A CURRICULUM FOR DIABETIC FOOT CARE EDUCATION.

A graduate project submitted in partial satisfaction of the requirements for the degree of Master of Public Health

Community Health Education

by

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The graduate project of Calvin C. Dong is approved:

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May, 1976
In memory of my late brother, Cary Nelson Dong
(July, 1946 to January, 1974).
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ABSTRACT

A CURRICULUM FOR DIABETIC FOOT CARE EDUCATION

by

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Master of Public Health in Community Health Education

June, 1976

A curriculum in foot care for diabetic patients was developed in a County Hospital setting to facilitate instruction and learning on the why, how, and when of proper foot care.

The curriculum originated in response to a need to reduce the number of emergencies and complications befalling the diabetic patients' feet, which are extremely susceptible to nerve disease and accelerated vascular degenerative disease. Patient education was deemed vital because diabetics themselves are most responsible for the maintenance of their health, and the prevention of foot problems.
The methodology used to develop the curriculum centered around designing a "Teaching Guide." The purpose for this design was to provide the health professional a practical means for communicating the necessary knowledge and skills of preventive foot care to diabetic patients. The "Teaching Guide" contains specific concepts, behavioral objectives, content, and learning opportunities for planned and orderly discussion with diabetic patients.

At the time of this writing, the curriculum for diabetic foot care education has not been implemented for patient teaching. Implementation is, however, expected to occur within the next month.
CHAPTER I

INTRODUCTION

It is currently estimated that approximately ten million Americans, almost five per cent of the nation's population, are affected with diabetes mellitus (29:7). In Southern California, alone, it is estimated that approximately 700,000 people are affected with the disease. Diabetes mellitus is the third-ranking killer disease in America today, with only heart disease and cancer taking more lives. In 1974, nearly 38,000 persons died directly from diabetes mellitus, and medical evidence indicates that as many as 300,000 persons died from its numerous complications (29:7). When compared to the general population, people with diabetes (recognized or not) are three times more likely in any given year to be temporarily disabled, hospitalized, or away from gainful employment (19:13).

Quite simply, diabetes mellitus is a chronic systemic disease in which the body is unable to turn glucose, or sugar and starches, into fuel for the tissues of the body, due to some lack of insulin effect. The diabetic state may be regarded with some accuracy as a state of exaggerated tissue starvation (19:14).
In 1923, with the introduction of insulin for the treatment of diabetes, the diabetic's life was made easier and longer. Unfortunately, for some, these added years have brought into light the complications of nerve disease and degenerative vascular disease.

THE DIABETIC FOOT

Perhaps nowhere in the diabetic's body are the ravages of nerve disease and degenerative vascular disease so glaringly apparent as in the feet. The feet of the diabetic are especially prone to developing these two complications. Their interaction produces a wide panorama of clinical findings, ranging from superficial foot problems consisting of disorders of skin, toenails, and trophic ulcers, to occasional more severe involvement of the muscles and bones (13:1). Ulceration, infection, and gangrene may follow in rapid succession, and amputation may be the ultimate end point (13:1). Prevention and early recognition can save the diabetic's feet from these complications, and the major responsibility rests with the diabetics themselves. This project is one such effort to help diabetic patients become more aware of the etiology of diabetic foot problems, and to provide them with the knowledge and skills needed for prevention, and early recognition of foot problems.
PATIENT EDUCATION NEEDS

The more diabetic patients know about their disability, the better they are able to live with it. In following, what diabetics do not know about foot care does hurt them. Only through effective patient education of the diabetic in the proper daily care of his/her feet can the diabetic do much to insure a healthful life without foot problems. The project was developed under the direction of the Senior Health Educator, Department of Medicine, and the Supervising Diabetologist of the Diabetic Care Clinic, at Martin Luther King Jr. General Hospital, Los Angeles, California. Both the health educator and the diabetologist had expressed a concern over the incidence of emergencies and complications befalling the diabetic patients receiving treatment at the hospital. Consequently, a diabetes patient education program was proposed for the hospital consisting of the following five education modules: 1) foot care, 2) hypoglycemia, 3) insulin therapy, 4) obesity, and 5) urine testing.

STATEMENT OF THE PROBLEM

Presently, the diabetes education that is offered to in- and out-patients at Martin Luther King Jr. Hospital is minimal, fragmented, and disorganized. To date it would appear that little more than survival information is disseminated, and often conflicting information is given
to the diabetic patient.

PURPOSE OF THE STUDY

The purpose of this study is to develop the curriculum for a diabetic foot care education module, so that complete, and comprehensive foot care education could be afforded to diabetic patients at Martin Luther King Jr. General Hospital.
CHAPTER II

LITERATURE REVIEW

Diabetes mellitus can be treated, it cannot be cured. Certain restrictions on the life-style of the diabetic patient will continue. Nevertheless, most diabetics can be taught to live full and active lives despite their disability. Perhaps more so than with any other disease, though, achieving the full life depends on teaching the diabetic to become an informed and active participant in his/her own health care. The more diabetic patients know about their disability, the better they are able to manage it, and live with it. Most authorities agree too, that good diabetic control tends to eliminate or decrease occurrence of the numerous long-term complications frequently associated with the disease (8:111).

Physicians prominent in the field of diabetes management have given credence to the importance of patient education.

Dr. E. P. Joslin states:

It is perfectly true that diabetes is a chronic disease. The important item is that it is susceptible to treatment. Effective treatment, however, rests in the hands of the patient . . . There is no disease in which an understanding by the patient of the methods of treatment avails as much (4:151).

Dr. Helen Rosenthal states:
The successful treatment of diabetes depends for the most part upon complete cooperation between the patient and the physician. Such cooperation can be achieved only when the patient is equipped with sufficient knowledge of the disease and its management (4:151).

Are diabetics being provided, though, with the information they need to prepare them to better manage, and live with their disease? Two recent surveys have shed some light on this question.

A SURVEY OF DIABETIC CARE

In 1972, the Minneapolis Diabetes Education Center reported two surveys of diabetic care. The first survey, directed to health professionals, had sought to determine what health professionals felt were the major problems in treating the diabetic patient. The second survey, directed to diabetic patients, had sought to determine what were the major needs and problems of diabetics.

In the first survey, questionnaires were sent to 100 nurses, 100 dieticians, and 100 physicians throughout the United States (6:9). The names of persons sampled came from lists of individuals involved with diabetes management. Approximately one-third of the 300 sampled completed the questionnaire: 27 physicians, 40 nurses, and 39 dieticians (6:9). In the second survey, members of Parents of Young Diabetics of the Twin Cities Association comprised the sample. Fifty-six parents completed
the questionnaire (6:11). While this group is not representative of diabetic patients throughout the nation, its response to the survey does merit some consideration (6:10).

At the completion of both surveys, it was found that both the health professionals and the parents had identified the lack of understanding of the nature of diabetes and its management as the major problem in diabetes care.

