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Educating the Dietitian on Nutritional Counseling Principles in Diabetes Mellitus and their Application for Adolescents with Insulin-Dependent Diabetes: Use of a Learning Package

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EDUCATING THE DIETITIAN ON NUTRITIONAL COUNSELING PRINCIPLES IN DIABETES MELLITUS AND THEIR APPLICATION FOR ADOLESCENTS WITH INSULIN-DEPENDENT DIABETES: USE OF A LEARNING PACKAGE

by

Eileen R. DeLeeuw

A thesis submitted in partial fulfillment
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Eileen R. DeLeeuw

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ABSTRACT

Educating the Dietitian on Nutritional Counseling Principles in Diabetes Mellitus and Their Application for Adolescents with Insulin-Dependent Diabetes: Use of a Learning Package

by

Eileen R. DeLeeuw, Master of Science

Utah State University, 1981

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The purpose of this study was to develop and test a Learning Package on nutritional counseling principles in diabetes mellitus with specific application for adolescents with insulin-dependent diabetes. The Learning Package was designed to be used as continuing education material for the clinical dietitian. It consisted of two audio tapes, 2½ hours in length, recorded by the author and an accompanying handbook or resourcebook. The resourcebook materials were designed to give further details, provide resources and materials for future reference, visually reinforce the audio presentation, summarize information given in the presentation, and give a bibliography of the references cited. The presentation was divided into four sections: Guidelines for Education of Individuals with Diabetes Mellitus; Educational Program Planning in a Health Care Agency; The

Adolescent with Insulin-Dependent Diabetes; The Educator-Client Interaction.

Following initial formative evaluations, the Learning Package was field tested in a seminar for practicing clinical dietitians held in three locations with several subjects completing the test in the home setting. Pre and posttest scores and attitudes of the participants towards the Guidelines and Learning Package were collected and are reported. Suggestions for improvement of the Learning Package and demographic data were also collected and are reported. Only 13.8% of the subjects met the 90% criterion as determined on the posttest. There was improvement from both forms of the pretests to the posttest. Tests of statistical significance were not conducted. Participants indicated acceptance of the Learning Package as a continuing education tool and of the Guidelines as of practical value to them in their practices.

Recommendations are made for improvement and revision of the Learning Package and final (summative) evaluation and testing before packaging and distribution by the American Dietetic Association. It is concluded that the Learning Package is acceptable to practitioners and, with the suggested revisions, can meet the continuing education needs of dietitians to improve nutritional education of persons with diabetes, as identified in the literature.

(182 pages)

CHAPTER I

INTRODUCTION

Background of the Problem

In 1962 Etzwiler observed that "Diabetes Mellitus is a chronic disease that at the present time cannot be cured but can be controlled. Optimum control offers the promise of an increased life expectancy with a minimum of medical complications. To achieve this the patient must have a thorough comprehension of the disease and be willing to cooperate closely with the physician... It should be emphasized in this regard that, particularly for the person with diabetes, patient education is of critical importance and can quite literally be a matter of life and death" (Etzwiler, 1962, p. 135). Since that time the call for improved patient education in diabetes has been repeated with increasing frequency and urgency. In 1967 it was reported that only a small fraction of patients were permanently well-regulated even though 80 to 90 per cent could be. It was concluded that this was most often due to the failure of education or lack of cooperation by the patient with respect to diet. Less frequently it was due to the lack of understanding by patients that a correct diet is still the important prerequisite even when insulin is part of the regimen (National Commission on Diabetes, 1975b). Data from the Diabetes Supplement to the 1965 National Health Survey showed 22% of the respondents said they were not given a diet and 25% said they were given a diet but did not follow it. Of the 77% who received a diet only three-fourths had been taught to use it. Fifty-three per

cent of the total sample said they followed a diet but only 10% of those following an exchange system scored as having a "good knowledge" of it. Dietitians, however, were twice as successful as nurses or physicians in influencing knowledge about diet (Stubb, 1968; Etzwiler, 1978).

In 1972 the American Hospital Association published a "Patients Bill of Rights." Nine of the twelve "rights" deal with the exchange of information. Three of them detail the responsibility of health care professionals to provide specific information to their patients (American Hospital Association, 1972). The 1975 National Commission on Diabetes throughout its reports called for improved diabetic education as an essential part of treatment and concluded that "...ignorance of proper treatment prevails not only among patients with diabetes and their families, but also too often among health professionals responsible for the delivery of health care to these patients..." (National Commission on Diabetes, 1975a, p. 15). More specifically, the Commission's Committee on Education reported that indirect evidence from patient studies indicated a lack of professional knowledge and skills necessary to adequately inform the patient about the importance of nutrition in the self-management of diabetes (National Commission on Diabetes, 1975b). In his testimony before the Commission's Committee on Treatment, Addison Scoville, Jr., M.D. and past president of The American Diabetes Association, concluded, "My strongest recommendation, therefore, is to emphasize the need for professional education. Patient care cannot be improved until the professionals providing primary care are better informed..."

(Scoville, 1975, p. 209). The Commission's Committee on Education concluded that gaps in professional knowledge and skills are often the primary cause of poor patient education and "...may lead to attitudes on the part of health professionals which may, directly and indirectly, result in apathy, anxiety, depression, insecurity, confusion, and disorganization in the diabetic patient's lifestyle" (National Commission on Diabetes, 1975b, p. 6). Also indicted were continuing education programs sponsored by universities, medical societies, state health departments, the American Diabetes Association and others as presenting complex concepts and research studies "at the expense of down-to-earth practical concepts" which would permit health professionals to offer improved care to diabetic patients (National Commission on Diabetes, 1975b, p. 7).

Addressing specifically the professional education needs of dietetic personnel, Turner and Kauffman (1975, p. 263) reported to the Commission that many dietitians and nutritionists do not have the time or expertise to:

1) Individualize diet counseling to specific therapeutic needs and life styles of persons with diabetes;
2) Make an educational diagnosis of each individual person with diabetes, evaluate, select, and prepare appropriate teaching aids; modify teaching methods appropriately;
3) Provide continuing education, follow-up, and referral that would be reinforcing and supportive to making necessary lifetime changes in the eating pattern required for diabetes management;

4) Meet the needs for counseling patients not requiring hospitalization.

The Commission on Diabetes submitted a number of objectives and goals to the U.S. Senate including the following:

1) Improve the knowledge, skills, and attitudes of the health professionals to provide effective care for the patient with diabetes mellitus.

2) Develop effective professional educational materials tailored to the needs of the various professional groups.

3) Support education of dietetic personnel in clinical and community dietetics including the development of "multimedia learning modules for practicing dietitians on nutritional assessment, nutritional counseling, education and behavior modification for persons with diabetes and their families," to be coordinated with the American Dietetic Association (National Commission on Diabetes, 1975b, p. 313).

As a result of the Commission's recommendations, a National Clearinghouse has been established as a central resource for diabetes educational materials and information. It has published annotated bibliographies of available diabetic education materials which reflect an almost total lack of educational tools directed to the professional (National Diabetes Information Clearinghouse, 1979 and 1980).

In response to these recommendations, "Guidelines for Education of Individuals with Diabetes Mellitus" has been prepared by a joint Task Force of the American Diabetes Association and the American Association of Diabetes Educators. The Guidelines are divided into

three levels of perceived need and include essential knowledge for each level. The content is then divided into knowledge and skills required of all individuals with diabetes and additional information needed by people with insulin-dependent and non-insulin dependent diabetes. In addition to the educational content there are statements of the aims of the guidelines at each level of need; descriptions of settings and personnel which might be utilized in implementation of the guidelines; assessment areas to be completed with the individual and/or family before implementing the educational content; and information to be documented in the Medical Record (Guidelines for Education of Individuals with Diabetes Mellitus, 1979).

Recently the American Diabetes and Dietetic Associations jointly published new dietary guidelines for individuals with diabetes mellitus. One of the principles set forth in these recommendations is that "Education of diabetic persons....is the key to achieving an effective meal plan. Each diabetic person should have the opportunity to discuss the reasons for the diet and to set dietary goals with a professional diet counselor...This must be a continuing educational process conducted in an understanding and non-judgemental manner, in which psychologic, physical, and socioeconomic factors are considered in developing each individual's daily food plan" (American Diabetes Association Committee on Foods and Nutrition, 1979, p. 527).

Because the educational and dietary guidelines need to be applied to individual patient needs as well as to nutrition education in general, certain modifications and considerations should be made for the different age groups. Adolescence is a time of intense and

changing needs for the individual with diabetes. As Etzwiler (Etzwiler, 1962) observed, each year the young person must be taught more about his disease and encouraged to assume increasing responsibility so that proper understanding, attitudes, and skills will be developed to meet the ultimate goal of self-care as he approaches adulthood. Khurana and White (1971) reviewed problems in managing adolescents with diabetes, concluding that problems develop from the characteristics and needs of these young people, the frustrations of diabetes itself, and the attitudes of their parents. They felt such problems in this age of transition from childhood to adulthood might affect the general course of the disease. They also reported dietary indiscretions of moderate to extreme degrees occurred in 72% of adolescent girls and were mild in 24%. In a Swedish study of juvenile diabetics, 62% of the patients (12 to 17 years of age) had unsatisfactory knowledge about diabetes with "appropriate food habits" in only 21%. It was also shown that patients entering adolescence (above the age of 12) had poorer food habits than the younger group but that there was a trend toward better food habits among those with a better knowledge about the treatment of diabetes (Ludvigsson, 1977). Children in the midst of an "adolescent growth spurt" have been found to cluster in groups with fair or poor control (Tietz and Vidmar, 1972). Finally, Bennett and Ward (1977) found that patients who do best are those who have been given the best understanding of their disease in the early years and who have learned to manage it themselves. Education and follow-up of the adolescent with diabetes

is thus critical for control and management which will affect the course of the disease throughout the remainder of life.

Statement of the Problem

There has been a strong mandate for better diabetic education, beginning with improved education of professionals. This mandate has emphasized the need for improved patient nutritional education, greater educational skills of dietetic personnel, and improved continuing education programs. As a result of these needs, Guidelines for Education of Individuals with Diabetes Mellitus have been prepared but have not yet been applied specifically to nutrition education. Modifications and applications for specific age groups also need to be made. The adolescent diabetic needs special education to meet the additional demands of adolescence and equip himself for appropriate self-care for the duration of his life.

Purpose and Objectives of the Study

To meet the needs detailed above, a Learning Package consisting of a four part tape presentation with accompanying resourcebook to be used for continuing education of the registered dietitian was developed and tested. The tape presentation introduced the Guidelines for Education of Individuals with Diabetes Mellitus and applied them specifically to nutrition education, discussed program planning to implement the Guidelines, provided instruction to the dietitian in the specific application of the Guidelines to patient needs and addressed the specific needs and characteristics of adolescents with diabetes.

The script for the tape presentation is included in Appendix A. The resourcebook was printed back-to-back using colored paper and spiral bound with pockets provided for the accompanying tapes. Copies of its 63 pages are included in Appendix B. The objectives of the study were:

1) Subjects will score 90% or higher on exam questions relating to content and definitions of the new Guidelines.
2. Subjects will demonstrate on the post-test an improvement in their ability to plan education for adolescents with insulin-dependent diabetes and will score 90% or higher on the post-test.
3. The Learning Package will be in a form acceptable to practicing dietitians for use in continuing education.
4. The study will determine if practicing clinical dietitians feel the new Guidelines to be of practical value to them.

Research Approach

This project was a modified form of the educational research and development strategy. It included initial research, initial design of the package, formative evaluations and subsequent revisions and a final testing. This final testing was designed to be a summative evaluation. However, the number of subjects who participated and the limited number of formative evaluations conducted would indicate it be considered a major formative evaluation in the form of a field test. This field test conducted with dietitians in three locations used a single-group pre-post test design to determine the success in meeting

the first two objectives. An attitude survey and evaluation form were used to determine achievement of the third objective and to meet the fourth. Dissemination and distribution will be carried out through the American Dietetic Association's Department of Continuing Education with whom the researcher has signed a letter of agreement to complete and submit the learning package for final evaluation and use by the Association.

Delimitations

The Guidelines and Learning Package were mainly tested for clinical practitioners of dietetics in the State of Utah who volunteered for the study. It is assumed that these subjects may represent a somewhat more intelligent and competent group of dietitians than that of the total population of dietitians who might use such continuing education material because of their volunteer status and the fact that they are, for the most part, currently practicing dietetics. This should not, however, be a significant concern since the assumption is made that if the Guidelines and Learning Package are of benefit to these subjects they will be of at least equal or greater benefit to dietitians with less ability and experience in diabetes education. While the Package was designed for use by the dietitian at home over a period of time, the testing was done in one four-hour-group session in three locations. Since the material covered by the package is rather extensive, it might best be studied over a longer period of time. Thus, the Package was not tested in the same setting for which it was designed. Further, no

consultation of the materials was allowed during the post-testing session. However, the materials were designed to be a resource for frequent reference by the practicing dietitian as she/he seeks to implement the principles discussed in the Package. Thus, it may be assumed that the dietitian may be more effective in actual education of individuals with diabetes, by frequently consulting the package materials than indicated by his/her performance on the post-test.

Limitations

The study will determine if the Learning Package improves ability to plan nutrition education for adolescent insulin-dependent diabetics. It will not be possible, however, to differentiate between the effect of the Guidelines and that of the Learning Package itself. Thus, it may be that the Guidelines would be more or less effective in enhancing the abilities of diabetic educators if presented in a different manner. Also, in determining the pretest-posttest change in scores, the magnitude of improvement may be affected by the subjects seeing both forms of the test before using the package and thus being able to specifically seek answers to those particular test questions during the presentation. The posttest thus becomes part of the learning package materials, a practice frequently employed by continuing education materials.

Definition of Terms

Adolesecence

Chronologically, adolescence is the time span from approximately 12 years of age to 21 years of age. Sociologically, it is the transition period from dependent childhood to self-sufficient adulthood.

Insulin-Dependent Diabetes Mellitus

The first subclass of diabetes, type 1 or insulin-dependent diabetes mellitus (IDDM) is usually characterized by abrupt onset of symptoms, insulinopenia and dependence on injected insulin to sustain life, and proneness to ketosis. Classically, this type of disease occurs in juveniles and it was formerly termed juvenile diabetes (National Diabetes Data Group, 1979).

Practicing Clinical Dietitian

The practicing clinical dietitian, R.D., is currently employed as a member of the health care team, affecting the nutritional care of individuals and groups for health maintenance. The therapeutic or clinical dietitian is involved in assessing nutritional needs, developing and implementing nutritional care plans, and evaluating and reporting these results. Her responsibilities include counseling individuals and families in nutritional principles, dietary plans, food selection and economics, and adapting plans to the individual's life style. She also compiles or develops educational materials to aid in meeting these responsibilities (American Dietetic Association, 1977).

CHAPTER II

REVIEW OF LITERATURE

The need for improved education of persons with diabetes and health care professionals working with them has appeared frequently in the literature, as cited in Chapter I. More specific components of appropriate diabetes education have also been discussed. These include adequate assessment and educational diagnosis, compliance and factors affecting compliance to health care recommendations, specific educational methods, successful diabetes education programs and approaches including health care teams, the time and financial cost of such programs, the specific needs of adolescents with diabetes, and the needs, benefits of and approach to review and follow-up in educational programs. Because the learning package was designed for professionals, the literature addressing these topics was reviewed in the appropriate sections of the taped presentation with a printed list of the references cited given in the resourcebook.

Using this review, suggestions and findings were given to the dietitian in the Learning Package to increase his/her knowledge and expertise in individualizing diet counseling, making educational diagnoses, using appropriate teaching aids and methods, providing appropriate follow-up and referrals, and counseling out-patients. These were the needs of dietitians which Turner and Kauffman (1975) reported to the National Commission on Diabetes. It was felt that this review of the literature combined with the researcher's additional insights and recommendations would assist participating

dietitians in meeting the objective of the National Commission on Diabetes to improve their knowledge, skills and attitudes for provision of effective care for clients with diabetes. The literature was thus also used in attempting to meet the Commission's objectives of developing effective professional educational materials tailored to meet the needs of dietitians and development of "multimedia learning modules for practicing dietitians on nutritional counseling, education and behavior modification for persons with diabetes and their families" in coordination with the American Dietetic Association (National Commission on Diabetes, 1975b).

It was thus determined that the literature contains recommendations to assist dietetic practitioners in meeting the current deficits in diabetes education. Many of the specific recommendations have recently been made in Diabetes Care, as the professional community has begun to focus more on effective diabetes education. This is obvious in the appearance of six articles in Diabetes Care discussing various aspects of diabetes education in the three issues since completion of the Learning Package. These include a study suggesting use of the family medical history as a teaching model (Doody and Grose, 1981) and a proposal for a new model for physician-patient communication (Solowryczyk and Baker, 1981) which would also be applicable to the dietitian-client interaction; a report of the success of the diabetes clinic approach to improve diabetes care and education (Bulpitt et al., 1981); a study showing 47% of admissions to a community hospital for diabetic complications were due to specific educational deficits (Geller and Butler, 1981); a

discussion of an educational diagnostic instrument (Windsor et al., 1981); and a description of the use of patient determined glycosylated hemoglobin measurements as an aid to patient education (McDermott et al., 1981).

The challenge to the practitioner is to keep up on and evaluate these many recommendations now appearing in the literature. Many dietitians do not have access to or time to review Diabetes Care and other similar journals which feature such specialized research and recommendations. Usually, such published information require interpretation and application to the individual setting. Thus, the Learning Package was created not to generate new information but to assist the practitioner in acquainting herself/himself with the most valuable recommendations in the literature with practical suggestions given to make their applicationl more feasible. The detailed review of the literature will be found in Appendix A with the references cited listed in Appendix B.

CHAPTER III

METHODOLOGY

Restatement of Objectives

To meet the educational needs of dietitians, especially those identified by the National Commission on Diabetes, a learning package was designed as a continuing education tool and evaluated. The objectives of the educational research and development project were:

1. Subjects will score 90% or higher on exam questions relating to content and definitions of the new Guidelines.
2. Subjects will demonstrate on the posttest an improvement in their ability to plan education for adolescents with insulin-dependent diabetes and will score 90% or higher on the posttest.
3. The learning package will be in a form acceptable to practicing dietitians for use in continuing education.
4. The study will determine if practicing clinical dietitians feel the new Guidelines to be of practical value to them.

Research Approach and Design

The steps of educational research and development were carried out as follows:

1. Behavioral objectives for the package were written. These are included on page 3 of the resourcebook, Appendix B.
2. An outline of the script was written. This is found on page 2 of the resourcebook, Appendix B.

3. An item pool was developed, with several questions for assessment of achievement of each objective.
4. The first drafts or prototypes of the two tests were prepared.
5. Tests were reviewed for validity by two faculty members by considered experts in diabetes education.
6. Revisions were made in the tests to conform to suggestions made in step 5.
7. The attitude and demographic data survey and a form for suggestions to improve the Learning Package were drafted and reviewed by the committee chairman.
8. Revisions were made in the survey and the form described in step 7.
9. The first draft of each section of the script was written and subjected to in-house review by faculty.
10. Revisions were made in the script based on the in-house reviews.
11. The first draft of a handbook (resourcebook) with materials to supplement the taped presentation was prepared and reviewed.
12. The resourcebook was revised according to the suggestions obtained in step 11.
13. Permission was granted to use the Guidelines for Education of Individuals with Diabetes Mellitus in the presentation and resourcebook.
14. The first draft of the complete Package was prepared.

15. The first draft of the Package was submitted to a formative evaluation by two registered dieitians with the researcher present.
16. Changes were made in the script and resourcebook as suggested by the formative evaluations.
17. The final form of the Package was prepared and final copies of all materials made.
18. A notice was published in the "Update," the newsletter sent to registered dietitians in Utah, soliciting participants for a seminar, in one of three locations, during which the Learning Package would be tested.
19. A follow-up notice was published in the next "Update" and follow-up letters were sent to 57 dietitians again soliciting participation in the seminars.
20. An initial letter was sent to dietitians who registered for the seminars, giving details and asking them to complete the two pretests which would later be sent to them.
21. One week before the seminars, the two forms of the test were mailed to participants to be completed before the seminar. A reminder of the seminar times and locations was also included.
22. Seminars allowing groups of the participants to listen to the taped presentation and use the resourcebook were held in Logan, Provo, and Salt Lake City, Utah.
23. At the conclusion of the taped presentation, participants were asked to complete the posttest, suggestion form, and

demographic and attitude survey.

24. The tests were corrected and responses to the survey and suggestion form compiled.
25. Reliability of the posttest was determined using the responses to the two forms of the pretests.
26. Descriptive statistics were calculated on the test and survey results to determine if objectives were met.
27. The Learning Package and a copy of this thesis will be submitted to the American Dietetic Association for review for use as continuing eduation material.

Description of the Instrumentation

Tests

Both tests (Appendices C and D) were criterion referenced, with each item measuring achievement of one of the behavioral objectives listed on page 3 of the resourcebook, Appendix B. Lists of the correct responses to each test and the objectives measured by each item are given in Appendix E. Sixty per cent of the questions referred to a case study application. It should be noted that the posttest was identical to form B of the pretest. The title was merely changed before use as a posttest. Thus, Appendix D represents both form B of the pretest and the posttest.

As described in the steps of the Research Approach, the tests were developed from an item pool prepared by the researcher. The forms used for the validity assessments are included in Appendix F. Initially (step 5) all but 5 items on the two tests were assessed as

"very valid." All suggestions to increase item validity and clarity were acted upon (step 6) so that, ultimately, all items on each test were assessed as "very valid."

Test reliability was calculated on the basis of the two pretests (forms A and B - see Appendices C and D) which the participants took before attending the seminar. It is assumed that some participants complete form A first and others form B as they were alternately packaged with form A or form B on top. The coefficient of equivalence or alternate form reliability (Borg and Gall, 1979) was computed using Pearson's correlation coefficient. The correlation coefficient, r, thus calculated was .21. The mean score on form A was 75.5% and the standard deviation was 9.27 while the average score on form B taken as a pretest was 71.3% with a standard deviation of 9.03. Individual subjects' scores are given on page 35, Table 3.

Demographic Data and Attitude Survey

A survey (Appendix G) designed to collect information about each participant and assess attitudes towards the Guidelines and Learning Package was developed by the author. Length of dietetic practice, route to registration and percentage of working time spent with clients with diabetes were determined from the survey. The survey also asked for participants' job title, places of employment and brief descriptions of their professional responsibilities. Subjects were also asked if the institutions at which they worked had formal diabetes education programs and if follow-up is routinely scheduled by dietitians at their facilities for clients seen with diabetes.

The second section of the survey requested participants to indicate their agreement with statements concerning the Guidelines and the Learning Package. Agreement or disagreement was indicated by selecting the appropriate number on a five-point Likert scale format with 1 indicating strong agreement, 5 indicating strong disagreement and 3 indicating an "undecided" attitude. An opportunity to provide additional comments on the Guidelines and their use was given at the conclusion of the survey.

Suggestions for Improvement of the Learning Package Form

A form (Appendix H) soliciting suggestions for improvement of the Learning Package content, taped presentation and resourcebook was also developed by the author. The format was that of open-ended questions, allowing a wide variety of comments. Suggestions for improving the accompanying tests, technically considered part of the package, and miscellaneous suggestions were also solicited.

Description of the Learning Package and its Development

The presentation was taped by the author using her own voice (see script, Appendix A). It was divided into four sections: I. Guidelines for Education of Individuals with Diabetes Mellitus; II. Educational Program Planning in a Health Care Agency; III. The Adolescent with Insulin-Dependent Diabetes; IV. The Educator-Client Interaction. The resourcebook (Appendix B) materials were organized using colored paper to correspond to these four sections. These materials were designed to: (1) give more detailed information than

given in the presentation; (2) provide resources and materials for future reference; (3) reinforce visually the information in the taped presentation; (4) summarize information given in the presentation; and, (5) give a bibliography of the references cited. Pockets were provided on the inside cover for the two tapes, one ninety minutes and one sixty minutes in length, on which was recorded the actual presentation. This format would be mailable to practitioners throughout the country and easily usable by anyone with access to a tape recorder, the basic requirements for a continuing education material.

Instructions on the use of the resourcebook were given throughout the taped presentation (see script, Appendix A) and on the introductory page of the resourcebook (Appendix B). Further details on the content of the Learning Package will be botained by consulting Appendices A and B.

The script for the presentation was developed one section at a time. The literature was consulted and appropriate studies and recommendations which were found were included. Practical suggestions for their application and implementation in different settings were developed as were lists of other resources to be consulted for further assistance. The presentation was concluded with an example of a case study application which was also developed by the author. After the first draft of each section was developed, it was subjected to an in-house review. Revisions were then made based upon these reviews. A similar approach was used for initial development of resourcebook materials. Permission was granted to use the Guidelines for Education

of Individuals with Diabetes Mellitus in the presentation and resourcebook.

Formative Evaluations

The first draft of the Learning Package was submitted to a formative evaluation by two registered dietitians. Originally, the plans had included 5 to 10 such formative evaluations. However, when the formative evaluations were set up, only thirteen persons had registered for the seminars which were to be summative evaluations. It was felt that it would be more appropriate to limit the initial formative evaluations to three and increase the number of subjects involved in the field tests. Therefore, three formative evaluations were planned. The third subject, however, became ill and unable to participate. A copy of the package was sent to a Diabetes Research and Teaching Center dietitian for a formative type of evaluation via the mail.

Both subjects who performed the initial formative evaluations hold masters degrees. They have had extensive experience in dealing with persons with diabetes in a variety of settings including camps for children with diabetes, counseling in clinics, and individual and class diabetes teaching in a hospital setting.

During the initial formative evaluations, the participants listened to the taped presentation and used the first draft of the resourcebook as directed. The researcher was present and the subjects were requested to stop the tape whenever they had a suggestion or the materials seemed unclear. The problem or suggestion was then

immediately discussed, recorded, and possible solutions suggested and evaluated. Almost all suggestions were acted upon as suggested and the two subjects had very similar suggestions and comments. As a result of the formative evaluations, Part II of the presentation was re-organized and several additional summaries were added to the resourcebook to allow visual reinforcement and increase the ease of following the presentation. Other additions, deletions and modifications were also made in the script. Following these revisions, the final form of the package was produced.

Description of Recruitment of Subjects

A notice (Appendix I) of the seminars was initially published in the April 1981 "Update." The "Update" is a newsletter of the Utah Dietetic Association, mailed to all registered dietitians within the state. Because of poor response to this notice, a follow-up letter (appendix J) was mailed with another copy of the notice to 57 selected practitioners on June 4. This second copy of the notice was revised to make the registration deadline July 1. Practitioners who received the letter were selected from a directory of the Utah Dietetic Association. Only practitioners who were listed as practicing clinical dietitians were sent letters. The notice had also been passed out to dietitians attending the state meetings of the Utah Dietetic Association and dietitians attending a class sponsored by Utah State University in Ogden. When another "Update" was published at the end of June, the notice was again included, with a registration deadline of July 14 given.

The notice was addressed to "practicing dietitians who are involved in counseling patients and clients with diabetes mellitus." No registration fee was charged and participants were promised a copy of the Learning Package. The registration form was included on the notice (see Appendix I). Because of the initial poor response and the philosophy that anyone interested enough to register for and attend the seminars would be appropriate subjects, all persons who registered were accepted for the seminars, regardless of their current employment. Because of dietitians' scheduling conflicts, the Logan seminar date was changed from August 5 to August 10.

Beginning July 13, letters (Appendix K) were sent to those who had registered acknowledging their registration and giving details of the time and location of the seminars. One week before the seminars at each location, follow-up letters were sent with the two forms of the pretests to the participants (Appendix L). This also served as a reminder. Participants registered as late as August 3 and as these later registrations were received the registrants were sent information on the plans and provided copies of the pretests for completion.

Description of Subjects

There was a total of 30 participants in the study. Table 1 summarizes the subjects' demographic data. One participant, subject number 25, is a diabetes education nurse and so her responses and results were not used in calculating statistics and results. The calculations were thus based on 29 subjects. The mean number of years

Table 1. Subjects' demographic data.

Sub. Nbr.	Yrs. Wk.	Job title/responsibilities	Route to registration	Percent of time working with diabetes	Institution have formal diabetes education program?	Schedule follow-up for clients with diabetes?
1	6	*Dietitian-developing policies and patient education programs materials	Internship	-	No	No
2	13	Director of clinical dietitians - teach diabetes classes in diabetes teaching unit	Internship	10%	Yes	No
3	3.5	Research assistant (research on diabetes and nutrition)	CUP	0	-	-
4	5	Relief dietitian for both clinical and administrative staff (pediatrics)	Internship	2%	Yes	Yes
5	--	Senior student in C.U.P.	-	-	-	-
6	7	*Director of Food Service-nutrition education including diabetes teaching team	Internship	5%	Yes	No
7	6	Recently clinical dietitian at a V.A. hospital. Now internship director	M.S. & work	25%	Yes	Yes
8	1.5	Clinical dietitian - med, peds and out-patients. Teach infant nutrition, weight classes.	Internship	40%	Yes	No
9	16	Clinical instructor for C.U.P. program	Internship	10%	Yes	Yes
10	8	Chief dietitian over therapeutic patient care.	Internship	20%	No	No
11	5	Clinical dietitian	CUP	30%	Yes	No

Table 1. (continued)

Sub. Nbr.	Yrs. Wkd.	Job title/responsibilities	Route to registration	Percent of time working with diabetes	Institution have formal diabetes education program?	Schedule follow-up for clients with diabetes?
12	15	Assistant administrator of dietary over the clinical dietitians	Internship	10%	Yes	No
13	5	Dietary instruction and follow-up of dialysis patients	Internship	30%	No	Yes
14	-	Senior CUP student working as clinical dietitian for experience this summer	(student)	50%	Yes	No
15	4	Clinical dietitian - nutritional assessment & instruction; diabetes & weight classes	CUP	20%	Yes	No
16	19	Renal dietitian	Internship	30%	Yes	Yes
17	8	Outpatient dietitian - teach diabetes and other classes	Internship	30%	Yes	Yes
18	10	Clinical dietitian (small hospital)	Internship	20%	Yes	No
19	7	Pediatric clinical dietitian	Traineeship	20%	Yes	Yes
20	20	Dietitian-mental hospital and Meals on Wheels	Internship	10%	No	Yes
21	-	Diet technician - interviews, diet instruction, diet classes	-	10%	Yes	Yes
22	5	Director university dietary counseling clinic - teach classes	Traineeship	50%	No-to start this fall	Yes

Table 1. (continued)

Sub. Nbr.	Yrs. Wkd.	Job title/responsibilities	Route to registration	Percent of time working with diabetes	Institution have formal diabetes education program?	Schedule follow-up for clients with diabetes?
23	15	Maternal & infant high risk clinic-nutrition education of pregnant patients	Internship	10%	Yes	Yes
24	3	Clinical dietitian	Internship	25%	Yes	No
25	-	Diabetes education nurse	-	(100%)	(Yes)	(Yes)
26	30	Clinical dietitian for dialysis	Internship	40%	No	Yes
27	-	Research assistant - recently graduated from CUP Awaiting registration exam	(CUP)	-	-	-
28	5	Part time clinical dietitian and Ph.D. student	M.S. & work	40%	Yes	No
29	2	Recently quit work as a clinical dietitian in a hospital, doctors clinic & nursing home	C.U.P.	50%	Yes	Yes
30	3.5	Homemaker with a child with diabetes	M.S. & work	-	-	-
	8.9	**Mean/Percentage	-	23.5%	24% No; 76% Yes	48% No; 52% Yes

- Indicates no response.
* Indicates the subject is the only dietitian in the facility.
** Based on the number of subjects completing each item.

worked by the subjects who are registered dietitians (excluding subjects 5, 14, 21, 25 and 27) was 8.9. The range was 1.5 to 30 years, a range of 28.5 years. The median was 6 years and the mode was 5 years (5 subjects). Internship was the route of 16 subjects, 55%, to registration. Four participants, 13.8%, became registered through the Coordinated Undergraduate Program (CUP). Only 6.9% or two of the subjects came through traineeships. Three participants became registered through masters degrees combined with work experience. This was 10.3%. One diet technician (3.4%), two senior CUP students (6.9%), and one person (3.4%) recently graduated from the CUP Program and awaiting the registration examination also participated. A description of the subjects' job titles and/or responsibilities is given in Table 1.

Twenty-five participants responded to the question, "approximately what per cent of your working time is spent working with persons with diabetes." The average was 23.5% with answers ranging from 0 to 50%. Twenty-four per cent of the subjects stated their institutions had no formal diabetes education programs while 76% did. Question number 7 on the Participant Information and Attitude Survey (Appendix G) asked: "Do you or other R.D.s in your institution routinely schedule follow-up counseling sessions and/or educational activities for clients seen with diabetes?" Fifty-two per cent responded affirmatively and 48% said no. However, it was interesting to note that dietitians working in the same institution sometimes responded differently to this question. From the author's knowledge of the procedures at the various institutions, it seems that some

interpreted this question to mean the scheduling of occasional out-patient appointments rather than routine follow-up procedures.

Subjects numbered 26 through 30 could not, for various reasons, participate in any of the seminars and so completed the study at home. Additionally, there were seven persons who registered but did not participate. Three of them registered less than two weeks before the seminars but should have received the pretests and details before the seminars. Three others had arranged to complete the study at home but did not return the materials. Thus, 31 registrations were actually received and 18.9% did not participate. Additionally one of the thirty participants, number 7, did not originally register but attended in place of a practitioner who had registered but had an emergency at work which prevented her attendance.

