (50)

In an address given at the 45th convention of the American Nurses' Association in 1965 in San Francisco, Dolores Little, Associate Professor at the University of Washington School of Nursing, commented on the influence of specialization and social change in nursing:

Specialization in nursing is no longer a debatable issue. Contemporary social forces, rapid scientific and technologic advances, and the demand for health services make specialization inevitable and necessary. (47)

The changing nurse role appears to be less an example of cultural discontinuity where the nurse is abruptly required to assume a function which is grossly inconsistent with her learned functions and the role expectations, and more a matter of increased inconsistency in role behavior where dominant and submissive patterns are intermingled. (17, 40)

The contemporary nurse is caught in a complex situation of conflicting expectations. The physician expects her to be efficient, to carry out his orders carefully and well, and to have a good understanding of the most up-to-date methods of care so she can adequately care for the whole patient. (37)

Unless nurses themselves accept it (specialization and change), and take steps to gain the cooperation and understanding of related professional groups and the public in bringing about changes essential to the improvement to nursing care, other groups may take over and nurses may be left behind. (50)

Reissman (58) suggests that the nurse does not yet clearly conceive her relative position in these new relationships; i. e., that of accepting the new responsibility given to her by the physician, or the fact that she, the nurse, is capable of carrying such responsibility. According to the literature, it appears that the nurse herself is having the hardest time accepting specialization as being a function of nursing care. Peggy Dixon, in "Can Ideals Be Preserved?" states that "Today nurses' expectations of nursing and their expectations of themselves as nurses don't coincide with what they experience in practice. The result is unrest, discontent, and dissatisfaction." (15)

This changing role has caused much active debate on the need for specialization in nursing, and the possible methods for developing specialists. Most references reviewed showed the nurse to accept specialization as a new part of total nursing care. However, some other articles revealed a dissenting opinion toward the need for specialization in patient care. (43, 44, 45) The following is a comment by Eleanor Lambertsen in "Nurses Have Been Trained to Nurse People--Not Machines." (43)

The voices of individuals and groups who previously expressed concern that the nurse was moving away from the bedside are now declaring that the nurse must be prepared to nurse machines. The industrial revolution in hospitals has created a demand for technicians capable of supervising and generally caring for the increasing variety of technical devices being employed for diagnostic and therapeutic

measures. But why should the nurse be singled out as the person responsible in these new areas?

Lambertsen (44) suggests that the problem is to keep the benefits of automation in appropriate balance with the skills of professional workers. "If we fail in this, we will have created more overwhelming problems that any equipment could ever solve. "

What is needed is multipurpose nurses in the hospitals, not nurses so narrowly prepared that they are capable of only functioning in one clinical service and with only one group of patients--certainly not so narrowly trained that their work is limited to patients attached to or observed by some intricate system of machinery. (45)

Peplau (52), however, sees automation as an asset to nursing. "Machines do not replace nurses. Rather, they are tools that extend human observation of physiological parameters, and thereby, provide additional measures for life-saving therapy. "

Role of the Nurse in the Hemodialysis Unit

The most important element in the success of the hemodialysis unit is the people who are working in it. "No degree of excellence of architectural design or sophistication of equipment can supplant a well-prepared nursing staff. " (30)

Working with monitors requires new learning on the nurse's part, and represents new responsibilities. The nurse will need both judgment and skill in instituting emergency procedures prior to the physician's arrival. She must be well-prepared in these

areas before assuming responsibility for patient care in the unit. It is in these few seconds the patient's life may literally be in the hands of the nurse. (42)

Clarence Imboden (39) stated that the use of instrumental monitoring equipment does not in any way decrease either the quality or quantity of nursing care given to the patient. On the contrary, nursing attention is increased for the patient. He also commented that the instrumental monitoring neither observes nor records many of the important signs and symptoms of patient reaction and response to physiological stimuli.

According to Howland (38), patient monitoring is one of the oldest and most fundamental activities of nursing. The nurse, acting in her capacity as a monitor, observes a patient. She decides whether his actual state has deviated from his individual homeostatic limits. She then determines what action must be taken to reduce any difference she observes between the actual and the desired states. On the basis of this decision, she may take action herself, or transmit the information about the actual state of the patient to the physician.

Hemodialysis nursing requires the nurse's sustained concentration. This type of vigilance in itself is enough to increase tension and produce fatigue more quickly. The nurse carries with her the constant awareness that the lives of her patients are directly

dependent on her alertness and judgments. Even though in recent years there has been a decrease in the death rate of patients with chronic renal failure, there still is a high rate of death of the patients being treated by hemodialysis compared to other areas of the hospital where dangerously ill patients are not concentrated.

Virginia Henderson (30) defined the function of the nurse:

The unique function of the nurse is to assist the individual, sick or well, in the performance of those activities contributing to health or its recovery, or to peaceful death that he would perform unaided if he had the necessary strength, will, or knowledge. And to do this in such a way as to help him gain independence as rapidly as possible. In addition, she helps the patient to carry out the therapeutic plan as initiated by the physician.

The small size of the dialysis unit and the low nurse-patient ratio necessary for constant surveillance, thus, provides opportunity for the nurse to give individualized nursing care to each patient. Therefore, she can attempt to meet the physiological, emotional, psychological, and spiritual needs of each patient. The patient-nurse relationship is one of trust. This is not only because the patient is aware that the nurse will be the first person to respond to the electronic equipment indicators, but also because he has continuous evidence of the nurse's interest in his welfare through the bedside nursing care she gives. (38, 39, 52, 73)

The purpose of nursing has never been merely to help cure.

Rather, it has been to offer a warmly human relationship through which people could develop and use their assets and external resources toward the solution of their health problems. Peplau, commenting on the use of mechanized devices in nursing, stated that all mechanized devices must be considered as secondary in importance to the nurse-patient relationship in situation. (52)

Specific Nursing Responsibilities

Physiological Considerations

Various authors have discussed the importance of the nurse in caring for the patient on hemodialysis. Trusk (72) commented that the survival of patients with renal failure is often directly related to the quality of the nursing care they receive, especially while they are being treated by the artificial kidney.

Not so many years ago, nursing care for the patient with acute or chronic renal failure was largely focused upon palliative and comfort measures for an individual with a terminal condition. Now, however, the increasingly successful use of hemodialysis has greatly increased the survival rate of patients with this condition. (56, 62, 64)

Patients with renal failure are usually critically ill. Since this condition occurs most frequently as a complication of some severe illness or major medical or surgical catastrophe, the patient who

develops renal shut-down is in danger of having uremia superimposed upon his primary problem. (3, 5, 8)

Nursing Diagnosis

Using the baseline condition of the patient prior to dialysis, the nurse must be extremely alert and quick to report significant changes in general condition, and particularly those symptoms which relate to central nervous system and cardiovascular disturbances. (3, 5) Pendras (51) and Scribner (64), well-known authorities in the specialty of hemodialysis as a therapy, consider the central nervous system derangements another problem caused by renal failure that affects the sensorium, makes the patient restless, apprehensive, obtunded, or comatose. It is important that the nurse be extremely observant for any signs that indicate deterioration of the sensorium as they are frequently signs of fluid and electrolyte imbalance that may be life-threatening to the patient.

Tarrant (70) suggests that blood pressure checked frequently can help determine changes in the central nervous system and blood volume status. A high blood pressure may also indicate sodium and water excess. A low blood pressure is most frequently the result of inadequate blood volume. The nurse caring for the patient on hemodialysis must be extremely alert to all of these changes and be ready to initiate any measure which will correct these abnormalities. (6, 13, 19, 20)

Potassium excess is one of the most frequent complications of acute renal failure. In oliguric patients with extensive tissue destruction, the patient needs to be observed most carefully for signs of potassium intoxication. (51, 63, 72)

To give effective nursing care, the nurse must meet both the pathophysiologic and psychological needs of her patient. (51)

To meet his physiologic needs she must have sound knowledge of the disease process and be familiar with the physical findings that guide the doctor in evaluating the progress of the patient. She must be alert to signs and symptoms of change in the patient's condition.

Within the last 5 years technological and medical improvements have made it possible to use long-term dialysis as a treatment technique. The clinical literature suggests that psychological characteristics of the patients as well as technical and medical aspects of care, affect the practicality of a chronic hemodialysis program.

In order for chronic dialysis to be successful a complex adjustment must be made which demands intelligent cooperation and emotional acceptance on the part of the patient. Significant adjustment problems have been reported in the literature which range from inadequate cooperation with medical requirements to severe depression and apparent psychosis. (61) The relevance of the level of

emotional stability shown by prospective dialysis patients is acknowledged by various investigators in their selection criteria.

A study conducted in 1963 by the University of Washington in Seattle described by Sand (66) concerns the psychological assessment of candidates for hemodialysis programs. This study was based upon the following assumptions: (1) Psychological characteristics of the patients as well as technical and medical aspects of care affect the practicality of a chronic hemodialysis program; (2) In order for chronic dialysis to be successful, a complex adjustment must be made which demands intelligent cooperation and emotional acceptance on the part of the patient.

This study was intended to summarize the opinions the Seattle psychological team developed over a period of 3 years (1962-1965) concerning characteristics related to patient adjustment, and to examine the characteristics of patients who were classified by a medical treatment staff as making either superior, adequate, or poor adjustments to chronic hemodialysis. The report of this study outlined (1) some inferences about the psychological requirements for successful adaptation to chronic dialysis which the psychological team has found useful; (2) presented medical staff ratings of patient's levels of cooperation and emotional adjustment; (3) examined the relationship between these ratings and pre-treatment and pre-psychological evaluation; (4) discussed some psychological

characteristics which in their sample appeared to differentiate between prospectively better and poorer patients.

The outcome of the study showed that very few of the patients used in their study showed grossly inadequate or emotional adjustment. The patients in their study who seemed to adjust most successfully appeared to be differentiated from the less adaptive patients in showing: (1) higher intelligence; (2) less defensive attitude about admitting to anxiety or emotional stability; (3) less reliance on emotional defenses that involve the use of physical symptoms; and (4) more satisfactory emotional support from family members.

Specific psychological factors that relate to adjustment in chronic hemodialysis were discussed. These stresses were divided into the following categories:

1. Loss of parts of body or body function
2. Loss of membership in groups
3. Failures of plans or ventures
4. Changes in way of life and living
5. Loss of home or financial status or possessions
6. Loss of job or occupation
7. Injury or threat of injury to self
8. Frustration in drives or derivatives

A study conducted by Shea (68) at the Georgetown University Medical Center in Washington, D. C. in 1965, was based on the following

assumption: From a subjective point of view of the patient, the emotional reaction to the need for chronic dialysis may represent the greatest obstacle to successful rehabilitation. This report summarized the experience with nine patients who were interviewed regularly over a period of two and a half years and included some observations on the first four patients who were not systematically interviewed. The age range of the patients was from 13 to 48 years; three were teenagers, five were adults between 22 and 32, and the rest between 42 and 48. All but one were males. All patients had an average or above average IQ and ranged educationally from junior high school to the doctorate level. Five were not married; the other eight were married and lived with their families.

Shea (68) found that all of the research patients manifested significant psychological reactions while on the dialysis program; however, three were able to compensate well, at least superficially.

Patients on the chronic dialysis program were admitted to the Clinical Study Unit, a 16 bed research unit, which was also used by other clinical investigators. The patients were admitted under voluntary informed consent and incurred no expenses while on the unit. Considerable interaction among the patients, as well as between patients and staff was essential. In an attempt to understand these interactions and to maintain them on a therapeutic level, the following program was found to be helpful:

1. Detailed psychiatric evaluation including psychological testing of all chronic renal patients was done prior to the initial dialysis therapy.

2. Weekly seminars, conducted by the ward psychologist primarily for the nursing staff, were based on the principles of individual and group dynamics and directed toward the special needs of research patients.

3. Weekly multidiscipline conferences were held which were spontaneous discussions of problems related to patient management. They were attended by all staff members directly involved in the care of the patients, that is, physicians, nurses, nurses aides, dietary staff, social workers, and physical and occupational therapists. The knowledge shared by each staff member, the greater the insight and understanding of the patients' total needs, and the collaborative team spirit fostered by this program resulted in marked improvement in the management of chronic dialysis patients as well as the other study patients on the unit.

Observations of the psychological problems occurring in patients on a chronic intermittent hemodialysis program for maintenance of life in chronic renal failure were found to be similar to those Sand reported. (61) Reactions to stress were divided into (1) those occurring before dialysis, consisting mainly of irritability, apprehension and insomnia; (2) those occurring during dialysis, namely

anxiety while being connected to or disconnected from the dialyzer, restlessness, irritability, and anxiety and often depression when technical difficulties arise; and (3) those occurring after dialysis, specifically, relief that the procedure is over. The patients' attitudes toward their cannula, the dialyzer, the diet, and the other patients were also discussed. Those conducting the study found that the severe reactions that occurred and the inability to compensate have shown the necessity to develop a more intensive program of psychological therapy for the patients on the chronic dialysis program.

Rehabilitation

One question frequently raised in connection with a chronic hemodialysis program is whether the patients can live satisfying, useful lives. (41, 59, 61) In other words, might such a program merely avert death without allowing the patient to live an adequate life, either by his own standards or those of the community?

To determine the feasibility of treating a large number of chronic renal failure patients with hemodialysis, the Seattle Artificial Kidney Center was constructed. This is a community kidney center established with the help of John A. Hartford Foundation, United States Public Health Service grants, and from Boeing Good Neighbor Fund. To date 22 patients have been treated for a total of approximately 40 patient years. Three patients have died, leaving 19 currently being treated.