**HOSPITAL BASED PATIENT EDUCATION**

Our health system has been described as an illness system where we ordinarily wait until persons are sick, and then we give them sophisticated, expensive, expert care (28:59). The survey of diabetic care reported above may lend some credence to this analysis. Currently, patient education is not considered an integral part of the treatment regimen in most health care facilities. Hospitals are, however, at long last recognizing the need to devote more attention to patient education in illness prevention, health maintenance, and chronic disability adaptation. But the gap between lip service and patient service remains wide (20:232). Efforts in the sphere of planned patient education in hospitals are still few, and underfinanced. A recognition of an increasing responsibility in patient education is, however, being
substantiated in some hospitals by the evolution and enactment of "Patient Bill of Rights," which contain statements such as the following two:

1. The right to obtain from your physician, nurse, or other health professional administering care complete information about your diagnosis, treatment, and prognosis in terms of language you can understand (18:3).

2. The right to obtain health education relative to any illness to better judge quality care (18:4).

Unfortunately, rights, alone, cannot sustain the drive for hospital patient education. Hospitals also need a concrete concept of patient education from which planned action can be facilitated.

In 1974, the Task Force on Patient Education for the President's Committee on Health Education submitted a paper entitled "The Concept of Planned Hospital-Based Patient Education Programs," for consideration as a position paper for the President's Committee on Health Education. The paper contained four recommendations that are especially relevant here, as they generally describe the concept of hospital-based patient education. The four recommendations are that hospitals and health professionals should (22:1):

1. Accept the premise that the patient has an inalienable "right to know" the status of his health; the nature of an existing health
problem; what community health resources are available to him and his family; and what he can do, if possible, to prevent future recurrences.

2. Encourage and make provisions for patients to take an active, participatory role in their own care to the extent they choose and are able to do so.

3. Establish a multi-purpose educational center in the hospital setting to implement staff and patient (consumer) education programs.

4. Employ a professional educational specialist with appropriate preparation (a) in social-psychological, physical and behavioral sciences with expertise in educational methodology and evaluative procedures, (b) to organize, develop, and implement the program, (c) to mobilize resources, and (d) to coordinate the teamwork of other health disciplines.

CURRENT DIABETES PATIENT EDUCATION PROGRAMS

Few would challenge the fact that nursing and some of the other allied health professions have led the way in attempting to establish patient teaching as a professional responsibility (5:13). Such a recognition of the importance of patient education is generating genuine efforts in some hospitals to enable the patient to become an informed, and active participant in his/her health care, rather than just a paying bystander. Unfortunately, some hospital attempts have been minimal, fragmented, and implemented without sound planning, or an understanding of patient education. In a much more positive light, though, some hospitals have developed well-rounded and soundly-planned patient education programs that can serve as good models.
In the realm of diabetes patient education the author will describe two diabetes patient education programs which have included diabetic foot care as an integral educational component. Both of these patient education programs are distinctly different from traditional nursing care/patient teaching in that a formal program with guidelines, objectives, planned action, and evaluation was utilized.

La Guardia Hospital, in New York City, is affiliated with the Health Insurance Plan of Greater New York (HIP), a prepaid health maintenance organization. In August, 1975, there was a published report of a series of diabetes management classes offered to the hospital's 120,000 HIP members. The series of classes was initiated by the in-service education supervisor in cooperation with physician, and dietary personnel at the hospital. Each series of classes consisted of three 1-1/2 hour meetings, one meeting per week for three weeks. The first meeting, led by a nurse instructor, dealt with the nature of diabetes, hypoglycemia, and hyperglycemia. The second meeting, led by a registered dietician was devoted to diet and medication. The third meeting, led by a physician instructor, was on the complications of diabetes, such as nerve disease and accelerated vascular degenerative disease. Self-management was included where appropriate in each meeting (23:1324). For example, foot care is crucial
for diabetics and a discussion of why, how, and when of proper foot care was an integral part of the series. Evaluation based on questionnaires which participants filled out in class, one month and one year after the classes, showed that a significant number had improved their knowledge and reported practices in self-care (23: 1324).

Although unpublished, the next diabetes patient education program reviewed by the author merits equal attention. Northridge Community Hospital, in Northridge, California, is currently offering a comprehensive series of educational sessions on diabetes management to its diabetic population. The "Diabetes Education Program," a joint venture between the American Diabetes Association: Southern California Affiliate, and Northridge Hospital, is the product of a mutual belief in the premise that it is what diabetics do not know about diabetes that hurts them. Each series is comprised of five, two hour evening sessions held Monday through Friday, one week each month. The program is designed with specific content and instructional objectives to help educate the diabetic. Furthermore, the program exemplifies a well-planned, multidisciplinary approach to diabetes education with the "instructional team" composed of dieticians, nurses, and physicians. Topics discussed in the series include the following: a) the nature of diabetes, b) foot care,
urine testing, and glucagon administration (why, when, and how), c) dietary prescriptions, and the "Exchange System," d) the complications of diabetes, including neurological and skin changes in the feet (15:1). Evaluation of the program is done by pre and post-testing of participants, and subjective observation of each participant by the "instructional team." Thus far, program evaluative tools have indicated that there is a significant increase in the level of knowledge of participating diabetics (Brady, personal communication, 1976).

From the foregoing discussion it is evident that diabetes patient education programs have demonstrated their worth, and that approaches such as the two described should be used in other health care facilities. Not only for diabetes, but also for other chronic diseases, and health maintenance. As each individual bears the major responsibility for his own health, patients need to be educated about their health and illness; and what can be done, if possible, to prevent future health problems.

Although patient education is in the earliest stages of development, more hospitals are recognizing that health education for patients can no longer afford to stagnate in the traditional mode of one-to-one counseling, or setting up pamphlet racks in hospital lobbies and clinic waiting areas. In the next chapter, the
methodology employed by the author in developing the curriculum for a diabetic foot care patient education module will be discussed.
CHAPTER III

METHODOLOGY

THE INCEPTION

The author first arrived at Martin Luther King Jr. General Hospital on June 24, 1975, to meet with the Supervising Diabetologist of the Diabetic Care Clinic, and the Senior Health Educator, Department of Medicine. At this initial meeting the diabetologist described the dilemma in diabetes patient education, and expressed the need for a planned diabetes patient education program. The Senior Health Educator voiced his full support for such a program, and his willingness to provide the author guidance in its development.

The next step came several weeks later, after the diabetologist had introduced his comprehensive diabetes education program consisting of the following education modules: 1) foot care, 2) hypoglycemia, 3) insulin therapy, 4) obesity, and 5) urine testing. At this point, the diabetologist suggested that the author limit his efforts to the development of the curriculum for one education module, specifically foot care, or hypoglycemia. In that the health educator concurred with the suggestion, the author chose diabetic foot care (hypoglycemia would be developed by another graduate student).
Having chosen to develop the curriculum for a diabetic foot care education module, the author turned his attention to exploring the nature of the target group, and any existent limitations.

THE TARGET GROUP

Martin Luther King Jr. General Hospital, a 400-bed acute care unit, serves the people residing in the Southeast Region of Los Angeles. Subsequently, the target group for the diabetic foot care education module was the diabetic population residing in this Region, who frequented the hospital's Diabetic Care Clinic for care. In order to formulate a patient profile of the target group, the author researched the demographic data of the community. Unfortunately, the author was unable to compile background data which validly described the target group. There was, however, published background information on the population, as a whole, who resided in the Southeast Region. This information did later prove helpful for developing a curriculum to meet the needs of the target group. And, as such, those background characteristics of the Southeast Region, which were helpful to the author will be mentioned.

