THE DEVELOPMENT OF PATIENT ORIENTED TEACHING UNITS ON CARDIAC MEDICATIONS

by

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A CLINICAL INVESTIGATION

Presented to
the University of Oregon School of Nursing
and the Graduate Council of the
University of Oregon Health Sciences Center
in partial fulfillment
of the requirements for the degree of

Master of Nursing
June 11, 1977

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This clinical investigation was partially supported by a grant from the American Nurses Foundation, and by a Nurse Traineeship from the United States Public Health Service Grant No. 5A11 NU00035-18.

ACKNOWLEDGMENTS

The writer wishes to express her deep appreciation to her Clinical Investigation advisor, May Rawlinson, Ph.D., and to her readers Evelyn Schindler, M.A., and Virginia Cory, M.S.N. for their guidance and assistance.

Acknowledgment is also due to the nursing research consortium members, Jean Hallberg, Ph.D., Harriet Moidel, Ph.D., and Penny Adler, M.S., as well as May Rawlinson, Ph.D., and Virginia Cory, M.S.N. for their contributions to the teaching modules.

The writer especially wishes to thank her husband whose support and understanding assured the completion of this study.

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CHAPTER I

Introduction

Education concerning an illness and its treatment has recently been recognized as the right of every health care consumer. Long given a low priority in health care, client education is gaining in emphasis and importance. The increased interest in health education is reflected in both lay and professional literature.

This concern with patient teaching comes at a time when health care knowledge and planning have become more complex. The increased complexity is seen in more exacting medical regimens for a client to follow in order to attain or maintain an optimal level of function. Many disease processes which claimed lives in the past are now medically managed on a long-term basis. Glazier (1973) estimates that 83 out of every 100 males born in the United States will die of chronic disease. These chronic illnesses are especially difficult to manage as they frequently require or accompany major changes in the person's life style and often the benefits of compliance offer few immediate results for the client to see as evidence of his improved health. This shift to long-term care places much responsibility on the client and his family. They must meet the changed demands of daily life to the best of their ability. Medications are one aspect of this long-term care, and the extent of compliance with medication prescriptions is of increasing concern in health care (Marston, 1970). Numerous studies have been directed at correlating different variables with compliance. Client education is one variable which has been shown to be effective in decreasing medication noncompliance.

As a member of the health care team, the nurse often has the closest contact with the individual or family and, because of this relationship, is in a position to help a client understand the illness and its treatment. However, studies show that patients are not consistently receiving the necessary instruction from any member of the health care team.

Despite the increased need and interest in health education, the current status of health teaching for clients is embryonic. This education continues to rely almost exclusively on one-to-one instruction and is based on the instructor's individual preparation and teaching expertise. The quality of the results of this instructional approach has been summarized by Barsky (1976). "In practice, the patient all too often lacks as much information as he wants. Unmet patient needs for information or giving confusing and contradictory information contribute to dissatisfaction and non-compliance." (p. 24)

Audio-visual teaching tools, concerning the medications given in a chronic illness such as heart disease, could help meet some of these needs. The National Heart and Lung Institute (1974) and other authors have recommended the development of such teaching tools which could be directed to specific areas of concern, establishing the exact information to be included for all patients (Skiff, 1974; President's Committee on Health Education, 1974). The development of such instruction for individuals with heart disease takes a small step toward meeting that recommendation. The creation of audio-visual programs concerning the use of medications is the goal of this investigation. The aim will be to offer health care consumers access to basic information which could prevent complications and maximize the effectiveness of the medications to be taken.

The review of the literature will include the following topics: the role of education in non-compliance, public awareness of the need for medication information, the nurse's role in client education and the use of audio-visual instruction programs.

Education versus Compliance

The term non-compliance has been used to describe the behavior of persons who do not follow the recommendation given by their physician. This failure to adhere to a medical regimen may be partial or total and the reasons for its occurrence have been the subject of many studies. It must be remembered however, that behavior considered to be non-compliant by health professionals may be in compliance with what the client believes to be an appropriate course of action based on personal knowledge and perceptions (Stimpson, 1972).

Marston (1970) reviewed the compliance literature from 1953 to 1967 and found little or no association between demographic attributes and medication compliance. Such attributes included age, sex, social and economic status, education and race. Complex, variable interrelationships were more successful in determining compliance, but the interactions have not been adequately tested in different populations to come to firm conclusions. Marston's review indicated that an increased number of medications and complexity of medical regimen may be associated with decreased compliance. The severity of an illness was also felt to be related to compliance, but studies were not conclusive. Mitchell (1974) however, provided an annotated bibliography of compliance research and reported a significant positive correlation between seriousness of illness and compliance with a medical regimen. Rationale of therapy,physician-client relationship, continuity of care and client education were also significantly related to increased compliance in Mitchell's review. Of

the five studies dealing with client education,all were positively correlated with compliance.

Schwartz (1963) conducted a descriptive study of non-compliance which revealed the extent of the non-compliance problem and provided the basis for many recent studies. Of the 178 randomly selected, chronically ill,ambulatory patients attending the general medical clinic at the New York Hospital, Cornell Medical Center, 59 per cent made errors when taking their medications. Errors judged to be potentially serious occurred in 26 per cent of the tested population. In research modeled after the Schwartz study, Neely and Patrick (1968) also showed a 59 per cent rate of medication errors. Thirty-two per cent of those errors were judged to be potentially serious and 34 per cent were due to inaccurate knowledge. Johnson (1965) conducted a study of the post myocardial infarction patient's compliance with medication. Her findings, based on the patient's reports of their medication history,point out a 23 per cent rate of non-compliance. This figure is probably even higher as compliance measured by history taking usually includes some distortion of the actual amount taken as the respondents try to give acceptable answers either consciously or subconsciously (Marston, 1970). Johannsen (1966) also investigated clients with cardiac disease, and unlike Marston (1970) and Mitchell (1974),revealed the seriousness of illness or length of treatment does not necessarily improve compliance for cardiac patients.

A brief review of English studies on medication compliance recommends an increase in patient education, establishing an exact medication schedule for a person to follow and a decrease in the number of medications ordered (Coleman, 1975). Similar recommendations are made by Blackwell, a psycho-pharmacologist (1975). Unfortunately,decreasing

the number of medications is frequently not possible and does not really deal with the reasons for non-compliance. However, the recommendation of increased patient education has been tested by several investigators. A recent study at the University of North Carolina covered 357 patients suffering from either diabetes or congestive heart failure. This research showed 18 to 19 per cent of patients failed to take their drugs, while 19 to 20 per cent took an excess amount of medication and 17 per cent took their medications at the wrong time. When patients were given information concerning the appropriate use of the medication, compliance was increased to more than 85 per cent (Galton, 1977). Hecht reports a linear increase in medication compliance with increasing amounts of education, shown in four groups of patients with tuberculosis. Measurement was done with pill counts and urinanalysis (1974).

In another nursing study, Deberry, Jefferies and Light (1975) created an instruction course on cardiac medications to be taught on a one-to-one basis in sessions lasting 15 to 30 minutes. Pre-test and post-test results were based on possible and actual gains. The minimum gain in knowledge was 33 per cent and three patients had a 100 per cent gain. All 29 patients showed improvement with the average gain being 72 per cent. These teaching sessions were initiated before discharge from the hospital. The timing of such teaching may play an important role in the retention and use of the information (Hart & Frantz, 1977). Such timing parameters have not yet been identified, but along with the method and content of an education program, timing may greatly affect the outcome (Hart & Frantz, 1977).

Compliance predictions based on psychological tests such as the Minnesota Multi-phasic Personality Inventory, Thematic Apperception Test, and Rorschach responses are also inconclusive at this point in

research. Researchers are attempting to develop a health locus of control scale which would allow for prediction of health related behavior. This scale consists of questions answered by an individual. The answers are then categorized as to the locus of control, that is, whether the individual is internally or externally motivated. Wallston, Wallston, Kaplan and Maides (1976) have shown positive results when initiating health programs which are consistent with that individual's locus of control beliefs. The results of one Wallston, et al. studies indicated that those who valued health highly on the locus of control scale sought more information than other subjects. Similarily in a second study, Wallston et al.showed that programs consistent with locus of control beliefs are more satisfactory to the participant. These studies concerning health locus of control offer a more solid basis for the general belief that the client's attitude toward illness and his satisfaction with his relationship with health care personnel may affect medication compliance (Mitchell, 1974; Hart & Frantz, 1977).

The Wallston et al.studies (1976) point out the fact that not everyone responds to the same methods of instruction (Murray & Zentner, 1976; Dodge, 1969; Skiff, 1974; Kamp, 1971). Currently a choice of teaching methods providing the same content is rarely available. The National Heart and Lung Institute (1974) encourages education throughout and after hospitalization. They point out that different groups and individuals have different educational needs but recommend a "core curriculum" of information that should be given to all, but not necessarily in the same manner of instruction. The task force on Patient Education for the President's Committee on Health Education recommends the establishment of an educational center in the hospital setting for patient education programs (1974). In order for such instruction to

change behavior, the learner must be an active participant in the learning process, using his interests and needs as the most appropriate starting point for effective instruction (Powell, 1973).