It is extremely important to start the chronic uremic patient on hemodialysis therapy as soon as symptomatic uremia makes it impossible for him to discharge his duties at work and at home. Patient adjustment and acceptance of hemodialysis are enhanced by a smooth transition into the dialysis program with a minimum of time lost due to illness. His previous experience, particularly regarding uremic neuropathy suggested that uremic complications were minimized when dialysis was started early. For this reason, the decision to accept a patient for dialysis in the Seattle Artificial Kidney Center Program was made approximately 3 to 6 months prior to that individual's need for dialysis. If accepted, the patient's conservative management was then administered at the Kidney Center by the same staff that would eventually administer the dialysis. During this period he was carefully instructed on a low protein-low salt diet, if needed and also was familiarized with the intricacies of chronic hemodialysis therapy. When hemodialysis is finally necessary, a very smooth transition from conservative management to dialysis therapy could be realized. The goal of the hemodialysis program was, and is, rehabilitation and eradication of the signs and symptoms of clinical uremia. In this study, experience with 22 patients in a community hemodialysis center is described. Treatment duration ranged between 1 and 50 months with an average per patient of 20.9 months.

Complications included cannula infections, hypertension, bone

disease, peripheral neuropathy, arthropathy, iron overload, hepatitis, and GI hemorrhage. Most of these complications were treated successfully.

Results in terms of degree of patient uremia, adequacy of nutrition, and rehabilitation were presented. Nineteen patients were rehabilitated to at least part-time semi-sedentary work and some to full-time work.

The goal of the chronic hemodialysis program in Seattle is the rehabilitation of the patient. The achievement of this goal required a program of comprehensive care and a team approach to the problem.

Most of the favorable experience with repeated hemodialysis in the treatment of chronic uremia has come from but a few major medical centers. In general, these successful programs have been well financed and well staffed. The patients have been selected by conscious or unconscious criteria that tend to favor their success. Cannula care and diet control have been vigorously regulated. The results of those programs have been such that widespread clinical application of the chronic dialysis has been advocated.

It is not yet clear how closely the pattern of those early successful programs must be followed to attain an acceptable degree of success. The purpose of the study by Retan (50) at Detroit, Michigan, Medical Center at Wayne State College of Medicine in 1965 was to describe experience in the application of repeated

hemodialysis to a series of medically indigent uremic patients. The program was financed within the stringent limitations of a city hospital budget. Patient selection was governed by institutional policy which precluded consideration of the value of the patient to the community. Cannula design and care, diet control, and the techniques of dialysis differed from the approaches that have been successful elsewhere. Retan (50) found that the program was of unquestionable value in providing a measure of enjoyable life for some of the treated patients, and it was lifesaving for one. In all 7 of the other patients, treatment was terminated for one reason or another after periods of up to 22 months after it had been started, and for some of these the quality of life during treatment was unacceptable.

This chronic dialysis program was the product of compromises. Patterns of patient selection and of patient care that were clearly undesirable were developed as the best attainable under the circumstances. The compromises were accepted with the hope that they would provide precedent that would permit more widespread and less expensive dialysis than published experience would indicate was possible. What was learned, instead, was an appreciation of the complexity of factors that enter into the success or failure of any given patient, and of the necessity for meticulous attention to detail in both the medical and paramedical areas necessary to

insure a prolonged favorable outcome of the therapy for all patients.

Retan (59) stated that his experience proved only that chronic dialysis, suboptimally done, was not in the patient's best interests. He believed that if hemodialysis therapy was undertaken at all when vital compromises must be made, it should then be done only as a short-term procedure with transplantation as the eventual goal.

"To be done properly, chronic dialysis requires a substantial investment in equipment, supplies and, perhaps above all, time and supporting personnel. " (59) Patient selection for motivation, intelligence, emotional stability, and rehabilitation potential appeared to be necessary to obtain the degree of cooperation required for long-term success. It remains for society to determine for whom the necessary investment will be made.

While an effective degree of life prolongation was obtained for some of these patients, for most the quality of life was unacceptable. Factors entering into the success and limitations in the program were discussed.

In addition to uncertainty about their life expectancy and stresses, individual to each patient as he and his family adapt to the changes forced on him by his chronic illness, there are the extremely immediate stresses of medical complications and emergencies. (21, 22) The patient will probably be required to face recurrent painful medical procedures or periods of relative ill health. In

some circumstances, he may be required to handle life-threatening emergencies himself. It is apparent that mistakes he or others make can be painful or indeed disastrous for him.

In the last five years several centers throughout the country have applied a variety of dialysis techniques in treating chronic uremic patients. Freeman (20) studied a selected number of patients in regard to chemical and physiologic considerations to develop practical, efficient hemodialysis techniques. In total, 11 patients were studied at the Georgetown University Hospital using four separate hemodialysis systems. The research group summarized the results of their experience in the use of various hemodialysis procedures and indicated the practicality of each technique. Four hemodialysis systems were used to maintain the life of 11 patients with chronic renal failure for periods of 2 to 30 months.

Freeman (20) found that there are no major technical obstacles that prohibit the use of hemodialysis for large scale treatment programs of patients with chronic renal failure. He also commented that a center embarking on such a program must be well-equipped with trained personnel and modern equipment that blends well with local experience and facilities, but must remain flexible to include newer innovations in technology that will ultimately reduce the great expense and inconvenience that the current hemodialytic systems incur. "One aim of each center should be continued

experimentation toward the end where the technique becomes so simple that the patient can treat himself, and consequently do away with the need for large hemodialysis center. "

Psychological factors crucially influence successful rehabilitation in many patients with chronic illness. Some factors often thought to be conducive to successful rehabilitation in any chronic illness include a stable doctor-patient relationship, a meaningful goal in life for the patient, and the meaning of the symptom or disability to the patient. Published experience with chronic dialysis in different parts of this country suggests that psychological factors are among the critical variables in determining adjustment to treatment.

At the University Hospital of the University of Washington and at the Seattle Artificial Kidney Center concern about psychological aspects of rehabilitation with dialysis led to the inclusion of a psychological evaluation as part of the total predialysis medical evaluation and to a repeat evaluation later in the course of dialysis. Wright (75) describes his study.

Twelve patients on chronic hemodialysis for periods of 6 to 33 months at the Seattle Artificial Center were studied between January, 1962 and December, 1964.

Ten patients were evaluated as follows. Prior to the onset of regular dialysis patients were interviewed once by a psychiatrist

and tested by a clinical psychologist with Wechsler Adult Intelligence Scale, Thematic Apperception Test, Rorschach, Rotter Sentence completion, and MMPI. The same group of patients were interviewed later by the same psychiatrist at points in treatment varying from 6 to 33 months after the first evaluation. Coincident with this follow-up interviewing, the same psychiatrist also interviewed patients' spouses or the most immediate relative, and a clinical psychologist obtained patient self-ratings of happiness and repeat MMPIs.

These interviews and tests made prior to treatment had the twofold purpose of: (1) getting a picture of the patient's basic personality traits, and (2) of his responses prior to illness. The follow-up evaluation had a different purpose toward understanding the patient's subjective feelings about the experience of dialysis. It was also directed at exploring the attitudes entertained toward the patient by significant persons in his environment--spouses, physician, and nursing personnel.

This study suggests the importance of early and continued education for both patient and spouse toward the treatment experience and possible complications of dialysis. Recognition of the psychological characteristics of the ideal dialysis patient although pertinent when the number of potential patients exceeds available dialysis, eventually might be expected to be less important than the recognition of the

variety of patient reactions and adaptation to the psychological stress of chronic dialysis.

1. Multiple examples of psychological stress are present in the experience of patients undergoing chronic renal dialysis.

2. After months of treatment, the critical stresses seem to arise from factors such as job change or marital problems rather than from the physical experience of recurrent dialyses.

3. Individual response to psychological stress during dialysis is dependent upon multiple variables that can be understood through adequate knowledge of the patient's life history and his current life situation.

4. Planned psychological support is indicated for the patient. This should be based on the doctor-patient relationship with a continued focus on patient feelings about dialysis, home life, and work. Additional support is available in the structure of group treatment in center dialysis.

An awareness of certain relationships prior to treatment seems pertinent both in the selection of more ideal patients and in the recognition of psychological needs of patients during dialysis. These considerations seem to support the emerging trend toward extending the period of conservative predialysis management during which a meaningful doctor-patient relationship can be established and appropriate education toward the patient experience can occur.

At the Peter Bent Brigham Hospital at Harvard Medical School in Boston, Massachusetts, a study was conducted by Hampers (26) concerning the practicability of home dialysis for patients with chronic renal failure. Because of the increased financial and logistic demands placed upon the medical centers by the enlarged dialysis load and because it is the opinion of the study group that the financial and medical responsibility for such patients should be shared by the community, a program of chronic ambulatory care performed in the home was initiated. The home dialysis program was started with the hope of having the procedure conducted entirely by lay personnel, thereby relieving the hospital staff for other duties.

Patients with terminal renal failure, who could not survive without dialysis even for short periods, were chosen for the home program. All patients were under 45 years of age, and judged to be emotionally suitable for chronic hemodialysis.

Four male patients had been treated for a period of from 7 to 13 months with twice weekly hemodialysis each lasting approximately five hours. Occasionally the frequency of dialysis was modified depending upon individual need. All of these patients had end-stage kidney disease with daily urine volumes of less than 400 ml.

Two patients had been maintained for over one year. One of the two received a renal homotransplant from his father after 12

months on dialysis and the other was still being maintained at home. Three of the patients suffered from chronic glomerulonephritis and one patient had polycystic kidney disease. Three patients were cared for by their wives. The patient who was not married was attended by a private duty nurse recruited from the community. In three instances no physician was in attendance at any one time during the dialysis, and the procedure was performed exclusively by the wife. In the remaining case, the doctor attended at the start of the dialysis. Local physicians from the community assumed the actual responsibility for the individual dialysis; and the medical results of home dialysis were comparable in every way to those of patients having their dialyses done only in the hospital. It was shown that there were advantages to home dialysis not possible with a hospital program.

The twin coil artificial kidney was used because of its simplicity of operation, and no complications were encountered.

The cost of a dialysis program still needs considerable pruning before it is within the reach of most family budgets.

Gombos (24) studied the feasibility of treatment of uremia in chronic irreversible renal disease by intermittent chronic peritoneal and hemodialysis. Practicality of such an approach within the framework of the Veterans Administration in Washington, D. C. was explored in March, 1963. A pilot program was initiated

for this purpose. Only four of five selected patients admitted to the program participated in the study since one patient died shortly after initiation of the program.

Criteria for the selection of patients were purely medical and did not include social, economic, or psychological factors. However, psychological factors were clearly recognized as important considerations in the treatment program.

To assess emotional factors, each prospective patient was subjected to psychological evaluation prior to institution of therapy. Intelligence had to be sufficient to understand the nature and prognosis of the disorder, but what was felt to be needed was sufficient practical sense to appreciate reasons for change in life and habits. Interest here was in the stability of the patient's home and the character of the patient's work pattern. It was felt that these factors would indicate the degree of change that could be imposed on the individual's life by the restrictions of the dialysis program.

The program was established to rehabilitate a selected group of patients incapacitated by long-standing uremia and other sequelae of chronic renal disease. To assess and rate the degree of their improved capacity, if any, and to carry out tasks related to their work and daily life at home, a simplified rating system was devised.

At the outset of treatment all patients were severely disabled, but institution of treatment resulted in significant improvement and

they all returned to their jobs.

The following conclusions were drawn as a result of this study:

1. Chronic hemodialysis and peritoneal dialysis are feasible and rewarding forms of therapy.
2. The delegation of the mechanical aspects of dialytic therapy to a nurse-technician team is practicable and safe when under the physician's supervision.
3. Protection of cannulas by aluminum brace insures safer course and longer survival of the shunts.
4. Performance rating system was devised to assess the results of the program. Significant improvement, but not complete rehabilitation, was accomplished in the selected patients.
5. It was felt a more vigorous treatment schedule would improve their performance status and minimize complicating factors such as neuropathy, hyperkalemia, and edema.

How well any particular potential patient adapts to stress is of considerable importance. Information concerning his ability to handle prior life stresses is essential. Significant emotional or interpersonal conflicts that the patient will be experiencing in addition to the stresses implicit in treatment would be seen as placing an extreme burden on his adjustive capacities. (61) These patients, although minimizing their problems during dialysis, seem to be awaiting a treatment that they hope will provide a close

return to normality.

Because the symptoms and the treatment are a constant reminder to these patients of their proximity to death, it seems that they are candidates for the same despair as Tolstoy. (71)

Ivan Ilych saw that he was dying, and he was in continual despair. In the depth of his heart he knew that he was dying, but only was he not accustomed to the thought, he simply did not, and could not grasp it.

Scope of Nursing Functions

Virginia Henderson, a recognized authority in the field of nursing describes the "unique" function of the nurse:

.....to assist the individual, sick or well, in the performance of those activities contributing to health or its recovery (or to a peaceful death) that he would perform unaided if he had the necessary strength, will, or knowledge, and to do this in such a way as to help him gain independence as rapidly as possible. (30)

In addition the nurse helps the patient to carry out the therapeutic plan as initiated by the physician. The nurse, as a member of the health team, helps other members to plan and carry out the total support whether it be for the improvement of health, recovery from illness, or support in death. (30)

Sister Olivia Gowan defines the comprehensiveness of nursing:

Nursing may be defined as an art and a science which involves the whole patient--body, mind, and spirit; promotes his spiritual, mental and physical health by teaching and by example; stresses health education and health preservation as well as ministration to the sick; involves the care of the patient's environment--social and spiritual and physical; and gives health service to the family and community as well as to the individual. (25)

The nurse in the hemodialysis unit not only has the patient's physical problem to cope with, but also she must be responsible for the proper functioning of the machinery, and be ready to carry out any emergency measures when necessary.