According to a 1970 census, the population in the Region was largely composed of three ethnic groups. White persons account for 58 per cent of the estimated 763,000
people in the Region (12:20). Persons with Spanish surnames account for 29 per cent of the white people and 17 per cent of the total population in the Southeast Region (12:20). Black persons account for 37 per cent of the population, and therefore comprise the largest single minority (12:20).

In the central area of the Southeast Region, where the hospital is located, Blacks are the predominant ethnic group. With the current crisis in the nation's economy, unemployment is a very acute problem in most communities of the central area. Therefore, the area where the hospital is located can best be described as a low income area.

The educational level of the population of the Southeast Region is described by health districts (12:39). The average median educational level, in terms of school years completed was highest for the Compton district (11.7 years), where the hospital is located (12:39). The other districts in descending order of educational level were Southeast (11.1 years), San Antonio (11 years), and South (9.8 years) (12:39).

LIMITATIONS

Several limitations were apparent at the inception of the development of the curriculum. First, although the importance of in-service education for
physicians, and nurses in diabetic foot care was apparent, the diabetic foot care curriculum would be designed to meet the needs of the diabetic patient population at the hospital.

Second, the curriculum would focus on adult diabetics (ages 20-65) at the hospital's Diabetic Care Clinic. This choice was made for the following two reasons: a) to better narrow the target group for planning educational experiences, and b) the Diabetic Care Clinic only cares for adult diabetics (juvenile diabetics are referred to the Pediatrics Department of the hospital).

Third, although there was a proportionate number of Spanish-speaking diabetics that came to the Diabetic Care Clinic for care, the author did not intend to make any translatory provisions in the curriculum.

DEVELOPMENT OF THE CURRICULUM

The overall goal of this study was to develop a curriculum in diabetic foot care at Martin Luther King Jr. General Hospital that would increase the diabetic's knowledge and practice of proper foot care. Pursuant to this goal, the strategy that the author chose to develop the curriculum was as follows:

Step 1. Learn about the hospital setting, where the curriculum would be implemented. The emphasis here was on learning the following:
a) Existent educational services offered to the diabetic patient.
b) Attitude toward concept of diabetes patient education, and patient education, in general.
c) Organizational structure of the hospital.
d) Communication channels.

Step 2. Research diabetes medical literature to compile a "body of knowledge" on diabetic foot care.

Step 3. Collate "body of knowledge" into an "Informational Resource" containing information on the following areas:
   a) The etiology of diabetic foot problems.
   b) Methods of prevention of diabetic foot problems.
   c) Signs and symptoms of diabetic foot problems.
   d) Methods of treatment of diabetic foot problems.

Step 4. Take major points of content from "Informational Research" and formulate a formal curriculum "Teaching Guide" for diabetic foot care patient teaching.

Pursuant to the steps outlined above, the author went to various medical libraries in Los Angeles and
Northridge. There, the author researched and read pertinent medical literature on the nature of diabetes, with an emphasis on foot care in regards to the aspects of foot care mentioned in Step 3. Furthermore, the author arranged to meet once weekly with the hospital's diabetologist from July through September (subsequent to September, occasional meetings were pre-arranged by the author when the need arose). These meetings were arranged for, and helpful in the following ways:

1. A good working rapport between the author and the diabetologist was built-up.

2. Problems in research, or questions encountered in reading by the author were readily able to be resolved with the diabetologist.

3. The author understood better what the diabetologist felt were important teaching areas in diabetic foot care.

4. The diabetologist suggested readings to aid the author in developing the curriculum.

5. Progress reports were presented to the diabetologist on the curriculum, and input was received.

6. The author became much more familiar with the ways in which diabetic patients were presently receiving educational assistance.

The author also engaged in weekly meetings with the Senior Health Educator, Department of Medicine, from
July through January, 1976, for feedback and guidance in this study. It should be noted, though, that only a proportionate number of these meetings dealt with activities relevant to the development of the curriculum (the remainder of the meetings were intended for field training experience). From those meetings, which were relevant to the development of the curriculum, the results were as follows:

1. A good working rapport between the author and the Senior Health Educator was built-up.

2. The Senior Health Educator oriented the author to the formal organizational structure of the hospital.

3. The Senior Health Educator suggested readings in patient education to aid the author in the understanding of hospital-based patient education.

4. Progress reports were presented to the Senior Health Educator on the curriculum, and input was received.

5. The author gained a perspective of the role of a hospital health educator.

Besides these weekly hospital meetings, the author visited and called several hospitals in Los Angeles County to find out if diabetes patient education programs were ongoing; and, if so, did they have a program in foot care, and how did it function. In this way, the author was
better able to discern the state of the art in diabetic foot care patient education.

In February, 1976, the curriculum for the diabetic foot care patient education module was completed. As formulated the curriculum has three parts:

1. A "Teaching Guide" (Chapter IV) containing specific concepts, behavioral objectives, content, and learning opportunities intended to facilitate systematic patient instruction and learning of proper diabetic foot care.

2. "Diabetic Foot Care Illustrations" (Chapter IV), intended as a visual aid to the "Teaching Guide."

3. An "Informational Resource" (Chapter IV), intended as an adjunct to the "Teaching Guide," to provide the instructor additional information on various aspects of diabetic foot care, with an emphasis on preventive care.

IMPLEMENTATION

At the time of this writing, neither the curriculum nor the education module in diabetic foot care has been implemented. However, discussions on implementation (with the diabetologist, and the Senior Health Educator) had been on-going, even before the curriculum was completed. As a result of these discussions,

* Focal point of curriculum.
implementation of the curriculum, and the education module, itself, will be as follows:

1. The hospital's diabetic nurse practitioners (DNPs) will be primarily responsible for teaching diabetic patients proper foot care, with the aid of the curriculum "Teaching Guide."

2. A training session will be arranged prior to implementation. This session would orient the DNPs to the goals of the foot care education module (and other modules, if completed), and provide discussion on the diabetic foot care curriculum and its usage.

3. The diabetic foot care education module will be implemented concurrent with other diabetes education modules.

4. A "mobile cart" will be a means for assisting the DNPs in patient teaching of foot care, and other modules. The "mobile cart" will be equipped with the following:
   a) Audio-video playback unit.
   b) Audio-video tapes on diabetes management for the patient to view, including one on foot care (provided Health Education Section, Department of Medicine).
   c) A flip-chart for illustrations, including illustrations on foot care (Chapter IV).
d) Space for demonstrations.

e) Space for storage of audio-video tapes, demonstration materials, and printed education materials, including those pertinent to diabetic foot care.

5. Implementation will most likely occur in the Diabetic Care Clinic waiting room, unless adequate space is available for patient teaching elsewhere in the hospital.

6. The diabetic foot care education module will be broken down into three patient teaching sessions. Each session will correspond to a specific concept in the diabetic foot care curriculum "Teaching Guide" (Chapter IV).

7. A DNP will travel with the "mobile care" to other areas of the hospital, and provide patient teaching, including foot care patient teaching, to those diabetics unable to come to the clinic.