Public Awareness

Recent editorials, articles and books have reflected an interest in medication practices. Such literature exhorts the consumer of prescription drugs to know more about what they are taking. Titles such as "Know your medications - stop taking risks" (Galton, 1977) and "The patient's right to know" (Elliot, 1976) have appeared in national publications and indicate a concern for potential risks. Such literature cites examples of people who were unaware of certain aspects of their medications. Directions for use, actions, side effects and toxic manifestations are considered basic necessary information (Galton, 1977; Elliot, 1976; White, 1975). The public is asked to assume more responsibility for their medications (Galton, 1977; Elliot, 1976; Barsky, 1976). The increasing numbers of patients being cared for precludes individual policing methods by health care professionals. There are too many patients and too many medications for health practitioners to assume full responsibility for long-term compliance with medications. By assuming the responsibility for taking their medications, the client can watch his own body response and make decisions regarding that medication (Redman, 1972; Barsky, 1976).

In order to assume that type of responsibility, the client must have an adequate knowledge base. Most clients are not receiving as much information as they would like (Barsky, 1976; Murray & Zentner, 1976). And the information is often vague, ambiguous and given sporadically (Mount & Wenger, 1975; Redman, 1975; Hart & Frantz, 1977). Clients want to know what to expect from a medication, and how will it change their body.

Included in this needed information is the expected action and side effects. The client also wants to know how to get the best effect. This includes careful instruction on when to take the medication and what factors may interfer with its efficiency, such as other medications and foods. And finally, it is important to know when to call the physician or clinic. Toxic and untoward effects of medications can often be detected earlier by the client than by health care personnel. Awareness of these symptoms can greatly diminish the risks and anxiety involved in taking prescription medications (Deberry et al.,1975; Redman, 1975; National Heart & Lung Institute, 1974; Barsky, 1976).

Client Education

Both professionals and the general reading audiences have been made aware of the need for consumer information on prescription medications. Satisfying this need then becomes the responsibility of both the practitioner and the client. Studies and observations continue to show that such teaching is still not being done on a consistent basis (Powell, 1973; Redman, 1975; President's Committee on Health Education, 1974). All health care professionals have been encouraged to actively engage in public education. The goal is to be sure that patients are competent to effect their own therapies and act to prevent complications (Schlottenfeldt,1975).

However, the question of which member of the health care team is responsible for such education remains unanswered. Physicians are the only health professionals with unlimited license to practice, yet their use of education therapy has been neglected (Blackwell, 1975; Redman, 1974; Weed, 1969). The concern that some professionals express in regard to the possible misuse of knowledge by patients may have arisen because patient education has not been conceptualized as a therapy (Redman, 1974;

Weed, 1974; Green & Figa-Talamanca, 1974). As Redman (1974) poignantly stated, "It is probably not well appreciated that withholding information or education - supportive therapy can be as devastating to the client as withholding other treatment such as drugs." (p. 4)

In a comprehensive study of 358 hospitals performing open-heart surgery, surgical candidates received their primary drug instruction from the physician in 99 hospitals. The nurse was the primary teacher in 174 hospitals, while the pharmacist fulfilled that responsibility in 8 hospitals (Hart & Frantz, 1977). The nurse was the more frequent instructor of medication usage. These statistics, combined with current investigations concerning the nurse and education therapy, support the idea of the nurse as a primary instructor for patients (Lowe, 1970; Vincent, 1971).

Client education is a basic tenet of nursing practice. Theoretical definitions and descriptions of nursing include teaching in basic nursing duties. According to Vasiliki (1977), Peplau perceives nursing as an educative instrument concerned with the promotion and restoration of health as well as the prevention of illness and alleviation of suffering; while Heidgerkin includes the client's education as a service provided by nursing as a vital part of the body-mind-spirit unity.

The National Commission for the Study of Nursing and Nursing Education found that the general population has given nurses the responsibility of assessing needs, designing and executing plans to meet those needs. This implies that nursing must also instruct patients in health maintenance and avoidance of problems in long-term care (Lysaught, 1974). The initiation of such client teaching by nursing staff is a nursing activity which has long been advocated in nursing texts and journals (Redman, 1972; Deberry et al., 1975; Murray & Zentner, 1976). The basic premise being that improved health or a better quality of life will result from under-

standing and adopting the essence of that teaching. Nurses have recognized such an educational need in the client with heart disease (Redman, 1974; Mount & Wenger, 1975; Bean, 1974; Deberry et al.,1975). These individuals need exact,detailed information relating to their particular set of circumstances (National Heart & Lung Institute, 1974; Mount & Wenger, 1975). An established basic content needs to be available to all persons when they wish to use it. (Collen & Soghikian, 1974).

Nurses however have done little more than other health professionals in terms of standardizing sequences of education. Education continues on a one-to-one basis in most instances (Redman, 1975; Deberry et al., 1975; Hart & Frantz, 1977). The reason for this may be an attempt at individualized instruction, but it remains the most costly in terms of time and energy as well as the most variable (Richards & Kalmer, 1974). The likelihood of clients receiving instruction is the function of available nursing time, client's ability to voice questions and the knowledge base from which the nurse is functioning (Mount & Wenger, 1975; Redman, 1974). Few nurses feel completly qualified to teach. Despite the exhortations of nursing philosophies and current concepts, there are few classes in patient instruction for nurses. There is even less attention given to educational concepts in physician's education (Redman, 1972; Reader, 1974; Weed, 1969).

Hart & Frantz indicate that more than half of the hospitals surveyed had no continuity in regard to patient education, and in those that did have teaching programs, the teaching staff found many impediments.

TABLE I. FACTORS WHICH IMPEDE THE DELIVERY OF A POST-OPERATIVE TEACHING PROGRAM

IMPEDING FACTORS	NUMBER OF PROGRAMS
Inadequate time	87
Inadequate staff	43
Physicians do not want nurses to teach	41
Lack of knowledge of how to teach	32
Heavy patient load	25
Lack of formal, structured program	18
Unstable nursing staff	18
Frequent patient transfers	15
Lack of follow-up program	13
Lack of patient acceptance	13
Lack of nurse motivation	13
Lack of teaching resources	8
Difficulty in getting discharge orders	8
Unstable medical staff	7
Lack of money for teaching	6
No response	32

(Hart & Frantz, 1977, p. 140)

The impediments interrupt and leave gaps in learning which may result in misunderstanding. Clients need and are demanding more information,but much confusion is engendered when two or more health professionals explain a medication in different ways or actually give totally different information to the client (American Hospital Association, 1972; Redman, 1972; Deberry et al, 1975).

Instructional Programs

The development of an instructional program begins with an observed educational need. The approaches to solving this need are many. There are several plans and studies of teaching methodologies for client education. Unfortunately, the delineation of pertinent content for most instructional tools is difficult to find. Few guidelines have been developed to determine what information should be given to the client at different stages of recovery (Murray & Zentner, 1976; Powell, 1972; Redman, 1975; Hart & Frantz, 1977). Consequently, the nurse approaches the client teaching situation with a self chosen methodology and content. With the current practice of assigning nursing staff to patient care, a nurse may only be in contact with a patient for a day or two, hardly enough time to accurately evaluate educational needs, give complete basic information, and answer specific questions (Alfano, 1976; Redman, 1975; Murry & Zentner, 1976).

Teaching strategies available include the usual one-to-one instruction both in the form of lecture and in a decision-making process. The decision-making process allows the patient some control over what he will learn by asking questions based on information given previously (Hallburg, 1969). The lecture method of instruction includes a preset agenda of information the nurse teaches the patient. Both of these methods place some,

if not all,responsibility for learning with the nurse and usually proceed on a one-to-one basis. Deberry (1975) and Murray (1976) found that with such individualized instruction clients complained of being unable to choose the time of teaching because teaching time was fitted into the researchers schedule and the hospital schedule. Deberry suggests that staff nurses would be better able to select times for patient education than a researcher as they would know when a patient had expressed interest and could then initiate the program. This writer feels that in reality, the staff nurse has less flexibility in terms of available time for teaching than the researcher. In a busy schedule readiness for instruction may be missed or if noted, there may not be time available to initiate instruction.

Small group lecture has been utilized as a more economical use of time. Such sessions reinforce one-to-one instruction and provide opportunity to correct faulty understandings. However, small group lecture must proceed at a rate acceptable to the majority and the logistics of gathering a group of hospitalized individuals for such discussion are usually too inconvenient for many who could benefit from such instruction (Skiff, 1974).

Programmed instruction, usually involving the step-by-step progression of information using a workbook format and some type of teaching machine, would allow a client to initiate the learning and to progress at an individual rate covering common concerns. Clients who are unable or unwilling to read all of the needed information would find such a method difficult (Murray & Zentner, 1976). Furthermore, many individuals are bored by this step-by-step method when dealing with basic concepts. The concept of using the correct answer as a reward is not as reinforcing as once believed (Davidson, 1977).

Clearly,there is no single method of instruction that will work for all people, but the concern is that clients should have a choice in their method of instruction. These alternatives should be consistent in content allowing equal access to information (Murray & Zentner, 1976; National Heart & Lung Institute, 1974; Powell, 1973; Redman, 1972; President's Committee on Health Education, 1974).