Because of the nature of the patient's illness and the subsequent need for the machine to keep the patient alive, many other problems occur. The nurse caring for this patient must deal with all of these problems, both physiological and psychological, if she is to give "comprehensive nursing care" to the "whole patient." (14, 19, 23, 27)

Team Approach

The goal of any hemodialysis program is the rehabilitation and eradication of the signs and symptoms of uremia. (47, 51) Hemodialysis therapy is administered as frequently as necessary to accomplish this end. (47)

The demand upon the physician to treat the whole patient is seldom more apparent than it is in chronic hemodialysis. The needs are so broad and essential that a team approach appears to be the most practical solution to this problem. (26)

The survey of the literature shows that this team approach is effectively being employed in nearly every chronic dialysis unit in the United States. (19, 20, 39, 47) One member of the team is the physician in charge of the hemodialysis unit; he has the total responsibility for making decisions regarding the management of his patient's treatment. (50, 61, 68) Haviland (28), Kolff (42), and Schreiner (62) who are prominent authorities in the subject of hemodialysis, comment that the physician is also in charge of those nurses and technicians who work under his supervision.

Physicians involved in caring for hemodialysis patients also should have adequate training and be thoroughly familiar with the procedure and with the pitfalls which may be encountered. Continuity of staff appears to be a key factor in successful patient care. (27)

The next important member of the team is the nurse who essentially is in charge of the patient during the dialysis procedure. Hampers (26) conducted a study regarding the management of patients with chronic renal failure, that supports the success of the nurse-conducted dialyses.

That nurse performed hemodialyses can be safely and efficiently incorporated into a chronic dialysis program is implied from our experience with over three thousand dialyses without patient injury due to either equipment or personnel failure. (26)

Hendler (31) makes the following comment regarding the type of care the nurse in hemodialysis nursing must give.

Although a high premium is placed on the technical skills of the nurse in the dialysis program, in order for it to be completely successful, it is advisable that the nurse move back from a purely technical and task-oriented approach to nursing care of the whole patient. Highly personalized care was required and the nurse had to demonstrate great sensitivity to each patient's individual needs, his fears and his desires.

The third, and no less important member of the team is the medical laboratory technician. This person has the responsibility for cleaning, rebuilding, and sterilizing the dialyzers as well as the maintenance of the array of equipment needed for synchronous dialyses. Evolutionary devices and cannula parts call for the services of the technician. "The proper choice of a technician will be rewarded by virtually trouble-free dialyses." (24)

Changing Nurse-Physician Relationship

The literature shows a change has taken place in the once traditional subservient role of the nurse. Now the nurse is not obliged to put up with abuse, and may expect to be treated with courtesy and

respect by the physician just as he expects to be treated by the nurse. (17, 37, 38, 69) Twenty years ago a nurse worked for the doctor. Now she works with him, and not for him. Thus, there is the transition of the nurse from the once subservient role to that of an equal peer relationship with the physician. (5, 69)

Present Nursing Practice--Legal Aspects

Nursing is faced with evaluating the past and designing new patterns compatible with present and future needs. "Refusal to state frankly a clear differentiation between medical and nursing practice constitutes one of the most significant problems facing the nursing profession today." (30)

Environmental settings and the range of situations are so closely allied and dependent upon each other that the nurse must have a complete compilation of the information before she can evaluate the patient's problem and make sound judgments to direct good nursing care. All of these factors and others influence the nature of nursing and medical practice and contribute accordingly toward determining the nurse's responsibility for performing such specific functions as those required of the nurse in the hemodialysis unit. (32, 33, 34)

Nathan Hershey makes the following statement:

Nurses realize the law is slow to catch up with present nursing practice, and must make appeals to their own national, state, and local organizations

for better understanding and assistance in clarifying present nursing practice standards. (34)

The American Nurses' Association has defined the dependent areas of nursing function as meaning "the administration of medications and treatments prescribed by a licensed physician or dentist." (7, 53)

The independent areas of nursing functions are defined as those activities the nurse may perform independently without the order of the licensed physician or dentist.

A survey of the literature reveals several suggestions as to why no definite legal action has been taken concerning the practice of the nurse in specialized areas.

1. Nurse practice is influenced by the accepted practice by the medical profession within the community. (32)

2. Nursing and medical practice are interrelated and frequently indistinguishable from each other. (33)

3. Physicians cannot agree among themselves as to whether or not those activities previously defined as dependent areas of nursing are nursing functions; likewise, nurses also differ in their opinion. (34)

4. The statutes of various states which define professional nursing are too nebulous to provide usable guides in determining the functions in which a nurse may legally engage. (34)

5. A nurse's negligent action, as well as her failure to take appropriate action can be the basis of liability. (12)

6. Hospitals should have policies stating specifically the conditions and limitations to which a nurse should adhere if these previously dependent areas are now accepted functions of nursing. (60)

7. The nurse is responsible for her own professional acts. (12)

8. The responsibilities and role of the nurse in any intensive care unit is a controversial question of concern to the nursing profession nation-wide. Employing agencies, doctors, and nurses seek authorization and reliable guidelines and answers on which they can rely. (12, 30, 33)

Medical and nursing licensure laws as well as licensing legislation for other personnel are not consistent from state to state. For example, in some states the licensing legislation contains a definition of the "practice of nursing" and in other states the phrase "registered nurse" is defined in terms of what the RN may do. In still other states, the legislation defined the "practice of professional nursing." (12, 33)

According to Nathan Hershey's article "Scope of Nursing Practice," licensing of professions is a function of the individual state. (33)

In "Clarifying Grey Areas of Practice," an editorial in the January, 1964, American Journal of Nursing, states that a national statement or stand on the nurses' performance of such procedures is impossible. (7) Too many local and regional differences are

involved: the wide range of settings in which nurses practice, the lack of uniformity in nursing preparation, and competence; the differences in nursing and medical practice acts from state to state; the existence or absence of a Good Samaritan Act within a state; and the differences between emergencies in uncontrolled settings as operating rooms, intensive care units, coronary care units, and in this case, hemodialysis units; also, emergencies in such uncontrolled settings as the home or the street. The article further suggests that prudent judgments based on sound scientific principles are required. (33)

Because legally, nursing and medicine are two separately recognized professions, problems of practice within the dependent area of nursing are best approached by joint study and collaboration of nursing and medical associations within the individual states. (7)

Since this study is concerned with the role and responsibilities of the nurse in hemodialysis nursing, it is necessary to consider what impact the introduction of this "new technology" has on these responsibilities.

The key responsibilities of the nurse have, traditionally, been those of observing patients, recording and reporting information about their condition, and carrying out the orders of the attending physician. The nurse has been a collector of information which

is recorded and which may, because of the acuteness of the patient's needs, have to be transmitted verbally and to the physician rather than by notations in the patient's chart. (34)

There are many observations made by the nurse that cannot be made by means of instrumental measurement. Some of these are observations of the patient's general condition, changes in color, increasing incoherency, odors, and interpersonal communication. These are observations or techniques that call for a blend of education and experience. (32) Providing treatment is a nursing responsibility that may be assumed by equipment. (32, 33, 34)

Machines will replace human beings only when the machines can perform given tasks more efficiently in a superior manner or as well as human beings at a lower cost. (29)

The number of patients who need continuous monitoring or treatment by automatic devices will probably never be large in relation to the total population. Most of the new equipment is primarily devoted to increasing the degree of surveillance of critically ill patients. (33) It can be assumed that changes from the traditional observation and treatment will be little affected by the relatively dramatic changes in intensive care.

Nathan Hershey (32) proposes this question concerning the present standards of nursing practice.

Nurses who work in such units in which automated equipment and other machines are a necessity of treatment of the patient, are

instructed to recognize readings or react to a special visual or audible signal from a machine. Are these nurses making medical decisions and, thus, violating the medical practice act?

According to this legal authority, if physicians describe in advance the problems of special patients that call for immediate use of either equipment or other emergency measures, and if the nurse has had the necessary instruction so that she is capable of carrying out such procedures, those judgments left to the nurse do not seem different from judgments now recognized as falling within the present practice of professional nursing. (32, 33)

Hershey further states that liability can arise as a result of a machine malfunctioning that results in patient injury. If this malfunction should have been recognized before the patient suffered injury, the individual using the machinery and their employers could be held liable. (32)

The nurse should never undertake to use any radically new or unfamiliar modern equipment until she has been fully trained in its use as to recognize the indications of faulty operation. (32)

It is the institution's responsibility to provide personnel qualified to operate and maintain such equipment in proper working order. (7, 9, 10, 12, 32, 33)

The nurse's responsibility in determining the operational reliability of equipment should be limited to recognizing relatively obvious equipment failures and reporting them to the technical specialist. (32)

If a thorough inspection of equipment is necessary, it should be done by a technical specialist and not by the nurse. (12, 32, 33)

According to the literature, the degree of continuing human appraisal of the patient's situation and machine functioning will almost certainly be required. (2, 5, 12, 33) The nurse is responsible for this appraisal. When equipment fails to function properly, unless the nurse possesses sufficient skills to correct the problem, she has the responsibility to notify the necessary technician. (12, 32, 33)

To the extent that nurses must adapt to new techniques and use new kinds of equipment, individual nurses will be challenged and stimulated.

However, there is no reason for the nurses who have ministered to patients effectively in the past to expect greatly increased liability risks because in the future they will be meeting their responsibilities in somewhat different ways. (32)

Nurses and the institutions will not become insurers of patient safety; they will be liable only where the standard of care, necessary to prevent unreasonable risks to harm the patients, is not met in the new contexts in which nursing and medical care is rendered. (33)

Moore (48) and Regan (57) state that the nurse cannot shift the blame to the physician or any other person when her own ignorance or negligence results in injury to the patient. This indicates that the law demands sound competent judgment on the part of the

nurse. In Nursing Practice and the Law, Milton Lesnik (46) states that legally nurses may perform many functions that are medical acts.

The performance by a nurse of any function involving treatment constitutes the practice of medicine, and unless the nurse complies with certain minimal requirements, she is violating the law. Those minimum requirements are: (1) that she act under the order and direct supervision of a duly licensed physician; (2) that she comprehend the cause and effect of the order; and (3) that the order be legal. (46)

Thus, subject to the requirement that a nurse understand the cause and effect of any medical order that she is to execute, in theory, that nurse may perform any medical act provided a legal order is given. (46) The right to engage in such functions is based upon the order plus the supervision of a licensed physician. The legal authority to engage in the area of nursing practice that primarily is a medical area converted into one of nursing by medical order plus supervision by a licensed physician can be based upon (1) custom or usage; or (2) statute. (46)

The Position Statement on the Registered Nurse in Oregon adopted by the Oregon Nurses Association Board of Directors, September 20, 1968, concerns the position of the nurse in "highly specialized areas" of nursing. (Appendix C)

Since hemodialysis nursing is a relatively new area of nursing in Oregon, there has been little done about setting up guidelines defining the role and responsibilities of the nurse in this very new

area of specialization. However, in another less recent area of specialization, that of the nurse in the coronary care unit, the Oregon Nurses Association has recently adopted a Statement on Registered Nurses in Acute Cardiac Care. (Appendix D) The survey of the literature regarding the legalities of nursing practice in specialized areas suggests that each state be responsible to define in each specialized area where the nurse must make judgments, the responsibilities and requirements of the nurse in her own area. (12, 32, 33, 34, 46)

Perhaps in the near future such a statement may be made to provide guidelines for nurse in hemodialysis nursing. The last paragraph of this Statement elicits such a suggestion.

Summary of the Literature Reviewed

Nursing and medicine are experiencing a change in the status of their work in relation to their past, each other, and the public. A growing interdependence between the two professions, evident, for example, in the increasing overlapping of functions, calls for changes in traditional relationships.

There are procedures and problems of judgment in medical care today which cannot be clearly designated as being solely medical or being solely nursing. Until a few decades ago, it would have been quite easy to define the scope and range of the

physician's functions and those of the nurse, and there would have been very little overlapping. Today this is impossible.

For the nursing profession, these changes seem to call for more advanced educational preparation, both liberal and scientific, and greater independence of judgment. The need for such independence of judgment extends far beyond the patient's bedside.

Studies have shown a direct relationship between how well the patient accepts attitudes toward his ability to adjust to the demands set before him. They have also demonstrated the importance of attitudes on the part of the medical and nursing staff members who deal intensively with patients on chronic hemodialysis therapy. Finally, the studies have pointed out the need for education on the part of both health personnel and the dialysis patient in regard to adequate preparation of the patient prior to (1) conservative medical management and (2) the initiation of hemodialysis therapy.

CHAPTER III

REPORT OF THE STUDY

Introduction

This study was undertaken for the purpose of determining the expressed opinions of registered nurses regarding the role and responsibilities of the nurse in hemodialysis nursing.

The study follows the steps outlined in Chapter I. The limitations and assumptions, as stated in Chapter I, have been the defining propositions of the study. The following hypotheses have been tested:

1. Nurses ordered according to year of graduation from nursing school show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.
2. Nurses ordered according to highest credential in nursing show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.
3. Nurses ordered according to years of nursing experience show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.
4. Nurses ordered according to present position in nursing

show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.

5. Nurses ordered according to clinical experience in hemodialysis nursing during basic nursing preparation show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.

6. Nurses who have observed the operation of a hemodialysis unit show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.

7. Nurses who have worked in a hospital which contained a hemodialysis unit show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.

8. Nurses who have worked in a hemodialysis unit show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.

9. Nurses who have read current literature pertaining to hemodialysis nursing show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.

10. There is no difference in expressed opinions regarding the scope of practice in hemodialysis nursing between nurses who read primarily medical journals and nurses who read primarily nursing journals.

11. Nurses who have attended classes or conferences in hemodialysis nursing show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.