EVALUATION

As crucial as diabetic foot care is, perhaps more crucial is the continual evaluation that must go on to monitor the effectiveness of patient teaching in foot care. With this in mind, the author has developed several suggested methods of evaluation.
A pre-post-test has been developed for each patient teaching session in foot care (Appendix A). The pre-tests will measure the participant's factual knowledge about foot care prior to each session. The post-tests, having the same questions, will be administered at the conclusion of each session.

Measurable behavioral objectives have been purposely written in the diabetic food care curriculum "Teaching Guide" (Chapter IV) as an additional evaluation tool to measure teaching effectiveness, and patient learning.

In addition to the two evaluation tools described above, the author has suggested a long-range evaluation. Periodical review of participant's medical chart (at six month intervals) is proposed to determine whether there is a reduction in hospital admissions for diabetic foot emergencies and/or complications.
CHAPTER IV
THE DIABETIC FOOT CARE CURRICULUM

SOME CONSIDERATIONS IN TEACHING

Diabetic foot care education is a continual process for the diabetic, and not a single educational exposure. Some people may learn slower than others, and some people may forget what they were taught. With this in mind, diabetic foot care education should be repeated at determined time intervals to reinforce and/or reassess each diabetic's knowledge and practice of good foot care. And, especially for those diabetics who have unfortunately suffered a foot crisis, the need for continuing diabetic foot care education cannot be over-emphasized.

Moreover, perhaps the most crucial condition affecting the success or failure of the foot care patient teaching is the instructor's attitude and approach to diabetic foot care. If the instructor provides little interest and dull instruction, it is unlikely that the participants will respond positively (9:49). On the other hand, if the instructor is interested and enthusiastic, there is a better chance for the diabetic to become an informed and active participant in the preventive health care of his feet (9:49).
AN OVERVIEW OF THE "TEACHING GUIDE"

The teaching guide was prepared in order to provide the instructor a systematic approach to diabetic foot care patient teaching, and learning. In its basis design the concepts which follow are the main ideas that diabetic patients should develop about foot care.

Concept I: The feet and legs of diabetics are susceptible to the complications of nerve disease, and accelerated vascular degenerative disease.

Concept II: The occurrence of decreased sensation, decreased blood supply, and ulcers in the feet of diabetics cannot be totally stopped, but their development can be delayed.

Concept III: Taking special care of the feet will reduce the risk of foot complications for the diabetic.

For each concept, measurable behavioral objectives have been identified to facilitate communication of proper foot care education to diabetic patients.

Behavioral objectives serve as a guide for the evaluation of the diabetic patients' understanding of the concepts listed above. Furthermore, the behavioral objectives indicate the specific cognitive behavior, or health
practice sought in the diabetic patient, and the specific content to be covered.

Learning opportunities are suggested as means to achieving behavioral objectives, and understanding the concepts. In the selection of learning opportunities for the diabetic patient, a number of criteria were considered including (9:55):

1. Instructor's ability.
2. Diabetic patient's ability.
4. Content to be covered.
5. Environmental conditions, and equipment available.
6. Time available.

Selected materials have been included, and provide the following: a) suggested educational aids for patient learning, and b) suggested resources to better inform the instructor about diabetic foot care.

For easy reference and hand-out purposes a fact sheet entitled "Patient Instructions for Diabetic Foot Care" has also been provided, as a supplement to patient teaching in proper foot care (see p. 49).
"TEACHING GUIDE"
Concept I: The feet and legs of diabetics are susceptible to the complications of nerve disease, and accelerated vascular degenerative disease.

I. OBJECTIVE: Following instruction, the student will be able to verbally explain facts associated with nerve disease in the feet and legs of diabetics.

CONTENT: 1. The job of nerves is to allow a person to have feeling in all parts of the body.
2. Diabetics are susceptible to nerve disease, which causes foot problems for the diabetic.
3. With nerve disease, nerves in the diabetic's feet and legs do not work as well as usual.
4. There is less feeling in the diabetic's feet and legs, perhaps numbness, burning, or tingling.
5. The diabetic may injure himself and not even feel it.
6. Because the injury is not felt it goes untreated, often becoming ulcerated and/or infected.

LEARNING OPPORTUNITIES:

1. The instructor will explain the facts associated with nerve disease in the feet and legs of diabetics. Flip-chart illustrations may be helpful (see "Selected Materials")
2. The instructor will ask students to recall any personal history of decreased sensation due to diabetes.
3. The instructor will have students verbally explain the facts associated with nerve disease in the feet and legs of diabetics.

SELECTED MATERIALS:

1. Flip-chart illustrations, including the following:
II. OBJECTIVE: Following instruction, the student will be able to verbally explain facts associated with accelerated vascular degenerative disease in the feet and legs of diabetics.

CONTENT: 1. The job of the blood is to bring oxygen and nutrients, and to remove wastes from tissues in the body.
2. Diabetics are susceptible to accelerated vascular degenerative disease, which causes foot problems for the diabetic.
3. With degenerative vascular disease, less blood, bringing oxygen and nutrients, circulates to the diabetic's feet and legs. Then:
4. Tissue in the diabetic's feet and legs may waste away.
5. Foot ulcerations may occur from minor irritation.
6. Foot ulcers may not heal as well, and often may become infected.
7. Gangrene may develop.

LEARNING OPPORTUNITIES:
1. The instructor will explain the facts associated with accelerated vascular degenerative disease in the feet and
legs of diabetics. Flip-chart illustrations may be helpful (see "Selected Materials").

2. The instructor will ask students to recall any personal history of accelerated vascular degenerative disease due to diabetes.

3. The instructor will have students verbally explain the facts associated with accelerated vascular degenerative disease in the feet and legs of diabetics.

SELECTED MATERIALS:

1. Flip-chart illustrations, including the following:
   a) Diagram of blood circulation in the foot and leg.
   b) Photographs of atrophic skin changes and ulcers in the feet.


Concept II: The occurrence of decreased sensation, decreased blood supply, and ulcers in the feet of diabetics cannot be totally stopped, but their development can be delayed.

I. OBJECTIVE: Following instruction, the student will be able to verbally explain how the development of diabetic foot complications can be delayed.

CONTENT: 1. The person most responsible for the maintenance of health and the prevention of foot problems is the diabetic himself.
2. There are two (*) measures for the diabetic to follow that can delay the development of decreased sensation, decreased blood supply, and ulcers in the feet.
3. The two (*) measures are:
   *a) Conscientious control of diabetes by following the prescribed use of diet, insulin, or oral agents.
   *b) Conscientious attention to foot care by following prescribed precautionary plan to avoid foot problems.
   Major elements of the prescribed plan are:
   1) Wash feet daily.
   2) Inspect feet daily, and immediately report any injury, pain, or unusual skin change to physician or Martin Luther King Medical Clinic.
   3) Avoid a break in the skin of the feet from any cause, such as a cut, burn, or other injury.
   4) Avoid adding to the danger of decreasing blood supply to the feet and legs.
4. If the diabetic already has decreased sensation, decreased blood supply, and/or ulcers in the feet, much more adherence to the two (*) measures above is needed to delay more serious foot complications.
LEARNING OPPORTUNITIES:

1. The instructor will ask students to explain how they might delay the development of diabetic foot complications.
2. The instructor will then explain what the two (*) measures are that can delay the development of diabetic foot complications, emphasizing the diabetic's own major responsibility in preventing foot problems.
3. The instructor will ask if any students have ever had a foot problem due to diabetes. For these students, the instructor will stress more strongly the importance of the two (*) measures to delay more foot problems.
4. The instructor will have students verbally explain what the two measures are, that can delay the development of diabetic foot complications.

