DIABETES SELF-MANAGEMENT EDUCATION CURRICULUM

A CURRICULUM FOR PERSONS WITH TYPE 2 DIABETES AND THEIR FAMILIES

REVISED OCTOBER 2001

North Carolina Diabetes Advisory Council
Department of Health and Human Services, North Carolina
2001

Electronic copies of the Modules are available at:

www.ncdiabetes.org

State of North Carolina • Michael F. Easley, Governor
Department of Health and Human Services
Carmen Hooker Odom, Secretary
Division of Public Health

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DIABETES SELF-MANAGEMENT EDUCATION CURRICULUM

A curriculum for persons with Type 2 Diabetes and their families

Revised by

The Patient and Professional Education Task Force

of

The North Carolina Diabetes Advisory Council

and staff of

The North Carolina Diabetes Prevention and Control Unit

Based on revision of

The North Carolina Diabetes Prevention Control Unit
Diabetes Education Curriculum 1987, 1991, 1998

THE NC DIABETES SELF-MANAGEMENT EDUCATION CURRICULUM

On behalf of the North Carolina Diabetes Advisory Council's Patient and Professional Education Task Force, we are pleased to present the *NC Diabetes Self-Management Education Curriculum* for diabetes educators. The modules and accompanying resources and materials will facilitate diabetes self-management training in a group setting and can be adapted or modified to fit the needs of specific programs across the state.

The curriculum was first developed in 1987 by faculty from East Carolina University's Brody School of Medicine and staff within the North Carolina Department of Environment, Health and Natural Resources. Over the last ten years, the text and materials have undergone several revisions in order to stay current with the science and to integrate new findings. The new edition, presented here, was revised and further developed by the Patient and Professional Education Task Force of the NC Diabetes Advisory Council in collaboration with staff from the NC Diabetes Prevention and Control Unit within the Department of Health and Human Services.

ACKNOWLEDGEMENTS

The Patient and Professional Education Task Force is a multidisciplinary group comprised of fourteen members, representing nursing, pharmacy, and nutrition, many of whom are also Certified Diabetes Educators. Over a 12-month period, these members committed their time and expertise to refining and publishing this quality product. They also spent additional hours pouring over the modules and reviewing materials for accuracy and completeness. For the future, the Task Force has identified four additional modules that are now under development to be completed within the next year.

Members of the Task Force who assisted in the preparation of the curriculum are:

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The curriculum would not have come to fruition without the tireless effort and attention to detail of De Vernon, Administrative Assistant with the Diabetes Prevention and Control Unit. Ms. Vernon spent countless hours typing and reformatting the entire curriculum and enthusiastically handled multiple corrections and modifications. Also, we express our appreciation to Mindy Andrus, RD, CDE, with the Brody School of Medicine, who also reviewed the nutrition modules.

CONTENTS

Teaching Tips

1. Adult Learners
   - Self directed
   - Problem oriented
   - Prefer to participate in learning

2. Sessions should be interactive!

3. A. People learn at different rates, ready at different times.

   B. Educational and literacy levels can influence how adults learn.

4. Maintain a learning climate that is respectful.

5. Be sensitive to the participant mix (i.e. education, experience, culture, values, and ethnicity).

6. Give careful consideration to the effects of non-verbal communication (i.e., facial gestures, hand or nervous movements).

7. Be informal, yet clear, on the importance of the message.

8. Plan for a comfortable environment. Pay attention to details such as lighting, ventilation, noise and seating arrangements.

9. Give learners time to process new information.

10. Use a dramatic introduction that will grab attention.

11. Emphasize the desired behavior or action instead of principles.

12. Provide a preview/overview.

13. Provide a summary and review. Go over what you have told them and what they have learned.

14. Knowledge is an integral part of diabetes self-management, but is not sufficient alone.

Observations about Adult Learners*

Adults Are People Who Have:

1. A good deal of first-hand experience.
2. Relatively large bodies, subject to gravity.
3. Set habits and strong tastes.
4. A past.
5. Some amount of pride.
6. Very tangible things to lose.
7. A reflex toward authority.
8. A great many preoccupations.
9. A bewildered reaction to options.
10. Preset reactions in groups.
11. Established values and attitudes.
12. Selective stimuli filter.
13. Strong feelings about learning situations.
14. Ideas to contribute.
15. Experience with life crises.
16. An allergy to too many basics.
17. A strong attraction for utility.
18. Secret fears about falling behind and being replaced.
19. Need for a vacation.
20. The ability to change.

* Modified from Davis, L.N. (1974) *Planning, conducting and evaluating workshops,* Austin, TX: Learning Concepts.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING

MODULE 1: DIABETES OVERVIEW

I. Purpose

To provide an overview of diabetes as a chronic disease process, including its causes and its effect on body systems.

II. Educational Objectives

At the end of this session the participant will be able to:

A. State that diabetes is a chronic disease.
B. Describe the role of insulin in normal body function.
C. Describe what happens in the body when insulin is not available or the cells cannot use insulin properly.
D. Describe the difference between type 1 and type 2 diabetes.
E. State two groups of people at risk for diabetes.
F. Identify at least two reasons why good diabetes control is important.
G. State signs and symptoms of diabetes.
H. State that a diabetes care plan is based upon:
    1. Meal planning and carbohydrate counting (diet).
    2. Exercise (physical activity).
    3. Medication (not always necessary for type 2 diabetes).
    4. Self-monitoring (primarily blood glucose).
    5. Preventive measures to reduce the risk of diabetes problems.

III. Pre-Teaching Guide for the Instructor

A. Review diabetes physiology, metabolism and insulin resistance.
B. Review the Diabetes Control and Complications Trial (DCCT) and the United Kingdom Prospective Diabetes Study (UKPDS).
C. Review transparencies 1 through 11. Prepare discussion relating the key and car to insulin and body cells. Note: Other educational materials (overheads, etc.) may be used to teach this concept; for some patient groups the educator may choose not to use the auto analogy.
D. Review pamphlet on "Take the Test … Know Your Score." Prepare for discussion on the role of excess weight to insulin resistance.
E. Review the types, management and treatment of diabetes.

IV. Supplies and Materials Needed for Teaching

A. Overhead transparencies 1 through 11.
B. Identification bracelet sample.
C. Identification card samples.
D. Individual meal plans and types of medication.
E. Black Board or Flip Chart (optional).
F. See Handouts and Resources in Section V below.

V. Handouts and Resources for Participants

A. American Diabetes Association: "Diabetes Take the Test … Know the Score."

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 1: DIABETES OVERVIEW – APPROXIMATE TIME REQUIRED: 90 MINUTES

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
The client, significant other, and/or caregiver [henceforth referred to as "participant(s)"] will gain a basic understanding of metabolism in diabetes and its signs and symptoms.	**GENERAL INFORMATION** **I. Introduce Topic:** A. Diabetes is a chronic disease. Diabetes affects many body parts; it can cause damage to nerves and blood vessels in eyes, kidneys, heart, and lower legs if it is not controlled. Good news! There is scientific evidence that improved control can delay the onset or minimize the severity of the complications of diabetes B. Most food we eat is changed to blood glucose (sugar). Blood glucose gives our body energy. A body chemical (hormone) called insulin helps the body use blood glucose. Insulin is produced in the organ called the pancreas. Diabetes results when the body does not produce any insulin or not enough insulin or when the body cannot properly utilize its own insulin. The latter condition is called insulin resistance. C. Body Function 1. Food changes to glucose and enters the blood stream. Normal fasting blood glucose is (venous, plasma) ≤ 110 mg/dl. Explain the differences in readings from one machine to another and the difference between the meters that record whole blood values versus plasma. 2. Pancreas sends insulin into the blood stream to open cell walls so glucose can move into cells. Then the cells produce energy for activities such as walking, thinking and working. 3. For people who cannot use their insulin properly, the cell walls stay closed. Glucose may spill into the urine and the person may have to urinate frequently. The person may feel tired, thirsty, hungry, and have blurred vision. **	Lecture and drawing as you describe body. Discuss the DCCT and UKPDC clinical trials. Auto Analogy: Body = engine Food = gasoline Insulin = fuel pump pushing gasoline into engine ** These symptoms <u>do not</u> occur in all persons with diabetes.	Transparencies (T#1) " Why Diabetes Mellitus?" (T#2) Diabetes, An Upset Glucose Balance (T#3) Energy Consumption (T#4) Fuel Supply for the Car (T#5) Fuel Supply for the Body (T#6) The Bloodstream Transports Fuel (T#7) Insulin: The Key (T#8) The key to Make Things Work	40 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 1: DIABETES OVERVIEW