Design of the Study

Selection and Revision of the Study Instrument

Following an initial review of the literature, the data collecting device was developed in the form of a questionnaire. Principles derived from the survey of the literature served as the basis upon which the tool was constructed. The questionnaire may be found in Appendix B.

The questionnaire was divided into three parts. Part I consisted of information which was desired concerning the nurse's basic nursing preparation, number of years of nursing experience, and whether or not the nurse had had any clinical experience in hemodialysis nursing during her basic nursing preparation.

Part II consisted of information which was desired concerning the nurse's opinions regarding the present standards of nursing practice and hemodialysis nursing.

Part III consisted of a series of statements of activities which are accepted as part of the functions of the nurse in the hemodialysis unit. The nurse's opinion was sought regarding whether each activity is or is not within the standards of present nursing practice. Each item was carefully selected in order that the activity mentioned could be a function in a hemodialysis unit utilizing either the Kiil, Drake-Willock, or Kolff dialyzers.

In effect, these statements were an evaluation of the responsibilities of the nurse in the hemodialysis unit, and were designed to

test the knowledge of the registered nurse participants regarding hemodialysis nursing. Both dependent and independent nursing functions are incorporated in Part III of the survey tool.

Pilot Study

Twenty registered nurses from the University of Oregon Medical School Hospital participated in the pilot study. They were requested to evaluate the tool in terms of content and format. At this time the questionnaire was also tested for reliability. The chi square statistic was employed to test the reliability of the items. Reliable items were those where the null hypothesis was found to be tenable. The questionnaire was administered to the pilot study group on two different occasions exactly one week apart. The results of the pilot study were analyzed and no revisions in the device were found to be necessary.

Selection of the Study Population

Three hundred names of registered professional nurses were selected at random from a listing of nurses in the Portland metropolitan area. The list was obtained from the District One Office of the Oregon Nurses Association. The list consisted of confirmed current addresses and professional information for all nurses who had responded to a survey made the previous year by that office. A sample from the general nurse population was desired to obtain information regarding hemodialysis nursing from nurses in as many areas of nursing as was possible.

Three hundred names were desired in order to assure that

groups of nurses would be large enough to test statistically.

Anonymity was maintained throughout the study. No names were used, nor was the use of names ever considered necessary. The registered nurse participants were assured their anonymity at the beginning of the study. This was stated in the cover letter which introduced the study.

Procedure for Solution

Procedure for Collecting the Data

Three hundred questionnaires were printed and assembled, each with an accompanying cover letter which described the study and gave directions for completing and returning the questionnaire. The cover letter may be found in Appendix A.

The questionnaire and accompanying cover letter were mailed to the 300 nurses whose names had been selected for the study, with a self-addressed stamped envelope provided for the return of the form. If a nurse did not desire to participate in the study, she was requested to return the uncompleted questionnaire. This was done in an effort to make the study as convenient as possible for the participant, and also, to attempt to secure a greater participation on the part of the study sample. A period of three weeks, from November 30, 1968 to December 14, 1968 was allotted for the

participants to return the survey form. Any questionnaires received after December 14, 1968, were not used in this study. This cut-off date was made for the purpose of limiting the study.

During the three week period following this mailing, 195 questionnaires were returned as follows:

Questionnaires returned unused	45
Questionnaires returned late	5
Questionnaires returned completed	145
Total number returned	195

Plan for Analysis of the Data

The questionnaire served as a record of responses made by each study participant. Numerical data were transferred to a tally sheet from which separate tables and figures could be constructed. Subjective responses were recorded as close to verbatim as possible. The number of returned, completed questionnaires provided a large enough N from which the data could be analyzed. Since the study was primarily designed to demonstrate the relationship between the nurses' knowledge of hemodialysis nursing as shown by her stated opinions regarding scope of practice and the multivariate hypotheses given in Chapter I, the major part of the analysis was planned to be in this area. The summary of the data may be found in Appendix E.

Statistical Manipulation and Interpretation of the Data

Part I of the questionnaire served as a basis for describing the sample population which was being studied. Questions 1, 2, 3, and 4 were analyzed statistically using the Friedman two-way analysis of variance by ranks. (66) The Friedman two-way analysis of variance is useful for testing the null-hypothesis that the k samples have been taken from the same population. (22, 16) To perform the Friedman rank test on these data, the following procedure was used:

1. The scores were cast in a two-way table having k columns.
2. The scores were ranked from 1 to k in each row.
3. The sum of the ranks in each column (R_j) was determined.
4. The value of χ^2 was determined using the formula

$$\chi^2 = \frac{12}{NK(k+1)} \sum [R_j^2 - 3N(k+1)]$$

where N = number of rows, k = number of columns, R_j = sum of ranks in j^{th} column. \sum directs one to sum the squares of the sums of ranks over all k conditions.

5. When the number of rows and/or columns is not too small, it can be shown that χ^2 is distributed approximately as chi square with $df = k - 1$ when the above formula is used.

6. The method for determining the probability of occurrence associated with the observed value of χ^2 depends on the

sizes of N and k.

7. If the probability yielded by the appropriate method in steps five and six is equal to or less than the tabled value, the null hypothesis is rejected.

The critical value of χ^2 at the 1% level of significance for a 6 x 26 table with 5 degrees of freedom is 15.09.

The value obtained from the data in the table is 673.67 which is higher than the critical value at the .01 level of significance. Therefore, the p (Probability) that the difference between the six groups regarding the year of graduation from nursing school is due to chance alone is not significant. The null hypothesis stating there is no difference between year of graduation from nursing school and the expressed opinions regarding the scope of practice in hemodialysis nursing is, therefore, rejected. There is, in fact, a great difference between each group and their stated opinions regarding the scope of practice in hemodialysis nursing. Factors, other than chance, are operating to show there is a significant difference between these groups and their expressed opinions regarding the scope of nursing practice in hemodialysis nursing.

Table 1 shows the comparison between nurses ranked according to year of graduation from nursing school and their expressed opinions regarding the scope of nursing practice in hemodialysis nursing. The nurses who expressed the most opinions consistent with

current practice in hemodialysis nursing were graduated since 1965. Next in line were those who graduated between 1961 and 1965. The third group were those who graduated between 1935 and 1940. The next group were those who graduated between 1951 and 1960. The two groups which ranked fifth and sixth were those nurses who graduated between 1941 and 1950, and those who graduated prior to 1935, respectively. The χ^2 for these groups as computed statistically was 673.67 which reveals a highly significant difference between these groups and their expressed opinions regarding the scope of practice in hemodialysis nursing.

Factors operating which may be responsible for this significant difference may be associated with whether or not the nurses have had any educational preparation in hemodialysis nursing, experience in a hemodialysis unit, or in a hospital containing a hemodialysis unit. It is undetermined exactly which factors are responsible for such a significant difference in the stated opinions of these groups.

The Friedman two-way analysis of variance and the formula for determining χ^2 is used with three other items. The null hypothesis was rejected at the .01 level of significance.

Table 1. A Comparison Between 145 Nurses Ranked According to Year of Graduation from Nursing School and Expressed Opinions Regarding the Scope of Practice in Hemodialysis Nursing.

Year of Graduation	Total Responses (N = 145)	Percentage of Total	Ranked Total	Rank
(1)	(2)	(3)	(4)	(5)
Prior to 1935	34	24.11	123.5	6
1935 - 1940	22	15.60	72.5	3
1941 - 1950	41	29.07	113.0	5
1951 - 1960	20	14.89	104.0	4
1961 - 1965	19	13.47	71.0	2
Since 1965	4	2.83	62.0	1

$$\chi^2 = 673.67$$

$$p < .01$$

Highest Credential in Nursing

The Friedman two-way analysis of variance is again used to test the hypothesis that the k samples have been drawn from the same population.

The critical value of χ^2 at the 1% level of significance for a 4 x 26 table with 3 degrees of freedom is 13.28. The value obtained from the data in the table is 90.30 which is higher than the critical value at the .01 level of significance. Therefore, the probability (p) that the four groups are taken from the same population is due to chance alone is not significant. The null hypothesis that there is no

difference between the highest credential held in nursing and expressed opinions regarding the scope of practice in hemodialysis nursing is, therefore, rejected. There appears, in fact, to be a great difference between the highest credential held in nursing and the stated opinions regarding the scope of practice in hemodialysis nursing. Factors other than chance are operating to reveal the significant difference between these groups and the expressed opinions regarding the scope of practice in hemodialysis nursing.

Table 2 shows the comparison between nurses ranked according to the highest credential held in nursing and expressed opinions regarding current practice in hemodialysis nursing. As was expected, those nurses with master's degrees appeared to express more opinions that were consistent with current practice in hemodialysis nursing than did those nurses with associate or baccalaureate degrees, and diploma graduates. Surprisingly enough, the associate degree graduates expressed similar opinions. However, they had the smallest N which was two. The baccalaureate graduates ranked third, and the diploma graduates ranked fourth because they expressed fewer opinions regarding the scope of practice in hemodialysis nursing.

Table 2. A Comparison Between 145 Nurses Ranked According to Highest Credential in Nursing and Expressed Opinions Regarding the Scope of Practice in Hemodialysis Nursing.

Highest Credential (1)	Total Responses (N = 145) (2)	Percentage of Total (3)	Ranked Total (4)	Rank (5)
Associate Degree	2	1.43	60	2
Diploma	68	48.23	85	4
Baccalaureate Degree	50	35.46	64	3
Master's Degree	4	14.89	51	1

$$\chi^2 = 90.30$$

$$p < .01$$

Years of Nursing Experience

The Friedman two-way analysis of variance is again used to test the hypothesis that the k samples were drawn from the same population. The Friedman formula for determining is again used to determine the value of χ^2 on the data shown in Table 3.

The critical value of χ^2 at the 1% level of confidence for a 7 x 26 table with 6 degrees of freedom is 16.81.

The value obtained from the data in the table is 90.30 which is significantly higher than the critical value at the .01 level of significance. Therefore, the p (Probability) that the difference between the seven groups regarding the years of nursing experience and

the expressed opinions regarding the scope of practice in hemodialysis nursing is due to chance alone is not significant. The null hypothesis stating that there is no difference between years of nursing experience and expressed opinions regarding the scope of practice in hemodialysis nursing is, therefore, rejected. There is, in fact, a great difference between the various year spans and the stated opinions of the nurses regarding hemodialysis nursing. Factors, other than chance, appear to be operating since the probability is .01, or, only one out of 100 responses would be due to chance alone.

Table 3 is the third of a series which indicates that the groups under study are not homogeneous; i. e., derived from the same population.

Table 3 illustrates a comparison between nurses ranked according to years of nursing experience and the expressed opinions regarding the scope of practice in hemodialysis nursing. As can be seen from Table 3, those nurses comprising the majority of participants are those who have practiced nursing over 25 years. No participants have had less than one year of experience. The next largest group were those who have practiced nursing from 16 to 20 years. There were eighteen nurses who have been practicing from 1 to 5 years, seventeen nurses who have practiced from 6 to 10 years, thirteen nurses who have practiced from 11 to 16 years, and sixteen who have practiced from 21 to 25 years. There were seven nurses who did not

respond to the question. Those nurses who expressed the most opinions about hemodialysis nursing were those who have practiced from 6 to 10 years. In striking comparison, the next two groups who ranked second were the nurses who have had between 21 and 25 years of experience, and nurses who have had over 25 years of experience. The fourth ranking group were those nurses who have had 1 to 5 years of experience. It was thought that the more recent graduates would express the most opinions regarding the scope of practice in hemodialysis nursing. However, the analysis disproved this theory. The middle two groups of nurses, those nurses who have had 11 to 15 years and 16 to 20 years of experience expressed the fewest opinions.

The χ^2 value for this comparison is 653.07 which is highly significant at the p (Probability) of .01. There is a significant difference in these groups and their expressed opinions regarding the scope of practice in hemodialysis nursing; i. e., they appear to be part of different populations, and therefore, the hypothesis is rejected. The other factors influencing this significance may be educational preparation, and whether or not the nurses have had any experience in the area of hemodialysis nursing either prior to graduation or since graduation. Since two of the groups expressing the most opinions regarding current practice in hemodialysis nursing were those nurses who have been employed over 20 years, this is thought to be a possibility. It can also be noted that all those who held master's degrees were in this category; i. e., all have had many years of experience in nursing.

Table 3. A Comparison Between 145 Nurses Ranked According to Years of Nursing Experience and Expressed Opinions Regarding the Scope of Practice in Hemodialysis Nursing.

Years of Experience (1)	Total Responses (N = 145) (2)	Percentage of Total (3)	Ranked Total (4)	Rank (5)
Less than 1	0	---	180.5	7
1 - 5	18	13.04	93.0	4
6 - 10	17	12.31	57.0	1
11 - 15	13	9.42	98.0	5
16 - 20	26	18.84	139.5	6
21 - 25	16	11.59	80.0	2.5
Over 25	46	33.33	80.0	2.5

$\chi^2 = 653.51$ $p < .01$

Present Position in Nursing

The Friedman two-way analysis of variance is again used to test the hypothesis that the k samples have been drawn from the same population.

The critical value of χ^2 at the 1% level of confidence for a 7 x 26 table with 6 degrees of freedom is 32.00. The value obtained from the data in the table is 1187.61 which is significantly higher than the tabled value of χ^2 . Therefore, the probability that the seven groups were taken from the same population is due to chance alone

is not significant. The null hypothesis that there is no difference between present position in nursing and expressed opinions regarding the scope of practice in hemodialysis nursing is rejected. There is a statistically significant difference between nurses in various positions in nursing and expressed opinions regarding practice in hemodialysis nursing.