SELECTED MATERIALS:

1. Flip-chart illustrations, including the following:
   a) "Control of Diabetes!"
   b) "Attention to Foot Care!"
5. "Diabetic Foot Care" hand-outs, available at Martin Luther King Medical Clinic.
Concept III: Taking special care of the feet will reduce the risk of foot complications for the diabetic.

I. OBJECTIVE: Following instruction, the student will be able to demonstrate the daily routine of foot hygiene.

CONTENT: 1. The diabetic should wash and inspect his feet daily.
2. Wash feet daily with soap and lukewarm bath water. Before immersing the feet in the bath water, the diabetic should make sure the bath water is not too hot.
3. Dry feet thoroughly and carefully by blotting, especially between the toes with a clean towel.
4. The "feel of the feet" cannot be trusted.
5. Inspect feet daily in good light for any unusual skin changes such as: sores, redness, pus, swelling, breaks in the skin, ulcers, and/or change in the shape of the foot.
6. If any pain, or unusual change in the feet is noticed, see physician, or call Martin Luther King Medical Clinic: (213) 639-2097.

LEARNING OPPORTUNITIES:

1. The instructor will explain the routine of daily foot hygiene.
2. The instructor will illustrate and explain, by means of flip-chart, the nature of unusual skin changes that the diabetic should watch for.
3. The instructor will demonstrate washing and inspection of feet by performing these routines on her own feet, in front of the students; or, by having the students view the routine of washing and inspection of feet on a video tape.
4. The instructor will have students demonstrate washing and inspecting their own feet, and verbally
critique each student's performance. The critique will be based according to how closely the student's performance resembles the procedure demonstrated by the instructor, or a video tape.

5. The instructor will distribute to students a fact sheet which outlines the daily routine of foot hygiene.

SELECTED MATERIALS:

1. Flip-chart illustrations, including the following:
   a) "Wash Feet Daily!"
   b) "Inspect Feet Daily!"
   c) Photographs of unusual skin changes that the diabetic should watch for.

   Note: Photograph resources (for c) include the following:
   2) "Modern Medicine," April, 1972.

2. Wash pan, lukewarm water, soap, wash cloth, clean towel. The quantity of each item will be based upon class size, and the discretion of the instructor.


II. OBJECTIVE: Following instruction, the student will be able to demonstrate the weekly routine of diabetic foot hygiene.

CONTENT: 1. The diabetic should pay special attention to proper toenail care to avoid in-grown toenails, which may ulcerate.
2. Toenails should be cut or filed only after washing the feet, or after soaking the feet in lukewarm bath water for approximately five minutes.
3. Always trim or file toenails straight across using a nail clipper or a blunt-tipped nail file. Never trim or file toenails shorter than the ends of the toes.
4. Clean around toenails when necessary, but never dig into the corners of toes.
5. If toenails are too thick, or tend to split or crack when trimmed or filed, have them cared for by a podiatrist.
6. If eyesight is poor, toenails may be cared for by a podiatrist.
7. If the feet show signs of dryness, soften skin by rubbing in lanolin or plain petroleum jelly.

LEARNING OPPORTUNITIES:

1. The instructor will illustrate and explain, by means of flip-chart, or video tape, the weekly routine of foot hygiene. Emphasis will be placed on proper toenail care.
2. The instructor will display supplies for proper toenail care: nail clipper, blunt-tipped nail file, lanolin, and plain petroleum jelly.
3. The instructor, using the displayed supplies, will demonstrate proper toenail care in front of the students; or, have the students view the routine of proper toenail care on a video tape.
4. The instructor will have students demonstrate trimming and/or filing their own toenails, and verbally critique each student's performance. The critique will be based according to how closely the student's performance resembles the procedure demonstrated by the instructor, or a video tape.

Note: If student's eyesight and/or manual dexterity is too impaired, have student trim and/or file toenails with assistance from family member; or have student verbally explain proper toenail care.

5. The instructor will distribute to students a fact sheet which outlines the weekly routine of foot hygiene.

SELECTED MATERIALS:

1. Flip-chart illustrations, including the following:
   a) Drawings of proper toenail care.
   b) Photographs of toenails trimmed or filed to proper length versus photographs of toenails trimmed or filed too short.

2. Nail clipper, blunt-tipped nail file, lanolin, plain petroleum jelly. The quantity of each item will be based upon class size, and the discretion of the instructor.


III. OBJECTIVE: Following instruction, the student will be able to verbally recall at least seven precautionary measures of diabetic foot care to prevent breaks in the skin.

CONTENT: 1. Breaks in the skin of the diabetic's feet often may not be felt, and take longer than normal to heal.
2. Breaks in the skin may frequently ulcerate, become infected, and develop gangrene.
3. To prevent breaks in the skin from any cause, such as a cut, burn, or other injury, the diabetic should:
   a) Wash and inspect feet daily.
   b) Never use scissors, or a sharp-tipped nail file for toenail care.
   c) Never walk barefooted.
   d) Never use a hot water bottle or heating pad to warm feet. Instead, wear socks to warm feet.
   e) Never wear worn-out stockings and/or shoes.
   f) Inspect inside shoes daily for foreign objects or torn linings.
   g) Never cut corns or calluses. See a podiatrist.
   h) Never put medicine on corns and calluses without approval of physician or podiatrist.
   i) Never sunburn the feet and legs.

LEARNING OPPORTUNITIES:

1. The instructor will illustrate and explain, by means of a flip-chart, or video tape, precautionary measures to prevent breaks in the skin of the diabetic's feet.
2. The instructor will ask students to recall any breaks in the skin, from ignoring precautionary measures.
3. The instructor will have students verbally recall at least seven precautionary measures.
4. The instructor will distribute to students a fact sheet which lists the precautionary measures to prevent
breaks in the skin of the diabetic's feet and legs.

SELECTED MATERIALS:

1. Flip-chart illustrations, including the following:
   a) Drawings of precautionary measure to prevent breaks in the skin of the diabetic's feet.

IV. OBJECTIVE: Following instruction, the student will be able to verbally recall at least two precautionary measures of diabetic foot care to avoid adding to the danger of decreasing blood supply to the feet and legs.

CONTENT:

1. Constricting blood circulation may increase the danger of decreased blood supply to the diabetic's feet and legs.
2. To avoid adding to the danger of decreasing blood supply to the feet and legs, the diabetic should:
   a) Never wear shoes that are tight. Wear shoes that are snug, but comfortable. Make sure the shoes allow a thumb's width from the end of the toe to the end of the shoe when standing.
   b) Never wear stockings with tight elastic tops, or garters.
c) Avoid sitting with the legs crossed.

LEARNING OPPORTUNITIES:

1. The instructor will illustrate and explain, by means of a flip-chart, or video tape, precautionary measures to avoid adding to the danger of decreasing blood supply to the diabetic's feet and legs.