Description of the Seminars

Seminars were held on August 6 from 12:30 to 4:30 p.m. in Provo in a Utah Valley Hospital classroom; on August 7 from 8:30 a.m. to 12:30 p.m. in Salt Lake in a Veterans Administration Hospital classroom; and on August 10 from 1 p.m. to 5 p.m. in Logan in a Logan Regional Hospital classroom. Eight subjects participated in Provo, 12 (one nurse) in Salt Lake and 5 in Logan. As participants entered the classrooms they were given a written introduction to the seminar with instructions as to the procedures to be followed (see Appendix M) and a copy of the Learning Package (the resourcebook with copies of the tapes). Pretests were then turned in and the participants allowed to read pages 1 to 4 of the resourcebook. Both the Suggestion Form and

Participant Information and Attitude Survey were distributed before the seminar began. Participants were asked to record suggestions throughout the taped presentation. They were allowed to respond to the first seven questions on the survey before the presentation began but were requested to complete the attitude questions only after listening to the entire presentation.

Participants completing the study at home were given the same directions. However, they were instructed that they did not have to complete the taped presentation in one session. Subjects number 26 and 27 turned their pretests in before obtaining the Learning Package, forms, and posttest. Subjects 28, 29 and 30 were mailed their forms, posttest and Learning Package one week after receiving the pretests. They were asked to complete the pretests before looking at the Learning Package and it was felt they could be trusted to do so.

The original or master tapes were used for the seminars. While the taped presentation was 2½ hours in length, the pauses to allow study of resourcebook materials extended the length to approximately 3 hours. A portable battery-operated tape recorder was used. Before starting the taped presentation, the researcher verbally welcomed participants and explained the purpose for which the Learning Package had been designed. Each part of the tape was then played with an approximate 5 minute break between parts. During the breaks the participants visited among themselves, obtained refreshments and/or took short walks. The researcher refrained as much as possible from making comments on the presentation until the posttests and forms were completed.

When the taped presentation indicated the tape should be stopped to allow study of the materials, the researcher did so. When all participants indicated a readiness to continue, the tape was again begun. However, subjects indicated that the tape did not need to be stopped for study of the lists of specific nutritional components of the three Guideline levels (pages 31 through 37, Appendix B) or for study of the case study (page 62, Appendix B). They felt they could study these lists as the presentation discussed them and so the tape was not stopped at these points.

At the conclusion of the taped presentation, the posttests were distributed for completion without consulting the resourcebook. The completed posttest, surveys and suggestion forms were turned in to the researcher.

Generally, these procedures were followed during all three seminars. Specific notes were taken on the procedures of each seminar and these observations are reported in Chapter IV.

Data Processing and Analysis

All tests were corrected by the researcher according to the correct answers given in Appendix E. A correct response was given four percentage points. Since response (a) on question 1 of form B and the posttest was partially correct, two percentage points were given for that response. Items 3 and 7 on form B and the posttest and item 7 on form A required three correct responses. One correct response was scored as one percentage point and two correct responses

earned two percentage points. Responses to the attitude survey and the suggestion form were also compiled by the researcher.

Descriptive statistics were calculated on the posttest scores for the entire group of participants and separately for the home group and the groups at each seminar location. Since the reliability of the tests was low and form B seemed more difficult than form A, the improvement between form B of the pretest and the posttest was calculated as well as the change between form A of the pretest (originally designated as the official pretest) and the posttest. The number of incorrect answers to each item on the posttest was tallied to be related to achievement of the objective the item assessed. Descriptive statistics were also calculated on the responses to the attitudinal questions on the survey. The descriptive statistics reported in describing the subjects and their professional activities were calculated by the author on the basis of the responses to questions 1 through 7 on the Personal Information and Attitude Survey (Appendix G). Reliability of the tests was also calculated by the author as previously described. All relevant comments on the Suggestion Form (Appendix H) were compiled by the author.

Final Packaging and Distribution

The Learning Package and a copy of this thesis including recommendations for improvement of the package will be submitted to the American Dietetic Association. The author has signed a letter of intent with the Association to develop a tape presentation for continuing education of registered dietitians. The Association's

Department of Continuing Education will thus review and perhaps further revise it for use in this manner and, if the package is accepted, conduct final packaging and distribution.

CHAPTER IV

RESULTS

Posttest Results

Posttest Scores

Table 3 summarizes participants' scores on the pretests and posttest and their responses to the attitude survey. The mean score on the posttest was 77.5% with a standard deviation of 14.63. The scores ranged from 54% to 96%. The mean increase from pretest A to the posttest was 2 percentage points, with a standard deviation of 10.02 and a range of +13 to -24. The change from pretest B to the posttest, which was the same form of the test, averaged an increase of 5.6 percentage points. The range was +32 to -23 and the standard deviation was 11.87. Only four participants, 13.8%, achieved the 90% criterion.

Because of some differences in the settings of the seminars, the mean posttest scores and increases from the pretests were compared among the four groups in Table 2.

Table 2. Group posttest averages and average changes from pretests.

Group	n	Post-test Mean	Number (Per cent) Meeting Criterion	Average Increase Pretest A to Posttest	Average Increase Pretest B to Posttest
Provo	8	65.4	0	+ .1	+7.9
Salt Lake	11	79.8	3 (27%)	+ .7	+7.8
Logan	5	80.8	1 (20%)	+10.4	+4.4
Home	5	72.4	0	- .8	- .6

Table 3. Participant's scores on pretests and posttests and responses to the attitude survey.

Subject Number	*Location	Test Scores (%) Pretest A	Pretest B	Post-test	Pretest-Posttest Changes A to B	B to B	Attitude Responses Survey Question Number: 8	9	10	11	12	13	14
1	L	54	69	67	+13	- 2	5	5	2	4	1	3	1
2	S	86	76	84	- 2	+ 8	2	1	4	2	3	2	3
3	P	81	57	77	- 4	+20	1	1	3	1	4	3	3
4	S	78	73	77	- 1	+ 4	2	2	2	2	4	2	4
5	L	76	81	88	+12	+ 7	1	1	-	1	3	-	-
6	P	66	69	70	+ 4	+ 1	2	2	4	1	4	2	4
7	S	-	-	77	-	-	-	1	2	2	2	2	3
8	L	72	69	76	+ 4	+ 7	2	2	4	2	4	1	3
9	P	61	70	65	+ 4	- 5	3	1	3	3	3	3	3
10	S	89	78	81	+ 8	+ 3	2	1	4	2	4	2	3
11	L	80	82	**92	+12	+10	2	2	2	2	4	3	4
12	P	76	48	80	+ 4	+32	-	-	-	-	-	-	-
13	S	80	74	**92	+12	+18	1	1	2	1	5	2	5
14	L	70	81	81	+11	0	1	1	3	2	4	3	4
15	P	92	64	88	- 4	+24	2	2	2	2	3	2	2
16	S	78	63	54	-24	- 9	1	1	1	1	5	1	5
17	S	88	82	**96	+ 8	+14	1	1	4	1	4	1	4
18	P	82	79	81	- 1	+ 3	1	2	3	2	4	2	4
19	S	62	54	73	+11	+19	1	1	2	3	5	2	5
20	P	64	73	54	-10	-19	2	2	3	2	4	2	4
21	S	81	65	72	- 9	+ 7	2	2	2	2	4	2	4
22	P	80	81	88	+ 8	+ 7	2	2	3	2	4	2	4
23	S	-	-	**92	-	-	1	2	3	1	4	1	4
24	S	77	74	80	+ 3	+ 6	2	1	3	2	4	3	3
25	(S)	-	-	-	-	-	-	-	-	-	-	-	-
26	H	70	66	72	+ 2	+ 6	2	2	4	2	3	2	2
27	H	66	77	79	+13	+ 2	3	1	2	3	4	2	3

Table 3. (continued)

Subject Number	*Location	Test Scores (%) Pretest A	Pretest B	Post-test	Pretest-Posttest Changes A to B	B to B	Attitude Responses Survey Question Number: 8	9	10	11	12	13	14
28	H	80	84	61	-19	-23	2	2	3	2	3	2	3
29	H	72	71	84	+12	+13	2	1	2	1	4	1	4
30	H	78	67	66	-12	- 1	-	-	-	-	-	-	-
***Mean:		75.5	71.3	77.5	+2.0	+5.6	1.85	1.59	2.77	1.88	3.70	2.03	3.50
standard deviation, s:		9.27	9.03	14.63	10.02	11.87	-	-	-	-	-	-	-
Range:		54-92	48-84	54-96	-24 - +13	-23 - +32	1-5	1-5	1-4	1-4	1-5	1-3	1-5

*L:Logan; S:Salt Lake City; P:Provo; H:Home.
**Indicates achievement of the 90% criterion (total of 4 subjects or 13.8%).
-Indicates the item was not completed by the participant.
***Computed on the basis of n = number of completed responses to that item.

Achievement of Learning Package Objective

A list of the number and per cent of subjects not achieving each Learning Package objective, as measured by the posttest, is given in Appendix N. The first three test questions corresponding to the first three Learning Package objectives measured subjects' understanding of the content and definitions of the Guidelines. These were of specific interest in measuring achievement of the study's first objective. The first question measured subjects' abilities to define and identify in ascending order the three levels of education for the individual with diabetes. Seventy-nine per cent or twenty-three of the subjects failed to meet this objective as measured by the posttest. The second objective was that the dietitian would identify at least three specific nutritional components of each level of diabetic education. As measured by question number 2 on the posttest, only 1 participant or 3.4% did not meet this objective. Four subjects, 13.7%, failed to meet the third Learning Package objective to identify appropriate places, times and settings for the attainment of each educational level, as measured by the third item on the posttest.

Attitudinal Responses

Table 4 summarizes the responses to the items assessing attitudes on the Participant Information and Attitude Survey. Table 2 gives each subject's response to each item. Eight persons responded to item 15 (see Appendix G) soliciting additional comments regarding the Guidelines and their use. Subject number 13 stated that the information "should be very useful in my practice with adolescent

Table 4. Summary of responses to the attitude survey.

Question Number	Question	Mean Response	---1---- Per cent Strongly Agree	---2---- Per cent Agree	---3---- Per cent Undecided	---4---- Per cent Disagree	---5---- Per cent Strongly Disagree
8	The Guidelines for Education of Individuals with Diabetes Mellitus will be of practical value to me in my work.	1.85 (Agree)	34.6	53.8	7.7	0	3.8
9	This Learning Package has increased my understanding of the process of educating clients with diabetes.	1.59 (Agree)	51.9	44.4	0	0	3.7
10	The Guidelines for Education of Individuals with Diabetes Mellitus will be easy to implement and follow in my practice.	2.77 (Undecided)	3.8	38.5	34.6	23.1	0
11	This Learning Package will make me more able to effectively counsel persons with diabetes.	1.88 (Agree)	29.6	55.6	11.1	3.7	0
12	The Guidelines and this Learning Package are too idealistic--they are not realistic for use by the "average practitioner."	3.70 (Disagree)	3.7	3.7	22.2	59.3	11.1

Table 4. (continued)

Question Number	Question	Mean Response	---1---- Per cent Strongly Agree	---2---- Per cent Agree	---3---- Per cent Undecided	---4---- Per cent Disagree	---5---- Per cent Strongly Disagree
13	In the future, I will devote more time and energy than I have done to establishing and improving continuing education programs for clients with diabetes in accordance with the Guidelines.	2.03 (Agree)	19.2	57.7	23.1	0	0
14	The Guidelines and this Learning Package are too idealistic--they are not realistic for use in the system in which I work.	3.50 (Disagree-Undecided)	3.8	7.7	34.6	42.3	11.5

renal patients also. I think the general principles can be used for helping anyone with a chronic disease requiring nutritionaland dietary modifications and management." Subject number 1, who is currently working part-time as the only dietitian in her facility, stated she had been given many ideas to consider and hoped to be able to implement follow-up which she felt was currently inadequate. Subject 18, also working in a small hospital, stated the Guidelines would "take some organization" but seemed a good program. Four subjects' comments related to the Learning Package rather than the Guidelines and the eighth comment seemed to relate to both. It expressed appreciation for the "work" and belief that it would be helpful "in terms of time saving and ideas." However, the subject, number 23, felt the Guidelines contained little on ketosis which is "especially important during pregnancy."

Subjective Observations

Some of the notes made by the researcher at each location relate to the results. Others are included in Chapter V. In Provo, the classroom had not been airconditioned as requested and so the setting was less than ideal. Between each part of the presentation the subjects regrouped themselves to be in the pathway of the cool air from the swamp cooler. Subject numbered 12 slept during almost all of the presentation and subjects numbered 9 and 18 slept during several portions of it. The classroom was not accessible to refreshments or restrooms.

The Salt Lake setting was well air-conditioned, provided soft chairs and was close to restrooms and refreshments. Subjects numbered 10 and 19 were slightly late. Subject number 4 did not arrive until midway through part I of the presentation. Subject 21 was absent for a segment of part II. Subject number 19 slept through the initial part of the presentation.

The Logan setting was also accessible to refreshment and restrooms. The group was interrupted by workmen and moved to a new setting near the conclusion of part II. It was noted especially in Logan but also in the other settings that participants noted in writing, with some difficulty, the five goals which are presented at the conclusion of part IV as those set for the client in the case study. These could be printed in the resourcebook with the case study summary.

Suggestions for Improvement of the Learning Package

The suggestions given (see form, Appendix H) were compiled by the author from the 25 forms which were completed. They are summarized below. Unless otherwise noted, each suggestion was given by only one person.

Content

a) Nine positive comments were given.

b) More information on psychological adjustments and home glucose monitoring were requested and two subjects requested information on the insulin pump.

c) It was suggested that the specific principles of diet therapy in

diabetes mellitus be included.

d) Two persons requested more discussion and examples of learner and behavior outcomes.

e) There was a request for more details and suggestions on gaining physician and administrative support.

f) That less time be allowed for study of resourcebook materials was suggested.

g) More information on the Guidelines was requested while another participant felt a simplified summary of the Guidelines was needed because 27 pages were overwhelming.

h) One person felt that the part II suggestions needed to be made more realistic.

Presentation

a) Three persons criticized the technical quality of the recording with one suggesting use of a professional narrator.

b) Three subjects suggested use of several different voices and perhaps music while three others stated the voice on the tape was good.

c) Eight positive comments were given.

d) Two persons suggested making the presentation self-instructional, using short quizzes at the end of each part for immediate feedback.

e) Two participants felt the narration was too fast while two others specifically stated the pace was appropriate.

f) It was suggested that a book format would be better than a taped presentation.

g) A live or videotaped presentation was also suggested as a preferable approach.

h) Participation of subjects was suggested.

i) Length was a major concern. Part II was felt too long by two persons as was Part IV by another. One suggestion was given that the presentation be more concise.

j) Six persons stated that the presentation was too long for one setting but would be appropriate if more time was given between parts of the presentation for review and "absorption."

Resourcebook

a) Two subjects suggested that slides and other visuals would have been more effective or would have increased the resourcebook's effectiveness.

b) Fourteen positive comments were given. Several specifically commented on the use of the colored pages.

c) Two editorial comments were given in regards to typing mistakes.

d) Two requests were made to put the specific nutritional components of each educational level immediately following the description of that level rather than at the conclusion of the entire text of the Guidelines. Another suggestion was made to "decrease the amount of flipping back and forth."

e) A request was made for a list of successfully functioning diabetes health care teams and another for resources for visually impaired clients.

f) More resourcebook materials were requested for part II with a specific request for a summary of the financial benefits of

educational programs which were discussed in that part.

g) A suggestion to include a specific resource on professional education was given.

h) Making narration and resourcebook wording identical was also suggested.

i) Four comments that the charts on the educator-client interaction were confusing were made. One of them was accompanied by a suggestion to give more written details to better accompany the taped narration of this part.

Miscellaneous Suggestions

a) Ten positive comments were given under this heading.

b) One subject commented that the Learning Package helped in her plans to organize follow-up classes during the coming year.

c) Another participant commented that posttest results might be affected by the relatively short time period of the seminar for the discussion of such an extensive amount of material.

d) The frequent quotations from Etzwiler were not acceptable to one practitioner who felt other authorities should be quoted more.

e) Subject number 12 felt the presentation should be given to other health care team members, especially nurse educators.

f) Better coordination between the taped presentation and resourcebook was felt necessary by one participant.

g) The need to indicate the length of each tape and total presentation time was also pointed out.

h) More introduction of the presentation at the beginning of the seminar was felt necessary and it was suggested participants

introduce themselves.

i) Another comment stated that the enthusiastic introduction to the seminar by the researcher was effective.

j) The presentation was "inspiring" to one practitioner.

Tests

Since the tests were technically part of the Learning Package suggestions for their improvement were also solicited and compiled.

a) Two persons suggested each choice of an answer to a question be listed on a separate line for easier differentiation.

b) A shorter test at the end of each part of the presentation rather than the longer version was suggested by two participants and there were two additional comments that the tests were too long.

c) The tests were unclear and hard to follow according to two comments.

d) One subject felt some questions indicated the correct answers to following questions.

e) It was suggested that directions be given to circle all appropriate answers instead of including the choice of an answer such as "a, b and d" on only some items since that seemed to indicate that the item's correct answer was probably a combination.

f) There were three positive comments as to the ease of following and taking the tests.

CHAPTER V

DISCUSSION

Posttest Result

Interpretation of Posttest Scores

Only four subjects achieved the 90% criterion set in objective 2 of the study. There was a mean increase from both forms of the pretest to the posttest although there was a wide range of change scores, a range of 55 percentage points for the change from pretest B to the posttest. Standard deviations were thus relatively high. The standard deviation of the posttest was substantially higher than that of the pretest, 14.13 versus 9.27 and 9.03. The high standard deviations of the posttest and change scores are interpreted to mean that there was a high degree of variability in the manner in which the seminar affected the performance of the subjects.

There was also a difference in the posttest means among the various seminar groups. The lowest mean was in the Provo group, which was 14.4 percentage points lower than the Salt Lake group. Initially, this was thought to be due to the poor physical conditions in which the Provo seminar was held. However, the average increases of the two groups, from both forms of the pretest, were nearly identical. Thus, the difference in means would seem to be due to some pre-existent condition or conditions and the seminar to have had similar overall effects in both settings. This is further established by the fact that both the Salt Lake and Logan groups had participants who met the

criterion while the Provo group, although larger than the Logan group, had none.

The mean posttest score of the Logan group was the highest of any group. This was the only group in which the pretest A to posttest gain score was greater than the pretest B to posttest gain score. Further, the average pretest A to posttest improvement of the Logan group was at least ten times higher than the other groups. The Logan pretest B to posttest average change score was approximately 3 percentage points lower than in the Provo and Salt Lake groups. There was no obvious reason for these differences and no statistical analyses were conducted to determine their significance.

Slightly negative mean change scores were achieved only in the home group which also had the next to the lowest posttest score average. This was not expected since it had been assumed that the home group would have more opportunity, if taken, to study the materials. The researcher does know of specific time pressures placed upon three of the five home group participants. This was the main reason they could not attend a seminar and it may have prevented them from taking advantage of the opportunity for additional study.

One of the basic assumptions made in using the change scores is that the changes were due to the seminar. The time period between the pretests and the posttest was one week or less. From verbal indications from participants and the dates on the tests which were dated, it is evident that many pretests were taken within 24 hours of the seminar. The relatively short time period between pre and posttests would further limit the chance for other factors to affect

participants' posttest performances. The assumption that the seminar was the main factor in determining the change scores may be taken a step further. That is, the negative change scores may indicate that the amount of material covered may have been overwhelming and initially confusing to some subjects and that further study would be needed for successful mastery of the material.

Further, change scores have inherent weaknesses including the ceiling effect and regression towards the mean which are assumed to have been in effect in this study. Intervals of change are not equal at all points and thus a change from 65 to 70 is not the same as from 90 to 95. Finally, the reliability of change scores is directly related to the reliability of the pre and posttests and inversely related to pre-posttest correlation. Thus, the change scores are a valuable descriptive statistic but cannot be interpreted as evidence that the Learning Package improved subjects' knowledge and test scores. This could be determined using experimental and control groups and tests of statistical significance.

Length of the presentation is assumed to have affected achievement on the posttest. Many comments were made on the suggestion forms to the effect that presentation of the materials over a longer period of time would be more effective. The Learning Package was designed for use in the practitioner's home, allowing additional time for study and review and decreasing the risk of "saturation." In all three seminars, it seemed that many subjects had reached this "saturation point" by the conclusion of the presentation and hurried

to complete the posttest. There was no extrinsic motivation to do well on the posttest.

The author was concerned with length throughout the project. However, it was determined that all information presented was important to the effective implementation of the Guidelines. It would thus seem more appropriate to present one part of the presentation at a time in a four-part seminar or to instruct practitioners using the Learning Package at home to pace themselves, allowing time for study and review. The inclusion of a short posttest at the end of each section could allow self-evaluation of readiness to proceed, in a self-instructional format. The more informal home atmosphere would also allow participants to be more comfortable and take a variety of measures to increase attentiveness.

Not only were the format and setting of the seminars different than those for which the Learning Package was designed but also the study was conducted with subjects who may not be representative of the entire population of practitioners who might use the Package. The study subjects were generally active in diabetes care and education, spending an average of almost one fourth of their working time in it. It may be that many dietitians who would use such a continuing education tool would not be practicing. However, dietitians who work with diabetes might specifically seek out such a tool. It can only be concluded that the study subjects were active in diabetes care and education and thus knowledgeable in it. If the Learning Package improved their abilities, it is assumed that it would do so for practitioners with less exposure to and experience in diabetes

education. However, such individuals may not fully appreciate the information and resources presented in the package because of their lack of experience. The researcher did observe that subjects related and reacted differently to various sections of the presentation and felt she could explain these reactions based on the settings in which the subjects practiced and their related needs.

Achievement of Learning Package Objectives

The criterion-referenced posttest allows detailed evaluation of the specific objectives met, which is helpful in further assessing the effectiveness of the Learning Package. Such assessments are important since two subjects who achieve identical scores may not have mastered the same objectives. However, the posttest may have certain weaknesses in accurately assessing achievement of objectives.

Of major interest, and related to the study's first objective, are the first three Learning Package objectives dealing with understanding of the content and definitions of the Guidelines. As listed in Appendix N, 96.6% of the subjects were assessed to have met the second Learning Package objective, "identify specific nutritional components of each level of diabetic education." The third objective requires identification of appropriate times, places, and settings for the attainment of each educational level and 86.3% were assessed to do this. This is just slightly under the 90% criterion set in the study's first objective. However, only 21% of the participants were assessed to have met the first Learning Package objective of defining and identifying the three levels of education in the Guidelines. The question, number 1, which was used to assess this objective used the

exact wording from the Guidelines for the definition of the Home Management level. However, participants were not required to memorize these definitions. It is felt that had the question assessed participants' understanding of the Home Management level in relation to the other levels achievement would have been much higher. The second and third posttest questions and Learning Package objectives indirectly assessed understanding of the progressive stages of the Guidelines with positive results.

The posttest question assessing Learning Package objective 8 was answered incorrectly in part or whole by 31% of the subjects. Most of these participants did achieve partial credit for the question. Thus it seems that further study of the advantages and uses of educational programs and methologies was required. The summary provided on page 48 of the resourcebook (Appendix B) should allow this study and review.

Only 79.3% of the subjects identified an important step in establishing a Diabetes Health Care and Education Team and only 69% identified an important step for gaining support of the team members. This may in part be due to the general recommendations made by the presentation in this regard. It is more difficult to apply general principles to specific situations such as those posed in the posttest. One suggestion was given to include more details on gaining physician and administrative support. Certainly, the challenge of establishing a functioning team varies from setting to setting and this may have affected the responses. The poor response to the question assessing the ability to identify important steps in gaining team support may be

partially due to the provision of only correct responses as choices. Thus, all participants identified at least one correct response but 69% failed to identify that all choices were correct.

During the seminars, several participants asked about question 11 on the posttest. There seemed to be confusion as to whether "current educational level" referred to the level just completed or the level to be initiated. This confusion seemed to be the reason 37.9% answered incorrectly. Thus, rewording the question should increase achievement of Learning Package objective 4a. All participants were able to identify the behaviors the individual in the case study should be doing (objective 4.b.). However, only 65.5% identified successfully the knowledge needed to achieve these behaviors. This may be due to the fact that the incorrect choices were also important nutritional facts but less directly related to the specific behavior.

Objective 4e, requiring identification of the most appropriate priority order for behaviors needing modification, was met by only 41.4% of the participants. Details on determining the appropriate priority order were not given in the presentation. However, the importance of so doing was discussed. There is also an element of personal opinions involved in this question (number 15) as all the behaviors given are important. It is doubtful that practitioners could ever fully agree on this question. It is important that they be able to prioritize behaviors according to their own professional values and opinions. Only 58.6% successfully completed posttest item 18 which assesses the ability to identify educational content necessary to meet specific educational goals. The correct response

was "d) all of the above." Thus, all incorrect answers were, in fact, partially correct.

Achievement of objective 4i involved identification of factors which might influence behavior in a specific case study and the manner in which they might be used and/or modified to achieve the desired behavior. Three posttest iems (19, 20, 21) assessed achievement of this objective. One hundred per cent of the subjects successfully completed item 21 and 96.6% completed item 20. However, only 72.4% successfully completed number 19. Using these results, the average percentage of participants achieving this objective was 90%.

As assessed on the posttest, 58.6% achieved objective 4j, 75.9% achieved 4k, 79.3% achieved Learning Package objective 4l, and only 55.2% achieved objective 4m. These assessed ability to identify others needing instruction, learner outcome, behavioral outcome, and items to be followed-up in a case study, respectively. One of the suggestions given was to further explain behavior versus learner outcomes and give examples. Responses to the posttest also showed a lack of ability to differentiate between the two. Further, several persons suggested a need for more details in the resourcebook on and more clarity in the discussion in Part IV of the educator-client interaction. The lower achievement on some of the questions assessing achievement of objectives relating to a case study would support such suggestions.

In regard to achievement of Learning Package objectives, it should also be noted that the posttest assessment did not measure actual ability to achieve the objectives in practice. It is hoped

that in actual practice, dietitians would frequently refer to the Learning Package materials which was not allowed on the posttest. Further, assessment could not be made at the conclusion of the seminars as to the actual application of the information by practitioners to their practice or the relation of the posttest measurement of knowledge and ability to application in practice.

Attitudinal Responses

Acceptance of the Learning Package

Participants expressed acceptance of the Learning Package as an educational tool, as assessed on items 9, 11 and 13 of the Participant Information and Attitude Survey (Appendix G and Table 4). Only one person disagreed (strongly) that the Learning Package increased understanding of the process of educating persons with diabetes while 51.9% strongly agreed and 44.4% agreed. Again, only one person disagreed that the package made them more able to effectively counsel persons with diabetes but 11.1% (3) were undecided, with 55.6% agreeing and 29.6% strongly agreeing. Thus, the agreement was strongest for the Package's effectiveness to increase understanding but still strong for the positive effect on ability. After completing the Learning Package, 19.2% strongly agreed and 57.7% agreed that they would devote more time and energy than they previously had to establishing and improving continuing diabetes education programs. However, 23.1% were undecided but none disagreed.

Attitudes Towards the Guidelines

Acceptance was also found for the Guidelines for Education of Individuals with Diabetes Mellitus, as assessed on items 8 and 10 of the survey. Only one person disagreed (strongly) that the Guidelines would be of practical value to them, with 7.7% undecided, 53.8% agreeing and 34.6% strongly agreeing. Further, 3.8% strongly agreed and 38.5% agreed the Guidelines would be easy to implement in their practice. It was interesting, however, that 34.6% were undecided. Hopefully, they were reserving judgement until they attempted the implementation. The responses to this question were also more evenly distributed since 23.1% disagreed.

General Acceptance

The overall principles in the Guidelines and Learning Package were not considered too idealistic for the "average" practitioner" or for use in the majority of systems in which participants were employed. Only 7.4% agreed they were too idealistic for the "average" practitioner with 22.2% undecided. That the Guidelines and Learning Package were too idealistic for use in the system in which subjects worked was agreed with by only 11.5% but 34.6% were undecided. The fairly high percentages of undecided subjects responding to these two questions is assumed to indicate persons who wished to attempt implementation of the principles introduced by the presentation before judging practicality. This is considered a positive result, especially in combination with those who agreed the principles were practical. It has been the researcher's previous experience that

practitioners too often feel defeated even before attempting to implement new programs.

Suggestions for Improvement of the Learning Package

Content

Most of the suggestions for other information to be included were beyond the scope of the Learning Package. However, results on the posttest indicated the two suggestions to give more examples on learner and behavior outcomes were valid. It is felt that to meet the request for more details on gaining physician and administrative support would be difficult and too time consuming due to the individual nature of such efforts in each setting. However, it may be that until dietitians actually attempt to implement and individualize the general principles presented to them, they will continue to score somewhat low, as in this study, on questions assessing ability to identify important steps in establishing a team and gaining the members' support.

The suggestion to make the presentation more realistic was a single suggestion and seems counteracted by the attitudes participants' expressed that the Guidelines and Learning Package were not too idealistic. The observation that less time is needed for study of resourcebook materials is irrelevant for future use since dietitians can determine the time they spend when using the Package at home. Finally, a suggestion to give more details on the Guidelines and another to give a simplified form of them can be met with the current form of the resourcebook. At the end of each level, a summary

of its essential components is given. The entire text of the Guidelines is given in the resourcebook. Further study would allow participants to elucidate more details.

Presentation

Suggestions for improvement of the technical features of the taped presentation and of the voice and speed will be accomplished with use of a professional narrator and professional equipment in the final packaging. Suggestions for use of a live presentation, videotape, slides, other visuals, participation of subjects and even a book format are not consistent with requirements for continuing education materials although they may have improved the seminars. The present form could, however, be easily made self-instructional and this should be given further consideration by both the author and the American Dietetic Association.

The other major type of suggestion for the presentation concerned length. It is felt that all items covered are important and complimentary. Each major subject must be understood in order to adequately implement the Guidelines and other recommendations. Most of these suggestions related to allowing time between each part of the presentation. This could easily be accomplished in the home settings and instructions to do so could be included.

Resourcebook

The four suggestions to increase explanation of Part IV materials and diagrams were substantiated by posttest results, as previously discussed. Typing errors noted by participants will be corrected.

The list of successful diabetes health care teams suggested by one participant is actually included in the list of Part II references which report such teams. The suggestion to include resources for visually impaired persons is met in the Part II materials.

A request for more resourcebook materials for Part II could be met by giving a summary of the financial benefits of educational programs, which was also requested. It is felt that having the narration and resourcebook wordings identical would be inappropriate since the narration often gives details which the resourcebook is designed only to summarize. Because the Guidelines are not the author's work while the lists of Suggested Nutritional Components for each level are, it would be inappropriate although perhaps more efficient, to include the components lists between levels of the Guidelines.

Miscellaneous

Most miscellaneous suggestions did not relate to the Learning Package itself. Indication of the length of each tape and of the total presentation should be made, as suggested. It is felt that although Etzwiler was frequently quoted a number of other references were cited and appreciation of them was indicated by the positive comments which were made. It should also be recognized that Dr. Etzwiler is one of the foremost authorities on diabetes care and the team approach. His suggestions have been successfully applied, as indicated in the presentation (see script, Appendix A). The suggestion to take the presentation to other health care team members should certainly be considered.

Tests

Several comments were made by subjects to the researcher during the seminars to the effect that they felt they had learned from the pretests. Certainly, the tests should be considered as part of the Learning Package. The suggestions to include short tests at the end of each section in a self-instructional format thus seems very applicable. The suggestion to type each answer choice on a separate line is an acceptable format suggestion. Since only one comment was made that one question indicated the answer to subsequent questions and this was not indicated in the validity assessments, this suggestion was disregarded. The suggestion to allow circling of more than one answer was also disregarded for two reasons. First, correction of the tests would be complicated and the additional effort not justified by any possible benefits. Further, some of the questions most often completed incorrectly were these offering choices such as "a, c, and d." It may even be likely that the subject who made this suggestion assumed all questions offering such a choice had multiple answers. This was not so.

Conclusions

Subjects did not score 90% or higher on the three posttest questions relating to the content and definitions of the Guidelines, which was the first study objective. Reasons have been discussed, including problems with the first posttest question. Achievement on the other two items was 96.6% and 86.3% averaging 91.5% and indicating achievement of the first objective. It is concluded that improvement

of the instrumentation might reflect achievement of the first objective.

An improvement was demonstrated between both forms of the pretest and the posttest, interpreted to reflect an improvement in the subjects' ability to plan education for adolescents with insulin-dependent diabetes. This achieves part of the study's second objective. However, only 13.8% of the subjects scored 90% or higher on the posttest, the other facet of the second objective. It may be that by allowing intervals between each part of the presentation for further study and review and by implementing other suggestions, performance on the posttest could be improved.

Responses to the attitude survey indicated the Learning Package was acceptable to practicing dietitians for use in continuing education. Thus the study's third objective was met.

Study participants expressed acceptance of the Guidelines as of practical value to them in accordance with objective 4 of the study.

Recommendations

Recommendations for Improvement of the Learning Package

The following recommendations are made to improve the Learning Packge:

1. More examples and explanation of learner and behavior outcomes should be given in both the presentation and resourcebook.
2. A written summary of the financial benefits of educational programs, as given in the second part of the presentation, should be included in the resourcebook.

3. Further details of the educator-client interaction and explanation of the related diagrams in the resourcebook should be provided.
4. The summary of the case study given on page 62 of the resourcebook should also include the five goals set by the dietitian.
5. The first question on the posttest should be reworded to assess understanding of the Home Management level in relation to the other levels.
6. The eleventh question on the posttest should be reworded to read, "the educational level which David should now be assisted to attain is:."
7. Specific instructions should be given with the Package as to the length of each part with suggestions as to time spacing and time needed to study and review each resourcebook section.
8. Consideration should be given to writing tests in the form of four quizzes, one to be taken at the conclusion of each part of the presentation with a list of correct responses provided. The quizzes, correct responses, and items to be studied if an incorrect response is chosen might be included in the resourcebook. This would provide a self-instructional format. A comprehensive posttest might also be included, if deemed necessary.