Table 4 shows the comparison between nurses ranked according to present position in nursing and stated opinions regarding the scope of practice in hemodialysis nursing. Respondents often referred to a field of nursing rather than actually designating their position. To illustrate, a participant may have indicated her position as coronary care unit rather than referring to her function as a staff nurse or head nurse. In tabulating responses, an attempt has been made to retain the respondent's terminology, but to list the positions in reference to nursing. From the results shown in the table, the nurses who were in the higher positions in the nursing hierarchy expressed more opinions on the subject of hemodialysis nursing, except for the three nurses who are presently employed in the coronary care units. The 12 groups, in order of greatest to least number of expressed opinions regarding the scope of practice in hemodialysis nursing are: (1) in-service education; (2) coronary care nursing; (3) supervisors; (4) director of nursing; (5) licensing consultants; (6) head nurses; (7) instructors; (8) occupational health nursing; (9) public health nursing; (10) general duty nursing; (11) private duty nursing; and (2) office nurses. This sequence seems logical except for the fact that the

public health nurses and general duty nurses who comprise two of the larger groups expressed the fewest opinions regarding the scope of practice in hemodialysis nursing. From the data it is logical to assume private duty nurses and occupational health nurses expressed the fewest opinions regarding the scope of present practice in hemodialysis nursing.

Table 4. A Comparison Between 145 Nurses Ranked According to Present Position in Nursing and the Expressed Opinions Regarding the Scope of Practice in Hemodialysis Nursing.

Present Position (1)	Total Responses (N = 145) (2)	Percentage of Total (3)	Ranked Total (4)	Rank (5)
Public Health Nursing	24	16.55	210.0	9
Coronary Care Unit	3	2.06	91.5	2
Instructors	27	16.82	159.0	7
Office Nurses	5	3.44	297.5	12
Head Nurses	15	10.34	151.0	6
Occupational Health	5	3.44	216.0	8
General Duty	16	11.03	222.5	10
Director of Nursing	8	5.51	106.5	4
Supervisor	22	15.17	94.0	3
Inservice Education	6	4.13	77.5	1
Licensing Consultants	5	3.44	150.5	5
Private Duty Nursing	9	6.20	241.0	11

$$\chi^2 = 1187.6$$

$$p < .01$$

Clinical Experience in Hemodialysis Nursing During
Basic Nursing Preparation

Part II of the survey form asked for opinions of the registered nurse participants concerning various aspects of their own experience and knowledge. Question 5 queried the participants about whether or not they had any clinical experience in a hemodialysis unit during their basic nursing preparation. All 145 participants responded to the question. One hundred forty-two responded in the negative; three responded positively. The three nurses who responded "yes" to the question were three of the four participants who had graduated since 1965 according to the analysis of the data for question 1. Since only three of the 145 participants answered "yes" to question 5, no conclusions can be made. The hypothesis stating that there is no difference between nurses having clinical experience in a hemodialysis unit during their basic nursing preparation must be held tenable. Only a minute proportion of the participants responded positively, and, therefore, no conclusions can be drawn.

Questions 6, 7, 14, and 16 of Part II of the questionnaire were analyzed using McNemar's technique for testing the difference between two percentages that does not necessitate the computation of the correlation coefficient between two variables. For each of the items, the data have been tabulated into a 2 x 2 table. The responses of each individual have been tabulated separately and each one

entered into the table. A tally was then placed in each cell. In this fashion the responses to all of the items by each of the individuals are tallied.

The following 2 x 2 table design was utilized in the construction of each 2 x 2 table used to determine the z for each item. (16, 74)

		Item 2	
		NO	YES
Item 1	YES	A	B
	NO	C	D

The tallies which were placed in the B and C responses are those individuals who responded in the same direction to the two items. Cells A and D represent the individuals who answered the two items differently.

The z test of significance is defined as the difference between two statistics divided by the standard error of this difference. This test of significance is made using the following formula:

$$z = \sqrt{\frac{(A - D)^2}{A + D}}$$

Observed the Operation of a Hemodialysis Unit

Table 5 gives the results of the 26 z tests made for question 6 of Part II of the questionnaire.

The hypothesis being tested for question 6 states there is no difference between nurses who have observed the operation of a hemodialysis unit and stated opinions concerning hemodialysis nursing. Of the 145 total responses, 67 participants answered "yes" to the question, and 78 answered "no." The z test was used to test the hypothesis on the basis of the 26 items given in Part III of the questionnaire. Table 5 shows the results of the multiple z tests done to test the hypothesis on each of the 26 items.

Two by two tables were constructed for each item in Part III. Table 5 shows the number of each item, its corresponding z, and the probability of each z occurring. All items tested on question 6 were found to be statistically significant at or beyond the .01 level except the following:

- Item 7: Initiate and discontinue a dialysis.
- Item 8: Collect a blood specimen and do a hematocrit.
- Item 11: Make the decision to administer normal saline when the patient is hypotensive.
- Item 19: Give the patient Procaine intravenously to decrease the patient's venous spasms.

Therefore, the null hypothesis stating that there is no

difference between nurses who have observed the operation of a hemodialysis unit and the expressed opinions regarding current practice in hemodialysis nursing is rejected for all items except 7, 8, 11, and 19. The null hypothesis is held tenable for those items.

Some assumptions can be made concerning the reason items 7, 8, 11, and 19 do not show a significant difference at the .01 level. These items can be classified as being dependent areas of nursing functions; i. e., the physician must designate these responsibilities to the nurse since they lie within the present realm of the practice of medicine and involve the making of decisions. The participants can be assumed to be unsure of the nurses' role in these dependent areas of nursing function and, therefore, great disparity occurred in their responses to these four items.

Table 5. A Comparison of z Test Results and Probability for Items 1 through 26 and Total Responses of 145 Nurses Who Have Observed the Operation of a Hemodialysis Unit.

Item (1)	z (2)	p (3)
1	6.717	.01
2	6.276	.01
3	7.318	.01
4	3.597	.01
5	6.756	.01
6	6.964	.01

Table 5. Continued

Item	z	p
(1)	(2)	(3)
7	0.137	ns
8	1.015	ns
9	7.313	.01
10	6.391	.01
11	0.366	ns
12	7.587	.01
13	7.452	.01
14	4.249	.01
15	7.517	.01
16	5.994	.01
17	6.349	.01
18	5.509	.01
19	0.630	.01
20	7.583	.01
21	7.160	.01
22	7.517	.01
23	5.939	.01
24	5.477	.01
25	6.282	.01
26	6.532	.01

Worked in a Hospital which Contained a Hemodialysis Unit

Question 7 queried the registered nurse participants as to whether or not they had worked in a hospital which contained a hemodialysis unit. Sixty-two participants answered "yes" to the question; 83 answered "no." The z test was employed to test the hypothesis comparing each of the responses to the 26 items in Part III with each of the responses given in question 7.

Table 6 shows the results of the multiple z tests done to test the hypotheses that there is no difference between nurses who have worked in a hospital which contains a hemodialysis unit and their expressed opinions concerning current practice in hemodialysis nursing. The table shows the number of each item, its corresponding value of z, and the probability of each z appearing in the table. All items tested on question 7 were found to be statistically significant at the .01 level with the exception of items 7, 8, 11, 19, and 24.

- Item 7: Initiate and discontinue a dialysis.
- Item 8: Collect a blood specimen and do a hematocrit.
- Item 11: Make the decision to administer normal saline when the patient is hypotensive.
- Item 19: Give the patient Procaine intravenously to decrease venous spasms.
- Item 24: Make the decision to stop the dialysis or to continue the dialysis after a blood membrane has ruptured.

The null hypothesis stating that there is no difference between nurses who have worked in a hospital containing a hemodialysis unit and the expressed opinions concerning current practice in hemodialysis nursing is rejected for all items except 7, 8, 11, 19, and 24. The null hypothesis is held tenable for those items.

The following comments can be made concerning the reason items 7, 8, 11, 19, and 24 are not significant at the .01 level. These items except for item 24 are the same items classified as dependent areas of nursing functions which appeared in the analysis of question 7. These items including item 24 are within the present realm of the practice of medicine and also involve the making of decisions. It can be assumed the responses of the nurse participants showed great disparity because they were unsure of the nurse's role in these dependent areas of nursing practice.

Table 6. A Comparison of z Test Results and Probability for Items 1 through 26 and Total Responses of 145 Nurses Who Have Worked in a Hospital Containing a Hemodialysis Unit

Item (1)	z (2)	p (3)
1	6.298	.01
2	6.017	.01
3	6.963	.01
4	6.715	.01
5	6.804	.01

Table 6. Continued

Item	z	P
(1)	(2)	(3)
6	7.508	.01
7	0.267	ns
8	1.137	ns
9	7.033	.01
10	6.173	.01
11	2.021	.01
12	6.755	.01
13	7.362	.01
14	4.031	.01
15	7.385	.01
16	5.907	.01
17	6.077	.01
18	5.085	.01
19	0.274	ns
20	7.385	.01
21	7.042	.01
22	7.428	.01
23	5.858	.01
24	0.823	ns
25	6.282	.01
26	6.606	.01

Worked in a Hemodialysis Unit

All nurses responded to question 8, which asked the nurses whether or not they had ever worked in a hemodialysis unit. One hundred forty-one participants responded negatively. Only four of the total 145 nurses answered "yes" to the question. Two of these participants who answered "yes" stated that they had experience with the Kolff dialyzer; one had experience with the Kiil dialyzer; and one, experience with the Drake-Wollock dialyzer.

Since only four of the 145 participants answered positively to the question, no conclusions could be made. The hypothesis that there is no difference in nurses who have ever worked in a hemodialysis unit and their expressed opinions regarding the scope of current practice in hemodialysis nursing must be held tenable. The N is not large enough to permit any conclusions to be made regarding the data.

Preparing the Nurse to Function in the Hemodialysis Unit Without Direct Supervision

Question 9 queried the nurse regarding how much time is required to prepare the nurse to function efficiently in the hemodialysis unit without direct supervision by the doctor.

Table 7 shows that the majority of the nurses who responded to question 9 felt that from one to three months was an adequate length of time to prepare the nurse to function efficiently in the

hemodialysis unit without direct supervision.

Twenty-two percent felt that four to seven months was adequate. Ten nurses (6.89%) felt eight to twelve months should be given to prepare the nurse to function in this area. Only two persons felt that a year or longer is necessary before the nurse can function adequately in the hemodialysis unit without the direct supervision by the physician. Thirty-two of the total nurse participants failed to respond to the question. As has been cited in the previous chapter, the literature varies in the length of time thought necessary to prepare the nurse to function adequately in the hemodialysis unit without direct supervision. No definite conclusions can be drawn since there is no definite answer to the question.

Current Literature Pertaining to Hemodialysis Nursing

Question 10 asked the participants whether or not they had read the current literature available pertaining to hemodialysis nursing: sixty-seven answered "yes"; 73 answered "no." The z test was employed to test the hypothesis that there is no difference between whether a nurse has read the current literature on hemodialysis nursing and expressed opinions regarding the scope of practice in hemodialysis nursing.

Table 8 shows the results of the multiple z tests done to test the hypothesis. The number of each item is given and its corresponding z value and probability. All items tested on question 10

Table 7. 145 Nurses Classified According to Present Position in Nursing and Length of Time Required to Prepare the Nurse to Function Efficiently in the Hemodialysis Unit Without Supervision

Present Position (1)	A Less than 1 month (2)	B 1-3 mos. (3)	C 4-7 mos. (4)	D 8-12 mos. (5)	E More than 12 mos. (6)
	Public Health	3	10	1	0
Coronary Care Unit	0	2	1	0	0
Instructors	4	10	5	3	0
Occupational Health	0	1	2	0	0
Head Nurses	1	7	3	1	0
General Duty	0	4	3	2	1
Director of Nursing	1	6	1	1	0
Supervisors	0	7	11	2	0
Inservice Education	0	2	3	1	0
Licensing Consultants	1	3	0	0	0
Private Duty	1	3	1	0	1
Office Nurses	0	2	2	0	0
TOTAL	11	57	33	10	2
Percentage of Total	7.85	39.31	22.75	6.89	1.37

were found to be significant at the .01 level with the exception of the following items:

- Item 4: Obtaining blood specimens for typing and crossmatching.
- Item 7: Initiate and discontinue a dialysis.
- Item 8: Collect a blood specimen and do a hematocrit.
- Item 19: Give the patient Procaine intravenously to decrease venous spasms.
- Item 24: Make the decision to stop the dialysis or to continue the dialysis after a blood membrane has ruptured.

The null hypothesis stating that there is no difference between nurses who have read current literature on hemodialysis nursing and the expressed opinions regarding practice in hemodialysis nursing is rejected for all items except items 4, 7, 8, 19, and 24. The null hypothesis is held tenable for these items.

The following assumptions can be made concerning the reasons items 4, 7, 8, 19, and 24 are not significant at the .01 level. These items all lie within the present area of the practice of medicine and involve the making of decisions. The responses of the registered nurse participants show great disparity perhaps because they felt uncertain of the nurse's role in these dependent nursing functions in present nursing practice. This, however, would be another study.

Table 8. A Comparison of z Test Results and Probability for Items 1 through 26 and Total Responses of Nurses Who Have Read Current Literature on Hemodialysis Nursing

Item (1)	z (2)	p (3)
1	5.422	.01
2	7.376	.01
3	5.860	.01
4	2.021	ns
5	7.376	.01
6	6.147	.01
7	0.346	ns
8	0.130	ns
9	6.414	.01
10	5.099	.01
11	8.982	.01
12	6.674	.01
13	6.600	.01
14	9.960	.01
15	6.567	.01
16	4.598	.01
17	5.091	.01
18	3.160	.01
19	0.970	ns

Table 8. Continued

Item (1)	z (2)	p (3)
20	6.511	.01
21	8.011	.01
22	6.681	.01
23	6.364	.01
24	0.263	ns
25	9.970	.01
26	5.077	.01

Type of Literature Read Most Often

Of the total 145 nurse participants who responded to the question, 133 stated they read nursing journals most often. Only 12 stated they read medical journals most often. The hypotheses that there is no difference between nurses who read primarily nursing journals and nurses who read primarily medical journals and their expressed opinions regarding the scope of practice in hemodialysis nursing must be held tenable. The number of nurses who responded positively to the question is too small to allow any conclusions to be made concerning the data.