2. The instructor will have each student inspect his own shoes and stockings for any danger of decreasing blood supply to the feet.

3. The instructor will have students verbally recall at least two precautionary measures.

4. The instructor will distribute to students a fact sheet which lists the precautionary measures to avoid adding to the danger of decreasing blood supply to the diabetic's feet and legs.

SELECTED MATERIALS:

1. Flip-chart illustrations, including the following:
   a) Drawings of precautionary measures to avoid adding to the danger of decreasing blood supply to the diabetic's feet and legs.


"INFORMATIONAL RESOURCE"
GLOSSARY OF TERMS

1. diabetic angiopathy: a complication of diabetes mellitus characterized by degenerative vascular disease, and ultimately insufficient blood supply.

2. diabetic neuropathy: a complication of diabetes mellitus characterized by abnormal function of the peripheral nerves (both sensory and motor).

3. diabetic nephropathy: a complication of diabetes mellitus leading to decreased renal function, and later renal failure.

4. diabetic retinopathy: a complication of diabetes mellitus leading to decreased vision and later blindness.

5. thromboendarterectomy: the operation that involves opening an artery and removing an occluding thrombus.
I. ETIOLOGY

Diabetic foot problems are caused by the development of the complications of peripheral neuropathy and angiopathy. Yet, the exact etiology for these complications remains unknown. It does not appear to be directly related to the abnormality in sugar metabolism, as peripheral neuropathy and angiopathy can be found in some persons, prior to having elevated blood sugars. Nor, does adequate control of the blood sugar level appear to prevent the complications of peripheral neuropathy and angiopathy. Therefore, the discussion of etiology will focus primarily on the development of peripheral neuropathy and angiopathy, rather than on the exact etiology for these complications.

Involvement of the peripheral nervous system by diabetes mellitus is referred to as diabetic peripheral neuropathy. The insidious development of diabetic peripheral neuropathy in the feet and lower legs probably results from a combination of some, or all, of the following factors: 1) hyperglycemia, 2) insulin insufficiency, 3) vascular insufficiency of the vasa nervorum, and 4) a metabolic abnormality of the nerves, particularly the myelin sheath, that is inherited together with diabetes mellitus, but occurs independently of the blood sugar and insulin levels (11:9). With peripheral neuropathic development, there is impairment of the structure of the
peripheral nerves, which secondarily leads to decreased conduction ability or to increased excitability of nerve terminals and peripheral nerves themselves (both sensory and motor). Such peripheral nerve disease may result in foot problems for the diabetic such as: dysesthesias, changes in the shape of the foot, and neuropathic ulcers. In general, the incidence of peripheral neuropathy increases with respect to the age of the diabetic and the duration of the diabetes.

The incidence of peripheral angiopathy also increases, in general, with respect to the age of the diabetic and the duration of the diabetes. However, the discussion of the development of the peripheral angiopathy, or accelerated degenerative peripheral vascular disease, can be divided into two major categories: macrovascular disease - primarily involving larger blood vessels, and microvascular disease - primarily involving smaller arteries, arterioles, capillaries, and venules.

Atherosclerotic changes in the large blood vessels - macrovascular disease - manifests in deposits of lipid and cholesterol that adhere to the large blood vessel walls (especially, the tibial and popliteal arteries). As a result, the normal blood supply to the diabetic's feet and lower legs may decrease. Qualitatively, these atherosclerotic changes in the large blood vessels differ slightly, if at all, in the diabetic as
compared to the nondiabetic. However, such degenerative vascular changes develop at an earlier age, and advance more rapidly in the diabetic. Severe atherosclerotic changes in the large blood vessels of the lower extremities, finally expressed as vascular occlusion, may result in gangrene in the diabetic foot. According to Dr. E. T. Bell, gangrene appears 53 times more frequently in diabetic men, and 71 times more frequently in diabetic women, as compared with the nondiabetic.

More so than the macrovascular disease, it is the occlusion of small arteries, and arterioles that accounts for the high frequency of small patchy areas of gangrene in the diabetic foot. This probably is because it is not uncommon, in the diabetic, for small blood vessel disease to be far advanced when compared to vascular changes in the large blood vessels.

Besides contributing largely to the increased risk of the diabetic foot to gangrene by decreasing blood supply to the foot, microvascular disease may cause atrophic changes in skin, and muscle tissues of the lower extremities. Atrophic skin changes are such that after minor trauma to the foot, ulceration frequently occurs. As a secondary complication, subsequent infection frequently follows in these ulcerated areas.

Such infections may be due, in part, to the ulceration not being felt, thus going untreated if there
is peripheral neuropathic involvement in the foot. Or, perhaps microvascular lesions of thickened capillary basement membranes may help account for these infections. Histopathological evidence has revealed basement membrane thickening in the capillaries of the diabetic foot and lower leg. This abnormality may create a barrier to leukocytes emigrating into sites of acute inflammation, or ulceration. Thus, there is an increased risk of the diabetic foot infection, with the consequence of established infection.
II. PREVENTION

From the preceding discussion of etiology, it is clear that the diabetic is more susceptible to foot problems, as a result of peripheral neuropathy and angiopathy. And, to thwart this susceptibility to foot problems the most satisfactory form of treatment, for the diabetic, is preventive.

The fact that the complications of peripheral neuropathy and angiopathy may occur unrelated to control of diabetes mellitus still does not deny the possibility of the influence of poor control on the eventual development of these complications. Good control of diabetes by prescribed diet, insulin, or oral agents may, in fact, delay or prevent peripheral neuropathy and angiopathy - thus preventing diabetic foot problems.

For the diabetic, good control of diabetes is not enough, however, when discussing prevention of diabetic foot problems. Conscientious daily foot care to help prevent diabetic foot problems is equally important. The major goals of preventive foot care for the diabetic to follow are: 1) practice a daily routine of foot hygiene to keep feet clean of bacteria and fungi, 2) protect the vulnerable foot from any undue mechanical, chemical, or thermal trauma, and 3) inspect feet daily for any unusual change (i.e., lesions on the skin of the feet of dermatologic, atrophic, or traumatic origin; changes in the
normal shape of the foot; change in gait; ulcers and/or infections), and notify a physician, or the MLK Medical Clinic if any unusual change is noticed (7:23).

Protecting the vulnerable foot from trauma is a major preventive goal of foot care, because lesions that frequently go unfelt, do not heal, ulcerate, and become infected are typical of the complications stemming from the combination of peripheral neuropathy and angiopathy. Daily inspection of the feet is equally important for the diabetic, because the "feel of the feet" cannot be trusted. With decreased feeling in the feet, the diabetic may be unaware of a foot injury and will walk on it until ulceration and secondary infection occurs - unless the feet are inspected daily.

On the following page, there is a more complete list of preventive foot care instructions, in that only the major goals of preventive foot care have been mentioned. For easy reference, and hand-outs, this fact sheet can be used by the health professional.
PATIENT INSTRUCTIONS FOR DIABETIC FOOT CARE

FIRST: 1) See your physician regularly and be sure your feet are examined at each visit.