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	I. Introduce Topic: (continued) 4. With no glucose for energy, cells begin burning fat (especially in type 1 diabetes). Fat is stored in the body for emergencies (illness). In some instances, when fat is burned, dangerous chemicals called ketones are produced. They build up in the body and can cause severe illness. 5. When a person is overweight, the cells are resistant to insulin. The "key" no longer opens the door to let glucose into the cells.	Explain why higher weight often leads to insulin resistance. Use lock and key analogy.	Handout: "Diabetes Take the Test … Know the Score" American Diabetes Association (ADA) (T#9) Pancreas (T#10) Lack of Insulin (The key: refer to overhead transparency (T#7 & T#8)	
	D. Who is most likely to have type 2 diabetes? 1. People with family history of diabetes. 2. Overweight people (20% or more). 3. Those people 40 years of age or older (though type 2 is now increasing among younger adults and children and youth). 4. Females who have had babies with birth weight of ≥ 9 pounds. 5. People under stress due to illness, injury, emotional strain or pregnancy. 6. Females with a history of gestational diabetes. 7. Member of a high-risk ethnic group (e.g., African American, Hispanic/Latino, American Indian, Asian American, Pacific Islander).	Do you have a mother, father, sister, brother, or relatives who have diabetes? Would weight control help a person with diabetes? Why?	(T#11) Triggering Factors for Diabetes	

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 1: DIABETES OVERVIEW

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
Participants can cite the types of diabetes, and describe the usual symptoms.	**I. INTRODUCE TOPIC: (continued)** 8. You have high blood pressure ≥ 140/90 (Goal of treatment for people with diabetes is ≤ 130/80). 9. Impaired Fasting 10. Have an HDL Cholesterol Level ≥ 45 mg/dl for men; ≥ 55 mg/dl for women mg/dl and a triglyceride level above 200. **TYPES OF DIABETES** **I. <u>Type 1</u>** <u>(Insulin dependent diabetes)</u> A. Pancreas produces very little insulin, if any. B. More common in children and young adults, but can occur at any age. C. Symptoms: 1. Frequent urination 2. Abnormal thirst 3. Unusual hunger 4. Rapid weight loss 5. Fatigue and weakness 6. Nausea 7. Irritability D. Requires balance of insulin injections (sometimes with oral medications too), activity, meal planning, and lifestyle changes. **II. <u>Type 2</u>** A. Pancreas produces some insulin, but it may not be enough to keep blood glucose at a normal level or the cells may be resistant to insulin produced. B. Most common in persons over 40 years of age, but increasing in teenagers and young children. C. Symptoms: 1. Drowsiness 2. Dry, itchy-skin 3. Weight gain *or* weight loss (unintentional) 4. Blurred vision 5. Tingling, numbness, pain in lower legs	Blackboard List signs and symptoms experienced. Discuss		10 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 1: DIABETES OVERVIEW

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
Participants will understand primary factors that affect blood glucose control.	**II. <u>Type 2</u> (continued)** 6. Easy fatigue 7. Slow healing of cuts or scratches 8. Frequent infections (e.g. vaginal infections) D. Requires balance of food, activity, lifestyle management and in some cases oral medications or insulin. **III. <u>Gestational Diabetes</u>** In diabetes that occurs during pregnancy, the blood glucose levels usually return to normal after the baby is born: however, the woman is at increased risk of developing type 2 later on in life. **MANAGEMENT** **I. For all types of diabetes, management is accomplished by a balance of meal planning, physical activity, medications (sometimes), blood glucose testing and lifestyle management.** A. Meal planning and carbohydrate counting (diet): Food portions and selections affect blood glucose. B. Physical Activity (exercise) Amount, intensity, and frequency of activity affect blood glucose. C. Medications: 1. Improves blood glucose levels. 2. Too much medication – may cause blood glucose to drop too low. 3. Not enough medication – blood glucose levels may remain high. D. Blood glucose testing E. Lifestyles Management: 1. Coping skills a. Emotional b. Physical c. Mental d. Spiritual	Group discussion: Ask How? Overeating, skipping meals, forgetting diabetes and medicine affects blood glucose.		10 mins. 15 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 1: DIABETES OVERVIEW

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	II. Treatment plans will differ, depending upon the needs of the individual. A. Examples of treatment plans: 1. Meal planning, carbohydrate counting and activity. 2. Meal planning, carb. counting, activity, oral medication(s). 3. Meal planning, carb. counting, activity, insulin. 4. Meal planning, carb. counting, activity, insulin, oral medication(s). B. Each person has his/her own treatment plan: 1. Do not take someone else's medication. 2. Do not follow someone else's meal plan. 3. Do not follow someone else's exercise plan.	Show individual meal plans and types of medication. Encourage discussion of treatment each individual uses.		5 mins.
	MANAGEMENT OUTCOMES **I. Effects of Treatments:** A. Meal planning and carbohydrate counting (diet): 1. Consistent meal plans result in more consistent blood glucose levels. 2. Weight loss reduces insulin resistance. 3. Blood glucose levels usually improve with weight loss. B. Physical activity (exercise): 1. Regular exercise reduces insulin resistance. 2. Lowers blood glucose, blood pressure and blood lipids. 3. Improves cardiovascular function and circulation. 4. Improves sense of well being. C. Medication: 1. Improves blood glucose levels. 2. Triglycerides (a form of blood lipids) often improve with blood glucose control. D. Blood glucose testing: 1. Indicates current and recent control. 2. Identifies trends, which suggest the need for changes.	Review basic metabolic changes by treatment.		15 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 1: DIABETES OVERVIEW

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	I. Effects of Treatments: (continued) E. Lifestyle changes: 1. Minimizes stress and stress-induced changes in blood glucose. 2. Reduces risk of certain diabetes complications. 3. Improves general health.			
Summary/Questions	**CLARIFICATION/COMMENTS:** A. What is diabetes? B. What happens to the food we eat? C. What is insulin? D. What happens when a person is overweight? E. Name three types of diabetes? F. Name four factors in the control of diabetes.	Ask, "Is there anything else you would like to know?" List on blackboard and identify when the questions will be answered.		10 mins.

Resources

Explanation of the meaning of the words found in the "Diabetes mellitus" Transparencies

Transparency No. 1 – Why "Diabetes Mellitus?
Literal meaning –"sweet urine." Normal urine contains no sugar. Therefore, in the early years of diabetes diagnosis, doctors would taste the urine. "Sweet urine" meant diabetes.

What is Diabetes?
Transparency No. 2 – Diabetes, An Upset Glucose Balance
There is sugar (or more correctly glucose) in the urine because the amount of glucose in the blood has built up so much that it spills out into the urine. The amount of glucose builds up in the blood because the body is not able to use the glucose properly. Thus, diabetes is a disorder in which the body cannot make proper use of glucose.

Auto Analogy
Transparency No. 3 – Energy Consumption
In a car, the engine converts fuel into energy to drive the car forward. In the body cells, also need fuel in order to produce the energy:

- In muscles for movement
- In the brain for thinking
- In the eye for seeing

Transparency No. 4 – Fuel Supply For the Car
The car engine needs a steady supply of gasoline to function properly.

Transparency No. 5 – Fuel Supply For the Body
The cells in the body also need a steady supply of fuel – principally sugar (glucose forms the food we eat, which is carried to the cells by the blood stream).

Transparency No. 6 – The Bloodstream Transports Fuel
In the intestine, many of the food(s) we eat (especially carbohydrates) are broken down into sugar (glucose) and then transported to the cells via the blood stream. Cells need glucose in order to function properly.

Insulin Production
Transparency No. 7 – And Insulin: The Key
The hormone (chemical messenger), insulin, is produced in the pancreas and then released into the blood stream.

Transparency No. 8 – The Key to Make Things Work
Even if there is gasoline in the tank, the car won't work until it has been switched on with the ignition key. Similarly, even when there is plenty of glucose in the blood, it cannot get into the cells without a key. The key, which allows the glucose to enter the cells, is called insulin.

Transparency No. 9 – Pancreas
In addition to insulin, the pancreas also produces another hormone called glucagon.