Recommendations for Further Study

After implementation of the suggested improvements, the ideal approach would be to conduct at least one more formative evaluation, specifically to assess the effectiveness of the changes. Following this evaluation, and any further changes which might be indicated, at

least one major summative evaluation should be conducted. These results should be subjected to statistical tests of significance. Such a summative evaluation would ideally be carried on in the home setting or a setting closely simulating it. Minimally, the summative evaluation should be conducted in a series of seminars, allowing time between parts of the presentation for review and study with incentives given to do so. Ideally, only at the conclusion of such a successful summative evaluation would final packaging and distribution be carried out.

Further studies might also be conducted to determine the actual changes practitioners made in their practice following use of the Learning Package. Details of their use of the Learning Package materials might also be sought. Use of the Learning Package or a modified version of it for other health care professionals might also be investigated. This might be coordinated between the Education Department of the American Dietetic Association and the professional section of the American Diabetes Association.

It is felt that by following the above recommendations, the Learning Package can meet the needs of dietitians as suggested by Turner and Kauffman (1975) to the Commission on Diabetes, all of which are addressed in the package. Further, the objectives submitted by the Commission to the U.S. Senate (National Commission on Diabetes, 1975b) which included development of "multimedia learning modules for practicing dietitians on nutritional assessment, nutritional counseling, education and behavior modification for persons with

diabetes and their families " to be coordinated with the American Dietetic Association could thus be met.

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APPENDICES

Appendix A

Learning Package Script

The need for adequate education of persons with diabetes mellitus has long been recognized. In 1962 Etzwiler observed that "Optimum control (of diabetes) offers the promise of an increased life expectancy with a minimum of medical complications. To achieve this the patient must have a thorough comprehension of the disease....It should be emphasized in this regard that, particularly for the person with diabetes, patient education is of critical importance and can quite literally be a matter of life and death" (Etzwiler 1962). Since that time the call for improved education of persons with diabetes has been repeated with increasing frequency and urgency. Reports such as those to the National Commission on Diabetes have substantiated a lack of knowledge of nutritional principles in persons with diabetes with resulting poor control. (Report of National Commission on Diabetes 1975b; Stubb 1968). The National Commission on Diabetes also found a lack of professional knowledge and skills necessary to adequately inform the patient about the importance of nutrition to be a major factor in this lack of education and control. (Commission on Diabetes 1975b). Addressing the importance of nutrition in control of diabetes, the American Diabetes and Dietetic Associations have emphasized that "Education of diabetic persons...is the key to achieving an effective meal plan. Each diabetic person should have the opportunity to discuss the reasons for the diet and to set dietary goals with a professional diet counselor...This must be a continuing educational process conducted in an understanding and non-judgemental manner, in which psychologic, physical, and socioeconomic factors are considered in developing each individual's daily food plan."

(American Diabetes Association Committee on Foods and Nuterition 1979).

This learning package has been designed to assist the practicing dietitian in meeting these special educational needs. Educational program planning, development of the educational prescription, and the educator-client interaction will be discussed with emphasis on the needs of the insulin-dependent adolescent with diabetes mellitus. Tools and resources will be suggested for use by the practitioner. This will be done in four parts, as indicated in the outline in the resourcebook. The first part will discuss Guidelines for Education of Individuals with Diabetes. The second section will deal with educational program planning in health care facilities. This is followed by a discussion of the insulin-dependent adolescent and the presentation concludes with a description of the actual educator-client interaction. While a specific effort has been made to provide practical and realistic suggestions, it is also recognized by the author that the overall plan presented for providing appropriate nutritional counseling to persons with diabetes is somewhat idealistic. No apology is made for this but rather it is hoped that the dietitian will accept the suggested ideal as something to work towards using suggestions provided herin in combination with her or his own particular talents, ideas, and resources.

(I) Guidelines for Education of Individuals with Diabetes Mellitus

One of the most significant responses to the recommendation of the Commission on Diabetes to improve the knowledge and skills of health professionals to provide effective care for the patient with diabetes mellitus (Commission on Diabetes 1975b) has been Guidelines for Education of Individuals with Diabetes Mellitus. This set of guidelines was developed by a joint task force of the American Diabetes Association and the American Association of Diabetes Educators. A copy of the Guidelines is included in your resourcebook, pages 5 to 30. Please turn to them. Do not be concerned with the details of the guidelines at this time. Later an opportunity will be given to study them in detail. It will be noted that they are divided into three levels of perceived need. The first level, on page 7, Educational Guidelines for Initial Management of diabetes or the Survival Level, provides essential information required at the time of diagnosis. This level represents basic or survival needs.

Beginning on page 8 the content of this and each of the other levels is divided into knowledge and skills required of all individuals with diabetes and additional information needed by people with insulin-dependent and non-insulin-dependent diabetes. The center column contains those items needed by all persons with diabetes. The column on the left includes additional knowledge and skills needed by the individual with insulin-dependent diabetes. The column on the

right side contains additional information and skills needed by the individual with non-insulin-dependent diabetes. The actual educational content of each level is preceded by statements of the aims of the Guidelines at that level and descriptions of settings and personnel which might be utilized, assessment areas to be completed with the individual and/or family before implementing the educational content, and information to be documented in the Medical Record.

The second level, on page 12, Educational Guidelines for Home Management of Diabetes, places emphasis on increasing knowledge and flexibility as some experience is gained in living with diabetes. This is essential for every individual but must be tailored to individual needs and capacity. This type of education is preferably offered in a non-hospital, as-close-to-home-as-possible environment. The third level, page 22, Educational Guidelines for Improvement of Lifestyle, presents a form of advanced learning viewed as enriching the individual's life with flexibility, insight, and self-determination.

The Guidelines are based upon the need of all persons with diabetes to be well informed and the belief that they should seek as much knowledge as possible. The Guidelines also recognize the limitations of the individual and family to accept and/or assimilate all there is to know about diabetes at the time of diagnosis as well as the limitations of some settings to provide additional education and educational experiences. The basic philosophy of these recommendations is that the ability to accept information as well as needs and desires for information are constantly changing and

developing. These needs must be assessed and met on an individual basis but to provide more information than is needed or requested defeats the educational objectives by overwhelming and confusing the client and the family. Often such efforts are never even comprehended by the client but the practitioner assumes the material has been covered and so fails to repeat it at the appropriate time. In studying the Guidelines it will also be noted that several items are repeated on more than one level. This is because the client will need to review and apply basic concepts in different ways and situations. Most individuals have been forced to discover concepts at the Improvement of Lifestyle Level, and even the Home Management Level, by trail and error through experience. Although no educational program can or should entirely replace personal experience, the process should not be experienced by each individual for every concept and professionals should be available to assist with proper interpretation of and adjustment for the individual's experiences.

Most objectives in the Guidelines are listed in general learner outcomes--or general things the client should know or be able to do. These must be translated into specific concepts and behavioral outcomes or objectives based on individual situations. For example, one Home Management Level objective is that the patient "explains how to increase food intake for vigorous or unexpected activity." While this is written in terms of a behavior, it is a learner outcome. The practitioner would then work with the client to define the manner in which this knowledge should be translated into a behavioral outcome--a way to improve the client's control. An example of a behavioral

outcome would be, "John will take one fruit exchange for each half hour he will be playing basketball before he begins playing." In summary, then, the Guidelines stress the importance of appropriate continuing education and individual counseling of persons with diabetes as their needs change and abilities develop. The specific objectives contained therein provide guidance to the practitioner in assessing needs and developing appropriate behavioral objectives or goals and providing specific information to enable accomplishment of these goals.

Turn to page 7 of your resourcebook, the Guidelines for Initial Management or the Survival Level. Read carefully page 7 and then skim pages 8 through 11 to become acquainted with the objectives in all subject areas. Turn off the tape and familiarize yourself with pages 7 through 11 for about five minutes.

Survival level objectives are designed to provide the client and family with the initial knowledge and skill to enable the person to get along or survive at the time of initial diagnosis. Generally, the learner outcome statements would be achieved at time of discharge from the hospital or from the immediate care of health care providers in the ambulatory setting. However, it must be realized that many clients with diabetes have not achieved these basic learner outcomes and so careful assessment must be made at the time of readmission or follow-up outpatient visit. Clients may conceivably "survive" without full knowledge of these basic principles for years. However, their control would be poor and decrease both their chances of long-term survival and quality lifestyle. Many clients have gone for years

simply taking injections and, in some cases, avoiding concentrated sugars. Some such clients may have been given survival level information but without assistance to apply it and/or without appropriate follow-up. Others may not have even been exposed to this basic information.

Often the insulin-dependent client with diabetes will require hospitalization at diagnosis. Survival level education should begin as soon as the individual and/or family is ready and able to learn. This requires a coordinated team effort. The client and family may first require the assistance of a medical social worker for help in accepting and adjusting to diabetes. In the case of the non-insulin-dependent and some insulin-dependent persons, initial management may be performed in an office or clinic but there are few differences as to requirements for counseling and education.

Turn to page 8 to examine in detail the nutritional components of the Survival Level (pause). All clients with diabetes and/or their families should, according to the Guidelines, be able to state the need for food as the source of energy. They should also be able to verbalize the need for complete meals and snacks at specific times. Finally, they must have the ability to plan meals according to their specific meal plan. Insulin-dependent persons should also be able to describe the relationship of meals to activity and insulin. It is well to keep in mind the outcome goals in the other subject areas which the insulin-dependent client and family will be exposed to concurrently. Basically they should also be gaining a working definition of diabetes, an understanding of the action of insulin, the

ability to properly give insulin injections, an understanding of and ability to deal with hypoglycemia, an understanding of the importance of contacting the health care professional in case of illness, the ability to perform and record urine tests, a willingness to verbalize that he or she has diabetes and the feelings associated with it, and an understanding of the importance of follow-up visits with various members of the health care team and the times for these visits. An awareness of these concurrent objectives will allow the dietitian to be a functional member of the health care team who will be able to reinforce these principles while counseling the client on basic nutritional concepts and practices.

These nutritional concpets are rather broad and can be broken down into a number of more specific components. A list of these components as suggested by the author can be found on page 31 of the resource book. Please turn to it. (Pause)

The first concept listed is that food is needed to provide energy and nutrients for the body's growth and maintenance. Numbers 2, 3, and 4 relate to the insulin-dependent client's need to understand the relationship of meals to activity and insulin. Number 2 states insulin is needed to allow the energy or sugar from food to enter the cells from the blood and be used. The third concept is that when the body exercises it requires less insulin to use the same amount of food or more food for the same amount of insulin, which leads to the fourth concept. This states that a balance between insulin and exercise on one side and food on the other side must be maintained to prevent problems. Too much food or too little insulin leads to high blood

sugar which is undesirable. Too much insulin or exercise or too little food leads to hypoglycemia or an insulin reaction. This concept, along with number 5, presents the need for complete meals and snacks at specific times.

Concepts 6 through 11 present the exchange lists and their use. In number 6 the client and family are told that to make it easier to get the right amounts of food, exchange lists have been designed. Each list contains foods which, in the amounts specified, provide about the same amount of calories and carbohydrate. Concept 7 points out that whichever food is chosen from a particular list, in the right amount, it is the same as far as calories and carbohydrate. This makes meal planning easier with variety possible once the amounts of each group which should be eaten at each meal and snack are known. In number 8 it is emphasized that meal plans are not the same but designed for the individual based on insulin therapy, nutrient needs, activity, and lifestyle. They may need to be changed later to meet changing needs. Number 9 gives the specific amounts of foods in each list and number 10 gives the client his specific meal plan and the basic rationale for it. Examples of rationale to be given the client would be, "to prevent hypoglycemia at critical times," to allow favorite food at breakfast, and so forth. In number 11 examples of the use of the meal plan in planning meals are given. Concept 12 discusses that concentrated sugars must be avoided because they are absorbed immediately in large amounts which cannot usually be handled by the injected insulin, resulting in high blood sugar.

The concepts numbered 13, 14, 15 and 16 are actually components of Guideline subject areas other than nutrition. Number 13 relates to the subject of hypoglycemia, stating that it is important to carry a quick source of "sugar" or carbohydrate at all times to be taken in case of an insulin reaction. Concept 14, related to the objectives under illness, emphasizes that when ill it is important to contact the physician immediately in order to be able to continue insulin and food intake. Concepts 15 and 16, under the subject of follow-up, are the most commonly overlooked and yet extremely important components. Fifteen states that follow-up is essential in order to evaluate the meal plan for needed changes, answer questions, and discuss other information which should be understood while 16 gives the specific time and place for the follow-up session. Without these components the counseling at the Survival level is incomplete and unsuccessful. Note that concepts for the occasional insulin-dependent client needing weight control are listed. While these will not be frequently used, they are essential when individual assessment indicates a need and/or when the client expresses an interest.

These components and those for the other levels are not given as a totally complete listing for each client but rather as suggestions of important concepts to be covered. The practitioner must make the final determination of information to be presented, based on individual assessment.

Now turn to the Home Management Educational level on page 12. Read carefully page 12 and then skim pages 13 through 21 to become

acquainted with the objectives in all subject areas. Please again turn off the tape for about five minutes.

Educational activities at the Home Management level should be designed to provide the individual and family with knowledge and skills to participate in the home management of diabetes. The overall goal is to enable the individual and family to become self-sufficient in the daily management of his or her diabetes. Home Management education should include group instruction plus practical exercises and individual consultation with the dietitian to individualize the nutritional care plan. There is no specified time period for the accomplishment of Home Management objectives but they should be accomplished according to individual needs and receptivity.

The ideal setting for accomplishment of Home Management goals is the home setting. However, this is seldom possible. Diabetes centers, learning centers for clients with diabetes and their family members, provide an opportunity for simulation of the home environment with professionals near to assist in necessary adjustments as well as give formal educational sessions. Camps for children with diabetes provide similar opportunities but in a recreational rather than every-day-home-type setting. However, many appropriate activities can be provided through clinic or hospital ambulatory services. These can combine information-giving sessions with applications in activities simulating home situations. However, the limitation of some such settings to provide the additional information and skills required at this level must be recognized and dealt with approrpiately. Several nutritional objectives at this level will be recognized as commonly

presented to the newly diagnosed individual with diabetes who is actually at the Survival level. Some of the basic concepts from the first level should be repeated here with assistance to the client in applying them in new situations. However, in general, these objectives should not be addressed until it is assessed that the client and family have achieved the Survival level nutritional goals and application of them. This may occur quickly enough to introduce Home Management nutritional material to the new patient before discharge but it is doubtful all Home Management objectives could be achieved within such a short time frame, especially in light of the objectives in other subject areas which will be covered. Some information at the Home Management level would not be valuable nor fully understood until some experience with living with diabetes at home is gained. Occasionally if a client will not be able to return for follow-up counseling or the facility is not yet prepared to provide such counseling, then it may be necessary to provide additional nutritional information at the Home Management level. A written summary might allow the client and family to review the material at a later time when it was more appropriate and needed. Other educational possibilities such as referal to other facilities or a public health agency for follow-up should first be thoroughly explored.

Refer to pages 13 and 14 to examine in detail the nutritional components of the Home Management level. In doing so, the outcome objectives in other areas which the client and family should also be working towards should be considered. This will not, however, always

be occurring concurrently. The client may progress more rapidly in achieving medication objectives than nutritional objectives or visa versa. However, in general it is assumed that the client has progressed to the Home Management level simultaneously in the various subject areas as is frequently the case. Basically in the other subject areas at this level the client and family should be exposed to the symptoms of diabetes as related to insulin deficiency, the onset, peak and duration of their insulin, the action and use of regular insulin, the mixing of insulins and further details concerning the injection of insulin. They should also gain additional understanding of and expertise in urine testing, in identifying, preventing and treating hypoglycemia, and in adjusting insulin and intake for illness. The importance and effect of activity, hygiene, and diabetic control as well as methods to improve individual control should also be discussed. Many important psychological adjustments are listed which must be made at this time. More than the survival level, this level has many "sub-levels" within each subject area. In other words, certain concepts must be encountered, understood, and applied before others. In some cases, not all concepts will need to be taught (such as mixing insulins for clients using only one type). Thus, individualization is even more essential.

A suggested list of specific nutritional components of the Home Management level is given on page 33 of the resource book. It is recognized that some facilities do not advocate the same type of therapy as indicated in these specifics. In that case, modifications of the information given can be made. The critical aspect is that

this type of information is given and these types of tools provided. The concepts have been listed in a suggested order; however, as previously indicated, this is highly optional and should be individualized. Not only do these specific concepts and topics relate to Home management nutritional objectives but also objectives in subject areas of definition, medication, hypoglycemia, illness, activity, control and psychologic adjustment--all of which become even more inter-related at this level. Now turn off the tape and read through the Suggested Nutritional Components of the Home Management level on page 33.

The first component reflects the importance of increasing involvement of the client and family in the nutritional care plan. They must also realize that the plan will need to be and should be revised as needs change. The starred concepts indicate a review of something which should have been introduced on the Survival level. These reviews, however, are followed by other concepts which build upon these basic ones and expand their applicability. This is the case in number 2 which allows discussin in number 3 of the undernutrition secondary to insulin deficit. The reviews in numbers 4 and 5 allow appropriate follow-up and evaluation before progressing to concepts 6 through 12 which discuss the major nutrients, their sources and effect on blood glucose levels. With this information the client can better understand the rationale for carbohydrate distribution given in number 13 and the importance of the emergency exchanges given in number 14. The basis for understanding the distribution of protein as discussed in number 15 and fat, as discussed in number 16, is also

laid. Concepts 14 through 16 allow flexibility necessary to deal with emergency and special situations encountered in home management.

Discussion of fat in the diabetic meal plan is continued in concepts 17 and 18. Referral to the exchange lists with unsaturated fat sources listed in bold letters makes number 18 easier to accomplish. By the time these concepts have been covered the client and family should realize the importance of nutrition in the control of diabetes which is concept 19. To further illustrate this the dietitian may want to have the client take his or her blood sugar immediately before and one to two hours after a meal, using the laboratory or chemstrips or dextrostix. Concepts 20 and 21 discuss the importance of consistency of intake in control and the use of exchanges in achieving it. Concepts 21 and 22 emphasize the already referred to importance of food for growth and health as provided by the meal plan. Number 23 discusses again that the meal plan should be easy to follow and adaptable to the client's lifestyle, hopefully encouraging further input by the client and family. The review in concept 24 of the effect of exercise leads to the specific dietary recommendations for unexpected or unusual exercise in concept 25. Concept 26 is a review, not of a previously presented nutritional concept, but one under the subject area of medicine with application as to the distribution of meals to prevent hypoglycemia. After this, the client and/or family should be able to give suggestions of nutritional alterations to be made in cases of recurrent hyper or hypoglycemia as indicated in number 27. Measures to prevent hypoglycemia in the case of delayed meals are presented in concept 28.

The use of alcohol in the diet, especially related to prevention of hypoglycemia, is presented in a basic fashion in number 29. Concepts 30 and 31 review and expand on the nutritional treatment of hypoglycemia to increase the client's ability to treat as well as to prevent it. Number 32 emphasizes the need of intake--especially carbohydrate and fluid--during illness and gives tools for calculating this. The final concept is essential--that of helping the client and family to plan future needed educational activities and identifying appropriate sources of nutritional information and counseling. This is basic to the concept of continuing education and achievement of a degree of self-sufficiency.

Refer to page 22 of the resourcebook and read this page carefully to acquaint yourself with the Improvement of Lifestyle level. Then skim pages 23 to 30 to become acquainted with the objectives in all subject areas at this level. First turn off the tape for about 5 minutes.

Educational offerings for Improvement of Lifestyle are focused on individual needs more than at either of the other levels. They should increase (the) client's and family's understanding of diabetes and the individual's related specific needs. The result should be intelligent participation by the individual in management of his or her diabetes and flexibility in management which will allow participation in a wide variety of activities and, ultimately, greater self-determination. Skills and knowledge at the Survival and Home Management levels should be mastered at this point. More than in other levels of education, assessment of individual needs must be thoroughly accomplished and

include age, occupation, likes, dislikes, fears, lifestyle, ethnic background, language, learning ability and willingness to learn.

The hospital in-patient setting is usually not the best for accomplishment of objectives at this level. However, some persons who have achieved the objectives of the previous levels may be admitted to the hospital for other needs such as pregnancy or surgery or for problems related to diabetes. As with clients at the Home Management level, the practitioner must be able to use this time to provide appropriate assistance in meeting Lifestyle objectives. This might best be done by individual counseling as well as planning with the client and family to provide other Lifestyle level educational opportunities after discharge. Diabetes education programs may provide Lifestyle management by means of small group discussions, problem solving activities and individual interviews led by a knowledgeable health professional. Individuals with diabetes used as educators are often very helpful in providing information about lifestyle management. The know-how to fit management of diabetes into a particular lifestyle can best be found in the experiences of successful persons with diabetes. Finally, individual interviews with the dietitian in coordination with the physician can often improve the lifestyle of the individual by providing observational insights and by being available for individual questions and problem solving. Often such educational opportunities as those suggested here are least available to the individual with diabetes.

The overall concepts presented at the Lifestyle level are more difficult to define because of the high degree of individualization.

Generally, the client and family should come to recognize the importance of control, factors influencing it, important control goals for himself or herself and behavior necessary to meet these goals. An understanding of how to modify regimen to maintain control while traveling, engaging in sports, and during illness should be gained. The client and family should be aware that vascular diseases are possible and that to increase chances for preventing or delaying complications control must be as good as possible. They should be prepared to cope with such possibilities. The individual should strive for essentially the same life goals as before diagnosis of diabetes and come to deal effectively with the impact of diabetes rather than being controlled by it. Special problems and the needs of different ages, such as school attendance, dating, marriage, contraception and pregnancy should also be understood and properly anticipated.

Please turn to page 36 for a list of suggested nutritional components of the Lifestyle level. While you familiarize yourself with this list, turn off the tape.

Because of the great variation in needs of clients and family members, these components have been listed only in terms of subjects with some detailed listings instead of the specific concepts suggested for the other levels. The practitioner should be aware that this can only be a general guide and much must be left to her or his individual disgression. There may also be some cases in which presentation of Lifestyle information may immediately follow presentation of Home Management information on a specific topic. This would certainly be

contingent upon the understanding of the individual and family. Starred concepts build upon previously given information. Usually the information given at this level would not be grasped well when the subject is first presented at the Survival or Home Management levels; however, there may be exceptions. For example, when presenting the restrictions regarding alcohol at the Home Management level some clients might wish and need a more detailed explanation as given at this later level. Again, individualization is essential. These components have not been listed in any particular order. The subjects should be presented in the order best suited to the individual's needs and there may be some subjects which need not be covered.

The first subject listed is eating out. Different types of eating out, from sack lunches to restaurants providing seven course meals, should be discussed. Exchange values for fast-food establishments are available from several sources and can be provided to the client. Practice can be given in this area using menus from various establishments or by "going out" as a group either to the hospital cafeteria or a local restaurant. The next listed subject is labeling. Labels can be a great aid to persons with diabetes and their families if they can do the calculations involved. Practice in using the method taught for converting label information to exchange values should be given the client with appropriate supervision from the registered dietitian. This would also be an appropriate time to supply lists of exchange values for commercial foods which have been calculated by the manufacturer or published in other sources. The discussion of alternative sweeteners, item number 3, should be both

practical and theoretical, according to individual needs. The discussion of dietetic foods will apply to most clients. Many persons do not understand the difference between "dietetic and diabetic foods." The suggestions given for holiday and party menus and foods should be individualized to meet individual tastes and traditions. Cookbooks for persons with diabetes provide excellent ideas. Adaptation of recipes may be more appropriately discussed with family members such as a mother rather than the client. A written step-by-step approach should be given for future reference. Items 7 through 9 refer to specific needs including pregnancy and growth. All clients and their families should have a genral understanding of these concepts but the details need only be discussed with those with that particular need. Further information on the effect of the various types of fat and sources of them are suggested in numbers 10 and 11 as follow-up to the basic concept presented at the Home Management level. Item 12 suggests evaluation of the meal plan with the client and family allowing them to be more involved with their nutritional care plan and more aware of special needs. The most important aspect of the review of prevention of insulin reactions in number 13 and of nutrition during illness, number 15, is that the client become increasingly able to make necessary adjustments as well as understand the basis for them. Thus, problem-solving situations should be included in counseling on these subjects. It is suggested in number 14 that details of the content and effect of alcoholic beverages be given as well as a review of rules for their use. As in all cases,

the counseling must address individual needs, number sixteen, and provide additional resources for the client, number 17.

Before concluding this discussion of the Educational Guidelines it should be emphasized that it is impossible to so-called complete these three levels. The Lifestyle level emphasizes individual needs which will frequently change, especially in the case of the adolescent. Thus, continual education is essential and synonymous with use of the Guidelines. Not only will needs change but also the ability and desire to understand and apply information. Information once covered is not necessarily completely understood even by the brightest clients. Furthermore, it is obvious that these levels are not always sequentially discrete or set. "Levels" of nutritional understanding may frequently blend together, making it difficult to distinguish between them. Even so, the concept of advancement of the client and family to new levels of understanding and application remains basic to the educational process. This <u>is</u> a dynamic process of progression and, occasionally, even retrogression. The essential components are individualization and frequent follow-up and counseling as opposed to delivering a set amount of material at one time. The label of "educated" then becomes relative and represents not an achievement of the client or practitioner but a process in which they are engaged -- <u>together</u>.

(II) Educational Program Planning in a Health Care Agency

In addition to engaging with the client in this process of education, the practitioner must be continually involved in educational program planning. Unfortunately, in discussions of patient education such as these, "education" is often considered as merely the educator-client interaction. However, this interaction is frequently ineffective without a conducive setting. Educational Program Planning involves the establishment of a setting conducive to achievement of the educational objectives at each level of the Guidelines. The two most important aspects of educational program planning are the establishment of a functional diabetes health care and education team and of a learning environment reinforced with various methodologies which provide information and learning experiences. Without a coordinated team approach, clients may receive conflicting information or be subjected to massive amounts of information and large numbers of expectations that overwhelm and frustrate them. And without educational programs the ability to achieve Guideline objectives will be limited.

Educational program planning in any health care agency begins by delineating responsibilities or roles in the educational process. This must be done both between health care agencies in the community and between health care professionals. Generally, facilities' responsibilities for diabetic education can be classified on the basis on which it is given--public health referral, out-patient appointment or in-patient counseling. Often a client will be involved in all

three of these situations and thus personnel in each setting should be aware of the services provided by other facilities. It would be futile to give specific delineations for educational responsibilities in the community in this presentation. They depend upon the resources within the community. It is, however, the responsibility of every dietitian working with clients with diabetes to be aware of and use appropriately the various available in-patient, out-patient and public health services. Furthermore he or she should have an understanding with personnel, especially registered dietitians, working within the various agencies as to the services provided and the information required. For example, if a client is to attend a diabetes education center, the registered dietitian should communicate to the dietitian at the center the patient's meal plan and nutritional care plan. Otherwise, the client may be presented with two different meal plans which would be confusing or different behavioral changes from those originally suggested to the client as top priority might be emphasized which would be overwhelming. Provisions and adjustments for differing exchange or food grouping systems used in different facilities and other differences in nutritional care must be made. In other words, the dietitian should not only recommend further education but make arrangements to assure that this education is useful rather than confusing or contradictory.

Frequent reference to the health care and education team has been and will be made. Essential features of this approach and suggestions for achieving it are given on page 39 of the resourcebook. The

philosophy of the team approach is that of improving health care and education by using a variety of health workers in a coordinated effort. By doing so, the client's education can become a single concerted and complementary effort rather than a fragmented approach. For the insulin-dependent adolescent this team should consist, minimally, of the physician, teaching nurse and dietitian as well as the client and family, though it will often include a social worker or psychologist and a clinical pharmicist. In this discussion of the team approach it must be first emphasized that the client and family are the most essential members of the team. Etzwiler (Etzwiler 1972) observed that while the concept of using a variety of health workers in a team approach to improve health care was valid, the most important member of the team--the patient himself--had been virtually forgotten. To achieve the desired control, he observed, it is imperative that the patient, as well as all other members of the health care team, be appraised of the objectives of health care and of their individual roles and responsibilities.

The inclusion of the client and family in the health care team requires a somewhat different approach than for professional members of the team. This should begin at the Survival level. Verbally explaining this is an excellent beginning and several of the nutritional components suggested for each of the educational levels emphasize the importance of client and family input. This along with soliciting information on preferences, lifestyle, traiditons, and so forth, may be adequate at the Survival level <u>if</u> the dietitian responds to this input. Such input should be presented to other team members

at team meetings which will assist in identifying priorities. Usually this is relatively easy at the Survival level but the priorities, once identified, should be presented to the client and family for acceptance or modification. As the client progresses past this initial phase, his participation should become more active in reporting information and suggesting changes. All such suggestions should be seriously considered by the registered dietitian. Etzwiler has suggested contracting, in written form, with the client for specific behavioral change. (Etzwiler 1972 and 1980a) This was partially in response to his finding that 150 nurses, physicians, and dietitians regarded the most important problem in the treatment of diabetes as the lack of patient knowledge and cooperation. He found contracting with clients for a single task to be carried out at home significantly increased compliance. By using a written contract technique compliance can be increased as much as three-fold and the client included in the planning. The written contract will explain what and how he or she must do, the expected advantages or rewards of doing it, and the role the dietitian will play--such as being available to answer questions and provide suggestions. Etzwiler also found that ongoing support or intervention further increased the patient's compliance with the contract. This was an increase from 52% to 64% with one telephone call and to 80% with two phone calls. This is another method by which the dietitian can include the client and/or family in the team and then assist them in carrying out their responsibilities. To achieve the control which is the ultimate objective of diabetes education it is imperative that the patient, as

well as all other members of the health care team, be appraised of the objectives of health care and of their individual roles and responsibilities (Etzwiler 1972).

Written delineation of professional members' roles and teaching responsibilities should be made as part of the initial establishment of the team. In the hospital setting, a basic series of Survival level of classes or subjects and the corresponding instructors might be outlined as well as follow-up and review procedures for clients who have advanced to other levels. As indicated in item number 3, page 39, there should also be a written copy of the team's philosophy, basic guidelines, and objectives for the diabetes education program. By outlining the general approach to nutritional care, the practitioner can usually increase physicians' understanding and cooperation. Such written guidelines not only facilitiate understanding and support among team members but can also be available to professionals who might refer clients to the facility for education. Critical to the success of the team approach is that each member understand and support all the basic principles taught by other team members and be willing to refer the client to the particular specialist who can best answer his questions.

It has also been indicated, in the discussion of Lifestyle level objectives, that educated and screened individuals with diabetes can be valuable members of the educational team. They can be included in a variety of ways--from a very structured program in which a few such individuals meet regularly with the team to an informal "buddy system" in which team members give them the names of clients whom they then

contact. With the adolescent, such "buddies" would also be helpful for the parents. It will be recognized that such associations may be much less beneficial if the person experienced with diabetes does not understand it or makes major deviations from appropriate control in his or her daily routine. However, a "perfect client" will not be found to act as a "buddy" or as a part of the education team. These persons should, however, have experienced the various levels of education and had successes in changing behaviors and adapting to lifestyles. Practical suggestions, experiences and success in living with diabetes, empathy, encouragement and a good example, as well as friendship, are the important contributions such team members can make.

Items 5 and 6 indicate that team members must coordinate their efforts and emphasize the same goals and recommendations. This will often mean restraining themselves from overloading the client with information. Page et al. (1981) found that 24 insulin-dependent children recalled an average of two recommendations made to them during a visit to a diabetes clinic while the dietitian, physician and nurse recorded an average total of seven recommendations per client. Further, forty per cent of the items recalled by patients were not recorded by team members. The investigators concluded that " it seems important that team members work together to limit the number of recommendations made at each session in order to maximize the probability that the most important recommendations are communicated and remembered." The team approach can provide a planned program with communication between professionals, resulting in one message being

given to the client and family and tools provided to assist them in acting upon that message.

Establishment of the diabetes education team and outlining its philosophy and programs results from a series of in-depth communications and interactions between professionals. These must be continued on a regular basis to allow effective team cooperation and changes in response to new research, assessments, and evaluations of the program. Communication of the dietitian's educational efforts to other team members and professionals can often be done simultaneously with documentation in the medical record. As indicated in the Guidelines, this documentation and communication should include assessment of the particular needs of the individual and family; teaching plan to meet the identified needs; materials given to and reviewed with individuals and families; individual and family response to materials and/or teaching; and a plan for review and/or follow-up of teaching. Several persons have also suggested the use of educational flow sheets (Etzwiler 1980b; Scalley et al., 1977) which include a list of items which are checked off as they are "covered" with the patient. These may be kept in the medical record or bedside chart for in-patients. They allow a quick evaluation of subjects covered and should also be designed to reflect an assessment of adequate understanding and ability to apply the concept. Only general concepts, such as those listed for each educational level would be listed. The team member responsible for teaching the concept would need to determine and present more specific components of each concept.

Communication among educational team members must not, however, be limited to such documentation. Regular meetings should be held to discuss individual client needs and care plans. Much essential information about the client may be gained by communcation among the various health professionals. Properly conducted team conferences can provide maximum information in a minimum of time. Regular meetings might be held at appropriate intervals to share information on each patient and determine goals. As team members pool their knowledge and assessment of each client, the ultimate goals for that individual often become immediately obvious. These must also be recognized and accepted by the patient, the most important team member. In settings where more than one dietitian functions in the team, communcation of the nutritional care plan between dietitians is essential. Communications must be maintained between all components of the patient care and education system. Etzwiler (1980a) reports luncheon meetings at two month intervals in which key members of each of three separate but interrelated health care delivery teams meet and exchange information and identify areas in which there may be disagreement.

Assessment, evaluation and modification of the educational process should also follow naturally from such meetings and communcations as new recommendations in the literature and problems encountered by team members are discussed. The team should set up methods for monitoring progress and determining results. For example, clients might be sent questionnaires to evaluate the programs in which they and their families have participated. The current behavior of the client such as frequency of major deviations from the meal plan or

frequency of severe hypo or hyperglycemia might be assessed. Besides behavior, assessment of knowledge using an objective test might be made. Many of these assessments could be included in educational and follow-up sessions. All data should be gathered and evaluated in accordance with sound research and statistical procedures. However, when such major methods are not readily or only infrequently available, the dietitian and other team members should not overlook more easily available, if less objective, evaluations. These might include correctly marked menus, and simple tests administered at the conclusion of an educational session. Results from all such evaluations should be presented, discussed, evaluated, and acted upon during team meetings and dietetic staff meetings.