2) Control diabetes by conscientiously following the prescribed use of diet, insulin, or oral agents.

SECOND: 3) Wash feet daily with soap and lukewarm water. Dry carefully by blotting, not rubbing, especially between the toes with a clean towel.

4) Avoid exposure to extremes of heat or cold. Check temperature of water before bathing feet.

5) Always trim or file toenails straight across, never shorter than the end of the toe, to prevent in-grown toenails. Only a nail clipper and/or blunt-tipped nail file should be used. Soften dry and brittle toenails before trimming, or filing by soaking feet in lukewarm water for approximately five minutes.

6) If feet show signs of dryness, soften skin by rubbing in lanolin.

THIRD: 7) Inspect feet daily in good light for any unusual skin change such as: sores, redness, pus, swelling, breaks in the skin, ulcers, change in the shape of the feet.

8) If any pain, or unusual change in the feet is noticed, see physician, or call Martin Luther King Medical Clinic: (213) 639-2097.

9) Inspect inside shoes daily for foreign objects, or torn linings.

FOURTH: 10) Never walk barefooted.

11) Wear shoes that are comfortable and roomy. Avoid wearing sandals, pointed, and open-toe shoes.
12) If feet feel cold at night, wear socks. Do not warm feet with a hot water bottle, or heating pad.

13) Do not wear stockings with tight elastic tops, or garters.

14) Follow special instructions from your physician, or podiatrist for corns and calluses.

15) In case of foot injury, wrap the injured area with cotton soaked in alcohol, and cover with loose plastic bag. Immediately notify physician, or call Martin Luther King Clinic: (213) 639-2097.
III. SIGNS AND SYMPTOMS

In order to facilitate effective patient education, the health professional must stress the concept of preventive foot care, as outlined in the preceding section. Prevention of diabetic foot problems, however, encompasses more than conscientious control of diabetes, and good foot care. Patient education on what the signs and symptoms are of peripheral neuropathy and angiopathy can further foster the concept of prevention. For, if the diabetic is educated in what are the signs and symptoms of complications that result in diabetic foot problems, early recognition of diabetic foot problems can be facilitated. And, early recognition followed by immediate therapy may help to prevent more severe consequences for the diabetic.

For the sake of explanation, the signs and symptoms will be discussed in the following two parts: 1) signs and symptoms stemming from peripheral neuropathy, and 2) signs and symptoms stemming from peripheral angiopathy. For further convenience, the signs and symptoms have also been divided into early/less severe, and late/more severe categories. It should be noted before beginning that any list of signs and symptoms is never complete. Moreover, every diabetic is unique, and may have different signs and symptoms from those mentioned, which predispose him to foot problems.
The probable signs and symptoms of peripheral neuropathy in the diabetic foot and leg that the diabetic should watch for, or should have physician check for at regular visits are as follows:

**Early**

1) Pain that may vary from dull or aching to cramplike or burning, which may be relieved by walking.

2) Coldness, numbness, tingling, or burning.

3) Feet are so sensitive that even the lightest touch can't be tolerated.

4) Decreased sensation to pain and temperature.

5) Decreased position sense.

6) Absence of knee jerks and/or ankle jerks.

**Late**

1) Change in the shape of the foot.

2) Change in gait.

3) Neuropathic ulcers.

4) Infection complicating ulcers.

The late signs and symptoms of peripheral neuropathy demand further explanation, because their presence puts the diabetic at extremely high risk.

Changes in the shape of the foot are produced by intrinsic muscle atrophy, or joint disorganization (Charcot's joints), both secondary to nerve impairment to the feet. With intrinsic muscle atrophy, the toes may be
drawn into a cocked-up position ("claw toes"), and the anterior arch may be abnormally aligned (3:839). With Charcot's joints, the foot slowly swells, becoming shorter and wider, and eventually the foot may look like a clubfoot, and feel mushy and boggy (3:837). In both instances, the normal shape of the foot is changed, which places the diabetic foot at high risk. For when the shape of the foot is changed, the gait may be changed; and the body weight is borne by areas of the feet not originally designed by nature to absorb these blows, and perforating neuropathic ulcers may develop at the sites of abnormal pressure.

Neuropathic ulcers are deep, circularly-shaped, have a punched-out appearance, and are usually painless (3:837). However, the diabetic must pay special attention, because gangrene or secondary infection may develop (thus, complicating the problem) if immediate professional therapy is not sought.

The probable signs and symptoms of peripheral occlusive angiopathy in the diabetic foot and leg that the diabetic should watch for, or should have physician check for at regular visits are as follows:

**Early**

1) Intermittent pain when walking, which may be relieved by sitting down.
2) Blanching of the skin when the feet and legs are elevated.

Late

1) Pain at rest.
2) Cold feet.
3) Atrophic skin changes of the feet and/or legs, such as:
   a) smoothness, and shiny appearance of skin.
   b) mottled and reddish-blue appearance of skin.
   c) inflamed skin lesions.
4) Ulceration (similar in appearance to neuropathic ulcer, but prognosis different).
5) Infection.
6) Gangrene.

As with peripheral neuropathy, the presence of any of the late signs and symptoms of peripheral occlusive angiopathy place the diabetic at extremely high risk and demand immediate attention. Furthermore, the diabetic, in this case, should pay much more attention to control of diabetes, and foot care.
IV. TREATMENT

As stated earlier, the most satisfactory form of treatment for the diabetic is preventive foot care. There are three educational components to patient education in preventive diabetic foot care. The three educational components are: 1) good control of diabetes, 2) good foot care, and 3) the nature of the signs and symptoms of complications that result in diabetic foot problems. Hopefully, all three educational components presented to the diabetic can help spare the diabetic unnecessary suffering and disability.

Diabetic foot problems, however, cannot always be prevented. Fortunately, there are some specific treatments that may help to remedy some specific foot problems.

In the case of specific foot problems associated with peripheral neuropathy, specific treatments are as follows:

1) Dysesthesias (numbered 1·3 in signs and symptoms of neuropathy/early) may be relieved by analgesic medications.

2) Changes in the shape of the foot and/or change in gait may call for limitation of weight bearing by the use of orthopedic appliances (i.e., short leg braces, crutches, specially built or molded shoes, and sponge rubber arch supports) in order to prevent neuropathic ulcers.

3) Neuropathic ulcers are treated with antibiotics, debridement, and drainage procedures. If neuropathic ulcers are too persistent, infection too
extensive, or gangrene has developed, the initial therapy is amputation.

In the case of specific foot problems associated with peripheral occlusive angiopathy, specific treatments are as follows:

1) Dermal blanching on elevation of feet and legs, and intermittent pain when walking may be relieved by vasodilator medications.

2) Rest pain, cold feet and atrophic skin changes may be relieved by reconstructive arterial surgery (i.e., thrombo-endarterectomies, and bypass grafts).

3) Ulcers are treated with antibiotics, debridement, and drainage procedures. However, the prognosis for ulcers associated with peripheral angiopathy is better than for neuropathic ulcers. For example, collateral circulation, or reconstructive arterial surgery may help ulcers heal.