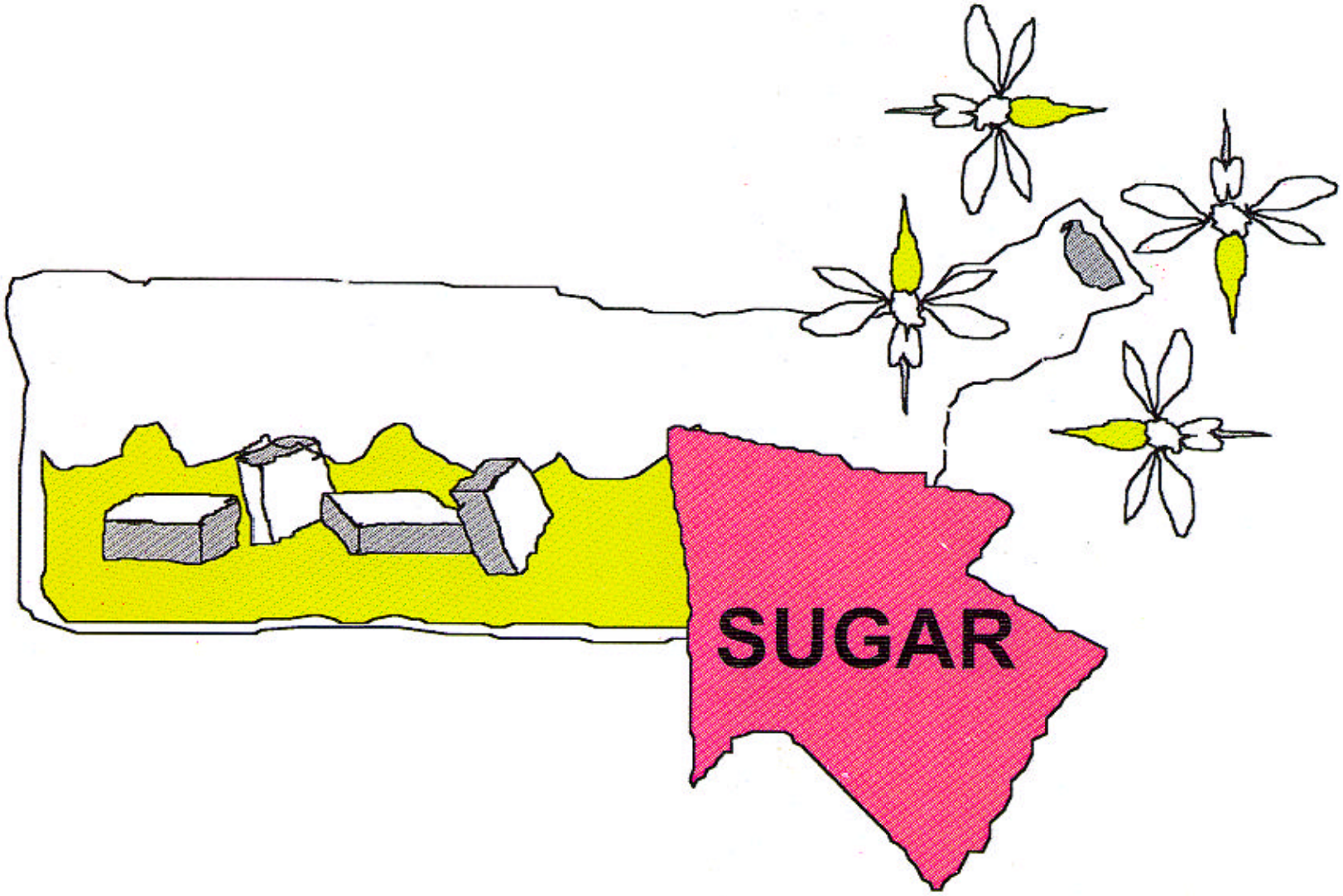
Function of insulin
Transparency No. 10 – Lack Of Insulin
Insulin is the key, which lets the glucose enter the cells. As the glucose passes into the cells, the blood glucose level falls. In the person with diabetes, the pancreas is no longer able to produce enough insulin and may indeed cease to produce any at all. In addition, the pancreas may be unable to properly use the insulin that is produced. Glucose cannot get out of the blood and into the cells causing the level of blood glucose to rise. Eventually, some glucose spills out into the urine.

Transparency No. 11 – Triggering Factors For Diabetes

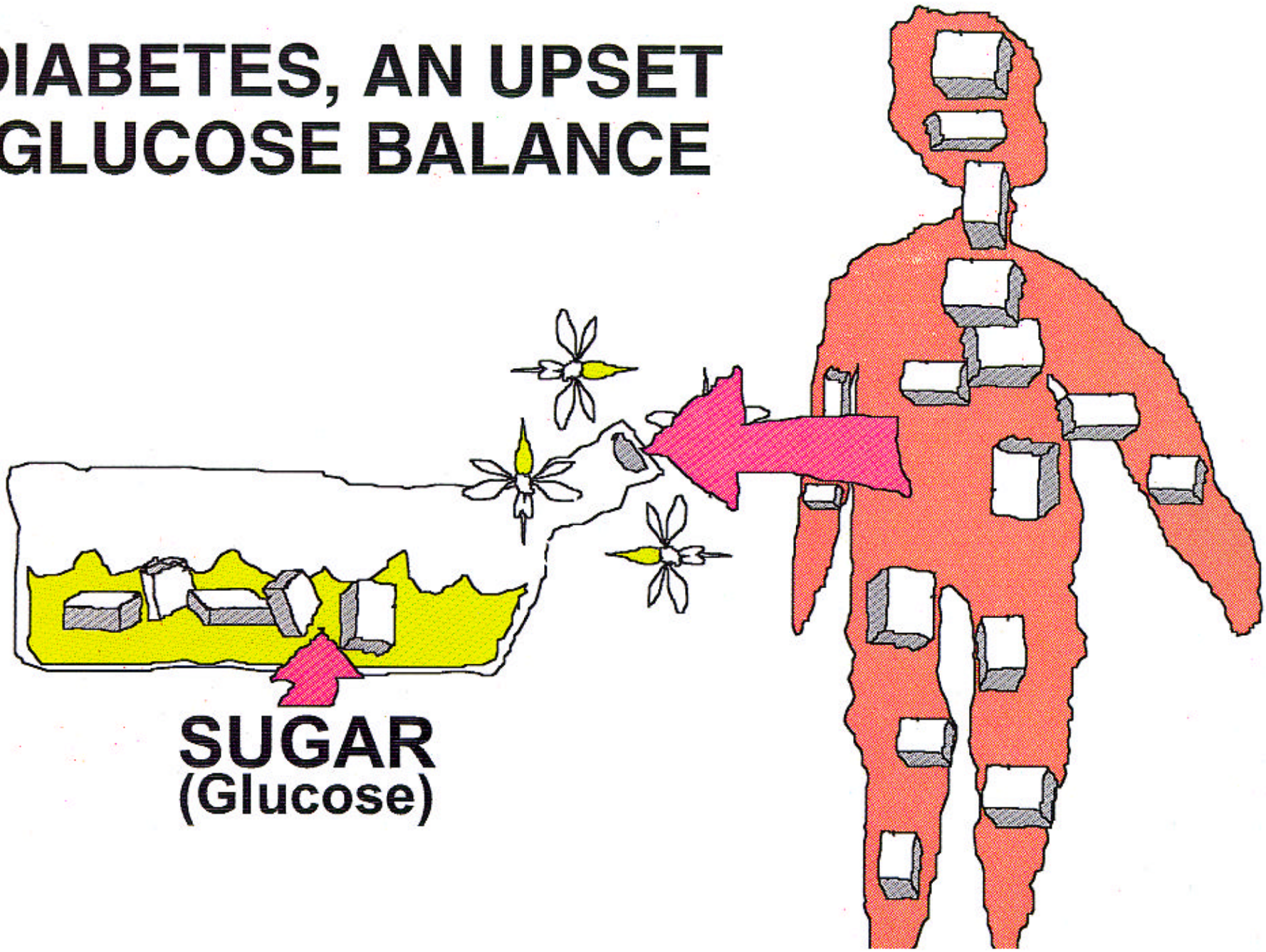
- Obesity
- Increasing age
- Accidents, serious illness
- Operations
- Emotional stress
- Some medications e.g. steroids
- Pregnancy

Adapted from Teacher's Guide to the Patient Education Program, "Talking About Diabetes", Boehringer Mannheim.