One method of client instruction which has only recently become available is the use of audio-visual tapes, slides or closed circuit television to give the client basic information. Increasing educational needs have been met in formal school settings with the use of such audio-visual tools with excellent results (VanMondfrands, 1972; Dale, 1969). The major attraction is that the student sets the pace of learning. The use of teaching methods which involve both auditory and visual stimuli have been shown to be more effective in health education measured in pre-test and post-test situations (Powell, 1972). However,the instruction referred to did not involve the use of specialized equipment (hardware) in presenting taped information (software). The ease of use as an education building block can be appreciated, but the effect on compliance in a medical setting has not been tested. Since the use of such software in patient education is relatively new, there is little information on its successfulness. (Simonds, 1969; Skiff, 1974). Theoretically, such instruction programs would allow the patient to begin learning and progress at his/her own rate, allowing time to internalize the information and use the knowledge in adapting to daily routines (Hilgard & Bower, 1975). This would include the client as an active participant in his care (Redman, 1974).

Currently,most software materials are produced by commercial interests and sell at a price allowing for profit and for the payment of

consultants. A few nurses have begun to design such courses for both client and professional education (Lucas, 1975; McClurg, 1974). The initial costs for the hardware with which to view the audio-visual instruction along with the artwork can be major expenses.

The use of these techniques could bridge the gap between nursing theory and nursing practice (Roth, 1971). By providing a standard for the content of drug information, nursing personnel would know what information each client had received. Instead of starting with basic information, the nurse is free to pursue individual spontaneous questions based on the information in the audio-visual program. This impromptu teaching is possibly the most important learning, but it is necessary for the teacher and learner to have a common frame of reference (Powell, 1972; Murray & Zentner, 1976).

A patient education library using audio-visual programs has been established at Kaiser Permanente in California. Their stated goals show tremendous confidence in such programs. These goals include the improvement of patient-physician relationships with increased understanding of disease, offering an avenue for more patient satisfaction and involvement, and reduction of health care costs with better use of professional time (Collen & Soghikian, 1974). The results of this program are currently being studied, but the consecutive six month reports indicate a steady increase in the number of patients utilizing the programs.

The nurse is a primary participant in client education and can contribute significantly to future use of audio-visual instruction for the public. These new approaches need to be tested in different content areas to establish their worth, but first those tools must be developed based on individual and general population needs for specific information (National Heart & Lung Institute, 1974; Redman, 1975; Richards &

Kalmer, 1974).

The large number of people suffering from cardiac disease and the importance of their medication is not debatable. By offering audio-visual instruction as well as printed material, such clients would have better access to basic knowledge concerning their medications.

Taking into consideration the role of education in reducing non-compliance, the nurse is increasingly encouraged to engage in health teaching. However, the complexity of health education is not always appreciated. Public awareness of a need for medication information has been identified, but an unorganized or inconsistent approach may well defeat the purpose of giving information. The establishment of basic content to be given to all clients would decrease the amount of inconsistency. This basic content could be expanded as necessary by the health teacher. One method of delivering this basic information is with the use of audio-visual instruction tools. This would allow many clients to initiate learning when they wish. Information in the slides and audiotape can be reviewed at an individual pace. This approach may decrease actual nursing hours involved in teaching, but increase consistency and organization of basic content.

Statement of the Problem

Instruction concerning the use of medications in cardiac disease is often inadequate and confusing. The creation of a consistent teaching tool utilizing slides and audio-tape as well as supplemental printed material is a nursing responsibility. This information is needed by the client to make responsible decisions concerning medication usage. Once a client is made aware of the presence of this information and instructed in equipment use, he/she can begin and proceed through the content at an

individual rate without the presence of a health professional.

Definition of Terms

Audio-visual instruction involves the use of learning tools which give auditory, visual and conceptual stimulation; such as the use of models, books and instructor's voice along with video and audio tapes or films, which could be used by an individual.

The hardware referred to is the electronic and mechanical equipment which provides the energy source for presentation. Tape recorders and closed circuit television are examples of hardware. The software are the tapes, slides or films themselves. They are the information source.

Non-compliance is the patient's failure to adhere to the medication regimen established for him by his physician to improve his physical or mental well-being.

Client Education. "Refers to the educational experiences planned for the patient by professional personnel as a component of his care and differenciates these experiences from unplanned learning experiences in the hospital and from other organizational or environmental factors which influence his behavior." (Simonds, 1969, p. 3.)

Purpose of the Study

The following items were identified as major concerns of this study:

1. To determine the three most commonly ordered discharge medications in treatment of cardiac dysfunction.
2. To review current information concerning these medications and select basic information needed by the client for maximum safety and benefit.
3. To arrange this information in a clear logical presentation designed for use by the layman.

4. To develop a program of general safety information to precede the specific medication presentations.
5. To place the safety and medication information on slides and audio tapes which the learner can initiate without professional staff presence and review at an individual pace.

CHAPTER II

Procedure

There have been many theories of learning advanced to explain and enhance the process of teaching and learning. Many of these theories were established in the nineteenth century and continue to find some voice in modern day learning theories. For ease of discussion and description, learning theories have been divided into two main groups, stimulus-response theories and cognitive theories. Within these theories there are finer divisions of interpretation, but this brief discussion will concentrate on their major contributions and selected areas of disagreement in the interpretation of experimentally obtain facts.

Stimulus-response proponents identify an external or peripheral stimulus as the initiator of a response. The learner develops habits or set ways of responding through the chaining of these stimulus response actions (General Programmed Instruction, 1970). This is the theory behind the use of programmed instruction. Visualization of correct answers immediately rewards the desired response. When facing a new stimulus, the person attempts to deal with the new situation by utilizing previously learned behavior habits. If this is not successful, trial and error becomes the means of dealing with the situation.

The cognitive theory identifies an internal or central brain process as the instigator of behavior. Learning is determined by the perceptual organization of information into useable concepts. When faced with a new situation, cognitive theorists believe the individual develops an understanding of essential relationships which results in insightful understanding of the new situation.

In summing up the basic differences in theory, Hilgard and Bower (1975) include: "...peripheral versus central intermediaries, acquisition of habits versus acquisition of cognitive structure, and trial and error versus insight in problem-solving..." (p. 25)

Few courses of instruction are solely based on cognitive or stimulus-response theories, but rather a combination of these. However, neither of these theoretical positions have been tested in patient education to assure a successful learning outcome in a particular situation (Redman, 1972; Murray & Zentner, 1976). Despite this lack of empirical data, it is often suggested that the learner-client will more readily accept that which can be understood and related to personal needs (Redman, 1972; Murray & Zentner, 1976; Powell, 1973). Consequently, both cognitive and stimulus response approaches to learning are utilized in meeting a client's need. Instructional programs are based on such learning theories.

The development of instructional programs is organized according to an instructional plan. There are several designs from which to choose (General Programmed Instruction, 1970; Kemp, 1971; Brandt, 1976). One of the most frequently used was developed by Kemp (Baer, 1977). This plan aims to answer three questions:

1. What must be learned?
2. What procedures and materials will work best to reach the desired learning levels?
3. How will we know when the required learning has taken place?

(Kemp, 1971, p. 9)

The main task of any client instructor is to structure experiences and information that will lead to the desired behavior changes. Kemp's step-by-step approach to this structuring offers a blueprint for design and yet leaves room for creativity (Kemp, 1971). Please refer to Appendix A for Kemp's Instructional Design Plan.

The procedure used in this study was guided by Kemp's instructional design. The material which follows includes the areas of: identification of educational need, learner characteristics, learning objectives, formulation of content, teaching/learning activities and resources, support services and evaluation. The initial step in this process is the selection of topics for which there is an educational need.

Identification of Educational Need

The introduction to this study and the literature review point out a considerable lack of information concerning medication usage. Since cardiac disease affects more individuals than any other disease entity in the United States of America,it is apparent that there is a large number of people who need education concerning cardiac medications. Such medications have the potential for maximizing cardiac function when properly used, but may also prove life-threatening when taken inappropriately, in excess or forgotten. Because of the wide diversity of cardiac medications ordered, a review of client charts was undertaken to determine the three most commonly used medications. Charts of post-myocardial infarction patients and documented cases of coronary artery disease were reviewed at the University of Oregon Health Sciences Center and the Portland Oregon Veterans Administration Hospital. All regularly scheduled medications were tabulated. (See Appendix B)

Based on a review of 80 charts, digoxin or its brand name Lanoxin was ordered in 40 per cent of the cases. Similarily, based on their own assessment of need, several nurses concerned with client education have developed content areas concerning digoxin (Deberry et al., 1975: Redman, 1972; Strong, 1975; White, 1975). The National Heart and Lung Institute also identified a need for such instruction concerning medications (1974).

Diuretics composed the next most frequently used medications in the chart review. Thirty per cent of the cases reviewed contained an order for diuretics. Despite the fact that diuretics have basic generic differences, the majority of diuretics have major physiologic changes and side effects which are quite similar. Because of this similarity, instruction concerning diuretics does not need to be drug specific (Goodman & Gilman, 1970; White, 1975). Diuretics are covered as a general topic in the teaching tool developed in this study.

Potassium supplements were the third most frequently ordered medications in the chart review, ordered in 23 per cent of the cases. Despite brand name differences again, the overt function and actions of concern to the client using potassium supplements are similar. Consequently, the potassium supplements were also grouped into one teaching block.

The percentages of drug usage were based on a review of charts from post myocardial infarction clients and clients with documented coronary artery disease, as was mentioned before. If clients suffering from congestive heart failure had also been included in that survey, the percentage of use would have been higher (Masen, 1976).