The actual team approach to patient care may produce problems stemming from the varied philosophical background of different disciplines, inability of members to communicate with each other, overlap of roles, or inability of the team to recognize and use talents of individual members (Paxinos and Ferguson, 1978). Paxinos and Ferguson report that regular meetings, respect for each member's professional role, and coordinated administration can minimize these and other problems. They conclude that any disadvantages are far outweighed by the detailed specialized care a patient can receive from this approach without losing the continuous close relationship which is so important in the care of chronic disorders.

There are few dietitians who contest the advantages and uses of the team approach but many who despair of ever achieving it in their particular institution. There is no "cookbook approach" to achieving

an education team--there are too many differences in personalities, abilities, economics, needs, and resources. However, some genral guidelines as outlined on pages 39 and 40 may be of assistance. Included under the list of references for Part two on page 50 of the resourcebook are several excellent and informative articles on the implementation of a diabetes education teams in a number of different settings and facilities . Other publications and resources are given on page 44. Doctor Donnel Etzwiler, M.D., (1972) has made the observation that "most dietitians would do well to assume a more aggressive role in health care. They are among the most highly educated of allied health personnel and have tremendous skills and resources to offer to patients and to share with other members of the health care team." An initial step for the dietitian to take in developing a team would be to select a physician, usually one who sees many clients with diabetes, who seems to understand the importance of the nutritional care and education she can offer. Developing a good professional relationship with such a physician or several physicians will provide an excellent basis on which to build. Other physicians and allied health care personnel will then see the value of her assistance and be more likely to seek it. Excellent support from the medical committee of the facility can thereby be gained. The dietitian's presence at rounds and as a new patient with diabetes is admitted will allow the opportunity to explain what she has to offer to the client and physician. When the practitioner is prepared to propose specific plans and programs there will then be a basis established for understanding, acceptance, and cooperation.

Suggestions should be specific and concrete. Statements such as "Doctor, we need a better approach to diabetic education" provide only a vague sense of criticism whereas a specific plan allows intelligent discussion and interaction. It is usually best to discuss proposals with several physicians and allied health personnel to gain input and support before taking them to the entire medical committee and/or administration. Finally, perseverence with both physicians and administration is essential.

Educational program planning is the partner of establishing an educational team in the dietitian's effort to provide a setting conducive to the educational process. As should be evident from the preceding discussion, there is a need for different options in educational programs to meet differing needs of clients. This process of planning is commonly referred to as instructional development for which a number of models have been devised, all of which employ the three important steps of analysis, design, and evaluation. Several resources giving detailed information on and guidance in this process are listed on page 44 of the resourcebook, number 3. (Pause) Item 3a is an excellent sourcebook and refers to the model to be discussed herein. This is a systems-approach, referred to as the Four-D Model because it divides the instructional development process into the four stages of Define, Design, Develop, and Disseminate which had been summarized on page 41.

The purpose of the first stage is to define and stipulate instructional requirements. This is an analytical stage in which the objectives are set along with constraints for the instructional

materials. First, the educational challenge facing the dietitian is studied and a search for relevant instructional materials and/or programs already in use is conducted. On pages 42 through 47 of the resourcebook is a list of resources which might be consulted. Leading drug companies are also a source of many materials on nutrition and diabetes. Local affiliates of the American Diabetes Association, as listed in the resourcebook, can supply valuable materials including the comprehensive new American Diabetes Association Cookbook. A newer resource for nutrition education materials is the National Diabetes Information Clearinghouse which provides annotated bibliographies on various subjects pertinent to diabetes. The bibliographies also include the source and cost of each material listed. Each bibliography is divided into two parts: Information for persons with diabetes and information for professionals. Each of these parts includes both print and nonprint (such as slides and tapes) materials. The Clearinghouse has been developed to act as a central resource for such information so that all possible information can be available for use by professionals and persons with diabetes across the country. As listed on page 44, Clearinghouse bibliographies pertinent for dietitians include: Diet and Nutrition for People with Diabetes; Cookbooks for People with Diabetes; Teaching Guides for Diabetes Education Programs; Educational Materials for and about Young People with Diabetes; Materials and Aids for the Visually Impaired Diabetic; Diabetes Educational Materials for Adults with Limited Reading Skills; Spanish Language Materials; Pregnancy and Diabetes; and General Information About Diabetes. These can be obtained free of charge by

writing the Clearninghouse address given on page 42 as can the Clearinghouse bi-monthly newsletters. These bibliographies will enable the practitioner to determine if materials exist to meet the identified needs and objectives and to obtain any such material for further evaluation and possible use. If neither pertinent instructional alternatives or materials are available then the development of instructional material and/or programs is called for.

In defining instructional requirements for such materials, an analysis of the target clients must also be made. Each client and family member will be different but typical and/or common educational backgrounds, experiences with nutrition and diabetes, and general attitudes should be identified. Next a task analysis or concept analysis should be done. This involves identifying the main skill to be acquired or major concept to be taught and analyzing it into a set of necessary subskills or individual concepts. After such an analysis, instructional objectives can easily be specified by converting the results into behaviorally stated objectives. These provide a framework for development of content, test construction and program evaluation. Objectives also allow rapid determination of the program's ability to meet clients' needs and goals. The dietitian can then choose the program which most closely meets those needs and modify or supplement it as necessary.

After the need for an instructional program and/or material has been identified and typical student characteristics and behavior objectives determined, the developer can move to the second or design stage. The first step is to design a criterion referenced test which

converts behavioral objectives into an outline for the instructional material and supplies on evaluative tool. Next, media for the presentation of instructional content must be selected based on the task and/or concept analysis, common client characteristics, production resources, and plans for use. Often a combination of media will be chosen rather than a single medium. Format selection must then be made. The Design stage is completed with the development of the initial design. Learning activities as well as formal instruction should be included as part of any such design for an educational program.

The third or Development stage involves modification of the initial design. These modifications are in response to expert appraisal and developmental testing. First, a number of experts, such as physicians, dietitians, and educators are asked to evaluate the material from instructional and technical points of view. It would be well at this point to involve members of the diabetes care and education team. Perhaps physicians who have been less cooperative can also be consulted, resulting in greater communication, cooperation and understanding. On the basis of such feedback, the material is modified to make it more appropriate, accurate, effective, usable, and of high technical quality. Developmental testing involves trying out the material with actual clients and family members to identify needs for revision. Clients rehospitalized for diabetes control may be helpful in such evaluations. Some of them may feel they have no need for further information and education but in the process of "helping" develop and evaluate materials may gain additional insights as well as

share their important knowledge and ideas. On the basis of the responses, reactions, comments, and clients' performance on tests, the material is modified. Assessment of whether or not behavioral objectives are met should always be done as part of developmental testing. Ideally the cycle of testing, revising, and retesting is repeated until the material works consistently and effectively. In most facilities, after initial appraisal and testing, the material and/or program may be actively used in education of clients and families with diabetes while further evaluation is carried out. When already existing materials and/or programs have been found, the Design step will be omitted but objectives should be defined and the evaluation at the Development stage should still be conducted to assess the effectiveness of the material or program and modifications which may need to be made to meet objectives.

The fourth stage, Disseminate, is seldom used by the dietitian. However, if there is a desire to share the material or program with other professionals, a summative evaluation should be conducted. Final packaging and distribution, sale, or publication may then be carried out. Many dietitians do not have the time, inclination or resources to mount an ambitious instructional development project involving all four stages. However, the process need not necessarily be complicated. Practitioners frequently undertake analyses of their educational programs and client characteristics and may have developed some instructional materials and even programs. In such cases, the Define stage is well underway and development of a simple material or

program not impossible. Testing and evaluating can be conducted as a natural part of the facilitiy's educational programs.

Using the steps of instructional development, a number of educational programs may be devised which employ various methodologies. These include one-on-one counseling by the dietitian, diabetes education centers and camps, home visits, discussion groups of professionals and individuals with diabetes, and basic classes on nutrition in diabetes. While these will be the major methodologies or approaches discussed, the dietitian may well discover and employ others as she seeks to meet clients' needs. A sample of articles discussing, describing and explaining these various approaches are included in the resourcebook, under refeences for part II. They have also been summarized on page 48 and 49 with space given for the practitioner to note possible applications in her practice. The most important methodology employs the individual registered dieitian counseling the individual client and/or family. Such a practitioner should be available for individualizing nutritional care and education plans at every phase and stage of education.

A more specialized type of educational methodology is embodied in the concept of a Diabetes Education Center. Similar to these are camps for children and adolescents with diabetes. Frequently these also provide excellent education for professionals. The basic assumption of such a methodology is that by offering a comprehensive learning and self-care living-in experience, the necessary understanding and skills can be attained and the individual made more self-reliant (Prater, 1974; Etzwiler, 1980a). Goals and objectives

can be set for and with each client for his stay at the center. The client may also choose a family member to accompany him to the center, especially in a live-in situation. In such a situation a dietitian can be present at meal times and assist in practical application of the meal plan in a variety of situations and answer any questions. By meeting each client at the beginning of the stay, usually for five days, the dietitian can assess and modify the meal plan and identify important items to be covered during the week. Camps offer similar opportunities with dietitians present to assist in food choices for recreation as well as provide basic information. Usually family members are not present, allowing the young person with diabetes to "be on his own" and associate with peers with similar challenges. Besides having a direct role in such programs, the dietitian can and should refer clients to them.

Home visits have been briefly mentioned, specifically in regard to achieving Home Management level education. Ideally, individualized instructions and observations can be carried out both at home and in the office by the nurse, the attending physician and dietitian. Programs allowing dietitians and nutritionists to visit homes have been somewhat limited. However, such opportunities would provide valuable information and teaching opportunities to the practitioner and should be pursued, as possible. In the situation which does not allow the dietitian to make home visits, there may be opportunity to train others to represent him or her in the home visit. Dwyer and Fralin (1974), have suggested a program in which a nutritionist instructs visiting nurses on nutrition for their clients with

diabetes. The nutritionist and visiting nurse frequently exchange information and set goals for each client. Then, on occasion, the nutritionist may visit the client with the nurse or meet with the client in the office. Use of educated persons with diabetes as diabetes education team members has been previously discussed and it should be noted that such persons often conduct informal home visits. They may also provide some nutritional instruction as well and may give appropriate feedback to the dietitian concerning further educational and nutritional needs. Each dietitian should evaluate the possibility of including some such home visiting program in the educational programs of the facility or of referring appropriate clients, with adequate information provided on their nutritional care plans, to public health agencies which might make such visits.

Group discussions with professionals and persons with diabetes and their families provide excellent continuing education opportunities which can be tailored to meet the needs of the clients in the community. Such programs, sometimes referred to as diabetic forums or clubs, may be sponsored by a hospital or local American Diabetes Association affiliate. By involvement in such programs the dietitian can relay the nutritional needs of her clients, on the Home Management and Lifestyle levels, to the organizers so that programs can be organized to meet those needs. She may frequently be involved in presentations and discussions for such groups and should encourage attendance by her clients.

Many hospitals provide basic classes on nutrition in diabetes, mainly at the survival level. These have many advantages if used

appropriately. They allow the presentation of information which almost all clients and their families will need. However, before attendance at such classes the dietitian should conduct interviews with the client and develop an individualized meal plan and nutrition care plan for him or her. Any other individualized instructions which are needed before the classes should be given. Following the classes, which usually present the exchange lists and their use, follow-up should be given to assure that proper understanding has occurred. These classes may also be used to give a good review to clients and family members of Survival level nutritional principles. Because of this, concepts which are presented more appropriately at the Home Management level are sometimes introduced at this time. This may be fine for those who have received Survvial level education previously but often overwhelms the newly diagnosed individual. One solution would be to provide two or three separate classes, the first presenting the most basic information--to which all would be invited. The other class or classes might then deal with eating out, emergency exchanges, sick day nutrition, and so forth with clients invited to attend only when they had advanced to the Home Management or Lifestyle Level. Hassell and Medved (1975) found that patients with diabetes receiving instruction in group classes utilizing audiovisual teaching techniques achieved significantly higher post-test scores than those taught in the traditional bedside manner. In addition, the dietitian's time was greatly reduced.

Hassell and Medved's findings also emphasize the importance of using appropriate audio-visual materials to enhance any instructional

process. By using the instructional development process appropriate materials can be found and developed for use in the various approaches and programs. Such materials are valuable for illustrating and reinforcing appropriate concepts and ideas by appealing to more than the sense of hearing. Examples of this include food models to illustrate food groups and serving sizes, a balance or scale to illustrate the relationship of food, insulin, and exercise, and even the use of the hospital cafeteria to illustrate and practice rules for eating out. Filmstrips may be used to introduce the exchange lists and their use. Printed materials can provide details of the exchanges, recipes, guidelines for eating out and supplemental exchanges. It is usually the printed materials which are overly or improperly used. They should never be handed to a client or family member without an explanation of their use. If the pamphlet contains a great deal of information, the client should have the important parts pointed out to him or be assigned to study a section at a time. Such detailed information, including the exchange list booklets, should be followed-up with evaluations to determine understanding and answer questions. Provision of more than two or three handouts at any one time will be confusing. It is also well to determine in follow-up sessions if the client and family have been able to use the information appropriately and point out other ways in which it might be used. A major challenge in working with children and adolescents is that most printed materials available are designed for adults and persons with a high school education. In this regard, the annotated bibliographies put out by the Diabetes Information Clearinghouse on

Educational Materials for and about Young People with Diabetes and Diabetes Educational Materials for Adults with Limited Reading Skills will be of great assistance. Appropriately simplified information and information related to the concerns of this age group should be obtained or developed. Other materials may be provided to parents, teachers and relatives.

Programmed education and self-learning units are specific types of audio-visual materials which can be complete educational programs in and of themselves. Several examples are cited in the references. Such an audiovisual unit can supplement the interview of the dietitian and assist clients with their nutritional management. Programmed learning specifies behavioral objectives in complete and explicit terms, presents information in a logical sequence, allows self-pacing, and requires the learner to participate actively and receive immediate feedback. It also cuts down on the initial time the dieitian spends with the client, freeing more of her time for appropriate follow-up. Etzwiler (1972b) found that such a program could be used to teach young persons with diabetes and their parents about diabetes and its control. Patients and parents expressed acceptance of the programmed instruction as a valuable adjunct to the total education process but all agreed it should not be the sole method employed. Etzwiler (1972b) reported many advantages of programmed instruction including the decrease in the amount of professional time required; provision of consistent, complete programs of high quality; individuals are allowed to acquire knowledge at their own learning rate; and material is readily available for periodic review. He identified the

disadvantages as including the inability to individualize; the danger that professionals may use it as the only means of education; the somewhat impersonal nature of the tool; and the expense of the equipment.

Financing educational programs and personnel is perhaps the most challenging aspect of program planning for the dietitian. He or she must be able to justify educational programs to administrative personnel who are concerned with budgeting. The resourcebook list of Part II references includes several which describe the cost/benefits of such programs. Isaff and Alogna (1977) reported an annual savings of $628,000 as a result of a program of continuous follow-up and in-depth education for medically indigent persons with diabetes and their families. Brouhard et al. (1978) conducted a study with children and adolescents with diabetes which indicated that effective patient education can result in decreased hospitalization as well as significant cost containment. They assessed the annual savings to be $40,950 for 28 patients - $1,463 per patient. One case was cited in which the patient's cost was $6,461 less for the five years after adequate education as compared to the five years prior to this intensive education. Torsten et al. (1978) have reported a study showing that with an average of 4.4 annual outpatient follow-up visits, the duration of diabetes which in turn reflects longevity was prolonged by 11.9 years. The cost was estimated at $10,468 per patient over forty years but the benefit per patient over the same time period was $100,656. The references given in the resourcebook

may be useful to the practitioner in presenting her request for funding.

As in organizing a health care team, requests for funding are most successful when accompanied by detailed information. This might include references from the current literature, statistics on the numbers of persons with diabetes served by the facility and their needs, as assessed in the first stage of instructional development, an outline for effectively meeting those needs, and anticipated costs and benefits. If a diabetes care and education team exists in the facility, their combined support will aid in such requests as will the support of individual physicians, other health professionals, and individuals with diabetes in the community. Some dietitians have found that excess funds gained from weight control classes and similar money-making services can be channeled into diabetes education. Even if such money does not return to the dietary department, it can be a useful tool in gaining financial backing for diabetes nutrition education programs. If administrative personnel are told that diabetes education programs have a higher priority than the money-making services which will thus be eliminated if funding and staffing are inadequate, it is likely that they will desire to provide the means to continue <u>both</u> types of programs.

Financial considerations should also include the client. Many medically indigent persons look upon diabetes education as a luxury they cannot afford. Educational program planning must take this into consideration. Perhaps medical social workers could make suggestions for funding through insurance or government programs. Fees might be

based on ability to pay. This is an extremely important area to assure that the programs reach the persons for whom they are designed. They should also be publicized in a variety of ways. Physicians must be made aware of such programs, their objectives and the means by which they may enroll their patients. They should be encouraged to recommend the programs to patients and might post announcements of such programs in their offices. A system might be devised to identify all patients with diabetes who are admitted to the hospital, inform them of and involve them in both in-patient and out-patient educational activities.

The initial requirement of time, money, and, most of all, effort to establish a diabetes education team and appropriate educational programs is frequently great and may even seem overwhelming. It is best to identify short-term objectives or tasks which will gradually lead to the provision of such an environment--conducive to true learning and education. The only true failure in this venture is the dietitian who never begins--who never takes the first step--or the next step if some have been taken. And since the very nature of this effort is one of constant evaluation, follow-up, and revision, each practitioner has an equal responsibility to take a step forward in this on-going process.

(III) THE ADOLESCENT WITH DIABETES MELLITUS

Application of the Guidelines for Education of Individuals with Diabetes Mellitus in any setting requires an understanding of individual needs. Adolescence is a time of very special needs. Chronologically, it is the time span from approximately 12 years of age to 21 years of age. Sociologically, it is the transition period from dependent childhood to self-sufficient adulthood. There are several developmental tasks of adolescence that must be successfully accomplished if the individual is to become a mature, well-adjusted adult. And, as Etzwiler (1962) has pointed out, during each year the young person with diabetes must be taught more about his disease and encouraged to assume increasing responsibility so that proper understanding, attitudes, and skills will be developed to meet the ultimate goal of self-care as he approaches adulthood. Daniel (1975) has summarized three stages of adolescent development which may be related to reactions to diabetes. These are outlined on page 53 of the resourcebook. In early adolescence there is a period of rapid growth and the person seeks a certain degree of freedom from the family as he begins to accept self-responsibility and moves from the influences of the home toward those of the peer group. There may be minor conflicts at home as the adolescent struggels for this freedom, sometimes more than he is ready to handle. An important aspect of this stage is the great concern with body image as there is rapid growth and maturation and the individual wonders if he will be tall and muscular or if she will be slim and attractive. The boy or girl

in early adolescence needs to know, more than anything else, that he or she is normal, usually seeking this reassurance by comparison with peers of the same sex. The concern is more with the present than the vague, distant future. Emotional normalacy is tested by acceptance into a peer group and by the ability to make friends of the same sex. Young adolescents spend a great deal of time just thinking and exercising their new found abilities of abstract thought and formulation of hypotheses which they relate to personal plans, peers, parents, and teachers.

Serious illness is extremely difficult for an early stage adolescent because of real or imagined threats to body image and physical integrity. If such an illness occurs before the period of development during which an adolescent moves from an idealized body image to a realistic one, there is a danger to normal psychological development. In addition, if the illness separates the young person from members of the peer group such as in confinement to the hospital, thus depriving him of control over his body and personal activities, there may be great difficulty in coping with the diabetes. However, having to be cared for by others is less of a problem during early adolescence than in later stages and such attention may even be temporarily enjoyed.

Mid-adolescence is often the peak of struggling with parents and others for control of personal destiny. A peer group may replace the parental influence and begin to set behavior standards. The desire to be attractive persists but is less related to ideal or real body image than it is toward acceptance by the opposite sex. Thoughts are more

outward with greater interest in the community and world, which may be accompanied by intense but temporary support for idealized causes. Inward thoughts and fantasies relate to imagined great achievements and situations with the opposite sex. Serious illness at this stage relates to independence, acceptance and sexuality. Individuals are still concerned about achieving prominence and acceptance--the male through characteristics based on strength, aggressiveness, and athletic competence and the female through attractiveness and an outgoing personality. If time is not taken to present the problems and consequences of diabetes clearly and fully, adolescent clients may take what little is told them and enlarge upon it, dramatize it or distort it.

Older adolescents are usually more stable than their younger, less mature counterparts, having established a satisfactory degree of independence and maleness or femaleness, relating well to members of the opposite sex, and having the ability to love and be loved. There has been acceptance of self; followed by interest in and relationships with others. Often at this stage, a dating partner has supplanted parents and peer group and thoughts and conversations are invested in exploring possibilities of careers, lifestyles, marriage, education, and other imminent decisions. There is thus an increased concern for the future. Illness at this stage may affect the relationship with one's boyfriend or girlfriend or one's choice of vocation or educational goals. Often at this stage, illness is only slightly related to body image, self-responsibility or sexuality. Bennett (1978) pointed out that for the adolescent with diabetes the struggle

for independence may be heightened when parents are controlling and rigid, sometimes resenting the teenager's dependence while contributing to it. Occasionally, becoming self-sufficient with regard to diet may represent an overwhelming task to the teenage client. This would exagerate the feelings of helplessness and hopelessness common to adolescents. Bennet also pointed out that older teenagers may feel less acceptable to members of the opposite sex or have concerns related to the possibility of hypoglycemia in social settings or the prospects for future vocation, marriage, and childbearing. Finally, Bennett felt diabetes might seriously interfere with the development of a mature ego and acceptance by peers. If a teenagers feels he does not belong to a specific group, there is often decreased self esteem and impaired self-image.

A basic educational approach must thus provide for an adolescent's increasing needs for self-responsibility, integrity of body image, for the resumption of mastery and control of himself and his life and for the maintenance or restoration of self-worth. Practitioners can help meet these needs by involving the boy or girl in the management of diabetes and the decision making process and by urging independent nutrition management of the diabetes within the family to the degree of the client's capability. The adolescent client should also be urged to become active in a peer group and to continue with educational and vocational plans. He must be made to feel that the health care and education team members respect him as a person and believe he can cope successfully with the diabetes. Specifically, the dietitian should also arrange the prescribed meal

plan to allow as much as possible for snacks at inconspicuous times, eating out with peers, and other activities with the peer group. Suggestions should also be given for other measures to adapt the meal plan to the teenager's lifestyle and thus avoid feelings of stigmatism or inadequacy. Adolescents with diabetes may feel fairly normal and focus on the normal aspects of their life situation while their parents focus more on the management problems of the diabetic regime and emphasize the condition rather than the normal life situation of their children. In counseling, the dietitian must attempt to join these forces for a well-rounded approach. It should be emphasized that good control is essential but overemphasis of the dietary regime can be detrimental.

References listed for Part III include a number of studies of adolescent attitudes towards and problems with the diabetic diet regimen. The reports have been summarized on page 55. Several European and Israeli studies have examined the attitude of adolescents to the diabetic dietary regimen and the family dynamics of eating habits in young diabetics (Gill et al., 1979; Ludvigsson, 1977 and 1979; Steinhausen et al., 1977; Zuppinger et al., 1979). Generally, a positive attitude toward the diet was found, in one case 93.1% accepted its regularity and 77.6% had a positive attitude towards its content. Only 11.6% considered the diet too rigid with 30.6% feeling it was "sometimes too strict" (Ludvigsson, 1979). The reports indicate that the majority of families cooperated with the clients in keeping regular meal times and eating together. Gil et al. (1979), however, reported 36% of his subjects were served separate dishes and

only 13% of the families had changed their eating habits to match that of the adolescent with diabetes. The studies reported that a majority of families continued purchasing sweets, thus increasing temptations to the client. While Gil et al. (1979) found friends were not a significant cause of dietary disturbance, Zuppinger et al. (1979) found that seduction by peers to take sweets was a major problem, even though information was given to the peers concerning the diet. A fear of stigmatism was the cause of omitting pre-exercise calories and deviating from the diet at school, according to Zuppinger (Zuppinger et al., 1979) while Ludvigsson found the diet was followed at school and felt this indicated acceptance by peers. Family problems evoked by the diet were also reported including sibling rivalry, both with siblings of the subjects envying the special foods and subjects envying their siblings the ordinary foods they were served. Mothers complained of increased financial burdens and additional time required for food purchase and preparation. In Gil's report (Gil et al., 1979), 25% of the young clients had unsatisfactory eating habits with the best diet achieved in the younger, prepuberty group when there was greater dependence upon parents. These reports come from outside the U.S. and similar studies are needed here. Some of the reports are contradictory but all reflect the special needs, concerns, and potential problems of adolescents with diabetes.

In the U.S. Bennet and Ward (1977) found that in some families food becomes a manipulative tool in the hands of the adolescent or the parents and felt that not until this aspect of care is seen in perspective and the adolescent accepts responsibility for himself will

reasonable control be achieved during these critical years. Khurana and White (1971) reported dietary indiscretions of moderate to extreme degrees in 72% and mild indescretions in 24% of female adolescent campers and counselors with diabetes. They concluded that such problems develop from the characteristics and needs of young people, the frustrations of diabetes itself, and the attitudes of their parents.

A general lack of knowledge among adolescents with diabetes has been frequently reported. Etzwiler (1962) has suggested that self care should be urged beginning at the age of 12 or 13 but not before, with the assumption that knowledge would increase as the client matured. Each year, he suggested, the child be taught more about his disease and encouraged to assume increasing responsibility with the ultimate goal of self-care in early to mid-adolescence. Ludvigsson (1977) found that 62% of Swedish adolescents with diabetes had unsatisfactory knowledge about diabetes with only 21% having "appropriate food habits." He also found that clients entering adolescence had poorer food habits than a younger group but that there was a trend toward better food habits among those with better knowledge. Tietz and Vidman (1972) showed similar problems in the U.S., finding persons in the midst of an "adolescent growth spurt" clustered in groups with fair or poor control. Finally, Bennet and Ward (1977) found that clients who do best are those who have been given the best understanding of their disease in the early years and who have learned to manage it themselves. Education and follow-up of the adolescent with diabetes is thus critical for control and

management which will affect the course of the disease throughout the remainder of life.

As Tietz and Vidman (1972) and Ludvigsson (1979) found, knowledge of proper control of diabetes is not necessary correlated to good control. However, Ludvigsson did find a positive correlation when knowledge was combined with positive attitudes. Thus, the question of compliance in adolescents with diabetes must be considered separately from the giving of information. Before this discussion of compliance begins, turn to page 56 and follow the summary of factors leading to noncompliance which will be discussed. Joan Hoover (1980) has presented an interesting perspective on compliance, as listed in reference number 9 on page 57 of the resourcebook. She points out that non-compliant clients may often simply be responding to their higher priorities of which the practitioner is not aware. Most clients and parents would not be so straight forward as to tell a practitioner, especially a physician, they will not follow his instructions and give their reasons. It would seem unreasonable to them to risk displeasing someone in whom the client's future and even life may depend. The dietitian does not hold the same position as the physician in such situations but there are similarities. Thus, the basketball player may never reveal to her that his first concern is avoiding reactions during games, even at the price of consistently high blood glucose levels. The practitioner should strive to tailor her priorities to fit those of the client. Then, it will not be a question of compliance in the negative sense of yielding to another, a situation which would threaten the adolescent's desire for

self-sufficiency and independence. Rather, it would be a team effort to accomplish common goals. The truly compliant client, then, is not compliant but motivated to follow recommendations because he wants to.

Another aspect of non-compliance to be considered in adolescents with diabetes is its inherent rewards for some clients. For example, the author, who was diagnosed with diabetes at the age of 9, remembers, with some embarrassment, purposely neglecting her injection on several occasions so she could go home during school to take it. This was simply for attention from friends and teachers, which she received in abundance. She felt postponing her injection for an hour or two was worth the attention and admiration for being able to live with diabetes which she received. Perhaps even hospitalization offers such advantages. A classic example of such motivation is the use of water to substitute for urine at diabetic camps, resulting in "negative" bedtime tests and extra food or even sweets--presumably to prevent night time insulin reactions. Thus, for some clients so called non-compliance holds rewards such as attention, special care, and food which are to them more important than the promise of good health and feeling well. In other cases, clients may simply lack other choices. In such cases, the dietitian has no right to expect compliance but should rather adjust the recommendations or offer other types of assistance. Finally, the practitioner should seek to avoid placing unnecessary guilt upon the client and family. For example, clients should be helped to understand that test results are not a "report card" on their performance or value but rather on the diet and insulin regimen. Further, promises should be carefully made.

Promising that no complications will result if adequate control is maintained may occasionally be motivating but will place much guilt upon the person who has suffered complications--whether or not they complied. This will also be true in promises of ease in controlling the diet and diabetes. Again, Joan Hoover, reference number 9, has examined these factors in detail from the client's perspective. She concludes that the only sound promise which can be given is that of feeling and functioning better and hopefully increasing the chances of avoiding or postponing complications.

If diabetes has been described well and the client and his family fully understand what compliance to the instructions will and will not do for his health, then the practitioner has fulfilled her responsibility. It is not so much the client's responsibility to live up to the expectations of health care professionals but rather the professional's responsibility to present this information to the client and family and tailor the regimen to fit their needs and priorities. If they are given the options to strike a balance between their preferences and the practitioner's requirements in an appropriate manner, it is likely the choice will be made to comply. If this choice is made, there will be even more need for support, reinforcement, and follow-up from the practitioner. If this choice is not made, creating guilt for the teenage client and his parents will not give them their needed self-esteem and confidence. There will still be a need for follow-up in a non-critical manner so that the dietary requirements will be realistic and information and

reinforcement will be available to the client when problems arise for which he will recognize a need for help.

Another useful report on non-compliance or "cheating" in children and adolescents with diabetes is listed on page 57 of the resourcebook. In it Belmonte et al. (1981) described sporadic "cheating" characterized by diet abuse and subsequent reports of negative tests in an effort to hide the resultant hyperglycemia. Prolonged cheating in the form of false urine tests was detected in 6% and was not correlated to age. The investigators also described the difficulty of determining such cheating. They felt the underlying causes included anger; depression; a desire to be manipulative; a desire to attract attention; a desire to escape from the normal routine; a belief that negative tests or discontinuance of insulin would mean the diabetes had been cured; testing to see if the diet and/or insulin were really needed; and simple desires for unallowed food or extra foods, sometimes combined with attempts to hide such desires. These are all examples of higher priorities and misconceptions which many practitioners fail to identify and deal with. The article also gives suggestions for identifying cheating and preparing parents for it. It is suggested that proven recurrent cheating should be dealt with openly, truthfully, and with compassion. If it is ignored it will be prepetuated. Finally, the investigators felt that cheating might often be a signal to parents that the younger child is not ready to accept full responsibility for diabetes management. On the other hand, adolescents are initially intrigued with the disease and the great knowledge they gain of it. This

attraction may later wear off, leaving only drudgery and routine. At such times, it is suggested, parents and practitioners need to offer help, support, and encouragement.

In a German study (Steinhausen, 1977) it was found that adolescents with diabetes in good or fair control initially perceived a high amount of maternal support. This declined as time went on. The reverse was found in clients in poor control, perceiving a small amount of maternal support in the first year and higher amounts the longer diabetes continued. This may be related to personality and perception but may also reflect the initial need for support while the client learns and practices necessary routines for diabetic control. It may be that the practitioner should provide a higher amount of support through counseling and follow-up during the first year after diagnosis. As the client and family learn during this time, supervision can be decreased as self-sufficiency increases. Sulway et al. (1980) have summarized professional attitudes which may lead to non-compliance. They include blind belief in the efficacy of treatment, hiding behind professional roles, keeping power and responsibility for treatment to themselves, overestimation of compliance without objective assessment, and being unable to say "I don't know" for fear of losing face. Galatzer et al. (1979) could find no single variable or combination of variables which could indicate the degree of general or nutritional compliance in juveniles with diabetes in Israel. They concluded that compliance depends on numerous personal factors and that individual contact including personal instruction and guidance must be used to enhance the client's

motivation. Thus the dietitian must take responsibility for assessing the adolescent's individual priorities and needs and developing a regimen to meet them and their general needs for freedom, self-responsibility, positive body image, good peer relationships, attractiveness to the opposite sex, and opportunities to make plans for their future. She must be able to work with the client and follow-up to assure he is assisted in taking increasing responsibility for self-care and gaining the tools to cope with and control diabetes throughout his adult life.

IV. THE EDUCATOR-CLIENT INTERACTION

The actual educator-client interaction is the focal point of the entire process of effective education of the person with diabetes. The major steps of this educational process are diagrammed on page 58 of the resourcebook. The first major step, educational program planning has been discussed in Part II and includes establishment of a functional diabetes care and education team and provision of educational programs and learning experiences using various methodologies. When this has been achieved the facility's environment will be conducive to effective educator-client interactions, the second major step in the educational process. The interaction is not, however, a single incident but involves three steps as indicated on page 59 of the resourcebook. Each actual instructional or counseling session must be combined with the steps of evaluation and follow-up, leading to a continuing process.

Turn to page 60 for details on the steps leading to instruction or counseling. The step immediately preceding the counseling session is the development of an educational prescription which involves selection of educational content and approach. The initial step in the development of the prescription is listed at the bottom of the diagram. It involves identification of the client's and family's current educational level. As has been discussed, each of the three levels involves the accomplishment of certain nutritionally related objectives. Thus, by determining the client's educational level the practitioner will gain a general insight into behaviors the client

should be doing following their interaction. This will necessarily need to be individualized. It should also be remembered that the objectives stated as learner outcomes must be translated into behavioral outcomes.