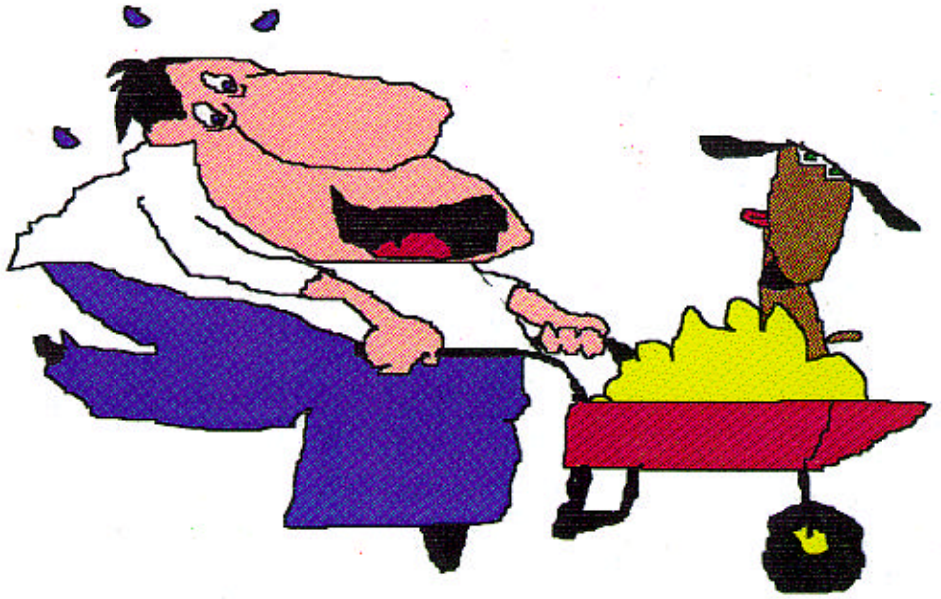
WHY "DIABETES MELLITUS"?