The client with cardiac disease often has many medications ordered and remembering how and when to take them becomes a major concern (Deberry et al., 1975; Mount & Wenger, 1975; White, 1975). These medications are known to have profound effects on the cardiovascular system as well as other body systems and interactions. The effects range in severity from general malaise to toxicity and death. Learning about these drugs is not simply a matter of knowing when to take them, but the basic reasons for their use, side effects, and toxic manifestations (Redman, 1972; Deberry et al., 1975; White, 1975; Elliot, 1976; Galton, 1977; Redman, 1975).

There are basic safety principles involved in the taking of any medication. Reminders concerning these general safety precautions are also necessary in helping the consumer get maximum benefit from medications. Rather than repeat general safety precautions in the discussion of each medication, safety reminders are included as a separate topic. This safety instruction is presented before the client receives specific drug content.

In summary, the topics developed based on identified needs were:

1. general drug safety
2. digoxin
3. diuretics
4. potassium supplements

Learner Characteristics

Once the topics were decided, the important characteristics of the group to be taught were reviewed. Factors such as age range, maturity level, attention span, socio-economic status, environmental limitations, intelligence, and motivation need to be considered (Kemp, 1971). The characteristics of the individuals were important in the wording and design of the teaching tool. The diverse backgrounds of the people who will use this teaching tool was a major concern. Cardiac disease strikes almost every segment of American society. Words were carefully chosen to control unwanted inferences and connotations (Murray & Zentner, 1976; Dale, 1969). Everyday language was used to explain concepts in a manner that allows for understanding. Census data shows that the median educational level of people over 40 is about 8 years (Redman, 1972; Reader, 1974). By designing a tool at the seventh to eighth grade level, it is hoped that the greatest number of individuals will understand the presentation without alienating the more highly educated clients.

Because clients with cardiac disease have a wide age range, approaches compatible with some age groups may not be as well received in another age group. Younger patients generally make more use of audio-visual instruction, generally know more about their medications and are more willing to ask when there is a question (Collen & Schoghikian, 1974; Murray & Zentner, 1976). Clients who must take cardiac medications have some similar physiologic characteristics and some common psychological attributes have been identified, such as Type A and B behavior (Friedman & Rosenman, 1974). However these commonalities have not been related to any particular teaching method. Consequently, the group of learners for which the teaching tool was created has wide ranges of age, intelligence, socio-economic background and motivation.

Learning Objectives

Keeping learner characteristics and goals in mind, learning objectives were developed. These objectives state what the client should know, be able to do, or perform differently after receiving this information (Kemp, 1971; General Programmed Teaching, 1970). The learning objectives for each of the medication areas state that the client will be able to:

1. identify the name of his/her medication,
2. identify the principal reason for taking that medication,
3. recall the safety factors involved in taking prescription medication,
4. describe how often the medication is taken and what to do to remember to take the medication,
5. list symptoms of toxicity which require prompt medical attention, and
6. utilize the above knowledge in self-administration of medications.

These objectives are organized in the manner proposed by Gagne (Hilgard & Bower, 1975). This is a classification sequence of knowledge and behavior which extends from simple to complex learning. This progression of facts to concept formation to problem-solving was described in the discussion of learning theories.

Formulation of Content

Content for the audio-visual programs was compiled from current pharmacology texts and other available teaching tools. The following information was used as background data for the content.

Current literature indicates that digoxin is frequently chosen to treat actual or impending congestive heart failure. It is often chosen over other digitalis preparations because it offers a good combination of intestinal absorption, speed of onset, duration, accuracy of dosage, margin of safety and cost. Digoxin produces a positive inotropic effect on the ventricle and increases function. This occurs in both patients with obvious signs of congestive heart failure and 65 per cent of those in latent heart failure, that is, patients who have heart disease but are not in failure (Goodman & Gilman, 1975). It improves the fundamental defect causing ventricular failure, that being, depressed contractility. Normal cardiac output can then be delivered at a substantially lower ventricular filling pressure. In addition to stimulation of the ventricle, digoxin also directly increases the force of atrial contraction. Cardiac slowing is often seen in patients with congestive heart failure who are on digoxin since the rate decreases with an improved cardiac output (Beland & Passos, 1975; Goodman & Gilman, 1970).

The amount of digoxin prescribed is based on lean body weight. Since digoxin is excreted by the kidneys, any impairment of renal function

can result in toxicity. Elderly patients generally have an increased incidence of digoxin toxicity because of a relative decrease in renal function, frequently accompanied by a lower lean body weight (Masen,1976).

The toxic manifestations most commonly seen are anorexia, nausea and vomiting, developing in that order. Diarrhea may also occur. These gastro-intestinal disturbances are more attributable to the glycoside effect on the central nervous system than to local gastric irritation (Masen, 1976). However many authors continue to recommend ingesting the tablet with a meal (Beland & Passos, 1975).

Cardiac arrhythmias are probably the most serious toxic effect and are the first symptom of toxicity in about one third of patients taking digoxin (Masen, 1976). The two major categories of arrhythmias are ventricular ectopic rhythms and atrio-ventricular, (A-V), nodal conduction defects. Premature ventricular contractions are frequently the first arrhythmia encountered and are often bigeminal and multifocal. With toxic amounts of digoxin, the A-V node becomes refractory and results in conduction blocks of varying degrees. Digoxin toxicity may also result in tachyarrhythmias such as paroxsymal atrial tachycardia and nodal tachycardia as well as atrial ventricular dissociation. (Goodman & Gilman, 1970; Masen, 1976).

Disturbances in the central nervous system occur as the level of toxicity increases. This can be expressed as drowsiness, headaches and visual color disturbances (Beland & Passos, 1975).

Serum potassium plays an important role in digoxin treatment. Hypokalemia predisposes to digitalis provoked tachyarrhythmias. Both the toxic and contractile actions of digoxin are increased with hypokalemia. Potassium and digoxin appear to compete for myocardial binding sites. Serum potassium which is maintained at 3.5 to 5.0 millequivalents per

liter helps control the contractile actions of digoxin (Beland & Passos, 1975). However,maintenance of a normal serum potassium may prove difficult when diuretics are employed to reduce retained sodium and water and decrease circulating blood volume. This decreases the cardiac work load and venous pressure, providing a decrease in pulmonary and peripheral edema as well as a reduction in blood pressure. This reduction in circulating blood volume can obviously exceed a safe limit if not carefully monitored. Excessive loss of electrolytes and fluid volume affects many body systems, including neurologic, gastro-intestinal and cardiovascular (Beland & Passos; Masen, 1976).

Excessive loss of potassium is often seen in diuretic therapy because of the permeability changes in the kidney. This loss can be regained with the judicious use of potassium supplements. Of course,the balance of potassium loss and potassium intake must be maintained to provide normal cardiac, neurologic and muscle cell activity (Washington Manual of Medical Therapeutics, 1975).

The preceding information was translated into layman's terms and numerous revisions were made during the development of pertinent content. These revisions were based on the input of nurse educators, a pharmacist, an expert in media use, and responses of non-medical persons. It was felt to be especially important for the latter group to review the content since those in the health professions often use medical jargon unknowingly.

Due to a long association with clients who suffer from cardiac disease,this writer has had an opportunity to identify many of the common areas of concern with medications. In fact,it was this observed need that prompted the creation of these teaching tools. The areas that appeared to cause the most confusion for the client were carefully

developed and emphasized.

Professional and lay input were incorporated to minimize misunderstandings by the deletion of any detected misleading content. The narrative was fully developed and reviewed before the slides were designed. This allowed the writer to see what content was amenable to visual development, and give the audio-visual consultant concrete information with which to work. This helped reduce the possibility of unorganized or missed information.

Teaching/Learning Activities and Resources

When selecting the method of teaching, all of the aforementioned steps must be considered. The type of content, learner characteristics, behavioral objectives and the means for production of the materials must be taken into account.

Slides and accompanying audiotape were selected for use for several reasons. Such a method gives both visual and auditory reinforcement of information. People remember 20 per cent of what they hear and 30 per cent of what they see, but 50 per cent of what they see and hear (Cresci, 1977). For those whose sight is impaired, the audio portion offers an alternative to reading the information.

Slide-sound programs can be easily viewed by a client by using an automatic sound sensor which turns the slides to a pre-set sound. In this way the slides stay synchronized with the sound so all the client must do is turn the viewing machine on. These programs can be reviewed by the client at his/her leisure and repeated as frequently as desired. This is unlike one-to-one, or group instruction which requires the teaching to take place at a time convenient to both parties.

Audio-visual aids have been used since the nineteen forties, and

have been shown to be effective in formal educational systems (Dale, 1969; Roth, 1971; Kemp, 1971). Slides and an audiotape are also easily used by the amateur producer. If future testing indicates needed revisions, the slides can be easily amended and reorganized.

Several general guidelines from the research on media and learning theories will be applied to the design and production of the instructional media.

1. Keep the approach simple. It is believed that too many ideas are distracting and may actually reduce learning. Basic sentence structure was combined with the presentation of only one idea in a statement. Complex and compound statements were avoided.

2. Progression of information was from concrete to abstract. Basic information is initially presented as background for understanding recommended behaviors.

3. The learning of concepts and facts is enhanced by repetition. The audio portion of the instruction repeats information on the slides and expands on it. The pamphlet offers a tangible reminder of what was presented to take home and use for referral.

Support Services

The development of the first two slide-sound tools was accomplished with the assistance of the Audio-Visual Department, Learning Resources Center and the Medical Graphics Department of the University of Oregon Health Sciences Center.