To individualize the objectives of the educational goals assessments must be made of the knowledge and behavior of the client and appropriate family members. As indicated on the diagram, the assessment of the client's current knowledge must be compared to the assessment of the knowledge necessary to achieve the desired behavior. Along with the analysis of knowledge there must be assessment of the client's current behavior in relation to the desired behavioral outcome. Finally, the behaviors most likely to be modified by education must be assessed. This involves assessing current desires for information and assistance and the client's personal priorities and goals. If the client and family do not have a desire for information, the registered dietitian must plan to develop such a desire before proceeding. This may be done by seeking to understand the priorities and showing the client how her assistance will help meet them and the general advantages of the educational program. The client should at least know how to contact the practitioner for assistance. If desires for information exist in some areas but not in those the practitioner feels most important it may be well to initiate the interaction with the desired information. As the client receives this desired assistance her trust in and rapport with the practitioner will increase and she will then be more receptive to suggestions that other information might be useful. In some instances the practitioner

might suggest other important information first be covered to lead up to a competency level necessary to understand the desired information and perform the desired behaviors. Using the assessments of priorities and desired information, goals for behavioral change and criteria for evaluating accomplishment should be set with the client and, when appropriate, family members. Using the assessment of need for knowledge and current behavior and the goals set with the client to change that behavior, appropriate educational content can be determined. Note that after determining the client's educational level and the corresponding required behaviors and before setting goals with the client, the diagram suggests prioritizing behaviors. When several behaviors need to be changed, this is an important step so that the client will not be unduly overwhelmed with expectations for multiple simultaneous changes.

Once the educational content required by the client and family is prescribed, the educational approach must also be determined to complete the prescription. Even if specific information is desired, if it is presented in an inappropriate manner it may not be useable or motivating to the client. Seven factors should be assessed to determine the factors most likely to influence the behavior in question. These have been discussed by Bartlett (1978) and others listed in the references on page 63 and are summarized on page 61 of the resourcebook following the diagram. Please turn to this summary. The process of identifying the factors which prevent a client from complying with a particular procedure is called behavioral diagnosis. Once the impediments to and catalysts for behavior change for a

particular client have been isolated, the appropriate educational-behavioral strategies can be selected. Assessment should be made as to how these factors will affect the behavior and to determine the factors most likely to influence the behavior in a significant manner. Assessment of knowledge of nutrition in diabetes, done in determining the appropriate educational content, is also useful in determining the appropriate approach. Beliefs, especially health beliefs, but also religious beliefs and beliefs about self should be assessed. Any preconceived ideas about the behavior which would make it unlikely that the client would adopt the behavior should be determined and addressed. Another related evaluation should be made of attitudes--toward diabetes, life, health and disease in general, nutrition, the meal plan, self, family, and peers. One of the most important aspects of optimal patient education is the promotion of desirable attitudes. Strong negative or positive feelings about the behavior or the situation that may influence the behavior should be determined. Thus, an effective educational approach will address attitudinal issues as well as cognitive and technical areas. Values should also be determined and these will usually relate closely to personal priorities, attitudes, and beliefs. The approach should assist the client in gaining an appreciation of the importance of the outcome of the behavior. Skills including reading, learning, cooking, planning meals and following plans, retaining information once learned and so forth should be evaluated. It should be determined that the client has the ability to learn the information as it will be presented and the skills assessment should

help determine an effective means of presentation. Skills needed to perform the behavior should be compared to the assessment of those the client currently possesses. Finally, enabling and reinforcing factors must be identified. Enabling factors are those which will make compliance to the desired behavior easier. Examples include previous exposure to a diet plan, habits of avoiding sweets, friends or family members who follow the diabetic diet regimen, and so forth. Any barriers making performance of the desired behavior more difficult should be determined and dealt with. Reinforcing factors would be those which would reinforce the appropriate behavior--such as feeling better, avoiding insulin reactions, attaining proper weight, and so forth. Sufficient internal or external reinforcement for engaging in the behavior must be provided and pointed out to the client. The educational approach may then be planned to account for relevant knowledge, beliefs, attitudes, values, and skills and to take advantage of and/or provide enabling and reinforcing factors.

Before the plans for the educational approach are complete, others needing education must be identified and a format or formats must be chosen. Even in the case of older adolescents, others will need to be educated--some by the practitioner and others by the client and/or parents. In all cases, both the parents and client should be treated as responsible people involved in the management of the disorder. Parents of early and middle-aged adolescents need to be confident both in their own ability to assist in management of the diabetes and, equally important, in their child's ability to handle his own disorder. Thus, education must be aimed at both parents and

adolescents, the aim being for the parents to adopt an appropriate supporting role and the client to undertake the primary role as quickly as appropriate. Ludvigsson (1979) found that in families in which another family member kept a diet there was greater consideration for the difficulty of dietary adherence and more of a tendency for other family members to eat the same food. Fewer sweets were eaten in homes in which eating habits were changed for the whole family. These findings suggest that family education and involvement is beneficial. However, it was also found that keeping a well-balanced diet can be achieved by the client without the rest of the family sharing the same diet or completely eliminating sweets from the home. Parents should be involved in education and other family members including grandparents and frequently visited relatives will need some information. Often educational sessions can involve several family members but at times parents and clients may need different approaches or the approach may need to include consideration of assessments of the seven factors from both the parents' and client's perspective. A medical social worker may be needed to help improve family interactions affecting dietary control of the diabetes. When appropriate, clients should be encouraged to educate teachers, coaches, and friends on various aspects of the diet.

Finally, as indicated on the diagram, the appropriate format or formats for presentation of the educational content in an approach which takes into account the seven factors previously discussed is selected. Several formats and methodologies for presenting information have been previously discussed with guidelines for

audio-visual aids and development of such aids and programs. If these suggestions have been followed objectives will be defined for each program and presentation. Thus, a quick assessment as to which will meet the client's needs and goals can be made. Often a combination of several methodologies will be best. All should be individualized by the practitioner as appropriate and as before discussed. The plans for the approach will then be complete, including plans to address important behavioral factors and educate other important persons using suitable methodologies and programs. These, combined with the specific educational content form the educational prescription which, when acted upon, completes the important step of instruction and counseling, as indicated on page 60.

The counseling session with the client and family does not constitute the entire educator-client interaction for effective education. Rather, it is the achievement of the educational prescription. Too often the practitioner's professional conscience is salved by simply providing information to the client. However, this must always be accompanied, as indicated on page 59 of the diagram, by evaluation and follow-up. It is important to distinguish between evaluation of learner outcomes and of behavior outcomes. Learner outcomes reflect knowledge gained by the client which is prerequisite for the control of diabetes. However, this is not necessarily reflective of good control. Thus, the behavior resulting from the instructions given and knowledge gained must also be evaluated. The practitioner must remember that the client's achievement of his goals is to be evaluated--not his performance on a test in relation to other

clients. These goals will usually be written in behavioral terms so that the test of knowledge, often used to evaluate a program's effectiveness, will only indicate ability to achieve the goal. Other methods of evaluation must thus be employed to assess actual client practice. This may frequently be done by the client and family members themselves. Evaluation is made more objective and easy if the criteria for achieving a goal and means of measuring the criteria are specified by the client and practitioner as part of the goal setting before the actual counseling or instruction begins. For example, a goal might be set that Jane will eat at regular mealtimes and avoid excess snacking in accordance with her meal plan. It might then be specified that she will keep a month's food diary to be used jointly with the dietitian to assess achievement of this goal. Achievement might be defined as no more than six meals eaten no more than an hour before or after the appropriate time and eating in excess of the meal plan no more than ten times. A major prerequisite for such an evaluation would be the honesty of the client. Other evaluative tools which might also be used are parameters of control such as hemoglobin A_1C, various blood glucose levels, and body weights. These are used on the assumption that the meal plan and dietary recommendations will result in proper glycemic control--an assumption which may not always be valid. Thus, the actual nutritional therapy must also be frequently evaluated. In the previous example, then, Jane's knowledge of the meal plan and its use and the meal plan itself must first be evaluated. Objective evaluation of client practice and adherence is a major challenge to the practitioner. Involvement of the client and

setting goals to meet his priorities make this less a challenge of "policing" and "judging" the client and more of a team effort.

The importance of follow-up, the other part of the educator-client interaction, has been emphasized throughout this presentation and in the literature. Whitehouse et al. (1973) studied 371 clients who attended an outpatient follow-up session after completing an in-patient diabetes education program. One hundred fifty-five, 41.7%, of the subjects had problems understanding the prescribed diet. It was found that over a five year period those who did not attend a follow-up session had a significantly higher readmission rate. The investigators concluded that even when patients have recently attended education sessions on living with diabetes, attendance at regular follow-up sessions should be encouraged for reinforcement of learning and identification of persisting gaps in information. Lawrence and Cheely (1980) reported an 8½% error rate on reassessment of 30 clients who had a correct baseline performance. Approximately one-third of the subjects had an error rate of 10% or more. These errors on previously correct items were not correlated to any other variable. The investigators felt this an indication of need for reassessment more frequently than is generally done. In Ludvigsson's (1979) study of eating habits in young persons with diabetes, there was a significant trend toward changing eating habits in accordance with the facility's nutritional policy with attendance of follow-up sessions.

As indicated on the diagram, such follow-up has two equally important aspects. First, materials previously covered and goals

previously achieved should be reviewed to assure adequate retention. This can be done in several ways. The lists of specific nutritional components of each educational level, on pages 31 to 37, might provide general guidelines for systematic reviews to be individualized according to the client's own level and previous and current needs. When designing specific educational programs, the practitioner would do well to include appropriate reviews in more advanced presentations. Most of all, she must be aware that material once covered is seldom perfectly understood or retained.

Progression to new goals within the educational level or the next level should also be included in the follow-up aspect of the educator-client interaction. In this way the educational process will be perpetuated as the process is actually begun again at the first step on the diagram, the identification of the client's educational level and behaviors he should next be doing. The impression should not be given that each session which the practitioner spends with the client should include instruction, evaluation and follow-up. Some sessions, especially in initial phases, may be solely for information gathering and development of goals and an educational prescription. Other sessions may be strictly for information giving or review and follow-up.

Dr. Donnell Etzwiler (1980; 1978) has suggested a time schedule for the various aspects of the educational process. After initial diagnosis and in-hospital education on the survival level, usually within a five to six day period, the client is discharged. He suggests the client be scheduled to be seen approximately three to six

weeks later and that revision of the meal plan will usually then be necessary. About this time clients begin to become uneasy with their disease. The shock of newness has worn away and they realize they have a chronic illness which is going to make significant demands upon them. They have also had a chance to carry out at home the various activities necessary for diabetic control. Experiences will have stimulated curiousity and some concern which prepares the client and family for initiation of in-depth, Home Management education. Etzwiler describes provision of such education at a Diabetes Education Center which has been previously discussed. This must be followed by a continuing preventative educational program of follow-up visits to a diabetes clinic. Each visit should be an educational experience, answering client's questions and updating and reviewing the basic concepts of diabetes management as well as providing new information on the Lifestyle level. Etzwiler suggests use of a continuing education flow sheet which might include the specific nutritional components of each educational level. This would assist in assuring review at appropriate intervals. Newly developed dietary information and recommendations should also be presented. While specific programs will vary, the time frame and approach suggested by Etzwiler are appropriate for any setting. The process thus becomes cyclic--development of an educational prescription, achievement of the prescription through counseling and instruction, evaluation of knowledge and behavior, follow-up with review and reinitiation of the process at a new educational level or goal within the same level.

In conclusion, the application of the steps and phases of the educator-client interaction should be considered in relation to a specific case study, summarized on page 62 of the resourcebook. This summary has been compiled by the registered dietitian with the help of other team members. Turn off the tape and study this summary before proceeding. Referring to the diagram on page 60, the initial step is to identify the current educational level and behaviors the individual should be doing following the interaction. In this case, Mary is obviously at the survival level. The basic behaviors she should be doing at this level are following her meal plan, avoiding sweets, carrying sweets for possible reactions, and planning to attend follow-up education. However, there are at least 16 concepts which need to be covered in order to enable her to do so. Assume that the dietitian, working with Mary and other team members, broke down the desired behaviors into several smaller goals, the first being avoiding sweets, especially honey; the second, eating at regular times; the third, following the established meal plan; the fourth, carrying sweets to treat possible reactions; and, the fifth, attending follow-up sessions. It will be assumed that the avoidance of sweets and eating at regular times have been covered and goals set and that Mary is prepared to learn about her meal plan. The next step for this and each behavioral goal, as indicated on the diagram, would be to assess the knowledge needed to follow the meal plan as compared to the client's current knowledge. Look at the nutritional components on page 31. (Pause) The first eleven will be needed for achievement of this objective. However, the first five will have probably been

explained in discussing regular meals and avoidance of sweets and so will only require a brief review. Components 6 through 11 will need to be covered in detail. Mary and her mother's ability to understand this information should be assessed. For example, if Mary does a lot of cooking she may be familiar with portion sizes and only need a brief review. However, she may never have been exposed to a food grouping system and so require more assistance with this concept while her mother will be somewhat familiar with it. The diagram on page 60 also indicates the need to assess current behavior. This will have been begun in previous interactions concerning eating on time and should be further done in taking a diet history and devising the meal plan to fit Mary's lifestyle.

To finalize the educational content of Mary's educational prescription, the behaviors most likely to be modified by education must be determined and goals set with her and her mother. These behaviors have largely been determined in the breakdown of goals previously specified. In setting such goals the practitioner has already determined that these five behaviors are high priority and likely to be modified and has set aside other behaviors which are a lesser priority and/or less likely to be changed by the client--such as her activity level and intake of vitamin supplements. In making this determination the practitioner would have considered Mary's current desire for information and her priorities and goals. These will also need to be considered more specifically in regard to following the meal plan. For example, Mary may indicate that since she likes to cook she would like some "diabeteic recipes." By

explaining to Mary that an understanding of the exchange lists will allow her to properly use the recipes, her interest and motivation may be increased. Likewise, by devising a meal plan that will allow Mary to continue her activities at school and with her peer group and by explaining this and the need to follow the plan to maintain health for those activities, Mary will be more likely to modify her behavior to meet the meal plan because it will allow her to meet personal priorities and goals. Such information could be presented to her and her mother preliminary to setting goals with them. Some general goals, as mentioned, may have initially been set with Mary but these goals should now be in terms of the specifics of following the meal plan. Mary will then have a clear understanding of the behaviors she needs to change and will be motivated to do so because of her interests and priorities. The goals set with Mary and criteria for assessing their achievement along with the assessment of current behavior, knowledge, and need for knowledge will detail the educational content.

The approach in presenting this educational content must now be determined. Assessment should be made of Mary's and Mary's mother's knowledge, beliefs, attitudes, values, skills, and enabling and reinforcing factors for their effect on Mary's adherence to the meal plan. The approach should allow emphasis on those concepts determined to be the most difficult or new to Mary, as before assessed. Assessment of beliefs shows misplaced beliefs in honey, natural foods, and vitamin and mineral supplementation. The use of honey will have already been addressed. Assessment should be made as to the effect of

the other beliefs on adherence to the meal plan. Perhaps the only problem would be the danger of Mary using a diet of juices to "cleanse" the body and thus it should be specifically pointed out that the meal plan does not and cannot allow for such a practice. Adequate explanation and reinforcement should be planned to overcome this belief. Assessment of attitudes which will affect Mary's dietary adherence would indicate that her mother needs assistance in gaining self-confidence and thus avoiding her previous feeling of incompetence in diabetes management. This can partly be done by assisting Mary to be as independent as possible and creating a team of her, her mother, and the dietitian to share the burden. Reassurance, reinforcement, and appropriate pacing must be planned in the approach to change this attitude. Further assessment of the specific causes of this negative attitude should be made so they might be more directly addressed.

Mary's teenage values center around her peer group and this will have been acknowledged in devising a meal plan to allow her to continue these activities and associations. The way in which it does so should be specifically pointed out to her. Mary needs to come value the control which dietary adherence will allow. Assessment of Mary's skills indicate abilities to learn well and to plan meals. However, if the educational program and/or materials are commonly used with adults, some modifications might need to be made, especially with information on the exchange lists, an area which has already been assessed as potentially difficult for Mary. Thus, in Mary's case, her academic and domestic skills and achievements will be assessed to also be enabling factors and should be referred to and incorporated in

presenting the educational content. Reinforcing factors will include her and her mother's desire for good health and Mary's desire to be "normal" and a part of her peer group. While these are all positive factors, the desire to appear normal will have some negative aspects since following a meal plan is not considered "normal." These factors in the positive sense should be pointed out to Mary and the negative aspects discussed to assist in avoiding them. In addition to this behavioral diagnosis, others needing education must be determined. Mary's mother will obviously need to be included. Care should be taken to help them appropriately delegate responsibilities among themselves without overburdening either one. It might even be determined that some information should be given to the client and her mother separately. If necessary, it should be arranged to provide information to Mary's teachers who might need to allow her to take snacks or decline certain food items in classes such as physical education and home economics. It should also be determined whether Mary's father and his wife could and should be instructed in preparation for her visits with them and to what extent Mary would need their help and be able to handle the negative influence her father's poor dietary control might have.

When the assessment of the seven factors and the way the approach should account for them has been made along with the determination of others needing education, an appropriate format may be selected. It may be that the practitioner will choose to include Mary and her mother in the hospital's class which explains the exchange system if the presentation would be understood and not be overwhelming. Perhaps

the practitioner or a co-worker will teach the class and be able to modify the presentation to meet participant's needs. The dietitian might also give an explanation of the class to Mary and her mother before they attend, reassuring them that the information would be reviewed as needed, giving them a copy of the meal plan to refer to as explanations are made in the class, and addressing the other behavioral factors previously assessed as important. After the class, additional counseling could be given to make certain Mary understood the need to avoid the so-called "juice fasts," understood how the meal plan could allow her to maintain her normal activities, and how to use the exchange system. With this plan for an educational approach, the instruction and counseling could be accomplished for Mary and her mother.

As indicated on page 59 of the diagram, an evaluation must also be made of the results of the "instruction." The learner outcomes should be evaluated immediately to assure that Mary and her mother have the knowledge and understanding necessary to follow a meal plan. This might be done during the class using a written test or practical application situations and in Mary's hospital room writing and/or marking menus and using food models and so forth. At a later date the practitioner should again meet with Mary and her mother to evaluate the criteria they had established for following the meal plan. This might very well be done simultaneously with the evaluation of the diet plan itself. Meanwhile, the practitioner would proceed to the other goals of carrying sweets and attending follow-up sessions. The accomplishment of all of the goals set at the Survival level might be

evaluated simultaneously at a follow-up session perhaps 2 to 3 weeks after discharge where appropriate review could be given. In Mary's case, it might then be determined that she was ready for Home Management level information and arrangements for attendance with her mother, if possible, at a diabetes education center could be made. If no such program was available, the dietitian could provide alternate learning activities to accomplish the selected Home Management goals. No matter which route was chosen, it would be essential to meet with Mary and her mother from time to time, pursuing additional goals and reviewing and evaluating accomplishment of previous ones.

Thus, the process of educating persons with diabetes is a perpetual one as should be the process of seeking to improve the eductional programs and counseling which the dietitian can offer to clients. No matter what the setting in which the practitioner works, he can apply the basic principles of the Guidelines for the Education of Individuals with Diabetes Mellitus, those of a continuing educational process which allows for change in client's desires, abilities, and needs to learn. This can effectively be done using the diagram on pages 58 through 61. The only limitation would be the practitioner's time constrains and the types of formats and programs available. The development of such educational programs and services will also be a continuing effort for each practitioner involved in diabetes education. The challenge to the practitioner is thus three-fold. First, to implement immediately the principles of the Educational Guidelines in her current work. Second, to work to establish a functional diabetes education team and a variety of

educational programs and learning experiences to meet the nutritional objectives suggested in the Guidelines. Finally, to carry on a program of continuous evaluation, assessment, and improvement in all areas relating to diabetes education. Again, the only true failure in nutritional education in diabetes is the dietitian who does not take the first or next step towards achievement of the ideal as described herein. The very nature of this effort is one of constant evaluation, follow-up, and revision and each practitioner is challenged to begin immediately to implement the principles discussed herein in his or her particular practice.

Appendix B

Learning Package Resourcebook

Note: Original pagination has been retained.

Resourcebook

of

Nutritional Counseling Principles

in Diabetes Mellitus

and Their Application for

Adolescents with Insulin-Dependent Diabetes

Developed by
Eileen R. DeLeeuw
in partial fulfillment of
the requirements for a
Masters Degree
at
Utah State University
1981

The materials in this Resourcebook have been developed and compiled by Eileen R. DeLeeuw with the exception of the Guidelines for Education of Individuals with Diabetes Mellitus, pages 5 to 30, which were developed by a Joint Task Force of the American Diabetes Association and the American Association of Diabetes Educators and used by permission and the addresses on pages 46 and 47 which are reprinted form the Diabetes Forecast. The Resourcebook is designed to accompany the tape presentation on Nutritional Counseling Principles in Diabetes Mellitus and Their Application for Adolescents with Insulin-Dependent Diabetes which contains frequent references to it. It will be best used as directed in that presentation. Before beginning the tape, however, it would be helpful to review the outline and objectives on pages 2 through 4.

Nutritional Counseling of Adolescents
with Insulin-Dependent Diabetes Mellitus

Outline

I. Guidelines for Education of Individuals with Diabetes Mellitus

- A. Introduction
- B. Survival level
- C. Home Management level
- D. Improvement of Lifestyle level

II. Educational Program Planning in a Health Care Agency

- A. Delineation of responsibilities for education
- B. Establishment and functioning of a health care and education team
- C. Program planning for provision of various types of educational programs and learning experiences
- D. Financing

III. The adolescent with insulin-dependent diabetes

IV. The educator-client interaction

- A. Development and implementation of the educational prescription
- B. Evaluation
- C. Follow-up
- D. Case study applications

Nutritional Counseling of Adolescents with
Insulin-Dependent Diabetes

Learning Package Objectives

At the completion of the learning package, the dietitian will be able to do the following with at least 90% accuracy on the corresponding written criterion referenced test:

1. Define and identify in ascending order the three levels of education for the individual with diabetes.

2. Identify specific nutritional components of each level of diabetic education.

3. Identify appropriate places, times, and settings for the attainment of each educational level for the person with diabetes mellitus.

4. Given a case study of a specific adolescent with diabetes:
   a) Identify the client's current educational level.
   b) Identify behaviors the individual should be doing following the practitioner's interaction with him/her.
   c) Identify knowledge necessary to achieve the desired behavior.
   d) Identify the best assessment of the individual's current knowledge and behavior as they relate to the desired outcome.
   e) Identify the most appropriate priority order for the behaviors in (b).
   f) Identify the behavior which seems most likely to be modified by education.
   g) Identify an approach whereby the R.D. could work with the patient to establish specific behavioral goals for nutritional management of diabetes and identify some possible goals which might be set.
   h) Given goals which have been set with the patient, identify the educational content most likely to aid in meeting those goals.
   i) Identify the following seven factors; how they would influence the behaviors in question; and how they could be used and/or modified to achieve desired behaviors:
      1) Knowledge 2) Beliefs 3) Attitudes 4) Values
      5) Skills 6) Enabling Factors 7) Reinforcing Factors
   j) For each desired behavior, identify the most appropriate format(s) for presenting the educational content and other persons who should also receive education.
   k) Identify learner outcome(s) to be evaluated for the educator-client interaction.
   l) Identify behavioral outcomes to be evaluated for the educator-client interaction.
   m) Identify items which should be followed up with the client.

5. Identify the three essential parts of the educator-client interaction.

6. Identify the two types of efforts necessary to support the actual patient education.

7. Identify services an R.D. should be available to perform for clients and patients on a continuing basis.

8. Identify the advantages and uses of:
   a) Learning centers simulating the home environment for clients with diabetes and their families
   b) Home visits to clients with diabetes
   c) Continuing small group discussions with health care professionals and persons with diabetes
   d) "Buddy System" using educated persons with diabetes to assist newly diagnosed individuals
   e) Basic classes on nutrition in diabetes
   f) A-V materials such as slide-tape programs, food models, computerized programs, self instructional programs, and printed materials

9. Identify important elements for establishing and evaluating learning programs.

10. Identify important steps in establishing a Diabetes Health Care and Education Team, especially as it relates to nutritional treatment and education.

11. Identify important steps in gaining support of the team members for nutritional treatment and instruction of clients with diabetes.

AMERICAN

DIABETES

ASSOCIATION, INC.

GUIDELINES FOR PATIENT EDUCATION

Developed by:

American Diabetes Association, Inc.

and

American Association of Diabetes Educators

GUIDELINES FOR EDUCATION OF INDIVIDUALS WITH DIABETES MELLITUS

Introduction

These guidelines for education of individuals with diabetes mellitus are divided into three levels of perceived need.

I. Educational Guidelines for Initial Management of Diabetes provides content required at the time of diagnosis and represents basic or survival needs. This level is based upon the limitations of the individual and family to accept and/or assimilate all there is to know about diabetes at the time of diagnosis and the limitations of some settings to provide additional education.

II. Educational Guidelines for Home Management of Diabetes places emphasis on increasing knowledge and flexibility as some experience is gained in living with diabetes. This is perceived as essential for every individual but must be tailored to individual needs and capacity. This type of educational experience is preferably offered in a non-hospital, as close-to-home-as-possible environment.

III. Educational Guidelines for Improvement of Life Style present a form of advanced learning viewed as enriching the individual's life with flexibility, insight and self-determination. Most individuals are forced to discover this information by trial and error through experience. Although no educational program can or should entirely replace personal experience, the process need not be experienced by each individual.

The content is divided into knowledge and skills required of all individuals with diabetes and additional information needed by people with insulin - dependent and non-insulin-dependent diabetes. The center column contains those items needed by all persons with diabetes regardless of their therapy. The column on the left side includes additional knowledge and skills needed by the individual with insulin-dependent diabetes. The column on the right side contains additional knowledge and skills needed by the individual with non-insulin-dependent diabetes. We are cognizant of the need for all diabetics to be well informed and believe that all individuals with diabetes should seek as much knowledge as possible regardless of their therapy.

In addition to the educational content, there are statements of the aims of the guidelines at each level of need; descriptions of settings and personnel which might be utilized in implementation of the guidelines; assessment areas to be completed with the individual and/or family before implementing the educational content; and information to be documented in the Medical Record.

I. EDUCATIONAL GUIDELIES FOR INITIAL MANAGEMENT OF DIABETES (SURVIVAL LEVEL)

AIMS: Educational activity at the survival level provides the individual and family with the initial knowledge and skills to enable the person to get along (survive) at the time of initial diagnosis of diabetes. These are outcome statements to be achieved at time of discharge from the hospital or at the time of discharge from the immediate care of the health care provider in the Ambulatory setting.

SETTINGS: The insulin-dependent diabetic may require hospitalization for initial regulation. Education should be incorporated into the care plan as soon as the individual/family is able to learn. This requires a coordinated team effort from physician, dietitian and nurse and may require the assistance of a social worker or psychologist for help and adjustment to accept diabetes.

For the non-insulin dependent diabetic, initial management may be performed in an office or clinic. This requires the services of physician, office nurse (educator), and dietitian often on a one-to-one instruction level. The physician and office nurse (educator) may share instructional time on medical subjects. Nutritional instruction and meal planning should be provided by a dietitian or nutritionist; a social worker or psychologist may be needed for help and adjustment to accept diabetes.

ASSESSMENT: It must be determined whether the individual is insulin-dependent or non-insulin-dependent. For all individuals, an assessment should be made of the individual's/family's awareness of the condition and of particular needs of the individual and family. The individual's age, social situation, learning ability, willingness to learn, and current knowledge of diabetes must be taken into account as a plan is prepared to bring the individual and family to a mastery of diabetes skills essential to survival.

DOCUMENTATION: Documentation in the Medical Record includes: assessment of the particular needs of the individual and family; teaching plan to meet the identified needs; materials given to and received with individuals and families; individual and family response to materials and/or teaching; and a plan for review and/or follow-up of teaching.

Content for Educational Program at the Survival Level

INDIVIDUAL AND/OR RESPONSIBLE PERSON:

Insulin-Dependent Diabetes	All Diabetes	Non-Insulin Dependent Diabe
	DEFINITION	
	-States need for insulin in body. -Describes what happens in the body when insulin is deficient. -State a simple working definition of diabetes. -State the role of nutrition, activity and medication in treatment of diabetes	
	NUTRITION	
-Describes relationship of meals to activity and insulin.	-States need for food as source of energy. -Verbalizes need for complete meals and snacks as appropriate at specific times. -Demonstrates ability to plan meals.	-Explains the role of meal planning in diabetes care. -States that weight control and physical activity are an essential component of diabetes management.
	MEDICATION	
-States what action insulin will have on blood sugar level. -States type, concentration, and amount of insulin to be taken. -Demonstrates ability to draw up correct amount of insulin. -Demonstrates ability to inject insulin correctly -States where insulin to be injected.		If medication is prescribe -States name of medication dosage, and when it is to be taken. -Lists possible side-effec from medications. -States possible interatio with other medications ta

Insulin-Dependent Diabetes	All Diabetes	Non-Insulin Dependent Diabete
-States that insulin must be taken everyday. -States care and storage of insulin, needles and syringes.		
	MONITORING CONTROL	
	-States when and why urine tests are to be performed.	
	-Demonstrates ability to perform urine tests with appropriate testing material.	-If appropriate, explains preparation for blood test including when and where to have the test done.
	-Demonstrates how to record results of urine test in % sugar per specimen.	
-States need to contact health care provider if urine tests are always negative, show heavy glycosuria, or show acetone in urine.	-States how to contact the health care provider or health care facility.	-States need to contact health care provider for persistent and/or heavy glycosuria.
	HYPOGLYCEMIA	
-States that too much insulin, too little food and/or vigorous activity may cause a low blood sugar.	-List possible symptoms of hypoglycemia.	-States that missed meals, too much oral medication, and/or vigorous activity may cause low blood sugar.
-States how to contact health care provider for help in dealing with hypoglycemia or its prevention.	-States what to do for hypoglycemia.	-States need to contact health care provider for hypoglycemia caused by oral agents.

Insulin-Dependent Diabetes	All Diabetes	Non-Insulin Dependent Diabetes
	ILLNESS	
-States need for continuing insulin during illness.	-States how to contact health care provider or emergency facilities in case of illness. -States what to report to health care provider.	-States how and what medication to take during illness.
	PSYCHOLOGIC ADJUSTMENT	
	-Verbalizes that he/she has diabetes. -Patient identifies self as having diabetes to relatives. -Verbalizes feelings about having diabetes to health professionals.	
	FOLLOW-UP	
	-States needed for further follow-up for care and education. -Describes follow-up plan and appointment.	
	DEFINITION	
	-Define what diabetes is.	
	NUTRITION	
-Know amount and time of eating meals and snacks.	Obtain meal plan.	-Know how to follow meal plan. -Reduce weight to control diabetes.
	ACTIVITY	
-Know how to increase food for planned and unplanned exercise.		-Identify need to increase activity to achieve and/or maintain ideal body weight.
	MEDICATION	
-Know type of insulin, how to draw up and how to inject.		-Know medication, dose and time.

Insulin-Dependent Diabetes	All Diabetes	Non-Insulin Dependent Diabete
	MONITORING	
-Know what to do for persistent negative or positive tests.	-Know how to perform urine tests.	-Know what to do if tests are positive.
	HYPOGLYCEMIA	
-Carry food or sugar to avoid insulin reactions.	-Recognize symptoms of low blood glucose.	-Know oral agent can produce low blood sugar.
	ILLNESS	
-Always take insulin.	- States how to contact doctor or emergency facilities in case of illness or hypoglycemia.	-Know what medication to take in case of illness.
	PSYCHOLOGIC ADJUSTMENT	
-Accept necessity of insulin shots, daily monitoring, etc.	-Be able to say, "I am a diabetic."	-Know and accept plan to control diabetes.

II. EDUCATIONAL GUIDELINES FOR HOME MANAGEMENT OF DIABETES

AIMS: Educational activities at the home management level provided the individual and family with diabetes skills and knowledge to participate in the home management of his/her duties. The goal is to enable the individual and family to become self-sufficient in the daily management of his/her diabetes. Remember: both diabetics and family members play an integral role in diabetes care and should be regarded as equal members of the health care team.

SETTINGS: Home management may be taught through an education program utilizing physician, nurse educator, dietitian, medical social worker, and possibly pharmacist, podiatrist, and other consultants; should include group instruction plus practical exercises and individual consultation with physician, nurse and dietitian to individualize the care plan of diabetes; requires use of classroom, manuals, educational aids, etc.; should have access to learning center for individuals and families.

Home management may be provided through clinic or hospital ambulatory service with group or individual instruction. The same team personnel should be utilized. The office nurse may act as nurse educator if so educated. Team members should act together as consultants in coordination with the attending physician. Education may be done in small groups or individually over longer periods of time but will cover the same materials. Referral to a social agency or psychologist may aid in adjustment to the psychological needs.

Home visits by visiting nurse may be combined with instructions by the physician in consultation with the nutritionist to provide the home management education. Individualized instructions and observations can be carried out both at home and in the office by the nurse, the attending physician, nutritional consultant and social worker.

ASSESSMENT: Evaluate the current level of knowledge and skills. Be certain the individual/family has acquired knowledge and skills as described in Survival Level section. Determine the needs of individual and family and plan the educational approach based on assessment of learning ability, willingness to learn, language, age, type of diabetes, and home situation.

DOCUMENTATION: Documentation in the Medical Record includes: assessment of the particular needs of the individual and family; teaching plan to meet the identified needs; materials given to and reviewed with individuals and families; individual and family response to materials and/or teaching; and, a plan for review and/or follow-up of teaching.