DIABETES, AN UPSET GLUCOSE BALANCE

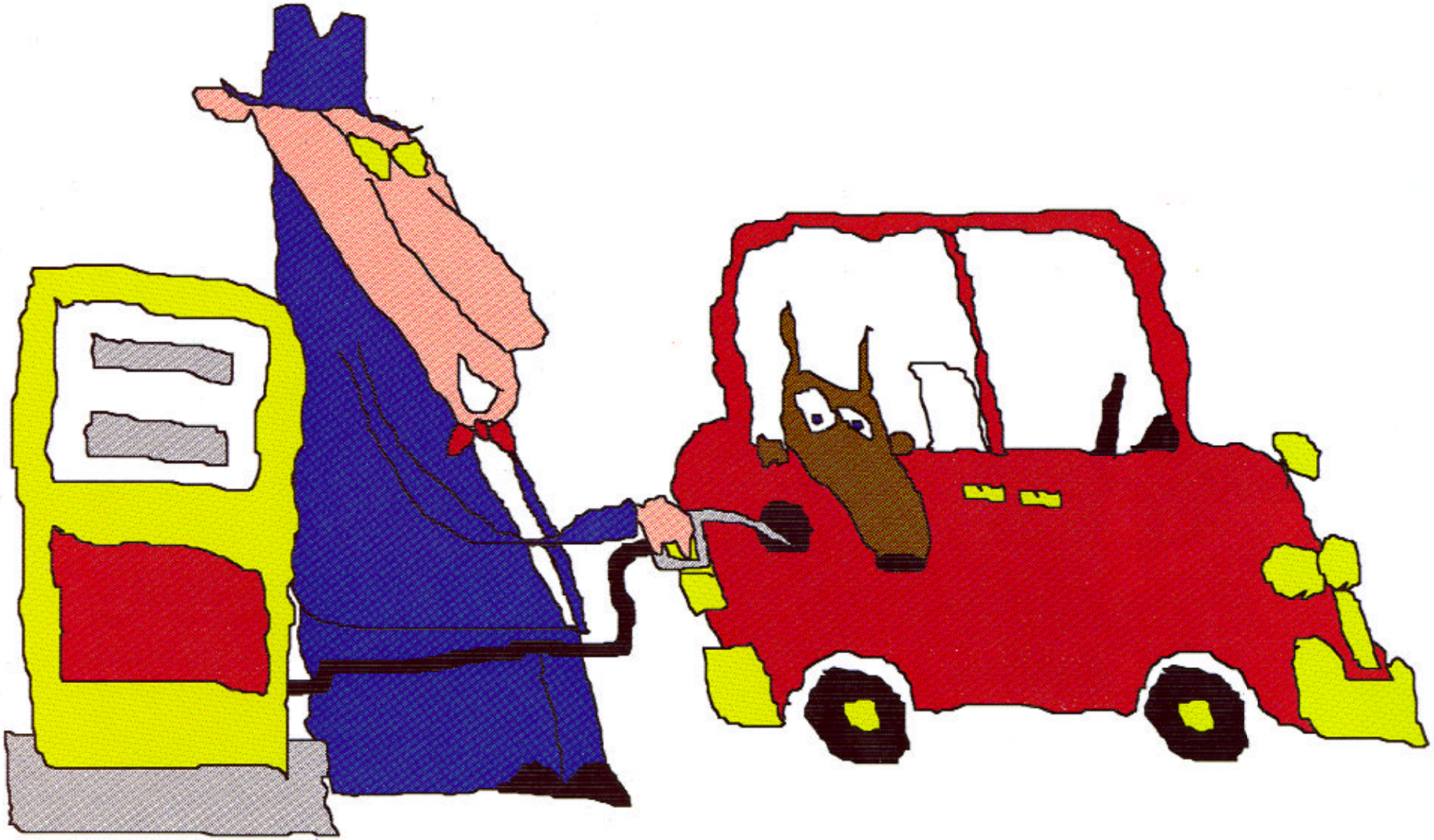


ENERGY CONSUMPTION

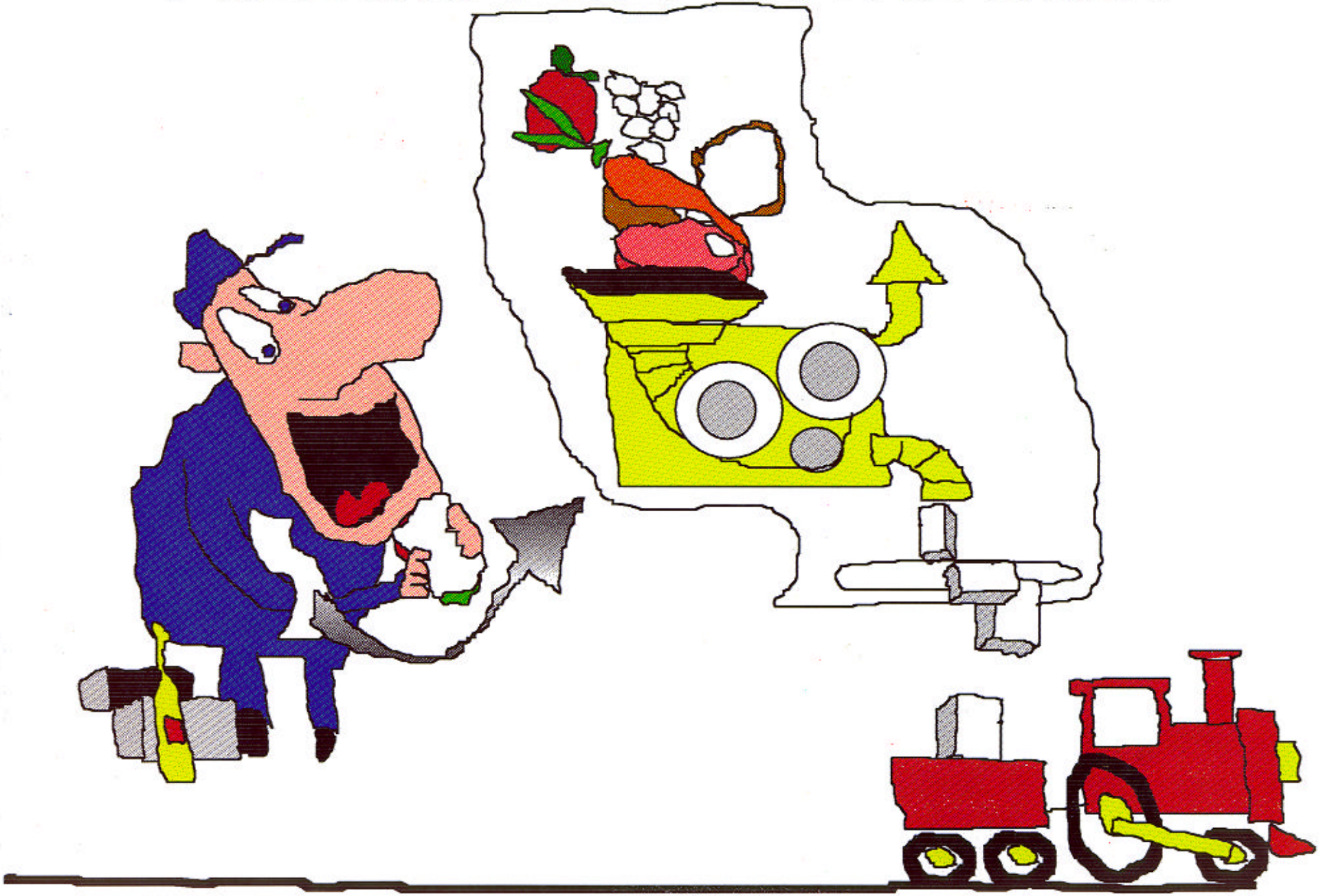


Movement **Work**

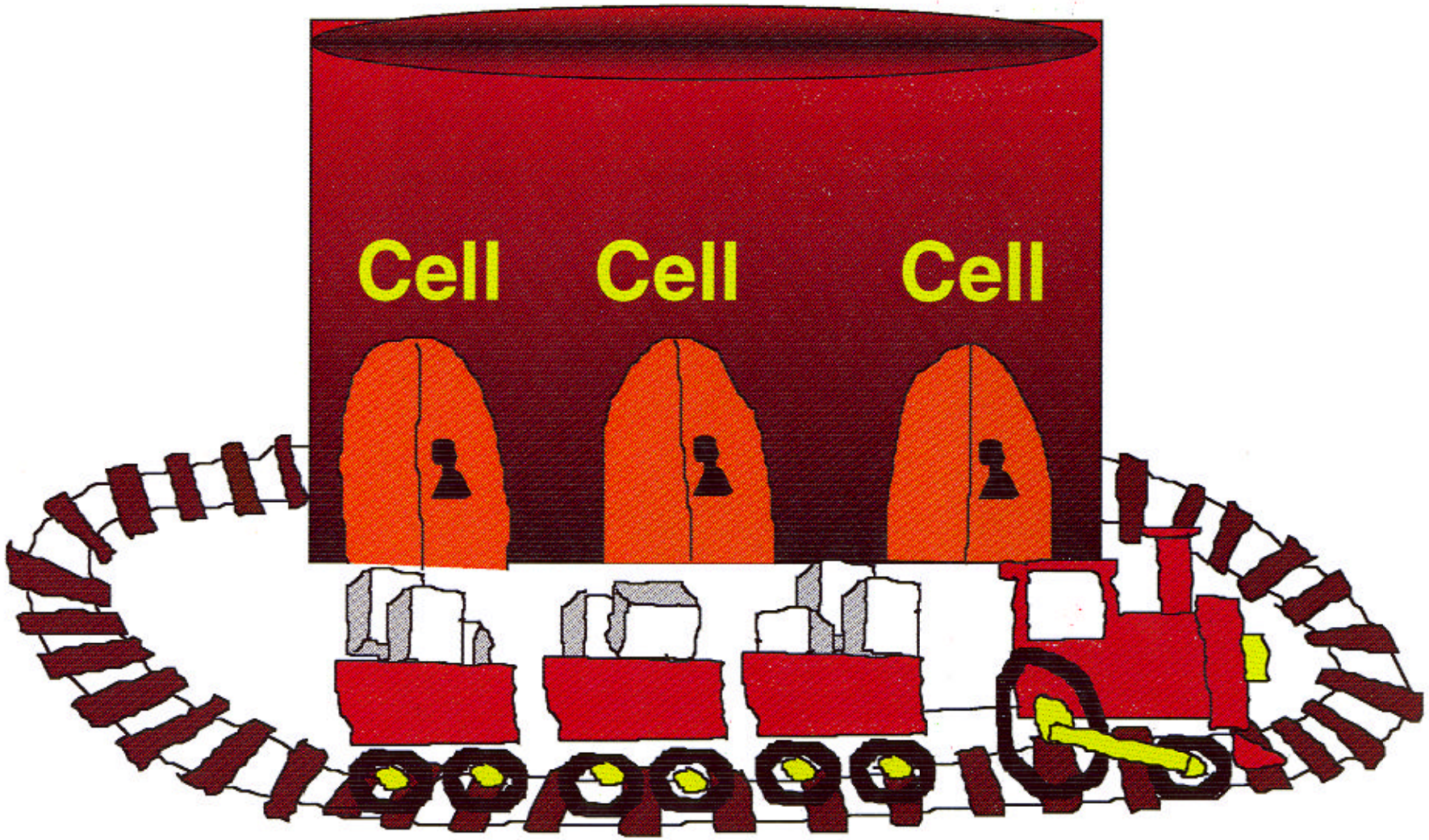