Responsibility for Patient Management

According to the survey of the literature which has been described in the previous chapter, the team approach to patient management has been found to be most effective in hemodialysis units the world over. (19, 20, 28, 42, 62) The participants were asked to check the person or persons whom they felt were responsible for the patient undergoing hemodialysis therapy.

Table 9 shows how each of the 12 groups of nurses responded to question 12. The majority of the participants felt the physician and the nurse should work together as a team. Almost no one felt the licensed practical nurse should be a member of the hemodialysis team which was an expected response. Few nurses felt the medical lab technician had a place as a member of the dialysis team. The literature has shown, however, that the medical lab technician does have a vital position as a member of the dialysis team. The reluctance on the part of the participants to select the medical lab technician as a member of the team, however, is an area for further study.

Table 9. Responses of 145 Registered Nurses to Which Person Should be Responsible for the Management of the Patient During the Hemodialysis Procedure

Present Position in Nursing (1)	A Doctor (2)	B Registered Nurse (3)	C Licensed Practical Nurse (4)	D Medical Lab Technician (5)
	Public Health Nursing	17	14	0
Coronary Care Unit	3	0	0	0
Instructors	24	13	0	6
Office Nurses	4	2	0	2
Head Nurses	11	10	0	2
Occupational Health	4	1	0	0
General Duty	13	9	1	4
Directors of Nursing	7	6	1	2
Supervisors	13	18	1	5
Inservice Education	3	6	0	1
Licensing Consultants	4	3	0	0
Private Duty	<u>7</u>	<u>2</u>	<u>0</u>	<u>1</u>
TOTAL	110*	85*	3*	24*

*Totals do not add to 145 as the question permitted a multiple response answer.

Changing Nurse-Physician Relationship

According to the 141 nurses who responded to question 13, the majority (137) stated the nurse is taking over a responsibility which once belonged to the physician, but which the physician now delegates to the nurse as being primarily a nursing responsibility. Only four persons felt the nurse was taking over the physician's responsibility for patient management for which she was not prepared. Regarding why the participants responded the way they did to question 13, the following reasons were given:

It is a responsibility that can be delegated.

She is working under direct supervision and orders of the physician.

Much of the care is good basic and supportive nursing care.

Doctors are too busy and nurses have enough education and experience to do this type of treatment.

Nurses' education has advanced to a point where they can and should be given responsibility that once belonged to the physician.

This is a part of total nursing care.

Professional people should work together and not as separate groups.

Nursing care is required. A physician is not prepared to give nursing care.

The nurse can make judgments based on patient's condition, what she knows about doctor's therapy and therapy in general. Teaching is wide open here; also,

patients need support nurse may be better prepared to give.

Before being given this responsibility, she should be known to be qualified to take the responsibility.

The doctor is there to make decisions; the nurse, to carry them out.

Because patients and/or their families can eventually be taught to use certain types of these units.

Special training should prepare the nurse to function properly in a hemodialysis unit.

Not enough doctors for constant observation. Most units have definite standing orders and policies.

However, more clearly defined guidelines need to be established.

The nurse is prepared to recognize signs, symptoms, make interpretations, and judgments, and recognize her own limitations, and refer to the physician when necessary.

The functions of the nurse under the direction of a physician is no more out of her field than is the function of any of the other clinical specialists.

From what I have seen, the doctors leave the complete responsibility to the nurse.

The debt is owed to the patient. The program is not broad enough to let the nurse take over.

A diagnosis of a physical condition must be made in this case which is medicine not nursing.

Doctors are putting too much responsibility on the nurse.

Do not know enough about it to have an opinion.

I don't know. I've never seen the equipment or the procedure.

Desire to Work in a Hemodialysis Unit

This question was analyzed statistically using McNemar's technique for testing the difference between two percentages that does not necessitate the computation of the correlation coefficient. This test has previously been described in detail at the beginning of this chapter. The hypothesis stating that there is no difference between nurses who want to work in a hemodialysis unit and their expressed opinions regarding the scope of practice in hemodialysis nursing is tested using the z test. The data for each item in Part III of the questionnaire and the responses to this question were tabulated into a series of 2 x 2 tables. The responses of each individual have been tabulated separately and each one entered into the table. A tally was then placed in each cell. In this fashion, the responses to all of the items by each of the individuals were tallied.

Table 10 gives the results of the 26 z tests made on question 14 of Part II of the questionnaire. All items were found to be significant at or beyond the .01 level except for the following items:

- Item 2: Make a decision to dialyze the patient.
- Item 5: Decide the amount of Heparin to be given every hour.
- Item 11: Make the decision to administer normal saline infusions when the patient is hypotensive.
- Item 19: Give Procaine intravenously to decrease the patient's venous spasms.

Item 23: Indicate how much potassium should be added to the patient's dialysis bath solution.

Item 25: Regulate Heparin and Protamine infusions according to the patient's clotting time determinations.

These functions may be classified as dependent nursing functions because the responsibility to carry out these functions must, at present, be delegated to the nurse by the physician. On all items except 2, 5, 11, 19, 23, and 25, the participants agreed that the activities mentioned are within the realm of present nursing practice. All of the other items were found to be significant at or beyond the .01 level. These six items were found to be not significant at the .01 level.

The hypothesis stating that there is no difference between nurses who want to work in a hemodialysis unit and their expressed opinions regarding the scope of practice in hemodialysis nursing is rejected for all items except 2, 5, 11, 19, 23, and 25. For those remaining items, the hypothesis is held tenable. This may be due to the disparity of responses to these items. It appears the nurses do not agree as to whether these responses are or are not within the scope of present nursing practice.

The following responses were given when the participants were asked to tell why they would or would not want to work in a hemodialysis unit:

I'm just plain scared.

I'm too old.

Unprepared.

I do not like such confining work.

Not enough challenge involved.

Area of nursing too restricted.

Major field of interest in nursing elsewhere.

Do not like direct patient care.

Probably lack of confidence.

I think the demands would be greater than the amount of physical and emotional attention I could give to it.

Unqualified.

Prefer well patients.

Lack of knowledge and lack of interest in this specialty.

Too monotonous: Prefer a variety of patients.

Boring repetitive technical procedure.

Too confining--too technical.

Involvement with patients ends in fatality. Too much responsibility is given to the nursing personnel.

Don't function well under stress situations.

Would like to learn more about it.

A challenging situation for cooperative action between doctor, nurse, lab technician, and patient.

It is a specialty that requires training, and is a nursing job of the future.

If offers excellent opportunity for total care--meaning psychological as well as physical care.

Curiosity.

Very good opportunity to learn, and help those that need help.

Challenging type of nursing care.

To keep active.

So I could learn the procedure sufficiently to use in public health when and where needed.

I enjoy close relationships with smaller numbers of patients.

To reacquaint myself to the care of the patient, his physical problems, emotional needs, and follow-up care he may need in the home and community.

Only if this warrants teaching nursing students.

Because I know nothing about it.

To expand nursing experience.

Table 10. A Comparison of z Test Results and Probability for Items 1 through 26 and Total Responses of 145 Nurses Who Desired to Work in a Hemodialysis Unit.

Item (1)	z (2)	p (3)
1	8.195	.01
2	1.182	ns
3	9.022	.01
4	6.037	.01
5	1.186	ns

Table 10. Continued

Item	z	p
(1)	(2)	(3)
6	8.954	.01
7	3.595	.01
8	3.660	.01
9	4.717	.01
10	7.984	.01
11	1.035	ns
12	9.336	.01
13	9.174	.01
14	7.038	.01
15	9.120	.01
16	8.351	.01
17	8.222	.01
18	7.267	.01
19	2.498	ns
20	9.067	.01
21	4.937	.01
22	9.127	.01
23	2.531	ns
24	4.389	.01
25	0.788	ns
26	8.102	.01

Formulating Guidelines for Nursing Practice
in Hemodialysis Nursing

Since hemodialysis nursing is a relatively new area, no definite guidelines for nursing practice in hemodialysis have been formulated. The participants were asked to check which organization, or organizations they felt should be responsible for formulating such guidelines.

According to the data shown in Table 11 the most frequently chosen organizations were (1) American Nurses' Association with 84 responses; (2) American Medical Association with 64 responses; (3) each individual hospital. The next two organizations receiving the next highest responses were Oregon Nurses Association, receiving 45 responses and Oregon Medical Association which received 32 responses.

The survey of the literature revealed the general consensus was that the organization which should formulate guidelines for nursing practice in hemodialysis nursing should be at the state level. From Table 11 it is found the nurses participating in the study feel the guidelines should be formulated on the national level. Also, a high number felt each individual hospital should be responsible for the formulation of guidelines for nursing practice in its own unit.

Since the question asked for multiple responses, no conclusions can be drawn from the data shown.

Table 11. Responses of 145 Nurses Regarding Which Organization Should Formulate Guidelines for Nursing Practice in Hemodialysis Nursing.

Organization (1)	Total Responses* (2)
American Medical Association	61
American Nurses' Association	84
Each Individual Hospital	56
Oregon League for Nursing	11
Oregon Medical Association	32
Oregon Nurses Association	45
Oregon State Board of Nursing	13
Oregon State Board of Health	16

*Totals add to more than 145 as the question permitted a multiple response answer.

Classes or Conferences on Hemodialysis Nursing

The responses to this question were analyzed using McNemar's z test which has been discussed elsewhere in this chapter. The hypothesis stating that there is no difference between nurses who have attended conferences or classes on hemodialysis nursing and their expressed opinions regarding the scope of practice in hemodialysis nursing was rejected for all items except items 2, 5, 11, and 25. For these items, the hypothesis was held tenable since none was significant at the .01 level.

Table 12 shows the results of the 26 z tests made on question 16 of Part II of the questionnaire. All items did prove to be significant at or beyond the .01 level except the following items:

- Item 5: Decide the amount of Heparin to be given every hour.
- Item 11: Make the decision to administer normal saline infusions when the patient is hypotensive.
- Item 25: Regulate Heparin and Protamine infusions according to the patient's clotting time determinations.

It has been determined that these items are examples of functions which are also within the present classification of dependent nursing. The responsibility to carry out these functions must at present be delegated to the nurse by the physician. All of the registered nurse participants agree that all of the functions lie within the scope of present nursing practice except for items 2, 5, 11, and 25. These items were found to be non-significant. All other items from 1 to 26 except items 2, 5, 11, and 25, were found to be significant at or beyond the .01 level. The hypothesis stating there is no difference between nurses who have attended classes or conferences on hemodialysis nursing is rejected. However, it is held tenable for items 2, 5, 11, and 25. This disparity in response to these items may be due to the fact that nurses are uncertain as to whether these are or are not within the scope of present nursing practice. However, this would be indication for further study.

Table 12. A Comparison of z Test Results and Probability for Items 1 through 26 and Total Responses of 145 Nurses Who Have Attended Classes or Conferences on Hemodialysis Nursing

Item (1)	z (2)	p (3)
1	8.663	.01
2	1.024	ns
3	9.329	.01
4	6.742	.01
5	1.482	ns
6	9.275	.01
7	3.248	.01
8	4.204	.01
9	9.382	.01
10	8.510	.01
11	1.771	ns
12	9.541	.01
13	9.435	.01
14	7.222	.01
15	9.488	.01
16	8.411	.01
17	8.777	.01
18	7.447	.01
19	2.897	.01

Table 12. Continued

Item	z	p
(1)	(2)	(3)
20	9.329	.01
21	5.924	.01
22	8.777	.01
23	3.316	.01
24	6.603	.01
25	0.295	ns
26	9.002	.01

CHAPTER IV

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Summary of the Study

The purpose of this study was to obtain the expressed opinions of registered nurses regarding the role and responsibilities of the nurse in hemodialysis nursing. The limitations and assumptions as outlined in Chapter I have been the defining propositions of the study.

Following an initial review of the literature, the data collecting device was developed in the form of a questionnaire. Principles derived from the survey served as a basis upon which the tool was constructed.

The questionnaire was divided into three parts. Part I consisted of information concerning the nurse's personal background. Part II consisted of information concerning the nurse's opinion regarding the present standards of nursing practice and their application to hemodialysis nursing. Part III consisted of a series of activities which are accepted as part of the functions of the nurse in the hemodialysis unit. The nurse's opinion was sought regarding whether the activity is or is not within the scope of present nursing practice.

The questionnaire was tested for reliability. It was administered to a group of 20 registered nurses on two different occasions exactly one week apart. The results of the test for reliability were analyzed using χ^2 . No revisions in the device were found to be necessary. Three hundred names were selected. One hundred ninety-five of the total number of participants responded, and of the number, 145 were usable.

The participants in the study were 145 registered nurses randomly selected from the membership of District One of the Oregon Nurses Association.

The findings were based on the information provided by the responses of the participants to a mailed questionnaire.

Part I of the survey tool was analyzed statistically using the Friedman two-way analysis of variance for testing the hypothesis that the k samples have been taken from the same population.

Questions 6, 7, 14 and 16 of Part II of the questionnaire were analyzed using McNemar's (z test) technique for testing the difference between two percentages. (74) The analysis was done by comparing the responses to the 26 items in Part III of the questionnaire with each of the responses given for each of the questions.

The results and interpretations of the statistical tests were presented.

Findings

On the basis of this study, the following hypotheses were accepted:

1. There is no difference between nurses having clinical experience in a hemodialysis unit during their basic nursing preparation and the expressed opinions regarding the scope of practice in hemodialysis nursing.