Content for Educational Program in Home Management of Diabetes

INDIVIDUAL AND/OR RESPONSIBLE PERSON:

Insulin-Dependent Diabetes	All Diabetes	Non-Insulin Dependent Diabe
	DEFINITION	
	-Lists symptoms of diabetes. -Explains the relationship of symptoms to insulin deficiency.	
-States relationship of under-nutrition to insulin deficiency.	-States how the diagnosis of diabetes is made.	-States relationship between state of over-nutrition, inactivity and relative insulin deficiency.
	NUTRITION	
-States relationship between food, exercise and insulin. -States value of food to maintain normal growth, weight and/or health.		-States relationship of obesity to diabetes. -States need to attain and maintain desirable body weight. -States role of activity in achieving and/or maintaining ideal body weight.
	-States the importance of food and control of diabetes. -States relationship of food to insulin -States reasons for consistency in daily caloric intake. -States reasons for consistency in daily caloric intake -States types of nutrients (CHO, protein, fat, etc.) in food, their function in the body and their effect on the blood glucose level.	

Insulin-Dependent Diabetes	All Diabetes	Non-Insulin Dependent Diab.
	-Describes a food exchange system which he/she is to use. -States need for modification of CHO and fat intake. -States his/her suggested meal plan. -Explains rationale for his/her meal plan.	
-Explains relationship of meals and snacks to insulin and lifestyle	-Explains need for flexible food distribution throughout the day related to activity.	
-Explains how to increase food intake for vigorous or unexpected activity.	-Plans appropriate menus according to meal plan. -Selects foods to match allowances in his/her meal plan. -Select foods in proper serving size; when appropriate patient uses food scale, cup, spoon, etc.	
-Selects appropriate foods for unexpected activity.		-States what foods to avoid in meal planning to achieve proper weight.
	MEDICATION	
-States the onset, peak and effective duration of injected insulin(s).	-States what action insulin will have on blood sugar. -Explains how exercise and insulin affect blood sugar. -Explains use and action of regular insulin.	-Explains type and action of oral agent, if used. -States possible side effects of oral agents. -Explains possible interactions of oral agents with other drugs which are being taken.
-Explains difference between U40, U80, amd 100 insulins. -States how to store insulin(s) at home. -Identifies correct syringe for concentration of insulin being used. -Demonstrates correct technique for measurement and injection of insulin.	-States when and how regular insulin may be used in times of stress.	

Insulin-Dependent Diabetes	All Diabetes	Non-Insulin Dependent Diabe
-Demonstrates how to mix regular and intermediate insulins. -Demonstrates how to sterilize and store a glass syringe, if using glass equipment -Demonstrates how to properly discard disposable needle and syringe. -Demonstrates how to use a variety of injection sites and how to keep record of site rotation. -Explains how to avoid insulin lipodystrophies.		
	MONITORING CONTROL	
	-States what information is derived from urine tests for sugar and acetone. -Demonstrates skill in performing urine testing for sugar and acetone with appropriate testing materials. -States difference in method and information obtained from first and second voided specimens. -Explains importance of timing urine tests accurately. -Demonstrates how to maintain accurate records of urine tests, recording % sugar in specimen. -Interprets own urine test records accurately.	
-Explains why the two-drop clinitest method is preferred.	-Explains how to store urine testing materials. -If using clinitest tablets, (a) explains what is meant by pass through reaction and what it signifies, (b) demonstrates correct method of performance of tests, (c) explains how to treat ingestion of caustic tablets (clinitest tablets).	-States the rationale for use of dip-sticks in testing the urine for glucose

Insulin-Dependent Diabetes	All Diabetes	Non-Insulin Dependent Diabet
	-Explains the effect of the urine test information of low and high renal thresholds. -States possible effect on urine glucose tests of ketones, ingested drugs (Vitamin C, aspirin, etc.) and other substances. -Verbalizes need to discuss urine test results with health care provider.	
	HYPOGLYCEMIA	
	-Review symptoms of hypoglycemia which might occur. -States own symptoms of hypoglycemia and usual progression of symptoms. -Reviews possible causes of hypoglycemia. -Identifies situations when he/she is most likely to become hypoglycemic. -Explains how hypoglycemic reactions may be prevented.	
-States how to choose extra food to meet needs of increased physicial activity.		
	-States relationship of alcohol ingestion to hypoglycemia	-States possibility of "Antabuse type reaction" with use of certain oral agents and alcohol ingestion.
	-States how to treat hypoglycemia. -Verbilizes why a diabetic must carry identificaton. -Shows his/her identification.	
-Explains why a diabetic must carry food or sugar or some substance for treating a hypoglycemic reaction. -Shows type of food or sugar which he/she carries.		

Insulin-Dependent Diabetes	All Diabetes	Non-Insulin Dependent Diabetes
-States when and how glucagon may be used in treatment of hypoglycemia. -Demonstrates how to draw up and administer glucagon.		
	HYPERGLYCEMIA (COMA)	
	-States what hyperglycemia and diabetic coma are. -Identifies possible causes of hyperglycemia and diabetic coma. -States signs and symptoms of hyperglycemia and diabetic coma. -States progression of untreated hyperglycemia. -States action to be taken to treat or prevent progression to diabetic coma.	
	ILLNESS	
-States relationship between illness and ketoacidosis.	-States effect illness will have on diabetes.	-States relationship between illness and hyperglycemia or non-ketotic hyperosmolar coma.
-States early signs of ketoacidosis.	-States observations of state of health and of diabetes to report to doctor. -States rules of general care during illness (activity, treatment of fever, etc.). -States types of foods or fluids which might be appropriate for sick days. -Identifies nutrients which might be used if nauseated (i.e., carbohydrate containing fluids). -Plans menus for sick day. -States rationale for fluid intake while ill.	-States early signs of excessive hyerglycemia or non-ketotic hyperosmolar coma.

Insulin-Dependent Diabetes	All Diabetes	Non-Insulin Dependent Diabe
	-States how frequently urine tests for sugar and acetone are to be performed and demonstrates skill in testing for ketones.	
-States need for insulin on sick days and plan for regular insulin supplements under appropriate medical supervision.		-States need for alteration of medication on sick days under appropriate medical supervision.
	-Verbilizes need for medical help in treating underlying illness.	
	ACTIVITY	
	-Explains why regular exercise is important to the management of diabetes. -States the effect of exercise on blood sugar levels.	
-States that sudden or vigorous activity may rapidly lower blood glucose causing insulin reactions.		-States that vigorous or prolonged activity may cause low blood glucose when taking oral agents.
	-States need for food intake during vigorous activity.	
	CONTROL OF DIABETES	
-States goal to prevent hyperglycemia or hypoglycemia and maintain blood glucose level as near normal as possible.		-States goal to maintain normal blood glucose, avoid glycosuria and to achieve and maintain normal weight.
	-Explains what good control is for him/her. -States significance to his/her health of hyperglycemia or hypoglycemia. -Demonstrates by problem solving how to adjust food activity and medication to improve pattern of control.	

nsulin-Dependent Diabetes

All Diabetes

-States how he/she will make adjustments in his/her own regimen to improve control.
-States relationship of persistent hyperglycemia to the development of vascular complications.

HYGIENE AND COMPLICATIONS

-Explains the need for good personal hygiene.
-States need for special care of feet.
-Identifies those factors which adversely affect circulation (smoking, pressure, cold).
-Identifies those factors which may cause injury to the feet.
-Demonstrates how to inspect and bathe feet, trim nails, etc. in care of feet.
-Explains the need for well-fitting shoes and socks.
-Explains proper care of skin and genitalia.
-Explains proper care of gums, eyes, teeth, skin, etc., according to age requirements.
-Lists complications which occur in diabetes.
-Verbalizes relationship of complications to state of control of diabetes.
-States the need for regular health check-ups.

PSYCHOLOGIC ADJUSTMENT

-Expresses insight into reaction to having diabetes.

Non-Insulin Dependent Diabetes

Insulin-Dependent Diabetes	All Diabetes	Non-Insulin Dependent Diabe
	-Expresses concern or anxieties to health care provider. -Discusses capabilities and limitations imposed by diabetes with health care provider. -Identifies self as diabetic to peers and colleagues. -States how to use available health services and when to seek help. -States view of him/herself as member of health care team. -Expresses need to monitor changing needs. -Plans future medical and educational appointments.	

Essential Components of Home Management Level Education

	DEFINITION	
	-Know how diagnosis is made; recognize the symptoms of lack of control of diabetes.	
-Know relationship between insulin deficiency and under-nutrition.		-Know relationship of insulin lack to over-nutrition.
	NUTRITION	
-Know food needs for normal weight and growth. -Know relation of meals to activity and insulin action.	-Become acquainted with food exchange lists. -Plan own meal including a variety of foods.	-If overweight, know need for calorie reduction; ma omit meals if on no medic
	MEDICATION	
-Know what to expect from insulin. -Know how to care for insulin.	-Know insulin lowers blood glucose and describe the need to balance insulin, food and exercise.	-Recognize the actions and cautions in the use oral agents. -Recognize that failure to reduce weight leads insulin requirements.

Insulin-Dependent Diabetes	All Diabetes	Non-Insulin Dependent Diabete
	CONTROL OF DIABETES	
-Identifies goal to prevent hyperglycemia or hypoglycemia and maintain blood glucose level as near normal as possible.	-Relationship of good control to the development of vascular complications.	-Identifies goal to maintain normal blood glucose, avoid glycosuria and to achieve and maintain normal weight.
	MONITORING	
-Know when to test for acetone and the significance of a positive result. -Know the use of second voiding in control.	-Learn to test with both sticks and tablets. -Know the pitfalls in tests and reagents and the significance of test results.	-If overweight, know that urine sugar tests should be negative if proper weigh loss occurs.
	HYPOGLYCEMIA	
-Learn to anticipate need for extra food. -Patient and family learn use of glucagon.	-Learn causes of hypoglycemia and know how to prevent. -Wear identification bracelet.	-Recognize symptoms of low blood glucose and how to treat. -Avoid excessive activity while on reducing diet. -Recognize prolonged low blood glucose can occur with oral medication.
	ILLNESS	
-Learn tests for ketones and their significance. -Recognize nausea and vomiting as sign of ketoacidosis and seek professional help. -Learn never to omit insulin and learn to use supplementary regular insulin.	-Learn how illness affects diabetes. -Test for urine glucose often. -Learn how to eat and drink when ill (sips of fluid).	-Know early signs of hyperglycemia (coma).
	HYGIENE AND HEALTH	
-Maintain good control to avoid health problems.	-Practice good personal hygiene.	-Know causes of foot problems and how to prevent them.

III. EDUCATIONAL GUIDELINES FOR IMPROVEMENT OF LIFE STYLE

AIMS: Educational offerings at the lifestyle level are aimed at increasing the individual's and family's understanding of diabetes and focus on individual needs. Improved life style suggests intelligent participation by the individual in management of his diabetes resulting in greater understanding of his/her needs, flexibility in management enabling him/her to participate in a wide variety of activities and ultimately greater self-determination.

SETTINGS: Presentation of material or experiences affect the life-style of the individual depends on shared experiences and individual counseling.

A diabetes education program may provide lifestyle management by means of small group discussions, problem solving, individual interviews, etc., led by a knowledgeable health professional.

Individuals with diabetes used as educators may be very helpful in providing information about lifestyle management. The know-how to fit management of diabetes into any lifestyle can best be found in the experiences of successful diabetics. Educated and screened individuals with diabetes can be valuable members of the educational team.

Individual interviews with the physician in coordination with the home visiting nurse or nurse educator or dietitian may improve the life style of the individual by providing observational insights and by being available for individual questions and problems solving.

ASSESSMENT: Evaluate the current level of knowledge and skills. Skills and knowledge described under Survival and Home Management levels should be mastered by this point. More than in other levels of education, assessment of individual needs must include age, occupation, likes, dislikes, fears, current life style, ethnic background, language, learning ability, and willingness to learn.

DOCUMENTATION: Documentation in the Medical Record includes: assessment of the particular needs of the individual and family; teaching plan to meet the identified needs; materials given to and reviewed with individuals and families; individual and family response to materials and/or teaching; and a plan for review and/or follow-up of teaching.

Content for Life Style Educational Programs in Diabetes

INDIVIDUAL AND/OR RESPONSIBLE PERSON:

Insulin-Dependent Diabetes	All Diabetes	Non-Insulin Dependent Diabetes
	DEFINITION	
	-Identifies the signifiance of hyperglycemia in relation to other metabolic problems and long term complications. -States the significance of hyperglycemia and glycosuria or vice versa relative to changes in renal threshold. -Lists the main differences between insulin dependent (JODM) and non-insulin dependent diabetes (MODM). -States current knowledge of hereditary aspects of diabetes. -Verbalizes concerns about diabetes in other family members.	
	NUTRITION	
	-Correctly selects food from a food grouping system for a variety of situations consistent with his/her lifestyle.	
-Selects food appropriate for school lunch menu, cafeteria, or work site.	-Selects appropriate meals from a restaurant or fast food menu. -Plans an appropriate meal or snack for holiday, party, or birthday.	-Selects food appropriately from a meals-on-wheels menu, cafeteria or work site.

Insulin-Dependent Diabetes	All Diabetes	Non-Insulin Dependent Diabet
	-States how to evaluate food products from labels. -Identifies those dietetic or low calorie foods which might be appropriate for his/her own meal plan. -States current policy concerning dietetic foods and sweetening agents. -States effects of food on blood lipid levels. -Selects appropriate types of fat when planning meals. -Shows how to adapt recipes for own meal plan.	
-If appropriate, shows how to chart weight on a growth chart.		-If appropriate, explains how own meal plan will help achieve normal weight.
-Shows how to change meal plan for sports, pregnancy, etc. -Plans need for extra food for vigorous or sustained physicial activity (i.e., back-packing, skiing, hiking, etc.). -States how food intake is planned to prevent hypoglycemia.		-Demonstrates how to plan meals to achieve weight reduction. -Verbalizes need for physical activity to achieve and maintain ideal body weight.
		-Demonstrates how to plan meals to prevent hypoglycemia while losing weight if on oral medication.
	-States need to consider alcohol as source of calories and shows how to include in meal plan.	
	MEDICATION	
	-States how to use regular insulin for needs in time of stress or illness.	

Insulin-Dependent Diabetes

-Demonstrates how to mix short and long acting insulins and explains expected benefits.
-Explains rationale for use of multiple daily insulin injections.
-Explains how own insulin regimen gives maximum flexibility to his life-style.

All Diabetes

-States use, onset, peak, duration of action of regular insulin.

-States how insulin or other medication may be stored while traveling, etc.

MONITORING CONTROL

-States advantages and limitations of a variety of urine testing materials, i.e., clini-test, diasticks, test tape, etc.
-States conditions or substance in urine which might influence accuracy of test, i.e., vitamins, etc.
-States how to determine whether test material is fresh or spoiled.
-Demonstrates by problem solving how to interpret information from urine tests.
-Based on own urine test records, states changes needed in own regimen to achieve better control.
-Demonstrates how to accurately perform blood sugar determination by dextrose sticks, if appropriate.

Non-Insulin Dependent Diabe

-States cautions regarding use of oral agents based on current status of oral agents.
-States rationale for alte native therapy of non-insulin dependent diabete

Insulin-Dependent Diabetes	All Diabetes	Non-Insulin Dependent Diabet
	HYPOGLYCEMIA	
-Distinguishes between adrenalin-induced symptoms of hypoglycemia and physicial symptoms of emotional stress, such as anger and fear.	-States when he/she is most likely to become hypoglycemic and states -how to prevent hypoglycemia by anticipatory treatment. -States importance of informing others about diabetes and hypoglycemic reactions. -Verbalizes what friends or companions need to know about insulin reactions. -States effect of neuropathy on epinephrine release and consequences to recognition of hypoglycemia.	
-States the possibility of hypoglycemia with ingestion of alcohol without following meal plan and the danger of confusion of hypoglycemia with intoxication.		-States danger of hypoglycemia with ingestion of alcohol unaccompanied by food if taking oral age
	ILLNESS	
	-Demonstrates by problem solving how to modify food and medication when ill to prevent progression of hyperglycemia, ketoacidosis, or hypoglycemia.	
-States how to use regular insulin supplements during illness under appropriate medical supervision.		-States how regular insuli might be required during illness or severe stress.
	ACTIVITY	
	-Shows record of participation in suitable exercise program.	
-States how to modify food and insulin to meet needs during extremes of activity.		-Identifies need for cardiac evaluation and health professional guidance and supervision before entering extreme exercise program.

Insulin-Dependent Diabetes	All Diabetes	Non-Insulin Dependent Diabetes
	CONTROL	
	-States probable benefits of good control and consequences of poor control. -Identifies specific goals for control of diabetes after discussion with personal physician.	
Identifies by problem solving the "Somogyi effect and cycling" and explains how to prevent or treat resulting "brittle" state.		-States how control is to be monitored to avoid hyperglycemia.
	-States how treatment plan may be modified during travel, illness, or vigorous activity. -Identifies recent or current research results and their relationship to control of diabetes. -States relationship of control to susceptibility to infection and other acute or subacute problems.	
	COMPLICATIONS	
	-States known relationship of chronic vascular problems to diabetes.	
States relationship of juvenile onset diabetes mellitus to retinopathy, neuropathy, nephropathy and necrobiosis.		-States relationship of non-insulin-dependent diabetes to coronary artery disease, atherosclerosis, cerebral arteriosclerosis, neuropathy, retinopathy and cataracts.

Insulin-Dependent Diabetes	All Diabetes	Non-Insulin Dependent Diabe
	-States role of control of diabetes and other factors in prevention of complications. -Verbalizes how he/she will practice good control of diabetes and good health maintenance to prevent or delay complications.	
	PSYCHOLOGIC ADJUSTMENTS	
	-Demonstrates by life style acceptance of chronic nature of disorder. -Acknowledges worth of diabetic as good example in helping other diabetics cope with their disease. -Verbalizes concerns related to having diabetes at different ages.	
-Verbalizes specific problems for children i.e., taking shots testing urine, eating-away from home, what to tell teachers, etc. -Verbalizes adolescents have problems with sports, dating, driving, self-image, responsibility, etc. -States that parents have special needs in coping with emotional needs of a child with diabetes. -Verbalizes that young adults may have special needs in regards to jobs, insurance, marriage, contraception, pregnancy and family responsibilities.	-Recognized that living with diabetes is a matter of concern to all members of the family.	-Verbalizes that middle age diabetics have problems concerning job security, insurance, traveling, etc. -Verbalizes that elderly diabetics have problems with surgery, illness, degenerative changes, etc.

Insulin-Dependent Diabetes	All Diabetes	Non-Insulin Dependent Diabe
	-Lists resources available to help the diabetic cope with special needs, i.e., camps for diabetic children, educational resources, health counseling, social agencies, etc.	

Essential Components of Life Style Level Education

DEFINITION

-Recognize importance of control and factors influencing it.

NUTRITION

-Select meals in a variety of situations, restaurant, party, etc.
-Learn food selection and preparation.
-Be able to adapt recipes to introduce variety into meals.

-Know how to choose foods under extremes of activities.

-Learn use of snacks to prevent hypoglycemia.

-If overweight, improve control of diabetes by food and weight reduction, and increased activity.

MEDICATION

-Learn to combine, split and vary dosage of insulin to obtain specific effects and improved control.

-Learn use of regular insu and other measures when i or for better control.
-Ideal weight is the most important medication for control of MODM.

CONTROL OF DIABETES

-Define goals; control goals and behavior necessary to meet them.

-Know how to modify regimen to maintain good control while traveling, engaging in sports, during illness, etc.

-Resolve to reduce weight if overweight and maintai good health habits.

Insulin-Dependent Diabetes	All Diabetes	Non-Insulin Dependent Diabetes
	COMPLICATIONS	
	-Know that to prevent complications control must be as good as possible.	
-Know that vascular diseases are possible and how to cope with them.		-Know that accelerated aging may be a problem and how to deal with it.
	PSYCHOLOGIC ADJUSTMENT	
	-Deal effectively with the impact of the disease; control the disease, don't let it control you; recognize the special problems of different ages.	
-Identify insulin as a friend; strive for essentially the same life goals as before diabetes.		-Changing patterns and life style if overweight.

Suggested Specific Nutritional Components (Concepts)
of the
Survival or Initial Management Level
for
Insulin-Dependent Persons

1. Food is needed to provide energy (and nutrients) for the body's growth and maintainence.

2. Insulin is needed to allow the energy or sugar from food to enter the cells from the blood and be used. (The analogy of insulin as a bridge into the cell or a door opener into the cell may be used).

3. When the body exercises it requires less insulin to use the same amount of food or more food for the same amount of insulin.

4. A balance between insulin and exercise on one side (illustration of a balance or scale may be used) and food on the other side must be maintained to prevent problems.

   a. Too much food or too little insulin (as in the case of the untreated diabetic) leads to high blood sugar which is undesirable.

   b. Too much insulin or exercise or too little food leads to hypoglycemia or an insulin reaction.

5. Since insulin is injected, complete meals and snacks in appropriate amounts are needed at specific times to prevent hyper and hypoglycemia.

6. To make it easier to get the right amounts of food, exchange lists have been designed. Each list contains foods which, in the amounts listed, provide about the same amount of calories and carbohydrate.

7. Thus, whichever food is chosen, in the right amount, it is the same as far as calories and carbohydrate. This makes meal planning easier with variety possible once the amounts of each group which should be eaten at each meal and snack are known.

8. Meal plans are not the same but designed for each individual based on insulin therapy, nutrient needs, activity, and life style. They may need to be changed later to meet changing needs.

9. Specific amounts of foods in each list.

10. The client's specific meal plan and basic rationale for it (to prevent hypoglycemia at peek insulin time, to allow favorite food at breakfast, to prevent hypoglycemia during regular exercise time, and so forth).

11. Examples of how to use the meal plan to plan meals.

12. Concentrated sweets (give examples) must be avoided because they are absorbed immediately in large amounts which cannot (usually) be handled by the injected insulin, resulting in high blood sugar.

13. It is important to carry a quick source of "sugar" or carbohydrate at all times to be taken in case of an insulin reaction. This might include hard

candy, canned orange juice, regular soda pop, or sugar cubes.

14. When ill, it is important to contact the physician immediately in order to be able to continue insulin and food intake.

15. Follow-up is essential in order to evaluate the meal plan for needed changes, answer questions, and discuss other information which should be understood (a preview may be given and plans made of topics to be covered).

16. Specific time and place for the follow-up session.

Note: Occasionally, very basic principles of weight control in diabetes will need to be discussed at this point. Concepts which might be included are:

a. Fad diets are inappropriate because they do not meet the needs of the person with diabetes.

b. 3500 calories make up one pound, thus a reduction of calorie intake will allow weight loss or an increase of exercise will use more calories and increase weight loss.

c. Before decreasing intake or increasing exercise for weight loss, the physician and dietitian must be consulted for appropriate changes in insulin and meal plan.

d. Your specific meal plan has been designed to do the following in terms of weight control:

Suggested Specific Nutritional Components (Concepts)
of the
Home Management Level
for
Insulin-Dependent Persons

1. Encourage input of client and family in development and achievement of the nutritional care plan--especially in identifying changing needs relating to the meal plan.

2. *Review the need of insulin to handle the glucose from food.

3. Without insulin, the body cannot use food and so becomes undernourished, resulting in weight loss.

4. *Review individual's meal plan and the rationale for it.

5. *Review the amounts in each exchange list and stress that only in that amount can intake be kept consistent. Discuss estimations.

6. Carbohydrate is the main source of the body's energy and is converted directly to glucose in the body--simple carbohydrates (as candy) faster than fruit or milk sugars which are converted faster than starch which is complex and must be broken down.

7. Exchange lists containing carbohydrate are: 1) Vegetable and 2) Bread-Cereal (both in the form of starch); 3) Milk and 4) Fruit (both simpler forms).

8. *Review the necessity of avoiding concentrated sweets because of their concentration and rapid absorption.

9. Protein above the amount needed to maintain, build and repair body tissue (muscle) can be converted to glucose in the body.

10. The main contributors of protein to the diet are the meat and milk exchanges although the vegetable and bread exchanges contribute small amounts.

11. Fat is the storage form of energy. Only a little bit of fat is converted to glucose in the body but insulin is needed to store it so it does affect ultimate control.

12. Fat is provided by foods found in the fat exchange list and meat exchange list. If whole or two per cent milk is used, fat will also be provided by the milk. There are some foods listed with the bread and cereal exchanges which also provide fat.

13. One of the important features of a diabetic meal plan is the even and proper distribution of carbohydrates so that the glucose produced will be in the proper amount for the insulin taken.

14. It is most important to eat all foods from the carbohydrate-contributing exchange lists at the times and in the amounts specified. For emergency situations when such foods are not available, the emergency exchanges should be used: 1/2 (skim) milk exchange = 1 fruit exchange = 1/2 bread exchange = 2 vegetable exchanges. These are not as accurate or equal as far as other nutrients to the original exchanges in the meal plan. They are strictly for emergency exchanges to give carbohydrate equivalents.

15. Since protein can affect the blood sugar level it should be eaten according to the meal plan except for very occasional times. Then, on special occasions, some (not all) of the meat exchanges can be "saved" to allow a larger portion of meat at a later meal in the day. This cannot be done with milk because it also contains carbohydrate.

16. Since fat has no immediate effect on "blood sugar," fat exchanges can be "traded" between meals in the day as long as the total amount allowed is not exceeded for the day. (Fat contributes twice as many calories as protein or carbohydrate in the same amounts besides affecting total insulin need).

17. Because persons with diabetes are more likely to have problems with heart disease, it is important they limit their intake of saturated fat and cholesterol to decrease their risk of such problems.

18. Sources of saturated fat and cholesterol to be limited include: (Point out how the exchange lists simplify this).

19. Control of diabetes, as the nurse and doctor have discussed, is important so you can feel good now and stay healthy in the future. Following your meal plan is essential for this since food affects blood sugar levels as previously discussed. (Use of a method of reading blood glucose levels combined with food intake may be appropriate here to illustrate the effect of diet on control).

20. The best way to have good control is to have regular exercise and consistent intake of carbohydrate, protein, fat, and calories from day to day so the correct amount of insulin can be determined and taken.

21. *Review the exchange system and that it allows this consistency in intake while assuring proper nutrition and being easy to follow.

22. Proper nutrition is important to assure proper growth and health: Protein allows for growth and repair and maintenance of tissues. Carbohydrate provides energy and fat provides a storage form of energy. Vitamins and minerals which come in different amounts with the protein, carbohydrate, and fat help regulate the body processes. The meal plan has been designed to provide proper amounts of these things.

23. *Review that the meal plan should be "followable"--adapted to lifestyle and activity and then insulin given to cover these aspects.

24. *Review the effect of exercise to increase the need for food or decrease the need for insulin.

25. In the case of unexpected or unusual exercise, two fruit or one bread exchange may be taken for each 1/2 to one hour of anticipated exercise before it is begun. If exercise is prolonged this intake should be repeated at intervals.

26. Review time of peak insulin action and need to have adequate food intake at this (these) time(s) to prevent insulin reactions.

27. Discuss "case studies" (or the individual's own problems) of persons with diabetes who have recurrent high or low blood sugar at certain times.

28. Unavoidable delays in meals can be handled by taking one bread exchange for each hour delay beyond one hour or by switching the evening meal and bedtime snack for longer delays.

29. Alcohol must be eaten with or soon after rather than before meals, according to exchange values and allowances (give list to appropriate clients) or it may cause insulin reactions.

30. *Review concentrated forms of carbohydrate which can be carried to treat a reaction and evaluate with the client those he or she carries.

31. Introduce other foods which may be used to treat hypoglycemia, such as milk and the reason that these will also be effective. Also discuss the need for "substantial food" such as a sandwich to follow the intake of concentrated sweets for slower, prolonged release of glucose.

32. Emergency exchanges can also be used on "sick days" when the most important goal is to provide carbohydrate (for energy) and fluids. Give values in terms of bread or fruit exchanges for pop, popsicles, sherbet, jello, and ice cream. Emphasize these are more concentrated and so should be taken in smaller amounts, dividing each meal into two or three smaller feedings. Later, eggnog, ice cream, cream soups and so forth can be added according to the exchanges as tolerated. Fruit juices are also excellent sources of carbohydrate and fluid.

33. Give proper resources for and encourage use of other help such as:
    a. R.D.'s phone number
    b. Local Diabetes Association affiliate
    c. Diabetes center
    d. Extension office
    e. Continuing meetings of professionals with groups of persons with diabetes
    f. Camps for children with diabetes

*Indicates the item is a review of information already presented, often for added emphasis or a more in-depth discussion.

Suggested Nutritional Components (Subjects)
of the
Improvement of Lifestyle Level
for
Insulin-Dependent Persons

1. Rules for eating out.
   a. Use of emergency exchanges
   b. Salad bar "values"
   c. Things to avoid
   d. Importance of asking questions
   e. Specifics for each type of food or course
   f. Rules for fast-food establishments
   g. Rules for cafeterias
   h. Suggestions for packing lunches

2. Use of information on labels
   a. Ingredient list and words representing sugars
   b. Carbohydrate, protein and fat values and adapting them to exchange values
   c. Nutrients listed

3. Nutritive and non-nutritive sweeteners
   a. Current statement on saccharin, cyclamates and others
   b. As sources of carbohydrate and kilocalories
   c. Guidelines for daily use (Example: Less than 16 kilocalories per day from these sources).

4. "Dietetic Foods"
   a. Cost
   b. Calories, carbohydrate, and fat content
   c. Importance of reading labels
   d. Items which might be appropriately used

5. Suggestions for holidays and parties

6. Adaptations of recipes
   a. Calculation of exchanges/serving
   b. Substitution of forms of fat and sweeteners

7. Needed changes for pregnancy and lactation
   a. General overview of increased nutrient needs
   b. The challenges of hyperemesis gravida and elevated blood sugars
   c. Practical suggestions
   d. Specific meal plan for the individual
   e. How to monitor and evaluate the meal plan
   f. Some of this information should be covered <u>before</u> pregnancy whereas details would not be necessary at that point.

8. Needed changes for other specific activities. As with number 7, give general nutritional needs, special challenges, suggestions to meet these challenges, a specific meal plan and ways to monitor and evaluate it.

9. Needed changes for growth.

10. Details of the effect of food on blood lipid levels.

11. Review and expand on appropriate types of fat and sources of them--indicate how to use the label to make such evaluations.

12. Evaluation of meal plan
    a. Follow growth chart
    b. Monitor weight
    c. Be aware of appetite
    d. Monitor blood or urine sugar--identify recurrent times of hyper or hypoglycemia.

13. Review measures to be taken to prevent hypoglycemia in the case of exercise, delayed meals, and so forth. Then relate to typical situations the individual faces.

14. Use of alcohol
    a. It is a source of calories
    b. Types which are also sources of carbohydrate
    c. Review exchange list values
    d. Importance of eating with a meal or soon after to avoid hypoglycemia--give details of this phenomenon.

15. Review rules for eating during illness and relate to the prevention of hypo and hyperglycemia and ketoacidosis. Follow with problem sloving situations and evaluation of the individual's management and experiences during illness.

16. Address individual needs, questions, and so forth. (This may include travel or recreational plans, family and social situations, and so forth).

17. Give list of resources for use in meeting individual needs.

Introduction & Part I References

1. American Diabetic Association Committee on Foods and Nutrition. Principles of nutrition and dietary recommendations for individuals with diabetes mellitus: 1979. Journal of the American Dietetic Association 75: 527-530, 1979.

2. Etzwiler, D. D. What the Juvenile Diabetic Knows About His Disease. Pediatrics 29: 135-141, 1962.

3. Guidelines for Education of Patients with Diabetes Mellitus. Prepared by a Joint Task Force of the American Diabetic Association and the American Association of Diabetes Educators. Drafted, Spring 1979.

4. National Commission Report on Diabetes, Volume I, December 1975. (DHEW Pub. No. 76-1018).

5. National Commission Report on Diabetes, Volume III, Part 5, December 1975. (DHEW Pub. No. 76-1031).

6. Stubb, Sarah C. The Diabetes Supplement of the National Health Survey, IV. The patient's knowledge of the food exchanges. Journal of the American Dietetic Association 52: 393, 1968.

Essential Features of the Team Approach to Diabetes Health Care and Education

1. Recognition and inclusion of the client and family members as the most essential members.
2. Respect for and delineation of each member's professional role and responsibilities.
3. Basic guidelines, objectives, and philosophy are established in writing.
4. Each professional member understands and supports basic principles taught by other members and refers the client to the member who can best answer his questions.
5. Members work together to emphasize the same goals and recommendations.
6. Members restrain themselves from overloading the client and family with information in one short period.
7. Communication between members is carried on on a regular basis using regular meetings and written documentation.
8. Continuous assessment, evaluation, and appropriate modification of the team programs are carried out.
9. There is coordinated administration.
10. Consult the references, pages 50 to 52, for further details and examples of successful programs using the team approach.

General Suggestions for Achieving the Team Approach

1. Assume an aggressive role.
2. Develop (a) good professional relationship(s) with (a) physician(s) who seem(s) to understand the importance of the nutritional care and education offered by the practitioner.
3. Be present at rounds and as new patients with diabetes are admitted to explain to physicians, nurses, and clients the services which can be provided.
4. When sufficient support is obtained from physicians and other health care professionals, specific plans and programs should be suggested for discussion and revision.
5. It is best to discuss proposals with several physicians and allied health personnel to gain input and support before taking them to the entire medical committee and/or administration.

6. Perseverence and persistence with physicians and administration are essential.

7. Counsult the references on pages 50 to 52 for further suggestions and examples of successes.

8. On page 44 several publications on establishing and evaluating teams and educational programs are given.

Four-D Model of Instructional Development

I. Define: (Definition and stipulation of educational requirements)
- --Define the educational challenge
- --Conduct search for relevant instructional materials and/or programs already available. (Consult resources listed on pages 42 to 44).
- --Define common client characteristics
- --Conduct a task or concept analysis
- --Define instructional objectives in behavioral terms

II. Design:
- --Design a criterion referenced test for evaluation
- --Select appropriate media
- --Develop initial design including learning activities whenever possible.