FUEL SUPPLY FOR THE CAR



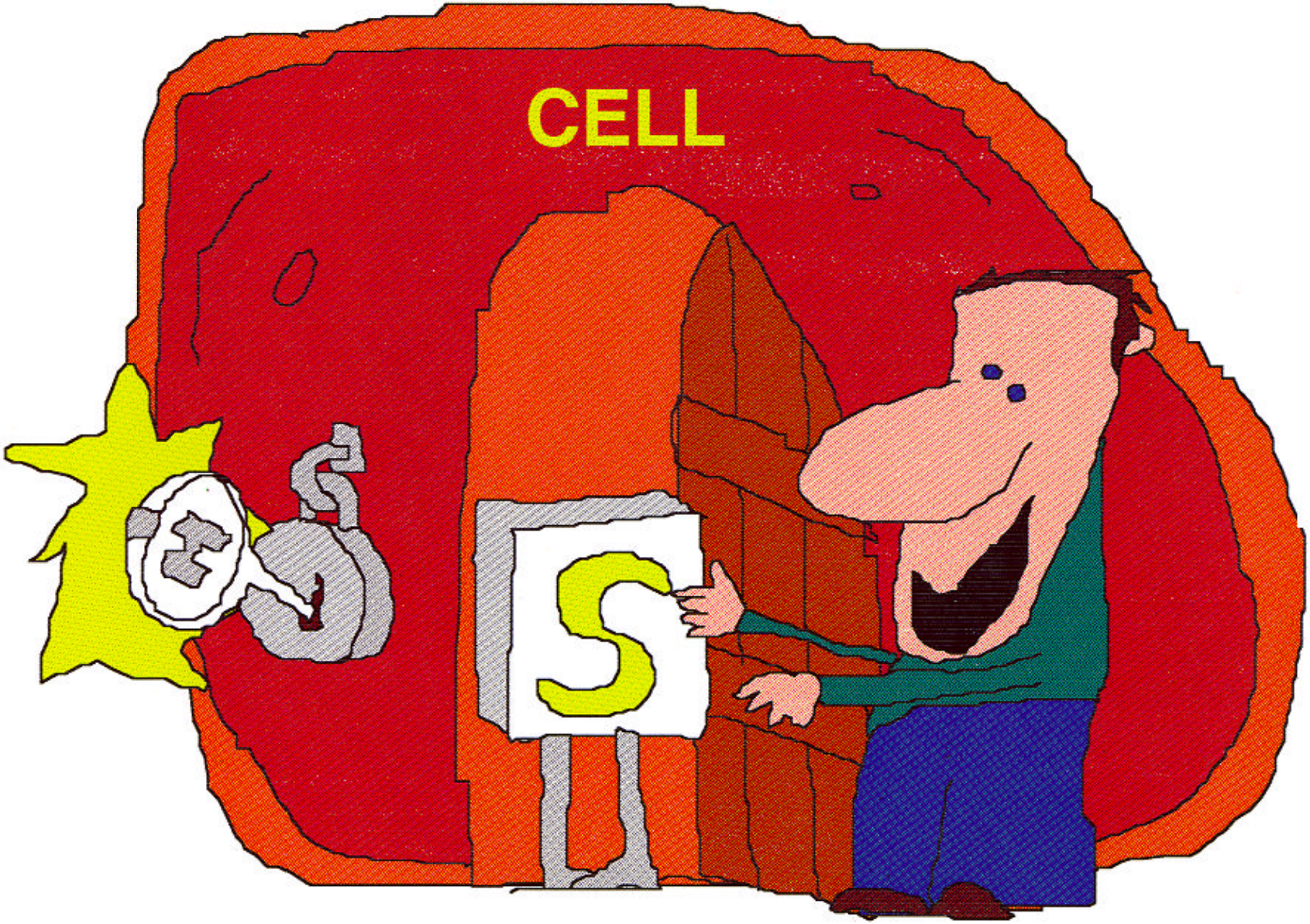
FUEL SUPPLY FOR THE BODY



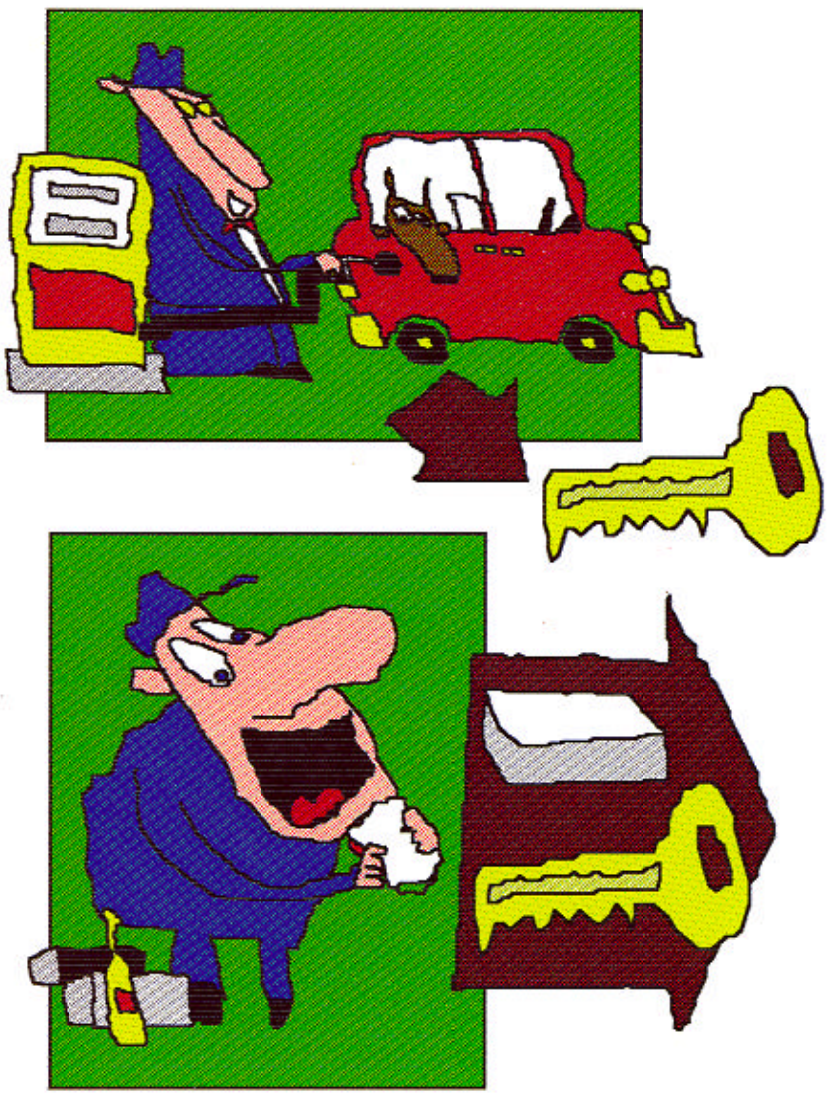
THE BLOODSTREAM TRANSPORTS FUEL

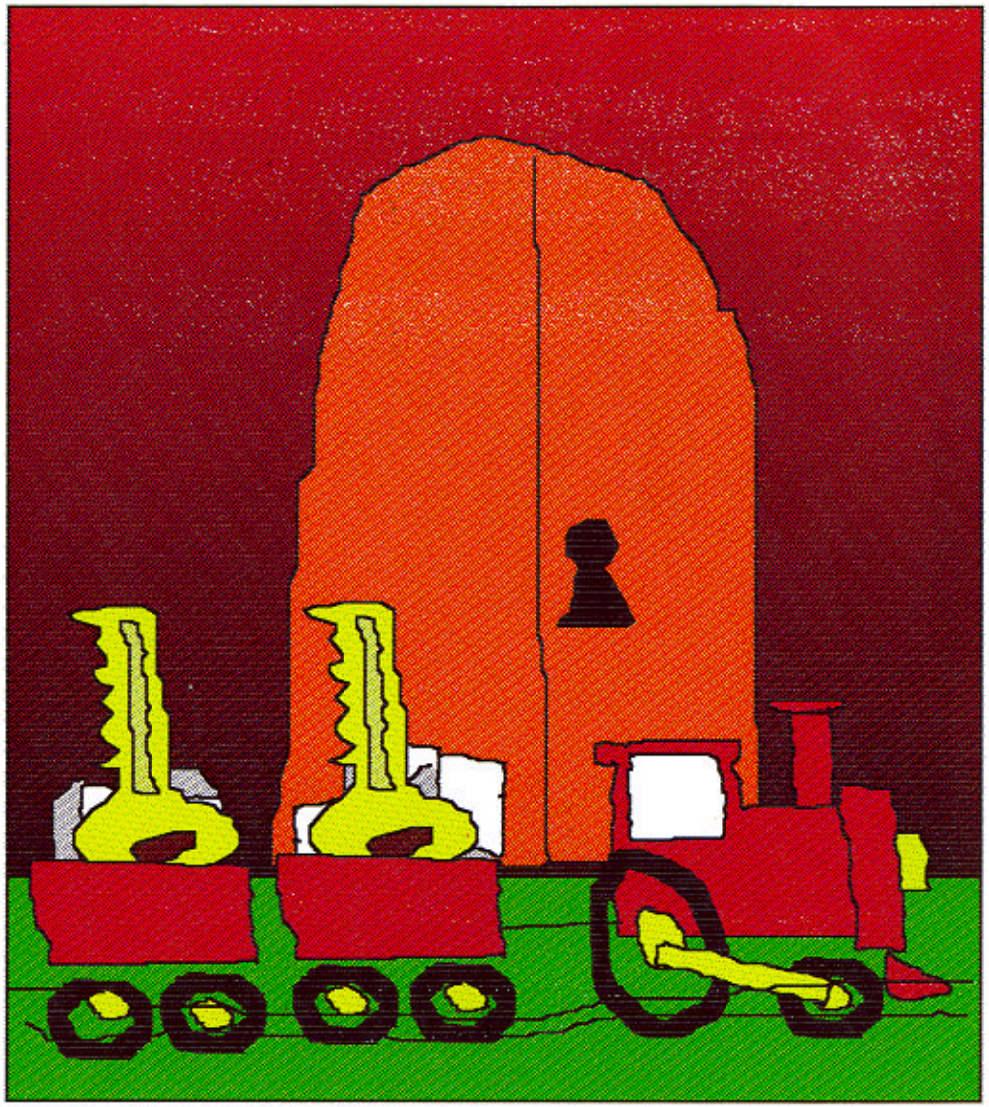