After the content was developed and revised, the writer made a rough draft of possible slides. These were reviewed and revised to delete unnecessary distractions in the slides. They were developed with clarity, simplicity, and client identification in mind. When the initial two

content areas were fully developed, those being the safety and digoxin content, they were taken to Medical Graphics for the artwork. This artwork consisted of simple figures which depicted the basic idea of the information contained on the audiotape. Slides not containing caricatures were typed by the writer. They were then photographed with a 35mm camera and mounted in slides. Based on the knowledge gained in the creation of the first two content areas, the writer rearranged appropriate slides from the safety and digoxin presentations and created the remaining slides with construction paper cutouts. This greatly reduced the cost of producing the slides since the consulting services of Medical Graphics were not necessary.

When the slides for each topic were completed, the audio portion was taped and electronic pulses were added to the tape for automatic slide changing. This process required only a brief session in the Audiovisual Laboratory. Once fully developed, each production was then reviewed by nurse educators for further revisions and changed accordingly.

Evaluation

The learning objectives indicate the basis for learning evaluation. Plans for the evaluation of the teaching materials were designed for use in further study. Based on the objectives, there were three main areas to be tested.

The first area to be evaluated is recall. The client is asked to identify the name of the medication, the principle reason for taking the drug, safety factors involved and toxic side effects. Paper and pencil tests are a good measure of recall if the client is able to read and write. In this instance, a pre-test and post-test would give an indication of information learned. The post-test would be administered

shortly after the presentation and then after approximately one month to evaluate long-term retention. These pre/post tests could also be given verbally if writing was thought to be a hindrance to complete answers.

However, correct answers on a post-test do not necessarily imply utilization of that knowledge. Learning is only partially seen in test answers because it is unknown if improved performance on a questionnaire indicates improved compliance with the recommendations. Lowe (1970) discovered that when a client had a method of remembering to take the medications there was a significant increase in compliance. Asking the client to state his/her method of remembering the medication would help point out the client's application of knowledge to his personal situation. This method of testing for limited personal application is more supportive of implied compliance but again has intervening variables. One can not assume that the stated mnemonic device is effective.

Such pre and post testing could offer considerable information on the response to the teaching tool when performance is correlated with demographic data. Not all learners respond to the same methods of instruction. Demographic correlations and response to the use of audio-visual instruction could be very helpful in planning future client education programs.

The final possible method of evaluating the utilization of the information given needs to be a longitudinal study looking at the use of the medications. This would include compliance testing, appropriate use of safety factors and proper response to manifestations of toxicity. Such factors could be assessed on returning clinic visits and responses to questions.

CHAPTER III

The Teaching Units

Included in this chapter are the four areas of instruction; digoxin, diuretics, potassium supplements, and safety. The content narrative, slides, audiotape and pamphlet are described for each of these areas.

Text of Slide-Sound Production
on
Digoxin Content

	Slide
Digoxin and Lanoxin are two different names for the same medication. This medicine is a type of Digitalis your doctor has ordered for you.	#1
This is what the pills often look like. There are three strengths which are three different colors and sizes. Your doctor has carefully decided what amount you need based on your size and physical condition. Ask your nurse or doctor exactly what strength you take and how often.	#2
The heart is a pump. It pumps blood from the heart to the lungs and throughout the body.	#3
There are two main reasons for taking Digoxin. First, it makes the heart a better pump. Digoxin increases the force of the pumping action of the heart and improves the heart's ability to pump the blood through the body.	#4
And second, Digoxin slows the speed at which the heart beats. This is expected, so long as the heart beat does not become too slow. The heart is pumping more efficiently and does not need to beat as rapidly.	#5

	Slide
You can count the rate of your heart beat and the rhythm at your wrist. This can be done by following along your thumb to the wrist with your fingers and press lightly to feel the pulse. Ask your nurse to help you practice this.	#6
So Digoxin makes the heart a better pump and slows down and regulates the heart. Your doctor has prescribed Digoxin for you for one or both of these reasons.	#7
It will be important to set up a regular time to take your Digoxin so you don't forget. For the best effect, Digoxin should be taken at the same time everyday. Take the medicine with a meal. For example, taking your pill with lunch will help you remember. It may also prevent stomach irritation since you will have something in your stomach. If not taken at meal time, it can be taken with a glass of milk.	#8
Most people must continue to take the Digoxin even after they are feeling better in order to prevent their problems from returning. However, the length of time you will need to take Digoxin depends on your particular problem, so ask your doctor how long he thinks you will need this medication.	#9

Slide

It is important to take just the right dose of Digoxin to keep the amount of medicine in your body at the right level. You need to take the medicine as prescribed to keep your heart working better and because the effects on your heart wear off as the medicine is used by your body. If you take less than prescribed, your heart will function less effectively. So if you forget your medication at the regular time, take it sometime that day. #10

Never take more than the amount your doctor has prescribed. Do not take an extra dose for any reason. If you have chest pain, Digoxin will not help -- phone your doctor. Digoxin is a strong medication and too much of it can slow your heart down more than it should be.

Does this mean you don't have anything to worry about if you just take your pill everyday as the doctor ordered? No, it doesn't. Everyone is different and your body may change in the amount of Digoxin it can handle or need. Usually your body will give you a warning that you have gotten out of the safety zone and the dose you are taking needs to be changed. Since you know best how you feel, when you know the warning signs, you can tell your nurse or doctor when they occur. Then the amount can be changed before there is a problem. #11

	Slide
These are some of the warning signs to look for that may show there is too much Digoxin in your body, and you should call your doctor before you take the Digoxin.	#11 contd.
First, a heart rate of less than sixty beats in one minute or faster than one hundred and ten beats in one minute. Therefore, take your pulse before you take your Digoxin and if less than sixty beats in a minute, don't take your pill, but phone your doctor or clinic and tell them your pulse. As a safety measure, particularly if you are in doubt, have someone else in your household check your pulse also.	#12
Second, if you have a lack of appetite, nausea, or diarrhea for more than two days, phone your doctor.	#13
Third, if you become unusually drowsy or very weak and tired, this could mean too much Digoxin. You need to call your doctor or clinic.	#14
And fourth, you may feel your heart pound or "skip beats". If this is something new for you again, phone your doctor. These warnings about too much Digoxin may all occur together or only one might happen. You should phone your doctor as soon as you notice any of these warnings. Don't wait.	#15

	Slide
If you notice more swelling in your feet and legs,	#16
a sudden unexplained weight gain,	#17
and increased shortness of breath, these may be signs that your heart is not pumping as well. If this happens you will need to make an appointment to find out if you're taking enough medication. The doctor is able to tell if you need more Digoxin with blood tests.	#18
Let's go over the things you need to remember when taking Digoxin. First, you need to find out what amount of Digoxin you will take and when to take it. Ask right away after you finish with this film so you won't forget.	#19
Second, learn how to count your pulse and check it prior to taking Digoxin. Some doctors like you to take it everyday.	#20
Third, call your doctor if you have any of the warning signs. It will help him if you can tell him what your pulse is and how much Digoxin you are taking.	#21
By knowing how Digoxin works, how important it is to take the right amount, and the warning signs, you can get the most benefit from this medicine.	

ABOUT YOUR

DIGOXIN

(LANOXIN)

DIGOXIN

Digoxin and Lanoxin are the same type of medication. This medicine has two main effects:

1. Digoxin makes the heart a better pump.
2. Digoxin slows down and regulates the heart.

Take this medication at the same time everyday after a meal or milk.

Take only the amount ordered for you and written on the prescription bottle. Never take an extra dose without your doctor's knowledge.

It is possible to take too much Digoxin. If you have any of the following symptoms call your doctor before you take your Digoxin.

1. A pulse rate of less than sixty (60) beats in one minute or more than one hundred ten (110) beats in one minutes.
2. Nausea or vomiting which lasts more than two days.

3. Unusual drowsiness or weakness and dizziness.
4. A pounding heart or "skipped beats" if this is unusual for you.

When taking Digoxin REMEMBER:

1. Know how much you take and how often.
2. Learn how to take your pulse and check it before taking your Digoxin.
3. CALL YOUR DOCTOR OR CLINIC IF YOU HAVE ANY OF THE WARNING SIGNS.