III. Develop: (Modification of the initial design)
- --Obtain evaluations from experts such as physicians, dietitians, and educators.
- --Modify on the basis of these evaluations
- --Do developmental testing with clients and family members to identify needs for revision (include an assessment of the success in meeting behavioral objectives)
- --Modify as indicated by developmental testing
- --Continue to test, revise, and retest
- --Evaluation should also be made of already existing materials found in Stage I which the practitioner may desire to use.

IV. Disseminate: If there is a desire to share the materials or program with other professionals, a summative evaluation would be needed. Final packaging, distribution, and sale or publication could then be accomplished.

(Summarized from: Thiagarajan, S. et al. Instructional Development for Training Teachers of Exceptional Children: A Source Book. Bloomington, Indiana: Indiana University, 1974.)

Resources for Educational Program Planning for Diabetes Education

I. Organizations

1. American Association of Diabetes Educators
   North Woodbury Road Box 56
   Pitman, New Jersey 08071

2. American Diabetes Association
   2 Park Avenue
   New York, New York 10016

   Local affiliates of the American Diabetes Association are listed on pages 46 to 47.

3. American Dietetic Association
   430 North Michigan Avenue
   Chicago, Illinois 60611

4. American Dietetic Association Diabetes Care and Education Practice Group
   Secretary: Joy Kirkpatrick
   72790 Arboleda Drive
   Palm Desert, CA 92260
   714-346-3911 ext. 1451
   Chairperson: Fronia Alexander, R.D.
   3052 Southdale Drive
   Dayton, Ohio 45409
   513-223-6192 ext. 274

5. National Diabetes Information Clearinghouse
   Westwood Building, Room 603
   Bethesda, Maryland 20205
   301-496-7433 or 202-842-7630

II. Journals

1. Diabetes Care published bimonthly by the American Diabetes Association. Annual subscription rates: $25 for individuals; $35 for institutions; $15 for students. Professional members of the American Diabetes Association receive Diabetes Care as a benefit of membership. Correspondence concerning subscriptions should be addressed to Subscription Department, American Diabetes Association (address in I(2) above).

   Diabetes Care is a journal devoted solely to diabetes and all its ramifications. Its aim is to improve the care of patients with diabetes. It seeks to serve the informational needs of the members of the health-care team by covering a broad range of subjects including drug therapy; diet and nutrition; detection and diagnosis; diabetic neuropathy, nephropathy and retinopathy; sexual and psychological problems of diabetes.

2. Diabetes, the monthly Journal of the American Diabetes Association. Professional members receive the Journal as part of their membership privileges. Annual subscription rates for non-members: $40 one year; $70 two years; $100 three years. Correspondence concerning subscriptions should be addressed to the Subscription Department, Diabetes at the American Diabetes Association.

   Diabetes is a journal of a more technical nature than Diabetes Care. The former reports original material only in an effort to furnish the medical profession with information concerning diabetes and related fields of medicine while the latter is more concerned with practical care.

3. Diabetes Forecast, a bimonthly publication of the American Diabetes Association. Subscription rates: $6 per year or $12 for subscription plus ADA membership (which allows persons with diabetes and their families to qualify for group life insurance, work on affiliate projects, attend affiliate meetings and classes, learn about diabetes health-care resources, and so forth). Correspondence concerning subscriptions should be addressed to Forecast in care of the American Diabetes Association.

   Forecast is a magazine to assist persons with diabetes in learning how to live with it. It includes articles on diabetes research, diabetes and exercise, travel with diabetes, pregnancy and diabetes, exchange values for commercial foods, recipes and other diet tips and information.

4. The Diabetes Educator is a quarterly journal published by the American Association of Diabetes Educators. Subscription is included with membership in the Association. Annual dues: Active Member, $30; Institutional Member, $100. The membership also includes a bimonthly newsletter.

   The Association and journal are designed to promote and aid the growth and development of quality diabetes education in the United States for the diabetic consumer.

5. "The Physician's Patient Education Newsletter" is a bimonthly publication. Subscription rates: $10/year or $18/year for institutions. Make checks payable to the University of Alabama-Birmingham. Correspondence concerning subscriptions and requests for a free review issue may be obtained from Edward E. Bartlett, Dr. PH, Editor; Physician's Patient Education Newsletter; 930 S. Twentieth Street; Birmingham, Alabama 35294.

   The discussion of the process of education in Part IV was taken partly from the October 1978 Newsletter and the April 1981 issue further discusses diabetes education and behavioral diagnosis of clients. The newsletter thus addresses issues in patient education.

III. Publications

1. American Association of Diabetes Educators publications for Diabetes Education Program Planning and Evaluation:
   a) "Directory of Diabetes Education Programs" ($7.50/copy - free to members)
   b) "Guidelines for Facility Assessment for Starting a Diabetes Education Program" ($3.50/copy for members; $4.50/copy for nonmembers)
   c) "Guidelines for Program Evaluation" ($1.00 per copy)
   Mail check made payable to AADE at address listed in I(1).

2. National Diabetes Information Clearinghouse annotated bibliographies:
   a) Diet and Nutrition for People with Diabetes
   b) Cookbooks for People with Diabetes
   c) Teaching Guides for Diabetes Education Programs
   d) Educational Materials for and about Young People with Diabetes
   e) Materials and Aids for the Visually Impaired Diabetic
   f) Diabetes Educational Materials for Adults with Limited Reading Skills
   g) Spanish Language Materials
   h) Pregnancy and Diabetes
   i) General Information about Diabetes
   j) The clearinghouse also publishes bimonthly newsletters and "State and Federal Assistance: Resource Directory for People with Diabetes."
   k) Also available through the clearinghouse is an NIH publication, "Pretesting in Health Communications: Methods, Examples, and Resources for Improving Health Messages and Materials."

3. Resources for instructional development:
   a) Thiagarajan, S. et al. Instructional development for training teachers of exceptional children: A source book. Bloomington, Indiana: Indiana University, 1974. (Copies may be ordered from The Council for Exceptional Children; 1920 Association Drive; Reston, Virginia 22091. $5.50/copy should accompany the order).
   b) Briggs, L. J. Handbook of procedures for the design of instruction. Pittsburgh, Pennsylvania: American Institutes for Research; 1970.
   c) Merrill, M. D. (Ed.) Instructional design: Readings. Englewood Cliffs, New Jersey: Prentice-Hall, 1971.
   d) Popham, W. J. and Barker, E. L. Planning an instructional sequence. Englewood Cliffs, New Jersey: Prentice-Hall, 1970.
   e) Popham, W. J. and Barker, E. L. Systematic instruction. Englewood Cliffs, New Jersey: Prentice-Hall, 1970.

4. Implementing Patient Education in the Hospital. Chicago, Illinois: American Hospital Association, 1979. (Copies may be requested from the American Hospital Association; 840 North Lake Shore Drive; Chicago, Illinois 60611).

5. References on organizing a diabetes health care and education team in various settings are given in the list of Part II references, page 50, numbers 2, 4, 5, 6, 9, 12, 13, 15 and 18. The references are annotated to allow selection of those most related to the practitioners own setting and needs.

6. References on the cost/benefits and needs for continuing diabetes education are given in the list of Part II references, page 50, numbers 1, 5, 10, 20 and 22.

Affiliate Diabetes Associations

ALABAMA
American Diabetes Association
Alabama Affiliate, Inc.
904 Bob Wallace Avenue, S.W., Suite 222
Huntsville, AL 35801
(205) 533-5775

ALASKA
American Diabetes Association
Alaska Affiliate, Inc.
715 L Street, Suite 4
Anchorage, AK 99501
(907) 276-3607

ARIZONA
American Diabetes Association
Arizona Affiliate, Inc.
555 West Catalina Drive, #16
Phoenix, AZ 85013
(602) 274-3514

ARKANSAS
American Diabetes Association
Arkansas Affiliate, Inc.
5422 West Markham
Little Rock, AR 72205
(501) 666-9481

CALIFORNIA
American Diabetes Association
Northern California Affiliate, Inc.
255 Hugo Street
San Francisco, CA 94122
(415) 681-8014

American Diabetes Association
Southern California Affiliate, Inc.
1127 Crenshaw Boulevard
Los Angeles, CA 90019
(213) 938-7271

COLORADO
American Diabetes Association
Colorado Affiliate, Inc.
2450 South Downing Street
Denver, CO 80210
(303) 778-7556

CONNECTICUT
American Diabetes Association
Connecticut Affiliate, Inc.
17 Oakwood Avenue
West Hartford, CT 06119
(203) 236-1948

DELAWARE
American Diabetes Association
Delaware Affiliate, Inc.
2713 Lancaster Avenue
Wilmington, DE 19806
(302) 656-0030

DISTRICT OF COLUMBIA
American Diabetes Association
Washington, D. C. Area Affiliate, Inc.
4405 East-West Highway
Bethesda, MD 20014
(301) 657-8303

FLORIDA
American Diabetes Association
Florida Affiliate, Inc.
1080 Woodcock Road, Suite 279
Orlando, FL 32803
(305) 894-6664

GEORGIA
American Diabetes Association
Georgia Affiliate, Inc.
1447 Peachtree Street, N.E., Suite 810
Atlanta, GA 30309
(404) 881-1963

HAWAII
American Diabetes Association
Hawaii Affiliate, Inc.
510 South Beretania Street, #101
Honolulu, HI 96813
(808) 531-3266

IDAHO
American Diabetes Association
Idaho Affiliate, Inc.
166 South Cole Road
Boise, ID 83709
(208) 377-4620 or 377-1460

ILLINOIS
American Diabetes Association
Northern Illinois Affiliate, Inc.
6 North Michigan Avenue
Chicago, IL 60602
(312) 346-1805

American Diabetes Association
Downstate Illinois Affiliate, Inc.
137 North Church
Decatur, IL 62523
(217) 422-8228

INDIANA
American Diabetes Association
Indiana Affiliate, Inc.
222 S. Downey Avenue, Suite 320
Indianapolis, IN 46219
(317) 352-9226

IOWA
American Diabetes Association
Iowa Affiliate, Inc.
5270 North Park Place, N.E.
Cedar Rapids, IA 52402
(319) 377-4615

KANSAS
American Diabetes Association
Kansas Affiliate, Inc.
2312 East Central
Wichita, KS 67214
(316) 265-6671

KENTUCKY
American Diabetes Association
Kentucky Affiliate, Inc.
224 E. Broadway — Suite 711
Louisville, KY 40202
(502) 589-3837

LOUISIANA
American Diabetes Association
Louisiana Affiliate, Inc.
619 Jefferson Highway, Suite 1F
Baton Rouge, LA 70816
(504) 927-7732

MARYLAND
American Diabetes Association
Maryland Affiliate, Inc.
3701 Old Court Road
Old Court Executive Park, Suite 19
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American Diabetes Association
New England Affiliate, Inc.
377 Elliot Street
Newton Upper Falls, MA 02164
(617) 965-2323

MICHIGAN
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Michigan Affiliate, Inc.
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(313) 342-9333

MINNESOTA
American Diabetes Association
Minnesota Affiliate, Inc.
5400 Glenwood Avenue North
Minneapolis, MN 55422
(612) 546-9619

MISSISSIPPI
American Diabetes Association
Mississippi Affiliate, Inc.
P.O. Box 11131
Jackson, MS 39213
(601) 981-9511

MISSOURI
American Diabetes Association
Heart of America Affiliate, Inc.
616 East 63rd Street, Suite 203
Kansas City, MO 64110
(816) 361-3361

American Diabetes Association
Missouri Regional Affiliate, Inc.
P.O. Box 11 (Mailing Address)
811 Cherry
Columbia, MO 65201
(314) 443-8611

American Diabetes Association
Greater St. Louis Affiliate, Inc.
1780 South Brentwood Boulevard
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(314) 968-3196

MONTANA
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Montana Affiliate, Inc.
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Great Falls, MT 59403
(406) 761-0908

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Nebraska Affiliate, Inc.
7377 Pacific, Suite 216
Omaha, NE 68114
(402) 391-1251

NEVADA
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3333 West Washington Avenue
Las Vegas, NV 89107
(702) 648-6928

NEW HAMPSHIRE
American Diabetes Association
New Hampshire Affiliate, Inc.
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194 North Main Street
Concord, NH 03301
(603) 228-1116

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New Mexico Affiliate, Inc.
525 San Pedro, N.E., Suite 100
Albuquerque, NM 87108
(505) 266-5716

NEW YORK
American Diabetes Association
Western New York Affiliate, Inc.
107 Delaware Avenue, Suite 240
Buffalo, NY 14202
(716) 847-0200

American Diabetes Association
New York Diabetes Affiliate, Inc.
104 East 40th Street
New York, NY 10016
(212) 697-7760

American Diabetes Association
Rochester Regional Affiliate, Inc.
797 Elmwood Avenue
Rochester, NY 14620
(716) 271-1260

American Diabetes Association
Upstate New York Chapter, Inc.
306 South Salina Street
Syracuse, NY 13202
(315) 475-1228

American Diabetes Association
Central New York Chapter, Inc.
1404 Genesee Street
Utica, NY 13502
(315) 735-0591

NORTH CAROLINA
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Charlotte, NC 28212
(704) 535-8111
(800) 432-7750 Toll Free in N.C.

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American Diabetes Association
Akron Area Affiliate, Inc.
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American Diabetes Association
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American Diabetes Association
Mahoning Valley Chapter, Inc.
420 Oak Hill Avenue
Youngstown, OH 44502
(216) 744-2444

American Diabetes Association
Greater Ohio Affiliate, Inc.
P.O. Box 432
Lancaster, OH 43130
(419) 423-7608

OKLAHOMA
American Diabetes Association
Eastern Oklahoma Chapter, Inc.
6565 South Yale Avenue, Suite 105
Tulsa, OK 74177
(918) 492-4047

American Diabetes Association
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2801 N.W. Expressway, Suite 146
Oklahoma City, OK 73112
(405) 842-8839

OREGON
American Diabetes Association
Oregon Affiliate, Inc.
3607 S.W. Corbett
Portland, OR 97201
(503) 228-0849

PENNSYLVANIA
American Diabetes Association
Greater Philadelphia Affiliate, Inc.
919 Walnut Street, Fourth Floor
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American Diabetes Association
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Diabetes Programs and Teaching Methodologies

1. Individual counseling by the dietitian
   --The most important methodology
   --Should be available to assist in individualizing nutrition care and education plans at EVERY phase and step of education

2. Diabetes Education Centers (and camps)
   --Offer a comprehensive learning and self-care living-in experience to provide necessary understanding and skills for increased self-reliance
   --May also offer professional education

3. Home visits
   --Provide valuable opportunities for teaching and assessing, especially on the Home Management level, in the setting where most of the nutritional management occurs
   --When unable to perform home visits, the practitioner may train and work with others, such as public health visiting nurses and educated persons with diabetes, who can make such visits.
   --May be combined with visits to the office or clinic

4. Group discussions with health professionals and persons with diabetes ("diabetic forums" or "clubs")
   --Dietitian's input can help to meet needs of individuals in the community.
   --The practitioner should participate and encourage participation by clients.

5. Basic classes on nutrition in diabetes
   --Should be preceded by interviews to determine individualized meal plan and nutritional care plan and any other necessary individualized instructions.
   --Individual follow-up should be given
   --Usually present information on the basic need for the meal plan and the exchange lists and their use.
   --Also provide good review for those who have had previous survival level education.
   --Sometimes include information more appropriately given at the Home Management level and overwhelming to the newly diagnosed individual. May need two classes, one for information from each level.

(Basic classes on nutrition in diabetes, cont.)
--Have been shown to be more effective than traditional bedside teaching and to reduce the practitioner's time.

6. Audiovisual materials
--Illustrate and reinforce concepts by appealing to more than the sense of hearing.
--Filmstrips, chalkboards, food models, hospital cafeteria, and a "scale" illustrating the relationship of diet, insulin and exercise are examples.
--Printed materials are often misused: Their use should be explained to the client and follow-up to determine understanding should be given. Provision of more than 2 or 3 items at one time may be confusing.
--Frequently such materials are aimed at an older audience and need modification for children, adolescents, and clients with learning handicaps.

7. Programmed education and self-learning units
--Specify behavioral objectives
--Present information in a logical sequence
--Allow self-pacing
--Require active learner participation
--Provide immediate feedback
--Should not be the sole educational method used
--Decrease professional time required for basic instruction
--Allow easy periodic review
--Do not allow for individualization
--Impersonal approach
-Expensive in terms of developing and of obtaining necessary materials and equipment.

Literature giving details on the advantages, disadvantages, and uses of such programs and methodologies is included in the annotated references for Part II, pages 50 to 52.

Part II References (Annotated)

1. Brouhard, B. H. et al. Education of the child with juvenile-onset diabetes mellitus: an example of cost containment. Texas Medicine 74(11): 63-64, November 1978.
An evaluation of the decreased cost of care for patients receiving structured initial diabetic education as compared to those who did not. Specific case studies are given. "Effective patient education can result in decreased hospitalization as well as significant cost containment."

2. Currie, B. F. and J. H. Renner. Patient education: Developing a health care partnership. Postgraduate Medicine 65(1): 177-180, 182, January 1979.
Suggestions for determining the "medical IQ" and knowledge of a patient, providing appropriate educational experiences for him, and developing a partnership with him.

3. Dwyer, L. S. and F. G. Fralin. Simplified meal planning for hard-to-teach patients. American Journal of Nursing 74(4): 664-665, April 1974.
An example both of a nutritionist working with nurses who visit clients with diabetes and of a simplified educational approach for teaching diabetic meal planning.

4. Etzwiler, D. D. Teaching allied health professionals about self-management. Diabetes Care 3(1): 121-123, January-February 1980a.
Dr. Etzwiler gives examples of the educational programs at the Diabetes Education Center in Minneapolis. He details the establishment and functioning of a diabetes education team which includes the client. A suggested time frame is given for the various stages of education. Suggestions for contracting with clients and giving ongoing support or intervention to increase compliance are given.

5. Etzwiler, D. D. and M. B. Ainslie. Juvenile onset diabetes mellitus: Practical care. Minnesota Medicine 63(7): 527-533, July 1980b.
Practical aspects of diabetes management including diet and client education are discussed. Dr. Etzwiler discusses the timing of educational efforts and his own educational programs.

6. Etzwiler, D. D. The patient is a member of the medical team. Journal of the American Dietetic Association 61(10): 421-423, October 1972a.
Dr. Etzwiler discusses the role of the dietitian in the education team, its establishment and the importance of including the client. Practical aspects of the functioning of the team and problems encountered along with time requirements are discussed.

7. Etzwiler, D. D. and J. R. Robb. Evaluation of programmed education among juvenile diabetics and their families. Diabetes 21(9): 967-971, September 1972b.
The acceptance and effectiveness of programmed machine instruction is evaluated. The subjects were taught about diabetes and its control but there was no objective evidence to indicate control of the disease was improved over a 3-month period. Patients and parents expressed acceptance of the program as an adjunct to the total educational process but not as the sole educational method to be employed. Advantages and disadvantages and description of the program are given.

Part II References (Continued)

8. Hassell, J. and E. Medved. Group audiovisual instruction for patients with diabetes. Journal of the American Dietetic Association 66(5): 465-470, May 1975.
Group instruction, with various techniques, and traditional hospital bedside teaching are compared as to patients' learning and dietitian's time (and thus money) expenditure. Learning was significantly greater and the dietitian's time was reduced by 100% in classes with eight patients.

9. Isaf, J. J. and M. T. Alogna. Better use of resources equals better health for diabetics. American Journal of Nursing 77(11): 1792-1795, November 1977.
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Stages of Adolescent Development and
Implications in the Adolescent with Diabetes Mellitus

I. Early adolescence
   A. Features
      1. Rapid growth
      2. Seeking a degree of freedom from family
      3. Beginning to accept self-responsibility
      4. Beginning to move from influence of home to that of the peer group
      5. Concern with body image
      6. Desire to be normal, comparing self to peers of the same sex
      7. Concerns center in the present
      8. Abilities of abstract thought and formulation of hypotheses have developed.
   B. Implications in diabetes
      1. Serious illness threatens body image and physical integrity.
      2. Difficulty in coping with hospitalization which deprives the individual of the newly found and valued control of his body and activities.
      3. Having to be cared for by others may, however, be temporarily enjoyed.

II. Mid-adolescence
   A. Features
      1. Peak of struggling with parents and others for control of personal destiny.
      2. Peer group may replace parental influence and begin to set behavior standards.
      3. Desire to be attractive becomes less related to body image and is focused on acceptance by the opposite sex.
      4. Thoughts are more outward
      5. Inward thoughts relate to imagined gread achievements and situations with the opposite sex.
      6. Concern with achieving prominence and acceptance through male or female characteristics continues.
   B. Implications in diabetes
      1. Guidelines for diabetes care may threaten independence, especially when imposed by parents.
      2. Serious illness may threaten sexuality and acceptance or at least perceived acceptance.
      3. If time is not taken to present the problems and consequences of diabetes clearly, adolescents may enlarge upon, distort, or dramatize that which is told them.

III. Older adolescence
   A. Features
      1. More stable than younger adolescents
      2. Have usually established a satisfactory degree of independence and maleness or femaleness.
      3. Relate well to members of the opposite sex
      4. Have developed the ability to love and be loved
      5. Acceptance of self followed by interests in and relationships with

others has usually occured.
6. Often a dating partner has replaced parents and peer group.
7. Thoughts are invested in exploring career, lifestyle, marriage and education opportunities and decisions.
8. Increased concern for the future

B. Implications in diabetes
1. Diabetes may affect relationship with the dating partner.
2. Diabetes may threaten plans for the future (or seem to do so).
3. Reactions to diabetes are now only slightly related to body image, self-responsibility or sexuality.

IV. General implications of adolescence in diabetes
A. Struggle for independence may be heightened when parents are controlling and rigid in regard to the diabetic treatment regime.
B. Fear of hypoglycemia in social settings is often a constant concern.
C. If the diet seems overwhelming or too difficult to follow, the feelings of hopelessness and helplessness will be exagerated.
D. If diabetes prevents the person from feeling part of a specific group, self-esteem and self-image may be damaged.

(Summarized from: Daniel, W.A. Jr. Impact of diabetes on adolescents. Texas Medicine 71(11): 56-60, November 1975).

Adolescent Attitudes towards and Problems with the Diabetic Dietary Regimen

(Summarized from the literature listed on page 57).

1. Generally a positive attitude with only about one-third feeling it "sometimes too strict."
2. While the majority of families ate together and kept regular meal times, about a third served separate dishes to the adolescents with diabetes and only a very small percentage changed their habits to match the diet of the subjects.
3. A majority of families continued purchasing sweets.
4. Conflicting reports as to whether or not friends and the peer group were a significant cause of dietary disturbance.
5. Conflicting reports as to whether the diet was kept at school.
6. Reports of fear of stigmatism leading to non-compliance.
7. Family problems were reported including sibling rivalry and increased expense and effort.
8. Reports that compliance is greater in the pre-puberty group where there is still dependence upon parents.
9. Food may become manipulative tool in the hands of the adolescent or parent.
10. Reports that dietary indiscretions, as high as 72%, may develop from adolescent characteristics and needs, the frustrations of diabetes itself, and the attitudes of parents.
11. General lack of knowledge reported.
12. Several reports indicating that early education and self-management give the best results in later adolescence.

Factors which may Lead to Non-Compliance in Adolescents

1. Clients are responding to their higher priorities of which the practitioner is unaware.
2. The practitioner has not tailored the care plan to fit the client's priorities.
3. Non-compliance may offer rewards such as attention and special care which are more valued than the promise of good health.
4. Clients may lack other choices.
5. Clients are unnecessarily made to feel guilty.
6. Promises are poorly and/or inappropriately made.
7. Anger
8. Depression
9. A desire to be manipulative
10. A desire to attract attention
11. A desire to escape from the "normal routine"
12. A belief that negative urine tests or discontinuance of insulin would mean diabetes has been cured
13. Testing to see if the diet is really necessary
14. Desires for unallowed foods, sometimes combined with attempts to hide such desires
15. The younger child may not be ready to accept full self-management responsibility while the adolescent may lose his interest in the disease and feel it a drudgery or dull routine.
16. It may be that the practitioner and parents should provide high amounts of support initially and decreased amounts as the client learns and practices the necessary routines.
17. Professional attitudes such as: Blind belief in the efficacy of treatment; Hiding behind professional roles; Keeping power and responsibility for treatment to themselves; Overestimation of compliance; Inability or lack of willingness to say "I don't know"

(See Part III references, page 57)

Part III References

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4. Crosby, E. F. Childhood Diabetes: The emotional adjustment of parents and child. Canadian Nurse 73(9): 20-23, September 1972.

5. Daniel, W. A. Jr., Impact of diabetes on adolescents. Texas Medicine 71(11): 56-60, November 1975.

6. Etzwiler, D. D. What the Juvenile diabetic knows about his disease. Pediatrics 29: 135-141, January 1962.

7. Galutzer, A. et al. An attempt to predict diabetes control by psychosocial variables. Pediatric and Adolescent Endocrinology 7: 170-176, (Karger, Basel 1979).

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10. Khurana, R. D. and P. White. Juvenile onset diabetes: Problems in managing 16 to 22 year olds. Postgraduate Medicine 49: 118-123, 1971.

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12. Ludvigsson, J. Attitude of the juvenile diabetic and his family towards the dietetic regimen. Pediatric and Adolescent Endocrinology 7: 147-152, (Karger, Basel 1979).

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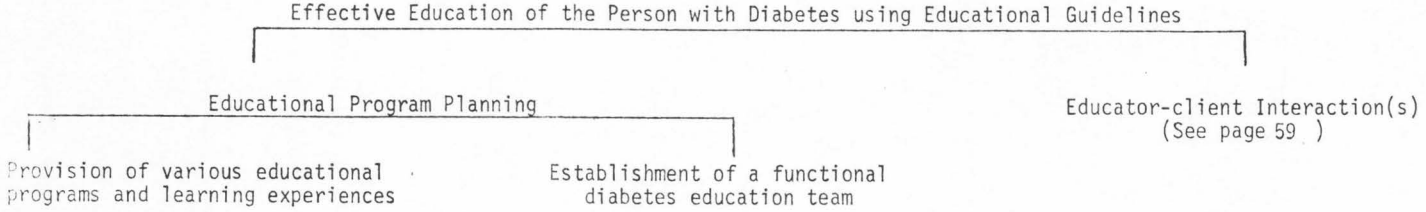
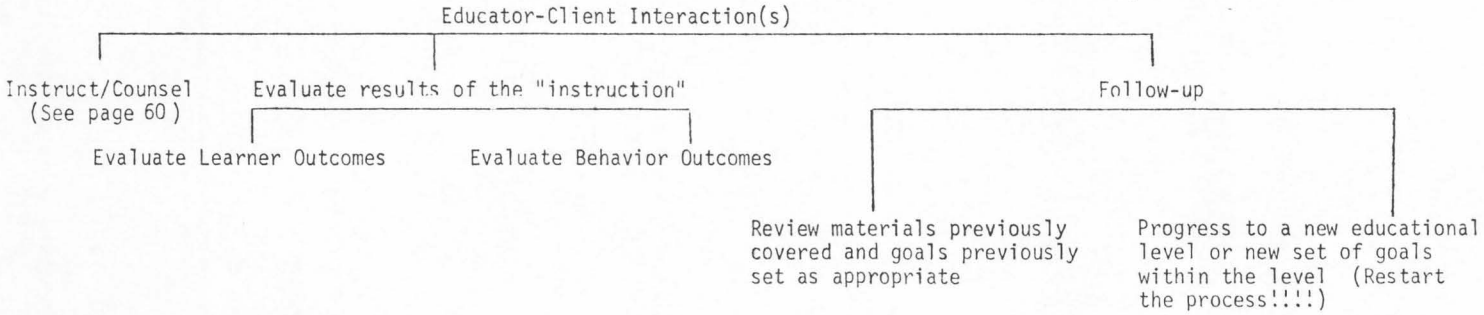
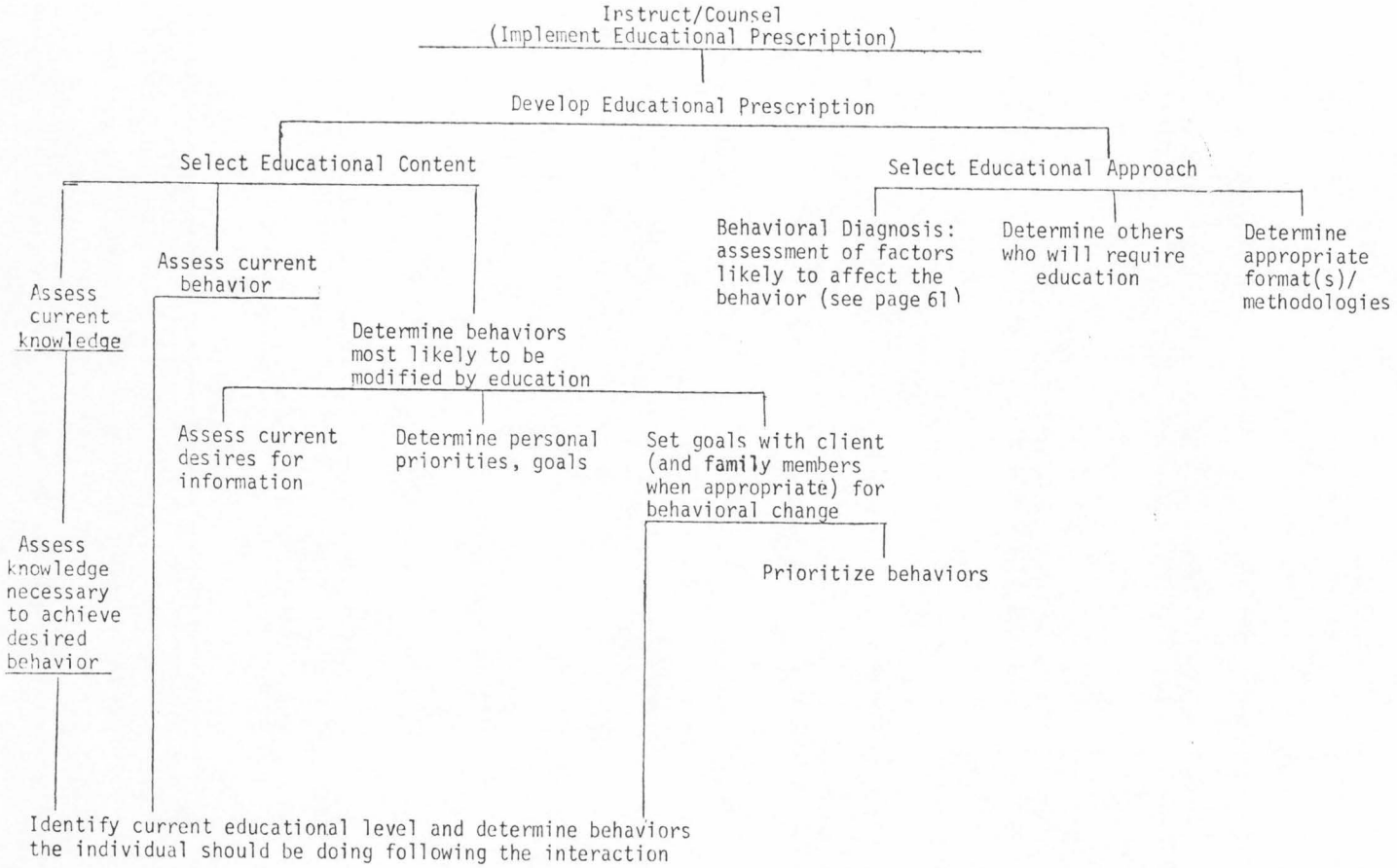
16. Zuppinger, K. et al. Attitude of the juvenile diabetic, his family and peers toward a restricted dietetic regimen. Pediatric and Adolescent Endocrinology 7: 153-158, (Karger, Basel 1979).


Effective Education of the Person with Diabetes using Educational Guidelines
Educational Program Planning
Educator-client Interaction(s)
(See page 59)
Provision of various educational programs and learning experiences
Establishment of a functional diabetes education team


Educator-Client Interaction(s)
Instruct/Counsel
(See page 60)
Evaluate results of the "instruction"
Follow-up
Evaluate Learner Outcomes
Evaluate Behavior Outcomes
Review materials previously covered and goals previously set as appropriate
Progress to a new educational level or new set of goals within the level (Restart the process!!!!)


Instruct/Counsel
(Implement Educational Prescription)
Develop Educational Prescription
Select Educational Content
Select Educational Approach
Assess current knowledge
Assess current behavior
Determine behaviors most likely to be modified by education
Behavioral Diagnosis: assessment of factors likely to affect the behavior (see page 61)
Determine others who will require education
Determine appropriate format(s)/ methodologies
Assess current desires for information
Determine personal priorities, goals
Set goals with client (and family members when appropriate) for behavioral change
Prioritize behaviors
Assess knowledge necessary to achieve desired behavior
Identify current educational level and determine behaviors the individual should be doing following the interaction

Factors to be Assessed for
Behavioral Diagnosis

1. Knowledge - Also assessed to determine educational content. Will it be sufficient to enable the client to know what to do?

2. Beliefs - Are there religious beliefs, beliefs about self, and especially health beliefs which affect the behavior? Are there preconceived ideas about the behavior that would make it unlikely that the client will adopt the behavior?

3. Attitudes - Toward diabetes, life, the meal plan, self, family, peers, nutrition, health, and disease in general. Are there strong negative or positive feelings about the behavior or the situation that may influence the behavior?

4. Values - These will have been assessed to determine personal priorities and goals for determination of educational content. Does the client sufficiently see the outcome of the behavior as important?

5. Skills - Including reading, learning, cooking, meal planning, and determination of portion size. Does the client have the ability to learn the information as it will be presented? What skills will he need to acquire in order to perform the behavior?

6. Enabling factors - What things will make it easier to perform the behavior? Are there barriers that would make it difficult to perform the behavior?

7. Reinforcing factors - What factors will reinforce the appropriate behavior? Will there be sufficient internal or external reinforcement for engaging in the behavior?