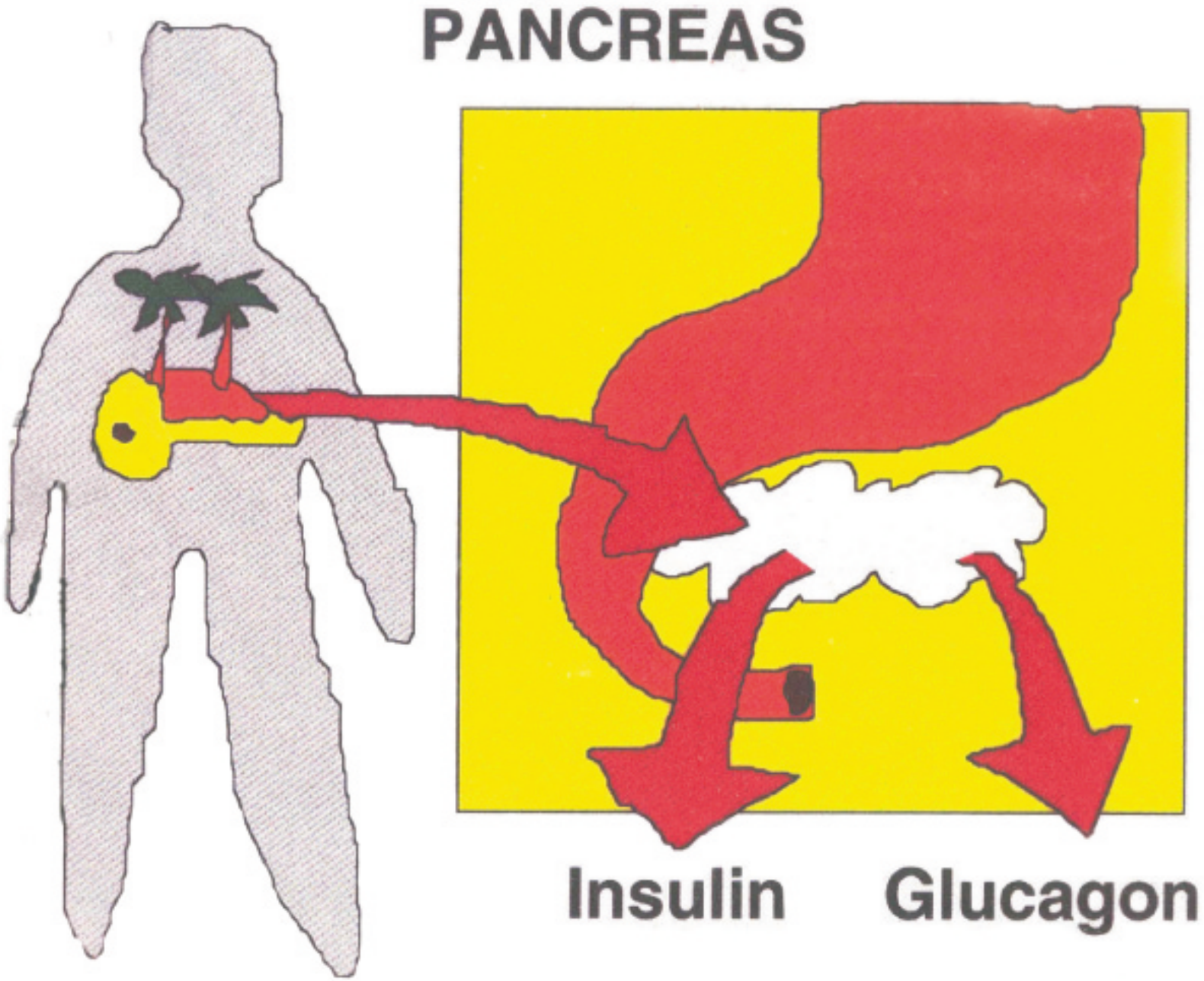
INSULIN: THE KEY



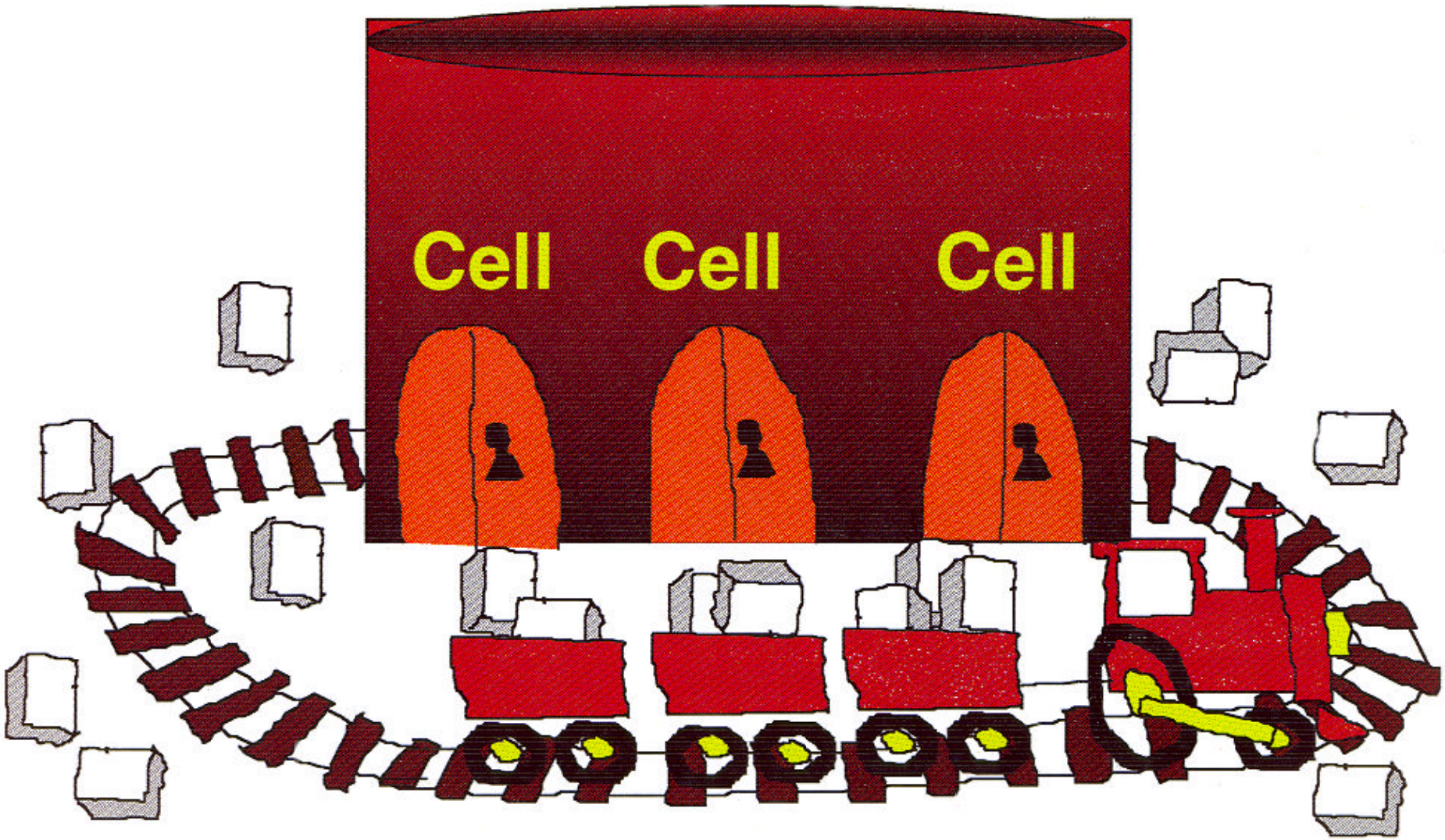
THE KEY TO MAKE THINGS WORK



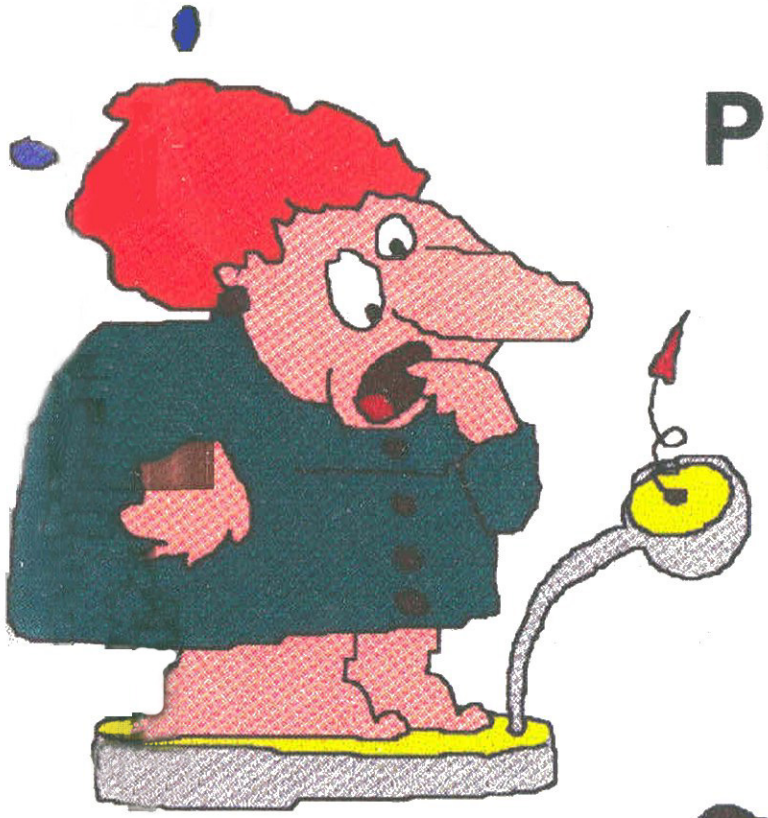



PANCREAS
Insulin
Glucagon