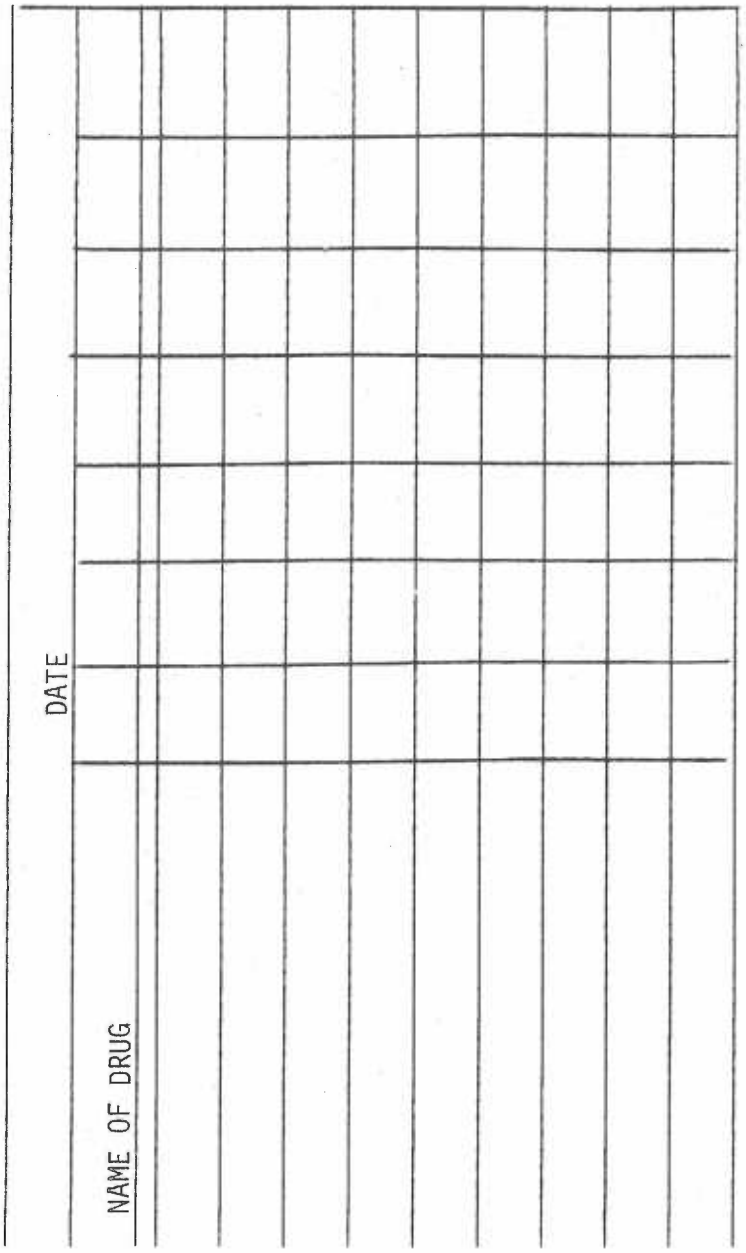
By following these suggestions you can get the most benefit from this medicine.

On the next page there is a chart for you to use to help you remember to take your medications. This is an example of how to use it.

DATE

DRUG	7/1	7/2	7/3	7/4	7/5	7/6	7/7	7/8	7/9	
LANOXIN	✓	✓	✓							

Example


DATE
NAME OF DRUG

Text of Slide-Sound Production
on
Diuretic Content

	Slide
Your doctor has ordered a medication for you called a diuretic. There are many different types of diuretics. Some people call them water pills since they help remove excess body water.	#1
You are taking a diuretic to help your kidneys remove the extra sodium and water from your body. Sodium causes the body to retain water. It is in many foods, but salt is the major source of sodium.	#2
You are retaining sodium because your heart is not pumping as well as it did in the past. This sodium retains water in the body. The excess water may collect in your feet and legs and make your shoes feel tight.	#3
It may collect in your lungs and cause you to have shortness of breath.	#4
This excess fluid can also make your blood pressure high or cause a sudden weight gain. The diuretic or water pill helps remove that excess water so that your heart will not have to work as hard.	#5

	Slide
It can make your breathing easier, make your feet less swollen or help lower your blood pressure.	#6
When you first start taking the diuretic you will urinate more frequently and may have to get up several times during the night.	#7
You will also lose weight rapidly the first few days, because you are losing that excess water. However after a week or two your weight should not vary by more than a few pounds.	#8
Read the label on your medication carefully and ask the nurse, doctor or pharmacist any questions you have. It will be important to take the exact amount of medication prescribed for you by your doctor. He has carefully decided on that amount based on your body's needs. The diuretic will begin to work in about one hour after you take it and last for six to eight hours. If you take less than prescribed, your body will start retaining fluid again.	#9
If you take more than your doctor has prescribed you may lose too much salt and water. This may cause your blood pressure to be too low and you will feel woozy or dizzy when you stand up.	#10

	Slide
Diuretics will also cause you to lose potassium in your urine. Potassium is needed by the body to help the heart, muscles and nerves work right. When you first start taking a diuretic your blood is tested frequently for the amount of potassium in the body.	#11
Your doctor may give you a prescription for potassium or suggest eating certain foods which have a large amount of potassium in them. Remember! The potassium and diuretic balance each other. Do not stop taking one and continue with the other.	#12
Weigh yourself every morning to see if the diuretic is working, and write the weight down. Tell your doctor or clinic about a weight gain or loss of more than four pounds in two days or eight pounds in a week. Since your diuretic will cause you to urinate more frequently, it is best to take your medication early in the day. That way you won't have to get up as often at night.	#13
Sometimes your body may give you a warning sign that the dose or diuretic may need to be changed. These signs do not occur frequently, but if they happen to you, notify your physician or clinic.	#14

	Slide
The first is unusual muscle weakness. In the leg muscles there may be unusual numbness and tingling or cramps and joint pain.	#15
Loss of appetite, nausea and vomiting are other warning signs.	#16
An unusually persistent thirst or decrease in amount of urine should also be reported to your doctor.	#17
And lightheadedness or dizziness when you stand up is the last warning sign you need to remember. Phone your doctor if you have any of these signs. The medication you are taking may need to be changed. Do not make the adjustments yourself and disturb the balance between the potassium and diuretic.	#18
When you finish listening to this tape ask your nurse or doctor which medication you will take and how often.	#19

DIURETICS (WATER-PILLS)

What You Need To Know

DIURETICS (WATER-PILLS)

There are many different types of diuretics. They are often called water-pills because they help remove excess body water and sodium. Sodium is what causes the body to retain the water. It is in most foods, but salt is the major source of sodium.

When the heart is not pumping well, the body begins to retain sodium and the sodium causes water retention. This excess fluid may collect in your legs, or in your lungs. It may also raise your blood pressure or cause a sudden weight gain. By getting rid of this extra water through the kidneys your breathing can become easier, your feet less swollen, and your blood pressure may decrease.

When taking a diuretic:

1. At first you will urinate more frequently and may have to get up at night.
2. At first you will also lose weight rapidly as you lose the excess water.
3. After a week or two, your weight should not vary by more than a few pounds.
4. Take the exact amount ordered. It will start to work in about one hour and last six to eight hours. If you take less than prescribed, you will retain fluid again. If you take more than prescribed, you may lose too much salt and

water, and lower your blood pressure too much. This may cause you to be dizzy or woozy when you stand up.

5. Read the label carefully and ask your nurse, doctor or pharmacist any questions you have.

Diuretics will also cause you to lose potassium in your urine. Potassium is needed by the body to help the heart, muscles and nerves work right. Your doctor may either give you a prescription for Potassium Chloride (KCl) or suggest easting foods that have large amounts of potassium in them.

REMEMBER!

1. The potassium and diuretic balance each other. Do not stop taking one and continue with the other.
2. Weigh yourself every morning and write it down. You can use the last page of this pamphlet for those recordings. If you gain or lose more than 4 pounds in two days or 8 pounds in a week, notify your doctor or clinic.
3. Take your diuretic early in the day so you won't have to get up as often at night.
4. Call your doctor if you have the following warning signs. They do not occur frequently but may mean the dose of diuretic you are taking needs to be changed:

   Unusual muscle weakness, cramps, tingling, or joint pain.

   Dizziness, nausea and vomiting.

   Unusually persistent thirst or decrease in urine output.

Example of weight recordings:

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Week 1 APR 5	150	148	149				
Week 2 APR 11							
Week 3 APR 18							

Use This To Record Your Weight:

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Week 1							
Week 2							
Week 3							
Week 4							
Week 5							
Week 6							
Week 7							
Week 8							
Week 9							
Week 10							
Week 11							
Week 12							

Text on Slide-Sound Production
on
Potassium Supplements

	Slide
One of the medicines that has been prescribed for you to take at home is called Potassium Chloride. Both potassium and chloride are chemicals normally found in the body and they are necessary for proper muscle, nerve and heart function. Certain drugs or conditions may cause you to lose potassium and chloride. For example, diuretics (water-pills) may cause a loss of potassium through the kidneys.	#1
This medicine, Potassium Chloride, will replace and maintain the potassium and chloride levels in the body. The medicine is sometimes called KCl;the K stands for the potassium and the Cl stands for the chloride.	#2
Potassium Chloride, or KCl, comes in many different ways. It may be in pill, powder or liquid form. Be sure to follow the instructions on the bottle or package about when to mix the KCl with water or juice.	#3
No matter what type of KCl you take, it should be taken with or after a meal to protect your stomach.	#4

	Slide
Since Potassium Chloride loses its strength when exposed to light or heat, be sure to keep it in a dark bottle in a cool place. If your Potassium Chloride comes in little packets, keep the packets in a cool place until used. Throw the medicine away if it has not been used within a year.	#5
Sometimes the amount of KCl that your body needs or can handle may change. There are some warning signs which indicate that the amount of KCl you are taking needs to be changed. If you have any of the following warning signs, call your doctor or clinic right away:	#6
first, persistent abdominal pain, nausea, vomiting or diarrhea,	#7
second, rapid and pounding heartbeats, or anything unusual about your pulse,	#8
third, weakness, tingling or numbness of your legs or arms, heaviness of legs,	#9
and fourth, feeling woozy, lightheaded or listless.	#10

Slide

#11

Don't change the amount of KCl you are taking without telling your doctor. If the amount of medication you are taking is changed ask your doctor if the KCl also needs to be changed.