INFORMATIONAL RESOURCE BIBLIOGRAPHY


"DIABETIC FOOT CARE ILLUSTRATIONS"
Your Feet Need Special Care.*

Diagram of Nerve Supply in the Foot and Leg. **

* (2:10)
** (1:9)
Diagram of Blood Circulation in the Foot and Leg.*

CONTROL OF DIABETES
For John Doe
Diet          
Insulin       
Oral Medicines

**

* (1:14)
***(2:39)
FOOT CARE

Wash feet daily.

Inspect feet daily. Avoid breaks in the skin. Avoid decreasing blood supply to the feet.

* (2.30)

* (2.34)
DO NOT Make Bath Water Too Hot. *

Inspect Feet Daily **

*(2:29)  
***(2:37)*
Always Use A Nail Clipper To Trim Toe Nails.**

Never Trim the Toenail Shorter Than the End of the Toe. ***

* (3:14)
*** (3:1)
Never Clean Around the Toenail with a Sharp Tip Nail File.*

Never Walk Bare-Foot.**
Never Use a Hot Water Bottle to Warm Feet. *

Never Wear Worn-Out Stockings. **

*(2:29)*

***(2:30)***
Never Wear Worn-Out Shoes.*

Never Cut Corns or Calluses.**

* (2:30)
** (2:31)
Never put medicine on corns without a physician's approval.*

Never sunburn the feet and legs.**

* (2:30)  
** (2:30)
Wear Shoes That Are Roomy and Comfortable.*

Never Wear Stockings with Tight Elastic Tops.**

* (2:40)
** (2:26)
Never Wear Garters.*

Avoid Sitting with Legs Crossed.**

* (2:26)  
** (2:26)


CHAPTER V

SUMMARY

Not too long ago, acute infectious diseases were the leading cause of death for Americans. Today, chronic diseases have forged to the forefront of killer diseases. As such, hospitals need to increasingly alter their focus from acute medical care to effective treatment for chronic diseases. Inherent in this transition is the increasing need for patient education in hospital settings.

Effective treatment for chronic diseases does not depend primarily on medicines, or expert medical care. Instead, effective treatment depends more so on the patient himself, and what he/she knows about his/her disease and its management. Hopefully, patient education can provide the patient the knowledge and skills needed to adequately control his/her disease. Perhaps then, long-term complications can be kept to a minimum, or even prevented.

Diabetes is one such disease where patient education is vital for effective control, and this project is one such effort in patient education within a hospital setting. The project was devoted to developing a curriculum for patient education in one aspect of diabetes management, specifically foot care.
Feet take on new importance for a diabetic. A diabetic's feet are susceptible to nerve disease and accelerated vascular degenerative disease. These complications can cause foot problems for the diabetic that may lead to time lost from work, hospitalization, or even disability. Patient education in foot care can enable the diabetic to do much to insure a healthful life without foot problems.

A "Teaching Guide" is the focal point of the curriculum that was developed. It is designed to provide a systematic approach to patient instruction and learning of diabetic foot care. An "Informational Resource" was also developed as an adjunct to provide the instructor background information, and additional reading in diabetic foot care.

At the time of this writing, the curriculum and education module in foot care has not been implemented. Strategies for implementation, and evaluation after implementation have, however, been formulated and are suggested to facilitate these actions.

Although the curriculum has not been implemented, the author has demonstrated the feasibility of developing a patient education curriculum in a hospital setting that is not fragmented or minimal.

In conclusion, the author believes that this project will prove effective in facilitating proper foot
care education to diabetic patients at Martin Luther King Jr. General Hospital. The author further believes that similar endeavors, such as the one demonstrated here should be pursued in other hospitals, and for other diseases besides diabetes. By so doing, patient education can become an integral part of the treatment regimen, and patients can receive the total care they rightfully deserve.
APPENDIX A

DIABETIC FOOT CARE QUESTIONNAIRES
DIABETIC FOOT CARE
CONCEPT I
QUESTIONNAIRE

In the following pages you will find a series of questions about foot care for the diabetic. Read the questions very carefully, and answer each question by circling the letter next to the right answer.

1) Diabetics must take special care of their feet because:
   a) They have flat feet.
   b) They may often develop poor blood supply to the feet, and foot ulcers.
   c) They walk a great deal.
   d) I don't know.

2) A condition that is more common with diabetics is:
   a) Weight gain.
   b) Less feeling in the feet and legs.
   c) Over-sweating.
   d) I don't know.

3) Foot injuries are dangerous for the diabetic because:
   a) The injury may not be felt.
   b) The injury may not heal very well.
   c) All of the above.
   d) None of the above.
4) If left untreated, a break in the skin of the diabetic's feet from any cause, such as a cut, burn, or other injury may:

a) Get infected.

b) Get ulcerated.

c) Get gangrene.

d) All or none of the above.
DIABETIC FOOT CARE
CONCEPT II
QUESTIONNAIRE

In the following pages you will find a series of questions about foot care for the diabetic. Read the questions very carefully, and answer each question by circling the letter next to the right answer.

1) The person most responsible for the health care of his feet is:
   a) The diabetic, himself.
   b) The physician.
   c) The nurse.
   d) I don't know.

2) Which of the following can delay or prevent the development of less feeling, poor blood supply, and ulcers in the diabetic's feet:
   a) Diabetic's attention to the prescribed use of diet, insulin, and/or oral medicines.
   b) Diabetic's attention to a plan of good foot care.
   c) All of the above.
   d) None of the above.
3) Which of the following should the diabetic do, as part of a plan of good foot care:
   a) Wash feet daily.
   b) Inspect feet daily for any break in the skin from any cause, such as a cut, burn, or other unusual skin change.
   c) Avoid any break in the skin of the feet.
   d) All or none of the above.

4) If the diabetic notices any injury or unusual skin change in the feet, he/she should:
   a) Immediately report finding to physician, or Martin Luther King Medical Clinic.
   b) Report finding to physician, or Martin Luther King Medical Clinic only if it looks really serious.
   c) Do nothing, and let the injury or unusual skin change slowly heal by itself.
   d) I don't know.
DIABETIC FOOT CARE
CONCEPT III
QUESTIONNAIRE

In the following pages you will find a series of questions about foot care for the diabetic. Read the questions very carefully, and answer each question by circling the letter next to the right answer.

1) Which of the following should the diabetic **not** do, as part of a plan of good foot care:
   a) Wash feet **daily**.
   b) Inspect feet **daily** for any unusual skin change, or break in the skin.
   c) Walk barefoot.
   d) I don't know.

2) The diabetic, when doing weekly toenail care, should do which of the following:
   a) Trim toenails with a pair of scissors when there is no nail clipper to use.
   b) Trim toenails straight across, never shorter than the end of the toe.
   c) Trim toenails when they are dry and brittle.
   d) I don't know.
3) In caring for his feet, the diabetic should:
   a) Wash his feet **daily** in hot water.
   b) Dig into the corners of toes with a sharp-tipped nail file to clean toenails.
   c) Inspect inside shoes **daily** for foreign objects or torn linings.
   d) I don't know.

4) When following a plan of good foot care, the diabetic should:
   a) Never warm feet with a heating pad, or electric blanket.
   b) Never wear stockings **without** tight elastic tops, or garters.
   c) Never exercise.
   d) I don't know.
BIBLIOGRAPHY