2. There is no difference between nurses who have ever worked in a hemodialysis unit and their expressed opinions regarding the scope of practice in hemodialysis nursing.

3. There is no difference between nurses who have primarily read nursing journals and those who have primarily read medical journals and their expressed opinions regarding the scope of practice in hemodialysis nursing.

The following hypotheses were rejected on the basis of the findings of this study:

1. Nurses ordered according to year of graduation from nursing school show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.

2. Nurses ordered according to highest credential in nursing show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.

3. Nurses ordered according to years of nursing experience show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.

4. Nurses ordered according to present position in nursing show no difference in knowledge of hemodialysis nursing.

5. Nurses who have observed the operation of a hemodialysis unit show no differences in expressed opinions regarding the scope of practice in hemodialysis nursing.

6. Nurses who have worked in a hospital which contained a hemodialysis unit show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.

7. Nurses who have read current literature pertaining to hemodialysis nursing show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.

8. Nurses who have attended classes or conference on hemodialysis nursing show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.

Significant differences were found between the year of graduation from nursing school and knowledge of hemodialysis nursing. It was found that the nurses who were the most recent graduates expressed more opinions about hemodialysis nursing. However, the group of nurses who graduated between 1935 and 1940 also expressed many opinions regarding hemodialysis nursing. It was also found that

those nurses who graduated between 1935 and 1940 held the highest credentials in nursing, and occupied secure positions in the nursing hierarchy.

The nurses who had over 25 years of nursing experience expressed more opinions about hemodialysis nursing than did the rest of the participants. No one had less than one year of experience. The next group were those nurses who have practiced from 16 to 20 years. These were also the same nurses who held the highest credentials in nursing, and who had been graduated from nursing school many years. The nurses who expressed the fewest opinions about hemodialysis nursing were those who had between 11 and 20 years of experience in nursing.

Nurses who held the highest positions in nursing expressed the most opinions about the practice of hemodialysis nursing. These were, in order: (1) inservice education, (2) coronary care unit nurses, (3) supervisors, (4) directors of nursing, (5) licensing consultants, (6) head nurses, (7) instructors, (8) occupational health nurses, (9) public health nurses, (10) general duty nurses, (11) private duty nurses, and (12) office nurses. It was found that those nurses who held the highest positions in nursing would have expressed the most opinions regarding hemodialysis nursing. However, the study show public health nurses and general duty nurses to rank relatively low; i. e., expressed the fewest opinions regarding the scope of practice

in hemodialysis nursing.

In general, the nurses felt all the independent activities listed in Part III of the questionnaire were within the scope of present nursing practice. However, it was also found that those activities which are dependent nursing functions were not felt to be within the scope of present nursing practice. In general, these items had to do with the making of decisions about the patient's condition and therapy. The following items are classified as dependent nursing functions:

- Item 2: Make the decision to dialyze the patient.
- Item 4: Obtain blood specimens for typing and cross-matching.
- Item 5: Decide the amount of Heparin to be given each hour.
- Item 7: Initiate and discontinue a hemodialysis.
- Item 8: Collect a blood specimen and do a hematocrit reading.
- Item 11: Make the decision to administer normal saline infusions when the patient is hypotensive.
- Item 19: Give the patient Procaine intravenously to decrease the patient's venous spasms.
- Item 24: Make the decision to stop the dialysis or to continue the dialysis after a blood membrane has ruptured.
- Item 25: Regulate Heparin and Protamine infusions according to the patient's clotting time determinations.

Generally, nurses felt that one to three months was an adequate length of time to prepare the nurse to function well in the hemodialysis unit without direct supervision.

When asked who should be responsible for the management of the patient during the hemodialysis procedure, the nurses responded that the physician and the nurse are responsible. Only 24 felt the medical lab technician has a place as a member of the dialysis team. Three felt the licensed practical nurse should be responsible.

According to the study, the nurses unanimously agreed the guidelines should be formulated on the national level, and the responsibility shared between the American Nurses' Association and the American Medical Association, and each individual hospital.

Conclusions

The findings of this study lead to the following conclusions:

1. Level of education had an effect on the opinions expressed by nurses regarding hemodialysis nursing.
2. Length of experience in nursing had an effect on the opinions expressed by nurses regarding hemodialysis nursing.
3. Nurses occupying the leadership positions in the field of nursing expressed the most opinions regarding hemodialysis nursing.
4. Nurses who have observed the operation of a hemodialysis unit expressed more opinions regarding hemodialysis nursing than did those nurses who have not.
5. Nurses who have read the current literature available regarding hemodialysis nursing expressed more opinions regarding

hemodialysis nursing than those nurses who had not read the literature available.

6. Nurses who had attended classes or conferences on hemodialysis nursing also expressed the most opinions regarding the scope of practice in hemodialysis nursing.

It was undetermined whether there is any difference between (1) nurses who have had clinical experience during their basic nursing preparation and their stated opinions regarding hemodialysis nursing; (2) nurses who have worked in a hemodialysis unit and their stated opinions regarding hemodialysis nursing; (3) nurses who have read primarily nursing journals, or primarily medical journals and their stated opinions regarding hemodialysis nursing. The number of nurses who responded to these questions was not significant and, therefore, no conclusions could be made.

Recommendations for Further Study

1. It is recommended that further study be done of nurses who are employed in hemodialysis nursing to determine whether the same responses would be given that were given by this study group.

2. It is recommended that an experimental and a control group be studied to determine whether inservice education would make a difference in knowledge of hemodialysis nursing.

3. It is recommended that the survey tool be adapted for use

with medical personnel to determine the expressed opinions of the physician regarding the scope of present nursing practice.

4. It is recommended that the survey tool be developed for use in public health nursing as a basis for determining the level of understanding of hemodialysis nursing and its implications for follow-up patient care.

5. It is recommended that the tool be devised for use in evaluating the psychological aspects of the patient as a basis for patient assessment prior to hemodialysis therapy.

6. It is hoped that this study will serve as the basis for further study which will improve the position of the nurse in the hemodialysis unit and, thereby, lead to better and more comprehensive patient care.

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APPENDICES

APPENDIX A

Cover Letter

3518 S. W. Eleventh Avenue
Portland, Oregon 97201
November 25, 1968

Dear Registered Nurse:

In partial fulfillment of requirements for a Master of Science degree at the University of Oregon School of Nursing, I am undertaking a study to determine the nurses' expressed opinions of the role and responsibilities of the nurse in Hemodialysis nursing, and to determine whether these responsibilities are within the scope of present nursing practice.

You are invited to participate in this study. It will take about 15 minutes of your time to complete the enclosed questionnaire. Please return the questionnaire in the enclosed stamped self-addressed envelope by December 16, 1968. If you do not desire to participate in the study, please return the uncompleted questionnaire.

Upon completion of the study, copies of the report will be placed in the library of the University of Oregon Medical School.

Thank you very much for your assistance.

Yours sincerely,



(Mrs.) Judith Sandilands, R. N.

Judith Sandilands is a regularly enrolled graduate student at the University of Oregon School of Nursing. Any assistance you can offer Mrs. Sandilands will be greatly appreciated.

Lucile Gregerson
Thesis Adviser

APPENDIX B

Questionnaire

QUESTIONNAIRE

Part I

Directions: Please place an "X" in the appropriate space across from the answer which most accurately describes you. There are no right or wrong answers. Please do not put your name on the questionnaire.

- | | |
|--|--|
| <p>1. Year of graduation from nursing school:</p> <p>a. Prior to 1935 _____</p> <p>b. 1936 - 1940 _____</p> <p>c. 1941 - 1950 _____</p> <p>d. 1951 - 1960 _____</p> <p>e. 1961 - 1965 _____</p> <p>f. Since 1965 _____</p> | <p>3. Years of nursing experience:</p> <p>a. Less than 1 year _____</p> <p>b. 1 - 5 years _____</p> <p>c. 6 - 10 years _____</p> <p>d. 11 - 15 years _____</p> <p>e. 16 - 21 years _____</p> <p>f. 21 - 25 years _____</p> <p>g. Over 25 years _____</p> |
| <p>2. Highest credential in nursing:</p> <p>a. Associate Degree _____</p> <p>b. Diploma _____</p> <p>c. Baccalaureate _____</p> <p>d. Master's _____</p> | <p>4. Present Position in nursing: _____</p> <p>_____</p> <p>_____</p> <p>_____</p> |

Part II

Directions: Please place an "X" in the appropriate space across from the answer which most accurately describes you or your opinion. There are no right or wrong answers.

5. Did you have any clinical experience in a Hemodialysis unit during your basic nursing preparation?
- a. Yes _____ b. No _____

6. Have you observed the operation of a Hemodialysis unit?
 a. Yes _____
 b. No _____
7. Have you worked in a hospital which contained a Hemodialysis unit?
 a. Yes _____
 b. No _____
8. Have you worked in a Hemodialysis unit?
 a. Yes _____ If your answer is "Yes" which type of
 b. No _____ machines did you monitor?
 Kiil Artificial Kidney Machines _____
 Kolff Artificial Kidney Machines _____
9. How much time do you think is required to prepare the nurse to function efficiently in the Hemodialysis unit without direct supervision?
 a. Less than 1 month _____
 b. 1 - 3 months _____
 c. 4 - 7 months _____
 d. 8 - 12 months _____
 e. More than 12 months _____
10. Have you read the current professional literature available pertaining to Hemodialysis nursing?
 a. Yes _____
 b. No _____
11. Which type of professional literature do you read most often?
 a. Medical Journals _____
 b. Nursing Journals _____
12. Which person do you think should be responsible for the management of the patient during the Hemodialysis procedure? (Check more than one if appropriate.)
 a. Physician _____
 b. Registered Nurse _____
 c. Licensed Practical Nurse _____
 d. Medical Lab Technician _____
13. Do you think the nurse working in the Hemodialysis unit is taking over a responsibility which really belongs to the physician?
 a. Yes _____ b. No _____

Please state the reason(s) for your answer.

14. Would you want to work in a Hemodialysis Unit?
- a. Yes _____
- b. No _____ Why? _____
15. By which organizations do you think the guidelines for nursing practice in Hemodialysis nursing should be formulated? (Check more than one if appropriate.)
- a. American Medical Association _____
- b. American Nurses Association _____
- c. Each Individual Hospital _____
- d. Oregon League for Nursing _____
- e. Oregon Medical Association _____
- f. Oregon Nurses Association _____
- g. Oregon State Board of Health _____
- h. Oregon State Board of Nursing _____
- i. Other, please specify. _____
16. Have you attended any classes or conferences on Hemodialysis nursing?
- a. Yes _____
- b. No _____

Part III

Directions: Given below is a list of activities which might be performed during a Hemodialysis procedure. Please place an "X" in the space which shows, in your opinion, whether you think the activity to be within the scope of present nursing practice, or not within the scope of present nursing practice. There are no right or wrong answers. The activities apply to the use of both the Kiil and the Kolff artificial kidney machines.

	<u>YES</u>	<u>NO</u>
Example: Give an "IM" injection.	<u>X</u>	_____

	<u>YES</u>	<u>NO</u>
1. Offer the patient pain medication and antiemetics when needed.	_____	_____
2. Make the decision to dialyze the patient	_____	_____
3. Take the patient's blood pressure every hour	_____	_____
4. Obtain blood specimens for typing and cross-matching.	_____	_____
5. Decide the amount of Heparin to be given each hour.	_____	_____
6. Weigh the patient before and after the dialysis.	_____	_____
7. Initiate and discontinue a dialysis.	_____	_____
8. Collect a blood specimen and do a hematocrit reading.	_____	_____
9. Record the proceedings of the dialysis on the hemodialysis chart form.	_____	_____
10. Inject a pre-determined amount of Heparin intravenously into the cannula.	_____	_____
11. Make the decision to administer normal saline infusions when the patient is hypotensive	_____	_____
12. Assist the patient in understanding his prescribed diet.	_____	_____
13. Teach the patient what problems to watch for and how to handle them.	_____	_____
14. Make the decision to stop the dialysis in case of a blood transfusion reaction	_____	_____
15. Observe the patient for signs of shock and volume depletion.	_____	_____
16. Teach the patient and his family how to operate the machine.	_____	_____

17. Teach the patient to care for his own cannula. _____
18. Unclot the patient's cannula using Heparin and saline solution. _____
19. Give the patient Procaine intravenously to decrease the patient's venous spasms. _____
20. Make the decision to call or not to call the doctor. _____
21. Make the decision to give the patient blood if the hematocrit reading suggests the patient might need it. _____
22. Observe the patient for signs of a transfusion reaction. _____
23. Indicate how much potassium should be added to the patient's dialysis bath solution. _____
24. Make the decision to stop the dialysis or to continue the dialysis after a blood membrane has ruptured. _____
25. Regulate Heparin and Protamine infusions according to the patient's clotting time determinations. _____
26. Apply an antibiotic ointment on the patient's cannulation sites and secure with a clean dressing. _____

APPENDIX C

Positional Statement of the Registered Nurse in Oregon

Oregon Nurses Association

Position Statement on the Registered Nurse
(Adopted by ONA Board of Directors September 20, 1968)

The registered nurse functions as an integral component of the medical care team. Although all registered nurses have demonstrated through licensure that they have minimal abilities and are safe practitioners, the capabilities and skills of individual nurses vary and are dependent upon a number of factors, including but not limited to educational preparation, experience, opportunity and motivation.

Registered nurses practice in a variety of settings and within each setting may be required to perform dependent and independent functions. Many of the functions will require specialized training and knowledge beyond that included in basic nursing education programs.