POTASSIUM CHLORIDE (KCl)

What you Need to Know

POTASSIUM CHLORIDE

Potassium and chloride are chemicals normally found in your body. They are necessary for proper muscle, nerve and heart function.

While you are taking diuretics (water-pills) you may lose some of the potassium in your body. The Potassium Chloride medicine replaces those chemicals lost through the kidneys when you are taking diuretics (water-pills).

Potassium Chloride is also called KCl, and it comes in pills, powder and liquid form. When taking KCl you should:

1. Follow instructions carefully about how to mix the medicine with juice or water.
2. Always take the medication with or after a meal to protect your stomach.
3. Keep the liquid KCl in a dark bottle away from heat. Also keep the little packets of KCl away from heat.
4. Throw away any Potassium Chloride (KCl) that is over one year old.

WARNING SIGNS

There are some warning signs which indicate that the amount of KCl you are taking needs to be changed.

1. Persistent abdominal pain, nausea, vomiting or diarrhea,

2. Rapid pounding heart beats, or anything unusual about your pulse,
3. Weakness, tingling or numbness in arms or legs or joint aches,
4. Feeling woozy, lightheaded or listless.

These symptoms don't occur often, but if they do be sure to call your doctor right away to avoid problems.

Remember that the diuretic and Potassium Chloride are carefully balanced. When one is changed the other must also be changed. Do not change either one without talking with your doctor.

Text on Slide-Sound Production
on
Medication Safety Content

	Slide
While you are in the hospital, the doctor has prescribed medications for you to help you get well and stay that way. During your hospitalization, the nurses have given you these medications according to the doctor's orders.	#1
But soon you will be going home and the responsibility for taking your medicine will rest entirely with you. We hope the following reminders will help you develop careful habits and attitudes about these important medications.	#2
Your doctor has prescribed these drugs for very specific reasons. You may have questions about these medications. In some cases it is important to know what side effects the medications might have. You will also want to know the purpose of this medication and the dose that you will be taking.	#3
So when you pick up your medications either in the hospital or at a pharmacy, check the label closely for:	#4

Slide

1. Your name. Only take medicine with your name on it. #5
2. The name of the drug and the amount you need to take. This should be the same each time you have the prescription refilled.
3. Your doctor's name.
4. Instructions for use. Be sure you understand these directions and follow them closely. If you have questions ask your doctor, nurse or pharmacist. Write down anything you think you might forget.
5. The expiration date, which tells you when the drug is no longer considered safe and effective.
6. The presciption number. This is needed to renew the medication.

With some drugs it is important for other medical people to know that you must have that medication. When taking some heart medications it is necessary to wear a Medic - Alert bracelet. Be sure to check with your doctor or pharmacist to see if you should wear one. #6

When you get your medication home, you must remember to store it carefully. Keep all of your medicine in separate pharmacy labeled containers, and put the containers in a safe, dry place out of the reach of children. #7

Slide

Never put your pills all together in one bottle, or take anything from an unlabeled bottle. You just can't be sure. #8

If you must take several medications at different times, a written record is a very helpful reminder. #9

When taking your medications at home, be sure to take the EXACT amount ordered. Never omit medicines without the doctor's knowledge. If you are sick and can not take the medicine, notify your doctor or clinic. Some drugs may cause nausea and the doctor will need to know about it.

Don't stop taking medicine without instructions from your doctor. Just because you are feeling better does not mean that you no longer need the medicine. Many medicines help you to feel better just as long as you take them as ordered by the doctor. If you stop taking them you might get sick again. #10

If you forget to take your pill, take your usual dose the next time it is due. Do not try to "catch up". Most medicine doesn't work that way and may even make you ill. Two pills is NOT twice as good as one. Take just the amount recommended for you by your doctor. #11

	Slide
Never take other medicine without checking with the doctor first. It may be the wrong dose or too old. Some medications, even aspirin, can affect the way that other medicines work. Throw away any medicine you no longer use. If you should get ill or have any side effects from the drugs, don't hesitate to call your doctor, nurse, or pharmacist to see what you should do.	#12
Remember to renew your prescription before the last pill is gone or the expiration date is up to be sure that you won't miss any doses of your medication. When you visit the doctor's office, bring your medications and any medication records with you for the doctor to see. If he wants to make a change in the way you take the medication, ask him to write the change on the bottle.	#13
Safety with medications is your responsibility. Don't let yourself down!	#14

MEDICATION

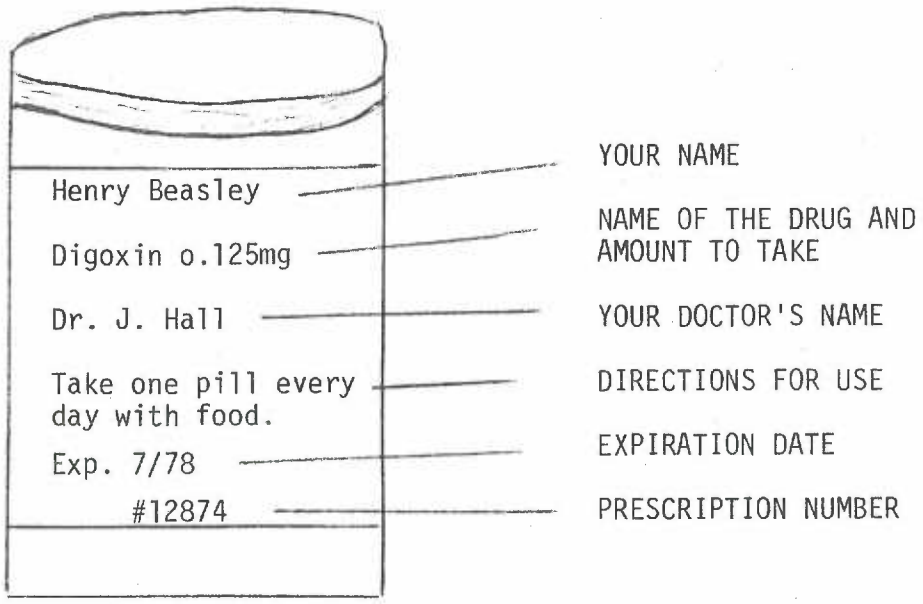
SAFETY REMINDERS

The following safety reminders are intended to help you get the most benefit from the medications your doctor has ordered for you.

Perhaps the most important thing you can do is to learn:

1. what medications you are taking,
2. how much medication you take and how often,
3. what side effects you might have.

The label on your prescription bottle can give you some of this information.



SAFETY TIPS

1. Store medicine in dry place out of children's reach.
2. Keep drugs in separate pharmacy labeled containers.
3. Keep a record of when you take your pills as a reminder.
4. Take the EXACT amount ordered. Don't skip doses or stop taking the medicine without checking with your doctor.
5. Do not take extra doses or try to "catch up". Most medicines don't work that way and may even make you ill.
6. Check with your doctor before taking any other medicines. Even aspirin can affect the way a drug works.
7. If you get ill or have any unusual effects that might have been caused by the medicine, don't hesitate to call your doctor or nurse.
8. Renew your prescription before the last pill is gone, or the expiration date is up.

9. Bring your medicines and any medication records with you when you visit the doctor. If the doctor changes the amount of medicine you will take, have him write the change on the bottle.
10. Check with your doctor, nurse, or pharmacist to see if you need to wear a Medic - Alert bracelet to let other medical people know you take that medication.

Safety with medications is up to you. Don't let yourself down.

Use the rest of this page to write down any questions you have about take your medicine. Write down any instructions you think you might forget!

CHAPTER IV

Discussion

Implications of this Study

Patient education is slowly coming of age. Orginally a tiny seed, the idea of education as a form of treatment has slowly grown and developed. However, the time has arrived when this growth needs to be cultivated and directed to meet the needs of the health care consumer. The development of the four learning modules described in this study was an attempt to direct health education to meet a specific area of expressed need. Granted, such instruction contributes to the teaching-learning resources of health professionals in a limited and circumscribed area. However, it offers a model of how to construct information in a manner consistent with the client's ability to comprehend.

Recent compliance studies reflect the need for client education and the general public has expressed an interest in health related information. As a result, learning centers designed for patients are being recommended by many sources and initiated by a few. It seems to be increasingly appreciated that informing the client can be likened to giving a canoeist a paddle. Without the paddle, the individual merely floats along with no control over direction, hoping to arrive at the distant shore. How much more direct and easy it is when the person is actively involved in reaching that destination. In much the same way, the actively involved client can help maintain a therapeutic medical regimen.

The use of audio-visual teaching tools actively involves the learner in the initiation and progression of learning. It offers the client background information from which personalized questions may stem. By providing background or basic information that can be independently reviewed

by the client, nurses spend less time in individual instruction, a very costly and often haphazard method. Costly in terms of professional time spent with each patient on an individual basis and haphazard because of the frequent lack of approaches based on valid learning principles of instruction and content construction in purported educative interactions. Formal education systems have long since learned the inefficiency of conducting education in this manner for those very reasons. Health education needs to investigate general learning principles and methods more closely. Because nursing often assumes teaching responsibilities, it would appear to be their further responsibility to improve on that teaching.

This study has attempted to identify pertinent content to be included in teaching the correct use of digoxin, diuretics, potassium supplements and general safety principles. This content was organized and presented in a slide-sound format. The results of this endeavor are to be an integral part of a larger study being conducted by a consortium of nurse researchers. This expanded study will investigate learner traits which may interact with three different teaching methods: (1) lecture, (2) decision making process, and (3) audio-visual instruction. The present study contributed the methodology of the third teaching strategy, as well as the teaching content for all three strategies.