Summary of Case Study Application

--Mary J., 13 year old eighth grader

--Normal weight prior to onset of diabetes

--Diabetes newly diagnosed

--Has been an "excellent student" at school

--Sedentery life style - preferring academic or domestic activities to physical activity

--Parents divorced, lives with mother, no siblings

--Middle income level

--Mother's health beliefs include "healing herbs," drinking juices to cleanse the body, high levels of "natural" foods and vitamin and mineral supplementation, and so forth.

--No serious previous health problems for assessment of adherence to medical recommendations

--Values acceptance by and participation in her particular peer group

--Does a lot of the home cooking

--Mother works and is seldom home

--No regular meal times

--Father is a poorly-controlled diabetic, choosing to ignore medical recommendations

--Mother was overwhelmed by the father's diabetic condition when it was diagnosed and felt incapable of handling it. May have precipitated divorce.

--Close relationship with mother

--Visits father and his wife for one month every summer

--Mother and father are high school graduates

--Mother and she do not eat or use table sugar or any sweets containing it. Feel honey is better and use it.

Part IV References

1. Bartlet, E. E. The process of education. Physician's Patient Education Newsletter 1(3), October 1978.

2. Buer, I. Diabetes in adolescence. Symposium on Youth Medicine: 1038-1040, December 1971.

3. Davis, W. K. et al. Factors affecting the educational diagnosis of diabetic patients. Diabetes Care 4(2): 275-278, March-April 1981.

4. Etzwiler, D. D. and M. B. Ainslie. Juvenile Onset Diabetes Mellitus: Practical care. Minnesota Medicine 63(7): 527-533, July 1980.

5. Etzwiler, D. D. Education of the patient with diabetes. Medical Clinics of North America 62(4): 857-865, July 1978.

6. Lawrence, P. A. and J. Cheely. Deterioration of diabetic patients' knowledge and management skills as determined during outpatient visits. Diabetes Care 3(2): 214-218, March-April 1980.

7. Ludvigsson, J. Attitude of the juvenile diabetic and his family towards the dietetic regimen. Pediatric and Adolescent Endocrinology 7: 147-152, (Karger, Basel 1979).

8. Whitehouse, F. W. et al. Teaching the person with diabetes: Experience with a follow-up session. Diabetes Care 2(1): 35-38, January-February 1979.

Appendix C

Pretest, Form A

Name: _____

Date: _____

TEST A

Please fill in your name and the date above.

Please circle or fill in the most appropriate answer.

1. Educational guidelines for the third or Improvement of Lifestyle level (a) provide content required at the time of diagnosis and represent basic needs b) place emphasis on increasing knowledge and flexibility as some experience is gained in living with diabetes c) present a form of advanced learning viewed as enriching the individual's lifestyle with flexibility, insight, and self-determination.

2. Nutritional components of the survival educational level include (a) the need for insulin in order to properly "use" food eaten b) the rules for use of artificial sweeteners and dietetic products c) the use of emergency exchanges or substitutions d) all of the above e) a and b above.

3. Detailed instructions on eating out and "going out for pizza with the gang" would best be achieved a) soon after diagnosis in a hospital in-patient class b) after achieving basic Home Management nutritional objectives--by small group discussions with a dietitian and educated "experienced" individuals with diabetes c) after achieving survival level nutritional objectives by a trained dietitian in a learning center with family members present.

4. The three essential parts of the educator-client interaction are a) introduction, presentation, and conclusion b) instruction/counseling, evaluation, and follow-up c) Survival level, Home Management level, and Lifestyle level d) none of the above.

5. Besides the actual educator-client interaction the dietitian must also do the following for effective education of persons with diabetes a) work to establish a diabetes health care and education team b) work to establish goals of the team c) establish basic classes on nutrition in diabetes, discussion groups with practitioners and persons with diabetes, and other educational programs d) all of the above e) none of the above.

6. Services an R.D. in a hospital setting should be available to perform for clients with diabetes include a) teaching basic classes on nutrition in diabetes b) assisting clients and their families to make necessary psychological adjustments to diabetes c) providing individualized meal plans to hospitalized and out-patient clients d) all of the above e) a and c f) a and b.

Test A (cont.)

7. Match the appropriate methodology to the description of its advantages, disadvantages, or uses.
   a) Live-in learning centers simulating the home environment for clients with diabetes and their family members
   b) Home visits to clients with diabetes
   c) Small discussion groups with professionals and persons with diabetes
   d) "Buddy Systems" using educated persons with diabetes to assist persons newly diagnosed with diabetes
   e) Basic classes on nutrition in diabetes

   ___ Can provide a good review of basic nutrition in diabetes and the exchange system to clients who have once covered survival level information
   ___ May be adapted to meet the current interests and needs of persons with diabetes in the community
   ___ Provides an informal example of appropriate means for adapting to diabetes

8. In order to properly establish educational programs in a health-care facility, the following should be done:
   a) Define the problem and objectives and determine if there are current programs and materials to meet them
   b) Find and immediately use existing materials
   c) Evaluate the effectiveness of any materials or programs to be used
   d) a and b
   e) a and c

9. In facilities where no diabetes health care and education team exists, the best initial step the dietitian might take in establishing such a team would be a) sending a letter to physicians detailing the problems with the care their clients with diabetes are receiving and asking their help in resolving them b) presenting his/her own proposal for such a team first to the medical committee c) establishing good working relationships with several physicians who are supportive of the dietitian's role in and approach to nutritional education in diabetes.

10. (An) element(s) which improve(s) the functioning of a diabetes health care and education team include a) regular team meetings b) specific delineation of each member's role and responsibilities c) consultation of other team members for suggestions and evaluation of nutrition education programs and information on specific clients d) all of the above e) a and b.

The remaining questions relate to the following case study:

Shelly, an eighteen year-old college freshman has just been diagnosed with diabetes. She is an honor student in engineering and engaged to be married in six months when her boyfriend completes his engineering degree. Her height is 5'8" and she currently weighs 115 pounds, having lost 15 pounds in the last two months. Shelly is the oldest of five girls and lives at home while attending college. Her father is a local businessman and her mother operates a beauty salon in the basement of their home. You have only spoken with Shelly briefly because she is still upset about her diagnosis made the day before. She is in the middle of a "tough quarter" and concerned about her future in school and with her fiance. She did indicate that she dislikes breakfast, eats only a light lunch and eats out frequently. She seems to survive on "quick" and "junk" foods as neither she nor her mother "really cook much." She works three nights

Test A (cont.)

a week at a fast food establishment. She indicated that if she were diabetic she would not need to worry about the diet because she "doesn't like a lot of sweets." She is very upset at the prospect of taking injections and feels the diagnosis may be incorrect since she "is not overweight, does not eat many sweets and sometimes goes without food for days." She is aware of the possibility of diabetic complications and seems worried about them especially since her girlfriend's father suffered from renal failure and, worse, impotence, "because he was diabetic." Shelly herself has no family history of diabetes.

11. Shelly's current educational level is a) Survival b) Home Management c) Improvement of Lifestyle.

12. Behaviors Shelly should be doing following your initial interaction with her might include a) writing her own recipes and preparing her own meals b) eating at regular times and in consistent amounts c) reading the labels of the convenience food items she uses and translating the information into exchange values for use in her meal plan.

13. Knowledge Shelly would need in order to maintain normal blood glucose levels would include a) the relationship of meals to insulin b) how to adapt recipes for her meal plan c) foods and amounts within each exchange list d) the use of exchange lists in planning meals e) all of the above f) a, b, and c g) a, c and d.

14. The best assessment of Shelly's current knowledge and behavior related to the Survival level nutritional goals is a) she knows how to plan meals but is not willing to use that knowledge b) she does not understand the relationship of food and insulin and so does not understand the need for a meal plan c) she does not know how to use labels on convenience food packages.

15. Assume that you have identified the following as behaviors Shelly needs to be doing: a) explain correctly the relationship of food and insulin b) plan a menu according to her 2000 Kcal meal plan c) acknowledge her need for a modified meal plan d) eat meals and snacks at regular times. What is the most appropriate priority order for these objectives and why?

a) a-c-d-b--because she must first have the knowledge and then apply it b) c-a-d-b--because she will not be ready to be educated until she changes her attitude about the need to modify intake. Also eating on time is preliminary to following a meal plan and necessary to make the plan effective. c) d-a-c-b--because eating on time is the most essential aspect of the diabetic diet regimen.

16. Which of the following of Shelly's behaviors seems most likely to be modified by education and why (choose the reason which will motivate her)? a) the skipping of meals because her new 2000 ADA meal plan shows she must have them b) the eating of concentrated sources of sugar because she "doesn't really like sweets." c) the denial of her need for a diabetic diet because she has been helped to accept her diabetes and understand the importance of control and because her attitude will prevent any other significant behavioral changes until it is altered. d) a and b because they do not require major changes and can be accomplished by education whereas c cannot.

Test A (cont.)

17. Appropriate goals to be set with Shelly might include a) I will eat a breakfast every morning between 8 and 9 a.m. b) I will use my meal plan to plan tentative menus for 3 days at a time c) I will plan ahead to have food available for following my meal plan d) all of the above but only after Shelly has accepted the diagnosis e) none of the above.

18. Shelly has decided to try an insulin and diet regimen for one month to "see if it makes her feel better." In order to meet this goal she will initially need to be taught the following by the dietitian: a) the relationship of meals to activity and insulin and the resulting need for complete meals and snacks at specific times b) use of the exchanges and her meal plan to plan meals c) how to translate label information into exchanges d) all of the above e) a and b f) b and c.

19. Which factors could be used to motivate Shelly to learn more about nutrition in diabetes and to follow a meal plan? a) her academic exposure in college, ability and desire to learn b) her exposure to food in her job c) her fear of complications of diabetes d) her desires to graduate and marry e) all of the above f) a,b and d g) a, c and d.

20. Which of the following factors may hinder Shelly's education concerning and adherence to her meal plan?
a) her cooking skills and habits b) her belief that diabetes is associated only with obesity and high sugar intake c) her denial of the diabetes and fear of complications d) all of the above e) none of the above.

21. How could Shelly's fear of diabetic complications be used in her education on nutrition in diabetes? a) she could be promised that by faithfully following her meal plan and working with the R.D. to make needed adjustments she can avoid complications b) explanation of the importance of diet in achieving control could be made with the promise that good control will help avoid ketoacidosis and insulin reactions and probably significantly decrease the chance of or postpone microvascular complications c) the dietitian should not discuss complications or use them as a threat to gain dietary adherence.

22. The most appropriate format for teaching Shelly to use her meal plan would be: a) a taped presentation on the exchanges b) hospital diabetes classes introducing the exchanges with a short slide/tape presentation and food models c) giving individual explanation of her meal plan with practice marking menus and appropriate feedback d) waiting until she has accepted the diagnosis and then giving explanation as to how the meal plan will help her feel better e) a then d followed by c f) d followed by b and then c.

23. A learner outcome to be evaluated after the initial patient-educator interaction with Shelly would be: a) she plans her meals in advance b) she acknowledges and explains her need for the meal plan c) she marks her menus correctly.

Test A (cont.)

24. Behavioral outcomes to be evaluated after teaching Shelly her meal plan and the exchange lists would be: a) she lists correctly 5 foods in each exchange list b) she marks her hospital menu correctly c) she plans her meals correctly and ahead of time at home d) all of the above e) none of the above.

25. Follow-up for Shelly should include a) reviewing with her the need for the meal plan and improvements it has seemed to make in her health b) a follow-up session to answer questions and assess necessary changes in her meal plan c) progression to other goals on the Survival and/or Home Management level d) all of the above e) a and c.

Appendix D

Pretest, Form B and Posttest

Name: _____

Date: _____

Please fill in your name and the date above. Please circle or fill in the most appropriate answer:

1. The level of educational need which emphasizes increased knowledge and flexibility as experience is gained in living with diabetes is a) the third or Home Management Level b) the first or Improvement of Lifestyle Level c) the second or Home Management Level d) the first or Survival Level 3) the third or Improvement of Lifestyle Level.

2. The importance of and rationale for following the diabetic meal plan is a nutritional component of a) the survival level only b) the Home Management Lebel only c) both the Survival and Home Management Levels, with review at the Lifestyle Level d) the Lifestyle Level only.

3. Match the educational level with its most appropriate setting:
   ___ Survival level
   ___ Home Management level
   ___ Improvement of Lifestyle level
   a) In classrooms, learning centers, small groups, special camps, and the home
   b) Through small group discussions, interviews with the dietitian, and association with educated individuals with diabetes
   c) At the hospital as soon as the client is ready to learn after diagnosis

4. The educator-client interaction is a) only one of the components necessary for effective education of the person with diabetes b) composed of counseling/instruction, evaluation, and follow-up c) most effective when supported by a cooperative health care and education team d) all of the above e) none of the above.

5. Education of the person with diabetes is most effective when a) the client has reached the Home Management level b) the health care and education team members are cooperative and supportive of the client and team members' efforts c) there are appropriate learning experiences and programs in the institution to support educational efforts d) a and c e) b and c.

6. Services an R.D. should be available to perform for outpatient clients with diabetes include: a) provide individual counseling for adjustments of meal plans b) provide individual counseling to accomplish Home Management and Lifestyle goals c) be involved with continuing small group discussions for persons with diabetes d) all of the above e) none of the above.

7. Match the appropriate methodology to the description of its advantages, disadvantages, or uses.
   a) Live-in learning centers simulating the home environment for clients with diabetes and their family members
   b) Home visits to clients with diabetes
   c) Small discussion groups with professionals and persons with diabetes
   d) "Buddy Systems" using educated persons with diabetes to assist persons newly diagnosed with diabetes
   e) Basic classes on nutrition in diabetes
   f) Self-instructional AV materials

   ___ While this method may be used at home, the materials should first be reviewed by the R.D. and accompanied by appropriate introduction and follow-up with the client
   ___ Provides the opportunity to present survival level information in an efficient manner which can be more effective and less time consuming than traditional beside teaching
   ___ Offers the opportunity to learn by experience with trained people to help interpret the experience and assist with necessary adjustments

8. Evaluation of educational programs and materials in a health care facility a) should be done monthly b) should be an ongoing process, initiated before they are used c) is only useful if done with a statistically sound research method d) all of the above e) none of the above.

9. When the practitioner is prepared to approach physicians and other health personnel concerning the formal establishment of a diabetes health care and education team, she/he should a) present a specific set of proposals so that there is a basis for discussion b) provide a list of problems which need to be solved to each person consulted c) ask for each person's suggestions of improving diabetes education in the facility.

10. In order to gain the support of medical professionals and health care team members the dietitian should a) use the medical record to communicate his/her treatment and instruction of the client b) provide them with a list of concepts to be covered with each client at each level, allowing for individualization and typical methods used c) respect their roles in diabetes education and refer clients to them when appropriate d) b and c e) all of the above.

The remaining questions relate to the following case study:

David, a 15 year old boy, has had diabetes for three years. During this time he has been maintained on a single dose of intermediate acting insulin. He was diagnosed in your facility and attended diabetic classes with his mother at that time. This is his fourth hospitalization for ketoacidosis since diagnosis. He has, however, refused further education, saying he understands diabetes. His mother has also refused assistance on the grounds that it is David's responsibility to care for himself. David has recently made the freshman basketball team and has the potential to be the "star center." His father, an athletic director at the community college, is concerned that he take full advantage of this opportunity. David has maintained a 3.0 G.P.A. and has hopes of attending college and playing collegiate basketball. He has two younger brothers and an older married sister with diabetes who seems to maintain good control.

David's management regimen includes a prescription for a 2200 calorie ADA diet. He is 5'11" and weighs 165 lbs (his weight ranges from 160 to 170). The doctor has decided to change his insulin prescription to 20 units Lente and 5 units Regular in the morning and 5 units Lente and 4 units Regular with the evening meal from the 34 units of Lente which he had previously been taking each morning. He seems rather discouraged but also more approachable than on previous admits. He admits to ignoring his meal plan. He states he cannot "afford" to have an insulin reaction as he did one year ago during a basketball game. (That particular case of hypoglycemia resulted in admission to the emergency room and may have been partially due to postponing his evening meal). He is also concerned at having enough "energy" for athletics. He doesn't want to carry exchange lists "out to get pizza with the gang" but states he still has his copies of the exchanges and remembers them fairly well. (Before his release after his diagnosis he was able to mark, select, and write menus well based upon his meal plan). Currently he eats breakfast about 6:30 a.m., lunch at the school cafeteria about noon, and snacks and eats irregularly after school. He feels that the 2200 calorie meal plan was "way too low" to play ball and avoid reactions. His ball practice is daily from 2:30 to 4 p.m. and games will usually be at 3 p.m. with occasional evening games. The coach has told David he will be starting all team members on a "special training diet," in one month, just prior to the beginning of basketball season.

11. David's current educational level is a) Survival b) Home Management c) Improvement of Lifestyle.

12. Behaviors David should be doing following your interaction with him might include a) writing his own recipes and preparing his own meals b) carrying his meal plan and exchange lists with him and never deviating from them c) consistently following his meal plan except for appropriate deviations for ball games at unusual times or other vigorous activities.

13. New knowledge David would need in order to maintain normal blood glucose levels and avoid ketoacidosis would include a) how to adapt recipes for his meal plan b) food within each exchange list c) how to increase intake for vigorous exercise and the need for flexible food distribution throughout the day related to activity d) the reason for consistency in daily intake and the effect of the different nutrients on blood glucose levels e) b and c f) b, c and d.

14. The best assessment of David's current knowledge and behavior related to the survival level nutritional goals is: a) he has had the ability to plan meals but is not using it b) he states the need for food as a source of energy but does not eat at appropriate times c) he has not been exposed to the nutritional knowledge necessary for survival level skills d) he has been taught the information necessary for survival skills but this was inadequate as it was not followed up with review and home management education e) a, b and c f) a, b and d.

15. Assume that you have identified the following as behaviors David needs to be doing: a) eating consistently b) taking pre-exercise calories before games and practices c) following a 3500 ADA meal plan. What is the most appropriate priority order for these objectives? Why? a) a-b-c because this will decrease the chances of insulin reaction which is his main concern and thus increase his motivation to comply. b) c-a-b because his blood glucose level must first be lowered and this will do it. c) b-c-a because his chief concern is getting adequate energy for basketball which this will allow.

16. Which of the following of David's behaviors seem most likely to be modified by education and why (choose the reason which will motivate him)? a) the skipping of meals and snacks before games--because he can thus avoid reactions during games b) the inconsistent eating because he can thus regulate his blood sugar c) the ignoring of diabetic restrictions when eating out because he can thus live longer d) inconsistent eating because he can better control blood sugar and be healthier e) the skipping of meals and snacks before practices and games because his new 3500 ADA meal plan states he needs them.

17. The best approach to setting goals with David would be a) asking his parents which things he most needed to do and then suggesting these as goals b) asking David what he would like to be able to do that he cannot now do because of diabetes, showing him how following a meal plan would help him do so and then assisting him in writing goals for following the plan c) taking a list of the nutritional goals for the Survival, Home Management, and Lifestyle levels to him and have him choose those he wishes to achieve

18. In order to meet his goals of avoiding insulin reactions and having energy to play ball David will need to be taught the following: a) the effect of the various nutrients on blood-glucose levels b) a meal plan providing adequate kilocalories for his activity and spaced in a way to cover his normal periods of activity c) how to increase food intake for additional vigorous or unexpected activity d) all of the above e) b and c.

19. Skills which David must have in order to regulate his blood glucose levels include: a) planning meals from an exchange list meal plan b) using label information c) estimating additional nutritional needs of strenuous exercise d) choosing according to his meal plan when at a fast food establishment e) a, b, and c f) c and d.

20. The most significant reinforcing factor for David to increase his adherence to the diabetic diet regimen would be: a) a desire to be like his sister b) a desire to please his father c) a desire to be a star basketball player d) a desire for a long and healthy life e) all of the above.

21. How could David's belief that his current meal plan is "too low" be used in his education? a) the dietitian can promise to increase the calories if he will follow the plan b) it could not be used in any way c) the dietitian could acknowledge the need for modification and offer to work with David to do so, in the process reviewing basic principles and demonstrating the importance of working as a team to monitor and meet changing needs.

22. Others who should receive instructions with David on adjusting intake for exercise would be: a) his mother b) his father c) his coach d) all of the above e) all of the above <u>if</u> David agreed f) a and c.

23. Learner outcomes to be evaluated after teaching David about adjusting intake for exercise would be a) he explains correctly which types of food are to be taken as pre-exercise calories b) he eats an appropriate snack before games c) he lists correctly his meal plan d) all of the above e) none of the above.

24. Behavioral outcomes to be evaluated after teaching David about adjusting intake for exercise would be a) he explains correctly which types of food are to be taken as pre-exercise calories b) he eats an appropriate snack before games c) he lists correctly his meal plan d) all of the above e) none of the above.

25. Follow-up for David should include a) brief review of the exchange lists and other information covered in his initial classes <u>before</u> further instruction b) brief review of the exchange lists and other information covered in his initial classes before and after this instruction as appropriate c) a follow-up session to make further adjustments to the new meal plan, asnwer questions and evaluate progress in relation to his goals d) progression to the Lifestyle level e) progression to other goals in the Home Management level f) b, c and d g) b, c and e.

Appendix E

Correct Responses to and Objectives Measured by the Tests

Question Number	Objective Measured	Correct Response Form A	Correct Response Form B
1	1	c	c
2	2	a	c
3	3	b	c-a-b
4	5	b	d
5	6	d	e
6	7	e	d
7	8	e-c-d	f-e-a
8	9	e	b
9	10	c	a
10	11	d	e
11	4a	a	b
12	4b	b	c
13	4c	g	f
14	4d	b	f
15	4e	b	a
16	4f	c	a
17	4g	d	b
18	4h	e	d
19	4i	g	f
20	4i	d	c
21	4i	b	c
22	4j	f	e
23	4k	b	a
24	4l	c	b
25	4m	d	g

Appendix F

Forms for Validity Assessment of the Tests

Validity Assessment
Form A (for Test A)

Please read each question on test A and then rate its validity in assessing achievement of the corresponding objective (listed below) by circling the most appropriate number: 1--Very valid 2--Somewhat valid 3--In-valid. If numbers 2 or 3 are circled, please give suggestions for improvement in the space provided

Question Number	Correct Response	Objective	Validity
1	c	1	1 2 3
2	a	2	1 2 3
3	b	3	1 2 3
4	b	5	1 2 3
5	d	6	1 2 3
6	e	7	1 2 3
7	e-c-d	8	1 2 3
8	e	9	1 2 3
9	c	10	1 2 3
10	d	11	1 2 3
11	a	4a	1 2 3
12	b	4b	1 2 3
13	g	4c	1 2 3
14	b	4d	1 2 3
15	b	4e	1 2 3
16	c	4f	1 2 3
17	d	4g	1 2 3
18	e	4h	1 2 3
19	g	4i	1 2 3
20	d	4i	1 2 3
21	b	4i	1 2 3
22	f	4j	1 2 3
23	b	4k	1 2 3
24	c	4l	1 2 3
25	d	4m	1 2 3

Comments and suggestions on specific test items for improvement of validity and clarity. (Indicate the item you are commenting on):

Validity Assessment
Form B (for Test B)

Please read each question on Test B and then rate its validity in assessing achievement of the corresponding objective (listed below) by circling the most appropriate number: 1--Very valid 2--Somewhat valid 3--In-valid. If numbers 2 or 3 are circled, please give suggestions for improvement in the space provided on page 2.

Question Number	Correct Response	Objective	Validity
1	c	1	1 2 3
2	c	2	1 2 3
3	c-a-b	3	1 2 3
4	d	5	1 2 3
5	e	6	1 2 3
6	d	7	1 2 3
7	f-e-a	8	1 2 3
8	b	9	1 2 3
9	a	10	1 2 3
10	e	11	1 2 3
11	b	4a	1 2 3
12	c	4b	1 2 3
13	f	4c	1 2 3
14	f	4d	1 2 3
15	a	4e	1 2 3
16	a	4f	1 2 3
17	b	4g	1 2 3
18	d	4h	1 2 3
19	f	4i	1 2 3
20	c	4i	1 2 3
21	c	4i	1 2 3
22	e	4j	1 2 3
23	a	4k	1 2 3
24	b	4l	1 2 3
25	g	4m	1 2 3

Comments and suggestions on specific test items for improvement of validity and clarity. (Indicate the item you are commenting on):

Appendix G

Participant Information and Attitude Survey

Nutritional Counseling Principles in Diabetes Mellitus
and Their Application for Adolescents with Insulin-Dependent Diabetes

Participant Information and Attitude Survey

If a question or item is not applicable to you, please so indicate and explain.

1. Name _____

2. Give your place of employment, job title, and a brief description of your responsibilities. If you are not now employed, please indicate the types of dietetic practice you have been involved in.

3. How many years have you worked as a dietitian? _____

4. What was your route to registration? (CUP, internship, etc.)

5. Approximately what per cent of your working time is spent working with persons with diabetes?

6. Does your institution have a formal diabetes education program(s)?

7. Do you or other RDs in your institution routinely schedule follow-up, counseling sessions and/or educational activities for clients seen with diabetes?

For the remaining items, please circle the number which most correctly indicates your agreement with each of the statements:

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

8. The "Guidelines for Education of Individuals with Diabetes Mellitus" will be of practical value to me in my work. 1 2 3 4 5

9. This learning package has increased my <u>understanding</u> of the process of educating clients with diabetes. 1 2 3 4 5

10. The "Guidelines for Education of Individuals with Diabetes Mellitus will be easy to implement and follow in my practice. 1 2 3 4 5

11. This learning package will make me more <u>able</u> to effectively counsel persons with diabetes. 1 2 3 4 5

12. The "Guidelines" and this learning package are too idealistic--they are not realistic for use by the "average practitioner." 1 2 3 4 5

13. In the future, I will devote more time and energy than I have done to establishing and improving continuing education programs for clients with diabetes in accordance with the "Guidelines." 1 2 3 4 5

14. The "Guidelines" and this learning package are too idealistic--they are not realistic for use in the system in which I work.
1 2 3 4 5

15. Are there any additional comments you have regarding the Guidelines and their use?

Appendix H

Suggestions for Improvement of the Learning Package Form

Nutritional Counseling Principles in Diabetes Mellitus
and Their Application for Adolescents with Insulin-Dependent Diabetes

Suggestions for Improvement of the
Learning Package

I. Content: Please list any items which seemed irrelevant, items which need to be covered in greater or lesser depth; subjects which should have been covered but were not, and so forth along with specific suggestions for improvement.

II. Presentation: Please list suggestions for making the presentation easier to follow; changing the rate at which information is presented and time allowed for study of resource book material; improving the taped narration; and so forth.

III. Resource Book: Please list other materials which should be included. Were the materials easy to follow with the taped presentation? Were any of the materials or information in the resource book inappropriate or in need of correction or improvement?

IV. Suggestions for improving pre and posttests:

V. Miscellaneous Suggestions:

Thank you very much!

Appendix I

Special Notice Announcing the Seminars

S P E C I A L N O T I C E

To: Practicing dietitians who are involved in counseling patients and clients with diabetes mellitus

From: Eileen Richards DeLeeuw, R.D., Masters Candidate, Utah State University

Concerning: Seminar on counseling the insulin-dependent adolescent with diabetes mellitus

For my thesis I have developed a learning package for dietitians to inform and instruct you about the recently published Guidelines for Education of Patients with Diabetes Mellitus from the American Diabetes Association. This has been accomplished under the supervision of my chairman, Barbara Prater, PhD, R.D..

I need some practitioners to field test this learning package at one of four half-day seminars:

Tuesday, August 4, Ogden, Utah
Wednesday, August 5, Logan, Utah
Thursday, August 6, Provo, Utah
Friday, August7, Salt Lake City

Participants will receive a copy of the package including the printed Guidelines, an audio tape and a resource book for their future use and reference. Please indicate your desire to participate by completing the following form and returning it by June 1st to:

Eileen Richards DeLeeuw
Utah State University
Dept. N.F.S., U.M.C. 87
Logan, Utah 84322

Participants who have registered will be informed of location and time at least two weeks in advance.

Educating the Insulin-Dependent Adolescent:
A Continuing Education Seminar

Registration Form

This seminar will be primarily devoted to a program developed at Utah State University. Since we wish to collect data as to the program's effectiveness we will administer a pretest and a posttest and solicit your suggestions on the program and materials. As a participant you will receive a copy of the learning package including the printed Guidelines, an audio tape, and a resource book for your future use and reference.

Name_____ Date_____

Current Employment_____

Work Address_____ Phone_____

Home Address_____ Phone_____

Thank you for your willingness to participate.

Appendix J

Letter Used to Follow-Up the Special Notice

UTAH STATE UNIVERSITY · LOGAN, UTAH 84322
COLLEGE OF AGRICULTURE
COLLEGE OF FAMILY LIFE

DEPARTMENT OF
NUTRITION AND
FOOD SCIENCES
UMC 87

June 4, 1981

Dear Practitioner,

The enclosed notice was printed in the April Update. I appreciate the response we have received, but we need more participants. Please seriously consider attending the seminar. I feel certain it will provide several insights into as well as tools for educating and motivating clients with diabetes. I also need and would appreciate very much your support and input.

THANKS!!!

Eileen

Appendix K

Initial Letter to Participants

UTAH STATE UNIVERSITY · LOGAN, UTAH 84322

COLLEGE OF AGRICULTURE

COLLEGE OF FAMILY LIFE

DEPARTMENT OF
NUTRITION AND
FOOD SCIENCES
UMC 87

July 13, 1981

Dear

Thanks so much for your willingness to participate in our seminar on Educating the Insulin-Dependent Adolescent. I wanted to inform you that it will be held in Logan on August 10, 1981 from 1:00 to 5:00 p.m. Please come to the Classroom #1 at Logan Regional Hospital which is located in the north east wing (turn left at the main entrance and go past the cafeteria. I will also need you to complete two short pre-tests prior to the seminar. These will be mailed to you on July 29th or 30th. Please bring the completed tests with you on the 10th. If there are any questions or problems in attending, contact me by mail or phone. I am really looking forward to sharing this information with you!

Thanks again.

Eileen Richards DeLeeuw, R.D.
Utah State University
UMC 87
Logan, UT 84322
750-2117 (University)
752-7933 (home)

Appendix L

Follow-Up Letter to Participants Accompanying Pretests

UTAH STATE UNIVERSITY · LOGAN, UTAH 84322

COLLEGE OF AGRICULTURE

COLLEGE OF FAMILY LIFE

DEPARTMENT OF
NUTRITION AND
FOOD SCIENCES
UMC 87

July 29, 1981

Dear

I am enclosing the two tests I mentioned in my previous letter concerning the seminar on Nutritional Counseling of Adolescents with Insulin-Dependent Diabetes Mellitus. I would appreciate it if you could take about an hour to answer the questions on each test. This will serve as a measure of the information you have prior to the seminar and will also provide data for test reliability. After completing the tests, make sure your name is on them and bring them with you to the seminar:

--Provo, August 6th, Utah Valley Hospital trailer classroom, 12:30-4:30 p.m.

--Salt Lake, August 7th, V.A. Hospital, Building 5 classroom, 8:30 a.m. to 12:30 p.m.

--Logan, August 10th, Logan Regional Hospital classroom #1, 1:00-5:00 p.m.

If you have questions, please feel free to contact me! Thanks again.

Sincerely,

Eileen R. DeLeeuw, R.D.
UMC 87, NFS
Utah State University
Logan, Utah 84322
750-2117 (university)
752-7933 (home)

Enclosure

Appendix M

Seminar Introduction

"Nutritional Counseling Principles in Diabetes Mellitus
and Their Application for Adolescents with Insulin-Dependent Diabetes:"

A Continuing Education Seminar

Welcome to the seminar--and thanks again for your participation!

The seminar will be based on a tape presentation for continuing education of dietitians. It will be conducted as follows:

1. As you arrive, please turn in your two pretests (make certain your name is on them) and pick up your packet.
2. Please read the first 4 pages of the resourcebook before the seminar begins.
3. You will be given a form for suggestions with your packet--please note on it any comments or suggestions you have during the presentation. You will also be given a Participant Information and Attitude Survey with the packet and may fill in the first seven items if time allows. It will be completed following the presentation and the remaining items should not be filled in until then!
4. The presentation is divided into 4 parts and there will be a five minute break between each part.
5. The taped presentation will guide you in the use of the resourcebook which is organized according to the 4 parts of the presentation.
6. Only one tape will be played for the group. You will not use your individual tapes during the seminar. When the tape indicates that the recording should be stopped to allow study of materials, it will be. Please follow the directions and indicate your readiness to continue the tape by looking up after completing the assigned reading. The tape will be turned on when all indicate a readiness to continue. If it is continued before you are ready, please so indicate.
7. At the conclusion of the presentation, a posttest will be given. Please complete and submit it and the Suggestion form and the Information and Attitude Survey before leaving. Make sure your name is on all three items.
8. Please keep the tapes and resourcebook for your future reference.
9. Again, please accept our sincere appreciation for your attendance and input.

Appendix N

Percentage of Participants Not Meeting Learning Package Objectives

Posttest* Question Number	Objective** Measured	Number of Incorrect Responses	% Incorrect Responses
1	1	23	79
2	2	1	3.4
3	3	4	13.7
4	5	2	6.9
5	6	1	3.4
6	7	1	3.4
7	8	9	31
8	9	4	13.7
9	10	6	20.7
10	11	9	31
11	4a	11	37.9
12	4b	0	0
13	4c	10	34.5
14	4d	3	10.3
15	4e	17	58.6
16	4f	1	3.4
17	4g	2	6.9
18	4h	12	41.4
19	4i	8	27.6
20	4i	1	3.4
21	4i	0	0
22	4j	12	41.4
23	4k	7	24.1
24	4l	6	20.7

Posttest* Question Number	Objective** Measured	Number of Incorrect Responses	% Incorrect Responses
25	4m	13	44.8

* See Appendix D for the posttest.

** Objectives are listed on pages 3-4 of the resourcebook, Appendix b.