The Oregon Nurses Association believes that, in the best interest of the patient, the registered nurse, and other members of the health care team,

1. The individual nurse has a responsibility to keep her skills and competencies current with the increasing body of knowledge in her field of practice.
2. The nurse should assume responsibility only for functions within the scope of her skill and competencies.
3. Nurses should participate actively in the development and planning of programs that provide training in the various areas of nursing practice and especially in those areas which require highly specialized skill and and an unusual degree of nursing judgment.
4. The nurse should assess the availability of guidelines, the adequacy of equipment, and the capabilities of personnel assigned to provide care, including lifesaving and other emergency measures and provisions for rehabilitation, before accepting any assignment that requires highly specialized skills and an unusual degree of judgment.

5. The nursing service department, acting jointly with administration of the employing facility and the medical staff, shares responsibility for the development of appropriate written policies and guidelines and for providing the training that will enable the nurse to provide effective, safe, and therapeutic care to patients for whom highly specialized skill and an unusual degree of nursing judgment is required.
6. Employers of nurses share responsibility for the quality of care received by patients and are expected to provide opportunities for the nurse to participate in orientation and inservice education programs, and in other programs of a continuing education nature, that will assist the nurse to maintain and develop skill and competency.

The Oregon Nurses Association believes further that the registered nurse has an obligation to the patient to perform only those functions or procedures for which she has been trained and is competent, and to refuse to place herself in a situation in which she is responsible for the incompetencies of those working under her direction and/or supervision.

Since the nursing service department provides continuing direct care, the registered nurse in her developing role as a professional practitioner assumes responsibility for coordinating the care provided to the patient by other members of the health care team.

APPENDIX D

Positional Statement of the Registered Nurse in Acute Coronary Care

Oregon Nurses Association

Statement on Registered Nurses in Acute Cardiac Care
(Adopted by ONA Board of Directors September 20, 1968)

The Oregon Nurses Association concurs with the statement of the Oregon Heart Association that the nursing staff is the key to the coronary care unit team. However, the Oregon Nurses Association believes that registered nurses should accept assignment in such units only if:

1. Hospital administration, medical staff and the nursing department in each hospital have agreed on, and made available to each nurse involved, policies and procedures including at least the following:
 - a. The nurse's responsibility with regard to specialized equipment, such as monitors, pace-makers, and defibrillators.
 - b. The nurse's responsibility for initiating and/or performing defibrillation, cardio-pulmonary resuscitation and other emergency procedures.
 - c. Specific instructions providing for the administration of emergency medications, including those medications which can be administered only upon the specific order of a physician and those which might be required on an emergency basis by the patient.
 - d. Adequate standing orders, including those for emergency situations, with provision for periodic review.
2. The nurse has had special training including
 - a. Anatomy, physiology and pathology of coronary disease.
 - b. Clinical features and complications of acute myocardial infarctions.
 - c. Electrocardiography emphasizing pattern recognition of cardiac arrhythmias.

- d. The principles and practice of cardiac resuscitation, including the use of pacemakers and defibrillators.
 - e. The principles of inhalation therapy, including tracheo-bronchial suction.
 - f. Principles and operation of electronic equipment.
 - g. Specialized problems of patients in coronary care units.
3. There is provision for continuing training of the nursing staff.

Since registered nurses are employed in facilities other than those with coronary care units, the Oregon Nurses Association believes that all facilities should have developed and approved by the administration, medical staff, and nursing service department, guidelines for the nurse involved in an emergency cardiac situation and provision for continuing training in the emergency procedures.

APPENDIX E

Summary of Data

6. Have you observed the operation of a Hemodialysis unit?
 a. Yes 67
 b. No 78
7. Have you worked in a hospital which contained a Hemodialysis unit?
 a. Yes 62
 b. No 83
8. Have you worked in a Hemodialysis unit?
 a. Yes 4 If your answer is "Yes" which type of
 b. No 141 machines did you monitor?
 Kiiil Artificial Kidney Machines _____
 Kolff Artificial Kidney Machines _____
9. How much time do you think is required to prepare the nurse to function efficiently in the Hemodialysis unit without direct supervision?
 a. Less than 1 month 11
 b. 1 - 3 months 57
 c. 4 - 7 months 33
 d. 8 - 12 months 10
 e. More than 12 months 2
10. Have you read the current professional literature available pertaining to Hemodialysis nursing?
 a. Yes 74
 b. No 67
11. Which type of professional literature do you read most often?
 a. Medical Journals 12
 b. Nursing Journals 133
12. Which person do you think should be responsible for the management of the patient during the Hemodialysis procedure? (Check more than one if appropriate.)
 a. Physician 110
 b. Registered Nurse 85
 c. Licensed Practical Nurse 2
 d. Medical Lab Technician 24
13. Do you think the nurse working in the Hemodialysis unit is taking over a responsibility which really belongs to the physician?
 a. Yes 4 b. No 137

Please state the reason(s) for your answer.

14. Would you want to work in a Hemodialysis unit?
- a. Yes 37
- b. No 107 Why? _____
15. By which organizations do you think the guidelines for nursing practice in Hemodialysis nursing should be formulated? (Check more than one if appropriate.)
- | | |
|----------------------------------|-----------|
| a. American Medical Association | <u>61</u> |
| b. American Nurses Association | <u>84</u> |
| c. Each Individual Hospital | <u>56</u> |
| d. Oregon League for Nursing | <u>11</u> |
| e. Oregon Medical Association | <u>32</u> |
| f. Oregon Nurses Association | <u>45</u> |
| g. Oregon State Board of Health | <u>13</u> |
| h. Oregon State Board of Nursing | <u>16</u> |
| i. Other, please specify _____ | |
16. Have you attended any classes or conferences on Hemodialysis nursing?
- a. Yes 41
- b. No 98

Part III

Directions: Given below is a list of activities which might be performed during a Hemodialysis procedure. Please place an "X" in the space which shows, in your opinion, whether you think the activity to be within the scope of present nursing practice, or not within the scope of present nursing practice. There are no right or wrong answers. The activities apply to the use of both the Kiil and the Kolff artificial kidney machines.

	<u>YES</u>	<u>NO</u>
Example: Give an "IM" injection.	<u>X</u>	<u> </u>

	YES	NO
1. Offer the patient pain medication and antiemetics when needed.	<u>119</u>	<u>26</u>
2. Make the decision to dialyze the patient.	<u>15</u>	<u>130</u>
3. Take the patient's blood pressure every hour.	<u>125</u>	<u>20</u>
4. Obtain blood specimens for typing and cross-matching.	<u>91</u>	<u>54</u>
5. Decide the amount of Heparin to be given each hour.	<u>14</u>	<u>131</u>
6. Weight the patient before and after the dialysis.	<u>122</u>	<u>23</u>
7. Initiate and discontinue a dialysis.	<u>70</u>	<u>75</u>
8. Collect a blood specimen and do a hemocrit.	<u>77</u>	<u>68</u>
9. Record the proceedings of the dialysis on the hemodialysis chart form.	<u>122</u>	<u>23</u>
10. Inject a pre-determined amount of Heparin intravenously into the cannula.	<u>117</u>	<u>28</u>
11. Make the decision to administer normal saline infusions when the patient is hypotensive.	<u>48</u>	<u>97</u>
12. Assist the patient in understanding his prescribed diet.	<u>125</u>	<u>20</u>
13. Teach the patient what problems to watch for and how to handle them.	<u>126</u>	<u>19</u>
14. Make the decision to stop the dialysis in case of a blood transfusion reaction.	<u>102</u>	<u>43</u>

	YES	NO
15. Observe the patient for signs of shock and volume depletion.	<u>124</u>	<u>21</u>
16. Teach the patient and his family how to operate the machine.	<u>112</u>	<u>33</u>
17. Teach the patient to care for his own cannula.	<u>116</u>	<u>29</u>
18. Unclot the patient's cannula using Heparin and saline solution.	<u>103</u>	<u>42</u>
19. Give the patient Procaine intravenously to decrease the patient's venous spasms.	<u>58</u>	<u>87</u>
20. Make the decision to call or not to call the doctor.	<u>127</u>	<u>18</u>
21. Make the decision to give the patient blood if the hematocrit reading suggests the patient might need it.	<u>27</u>	<u>118</u>
22. Observe the patients for signs of a transfusion reaction.	<u>127</u>	<u>18</u>
23. Indicate how much potassium should be added to the patient's dialysis bath solution.	<u>20</u>	<u>125</u>
24. Make the decision to stop the dialysis or to continue the dialysis after a blood membrane has ruptured.	<u>71</u>	<u>74</u>
25. Regulate Heparin and Protamine infusions according to the patient's clotting time determinations.	<u>47</u>	<u>98</u>
26. Apply an antibiotic ointment on the patient's cannulation sites and secure with a clean dressing.	<u>115</u>	<u>30</u>

Typed by
Barbara Glenn

AN ABSTRACT OF THE THESIS OF

JUDITH MARLENE SANDILANDS


For the MASTER OF SCIENCE in NURSING EDUCATION

Date of receiving this degree: June 12, 1969

Title: A STUDY OF THE EXPRESSED OPINIONS OF 145

REGISTERED NURSES CONCERNING THE RESPONSIBILITIES

OF THE NURSE IN THE HEMODIALYSIS UNIT

Approved: 

(Associate Professor in Charge of Thesis)

The purpose of this study was to obtain the expressed opinions of 145 registered nurses regarding the role and responsibilities of the nurse in hemodialysis nursing. The data were collected by means of a mailed questionnaire consisting of three parts. The questionnaire was constructed from principles located in the literature.

The questionnaire was tested for reliability. It was administered to a group of 20 registered nurses on two different occasions exactly one week apart. The results of the test for reliability were

analyzed using chi square.

The participants in the study were 145 registered nurses selected from the membership list of District One of the Oregon Nurses Association. Three hundred questionnaires were mailed; 195 participants responded, and of that total, 145 questionnaires were usable.

Findings

On the basis of this study, the following hypotheses were accepted:

1. There is no difference between nurses having clinical experience in a hemodialysis unit during their basic nursing preparation and opinions of nurses regarding hemodialysis nursing.

2. There is no difference between nurses who have ever worked in a hemodialysis unit and opinions of nurses regarding hemodialysis nursing.

3. There is no difference between nurses who have primarily read nursing journals and those who have primarily read medical journals and opinions of nurses regarding hemodialysis nursing.

The following hypotheses were rejected on the basis of the findings of this study:

1. Nurses ordered according to year of graduation from nursing school show no difference in expressed opinions regarding

the scope of practice in hemodialysis nursing.

2. Nurses ordered according to highest credential in nursing show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.

3. Nurses ordered according to years of nursing experience show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.

4. Nurses ordered according to present position in nursing show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.

5. Nurses who have observed the operation of a hemodialysis unit show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.

6. Nurses who have worked in a hospital which contained a hemodialysis unit show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.

7. Nurses who have read current literature pertaining to hemodialysis nursing show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.

8. Nurses who have attended classes or conferences on hemodialysis nursing show no difference in expressed opinions regarding the scope of practice in hemodialysis nursing.

Significant differences were found between the year of

graduation from nursing school and opinions expressed by the participants regarding the scope of practice in hemodialysis nursing. It was found that the nurses who were the most recent graduates expressed more opinions that were consistent with current practice in hemodialysis nursing. However, the nurses who graduated between 1935 and 1940 also expressed opinions similar to those of the recent graduates about hemodialysis nursing. It was found that those nurses who graduated between 1935 and 1940 held the highest credentials in nursing, and occupied secure positions in the nursing hierarchy.

In general, the nurses felt all the independent activities listed in Part III of the questionnaire were within the scope of present nursing practice. However, it was also found that those activities which are dependent nursing functions were not felt to be within the scope of present nursing practice.

Conclusions

The findings of this study lead to the following conclusions:

1. Level of education and length of nursing experience had an effect on the extent to which the participants expressed opinions that were consistent with current practice in hemodialysis nursing.

2. Nurses occupying the leadership positions in the field of nursing expressed opinions which likewise showed that they were informed regarding the practice of hemodialysis nursing.

3. Nurses who have observed the operation of a hemodialysis unit expressed more opinions that were consistent with current practice in hemodialysis nursing than did those nurses who have not.

4. Nurses who have read the current literature available regarding hemodialysis nursing expressed opinions that were consistent with current practice in hemodialysis nursing than those nurses who had not read the available literature.

5. Nurses who had attended classes or conferences on hemodialysis nursing also expressed opinions that were consistent with current practice in hemodialysis nursing.

6. It was undetermined whether there is any difference between (1) nurses who have had clinical experience during their basic nursing preparation and expressed opinions regarding the scope of practice in hemodialysis nursing; (2) nurses who have worked in a hemodialysis unit and expressed opinions regarding the scope of practice in hemodialysis nursing; (3) nurses who have read primarily nursing journals, or primarily medical journals and expressed opinions regarding the scope of practice in hemodialysis nursing. The number of nurses who responded to these questions was not significant, and, therefore, no conclusions could be made.

Recommendations for Further Study

1. It is recommended that further study be done of nurses who

are employed in hemodialysis nursing to determine whether the same responses would be given that were given in the study group.

2. It is recommended that an experimental and a control group be studied to determine whether inservice education would make a difference in knowledge of hemodialysis nursing.

3. It is recommended that the survey tool be adapted for use with medical personnel to determine the expressed opinions of the physician regarding the scope of present nursing practice.

4. It is recommended that the survey tool be developed for use in public health nursing as a basis for determining the level of understanding of hemodialysis nursing and its implications for follow-up patient care.

5. It is recommended that the tool be devised for use in evaluating the psychological aspects of the patient as a basis for patient assessment prior to hemodialysis therapy.

6. It is hoped that this study will serve as the basis for further study which will improve the position of the nurse in the hemodialysis unit, and thereby, lead to better and more comprehensive patient care.