Being part of a consortium effort offers an opportunity to pool talents of the members in order to refine teaching tools, review teaching content, offer new ideas, and compare medication practices in different health care facilities. However, certain disadvantages are also inherent in the consortium approach. In this study for instance, pilot testing has been delayed because of the amount of time needed to review and adjust content and slides to meet the needs of all consortium

members. Originally, it was planned to pilot test the teaching strategy developed in this study, comparing its effectiveness with the other two strategies. However, this aspect of the study has been delayed for the present time. It will be tested for effectiveness after its incorporation in the consortium study.

Although the teaching strategy of this study is economical in terms of the teacher's time, the purchase of necessary hard and software has proven it to be the most expensive approach to develop. Artwork for slides was also a considerable expense. However,ongoing expenses are minimal. The only nursing staff time required is in giving instruction on hardware use. The slides can easily be updated as new information comes to light. A case in point is the taking of digoxin with or after a meal. At the inception of this study, the preceding was recommended to reduce nausea from gastro-intestinal disturbance. However,more recent scientific studies have shown that such nausea is due to the glycoside's effect on the central nervous system and not related to gastro-intestinal irritation (Masen, 1976). As this knowledge becomes accepted, the slide recommending ingestion with meals will be adjusted accordingly.

Once a design format was established, the initial creation of these slides was relatively simple. The writer has little artistic talent yet found construction of the diuretic and potassium supplement slides to be within her skills. However, there is a considerable amount of time involved and for many program developers merely creating the content and rough drafts of the slides would be more efficient, leaving the artistry to a graphics department.

The use of audio-visual instruction tools in patient education has great potential. It is hoped that future endeavors will add to a client

oriented library of information, offering a variety of health teaching tools which make use of modern technology in learning.

Recommendations

Future studies recommended by the writer include the following:

1. Pilot testing of the teaching tools created in this study, utilizing a pretest and posttest to evaluate effectiveness.
2. Identifying teaching methods which correlated with client traits for audio-visual instruction strategy as one method of instruction.
3. Further development of audio-visual instruction tools for other medications, diet, and exercise therapy for the client with heart disease.
4. The conduction of a longitudinal study of compliance to determine the long-term behavioral effectiveness of audio-visual teaching when compared to a control group.
5. The development of a cost effectiveness comparison of instruction utilizing audio-visual programs versus more traditional methods in both the hospital and clinic setting.
6. An evaluation of nursing, client, and physician attitudes toward the use of audio-visual instruction may prove interesting.

CHAPTER V

Summary and Conclusions

Medications taken by clients with cardiac dysfunction are of vital importance to their well being. Education concerning these medications may maximize the therapetuic effects and minimize complications. Unfortunately the need for drug related information is not being met on a consistent basis. This educational deficit continues to exist despite recent studies which clearly point to an increase in compliance as a result of client education. Researchers are not alone in their identification of this need. The general public has also expressed interest in receiving more complete knowledge concerning their medications.

The nursing professional recognizes teaching as one of its purposes, and has long been actively involved in client education. Because of this association with teaching, it logically becomes the profession's responsibility to make needed improvements in that education. Conclusions have been drawn concerning the need to involve the client in his/her own care and to offer consistency of information in areas of educational need.

The development of the teaching modules concerning cardiac medications, specifically digoxin, diuretics, potassium supplements, and safety principles was the goal of this study. This method of education has the potential to increase compliance by providing consistent and useful information to the client. The use of audio-visual instruction in client education is relatively new despite its acceptance in other formal teaching situations. Such a teaching approach allows the learner to initiate the program when desired and progress at an individual pace. It is proposed that this method of instruction be expanded to include other

teaching programs in an effort to increase the client's knowledge about the medical regimen and make more efficient use of nurses' teaching time.

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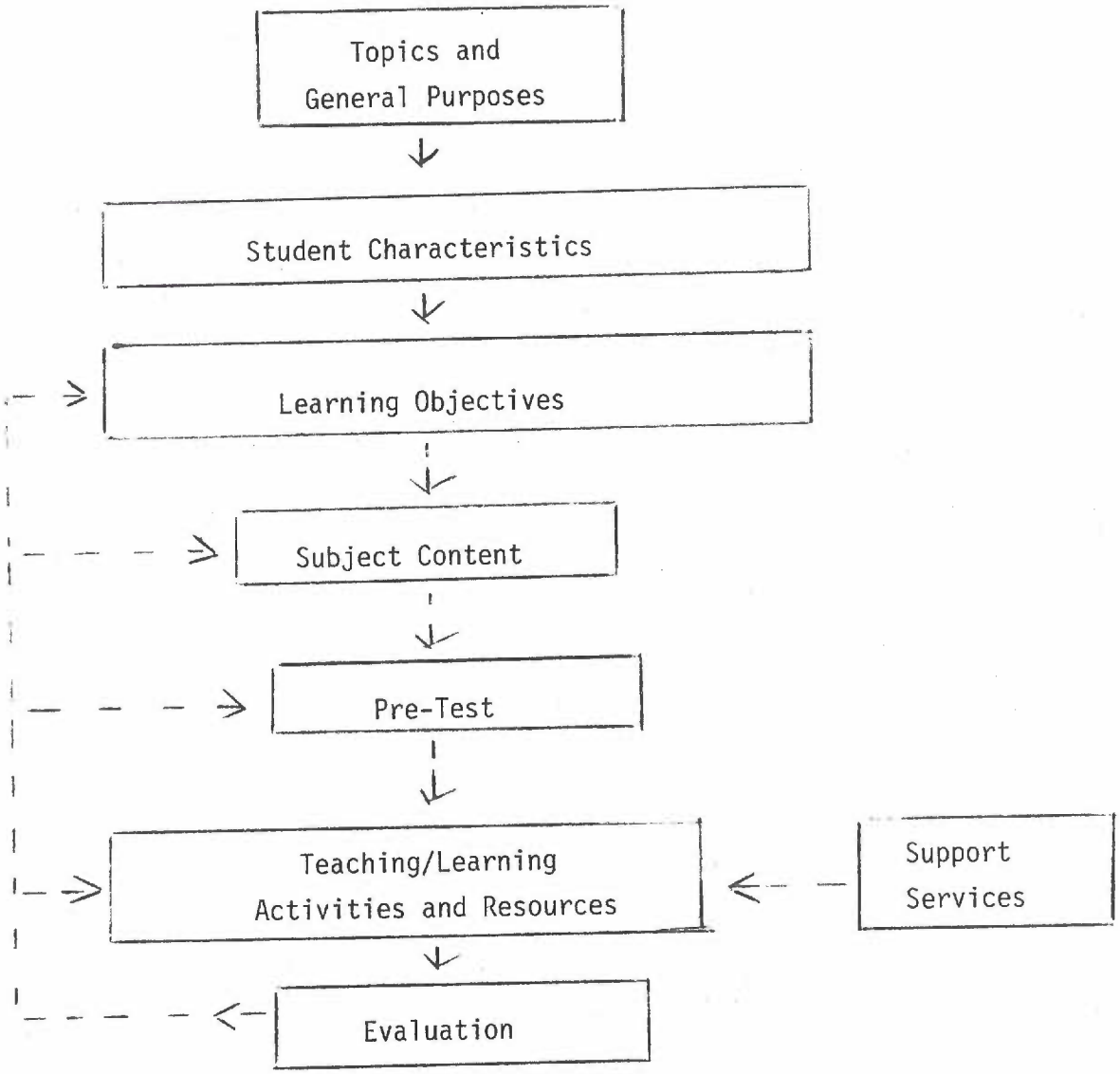
APPENDICES

APPENDIX A

Instructional Design Plan



Instructional Design Plan (Kemp, 1971, p. 10)

APPENDIX B

Tabulation of Discharge Medications

PATIENT #	ANTI-COAGULANT	CARDITONICS	ANTI-ARRHYTHMIC	DIURETIC	K SUPPLEMENT	OTHERS
Summary Portland Veterans Administration Hospital						
N = 35	Persantin - 3	Digoxin - 13 Lanoxin - 1	Quinidine - 5 Propranolol - 1 Inderal -13	Hydrochlorthiazide - 2	K - Lor - 9	Isordil - 8
Summary University of Oregon Health Sciences Center Hospital South						
N = 45	Coumadin - 1	Digoxin - 15 Lanoxin - 1	Quindine - 4 Inderal- 1	Lasix - 6 Hydrochlorthiazide - 10 Hydrodiuril - 1	K - Lor - 11 KCl - 3 K-Lyte - 1	Valium - 5 Isordil- 1 Aldomet -3
Total percentages						
N = 80		40% Digoxin	11% Quinidine 19% Inderal	30% diuretics	23% potassium supplements	
*numbers refer to frequency of patient use						

Chart Survey Prescribed Drugs

Medications are listed as they were ordered in the charts. Percentages include both generic and proprietary names.

AN ABSTRACT OF THE CLINICAL INVESTIGATION OF

SUSAN ELIZABETH SCHENK

for the Master of Nursing

Date of receiving this degree: June 11, 1977

Title: THE DEVELOPMENT OF CLIENT ORIENTED TEACHING UNITS ON CARDIAC MEDICATIONS

Approved: [redacted]
(Professor in Charge of Clinical Investigation)

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