LACK OF INSULIN

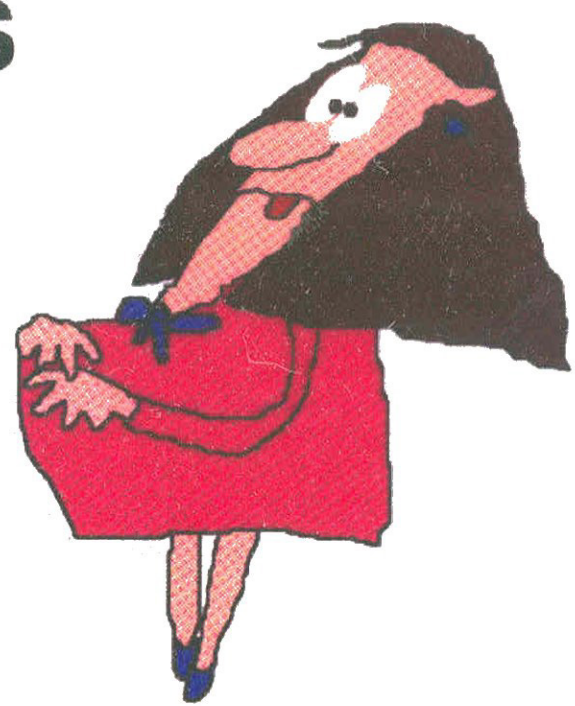


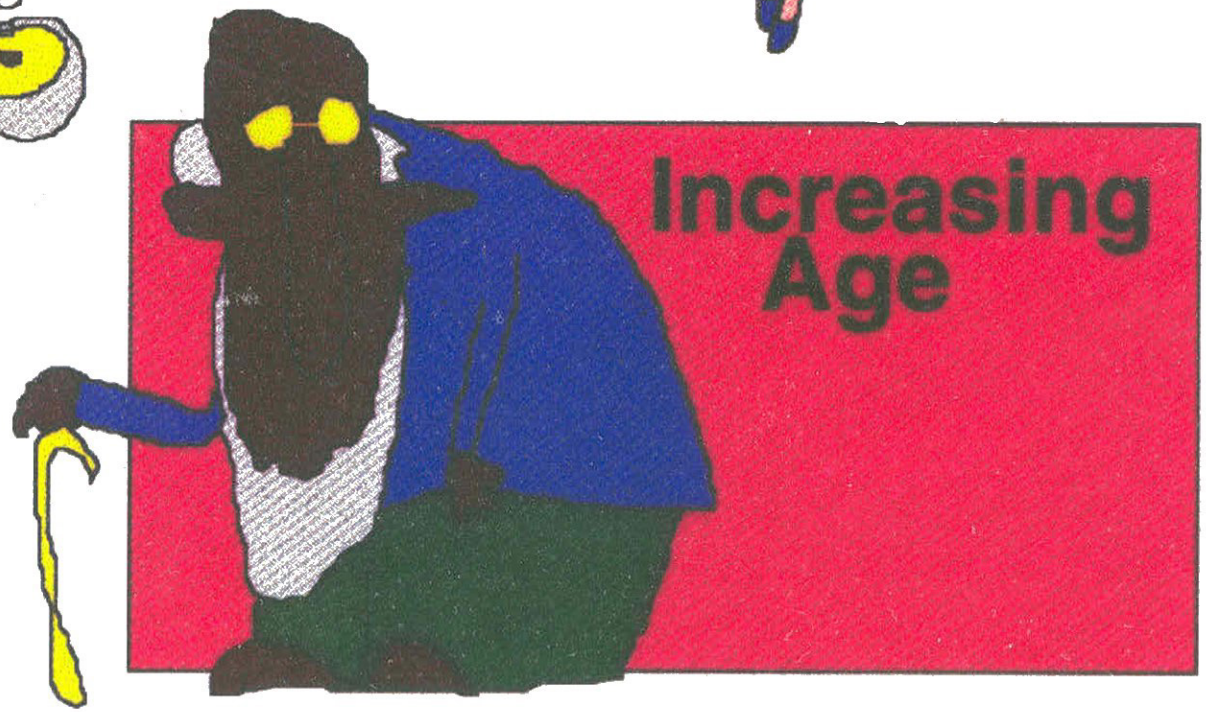
TRIGGERING FACTORS FOR DIABETES



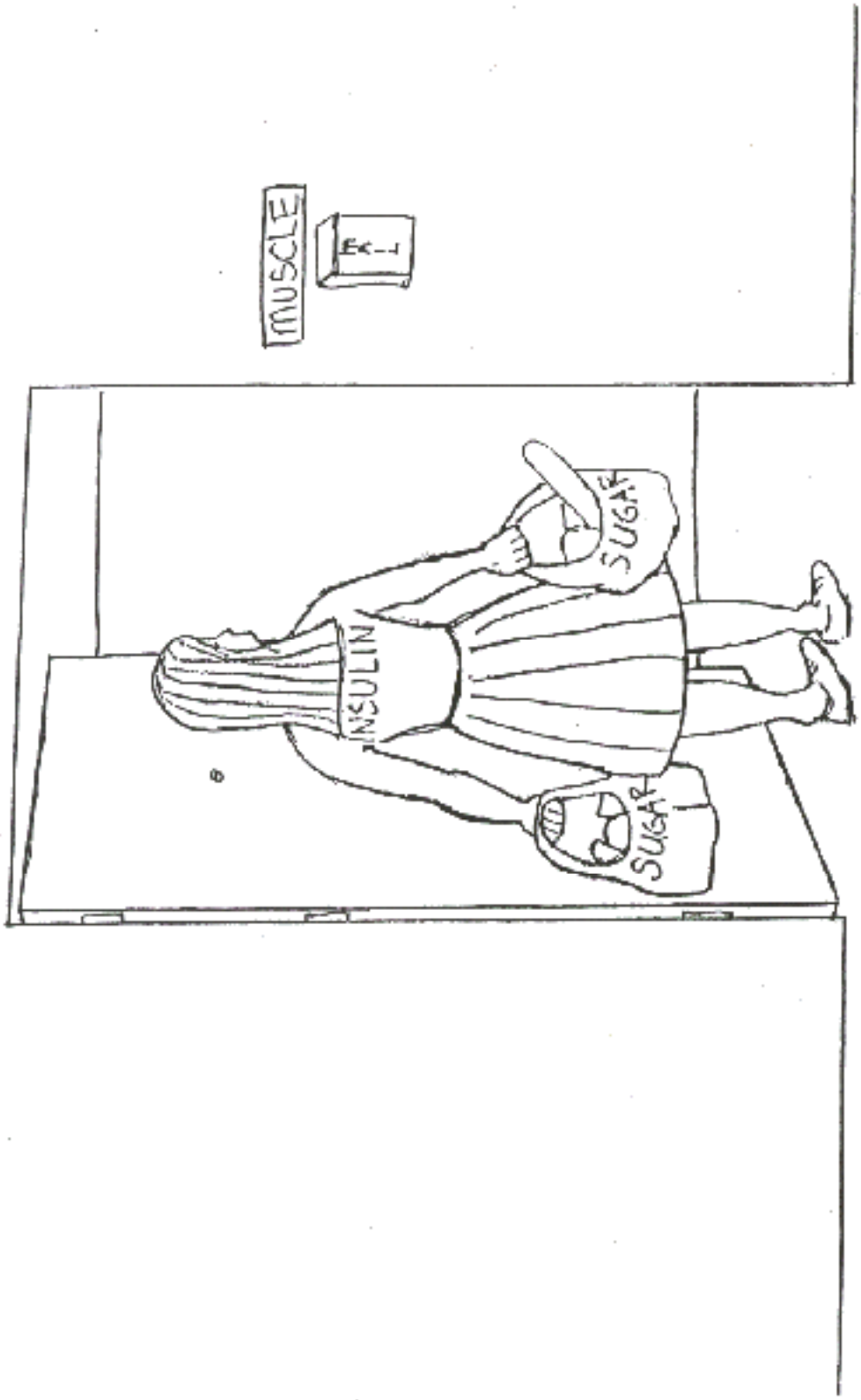
Overweight

Pregnancy

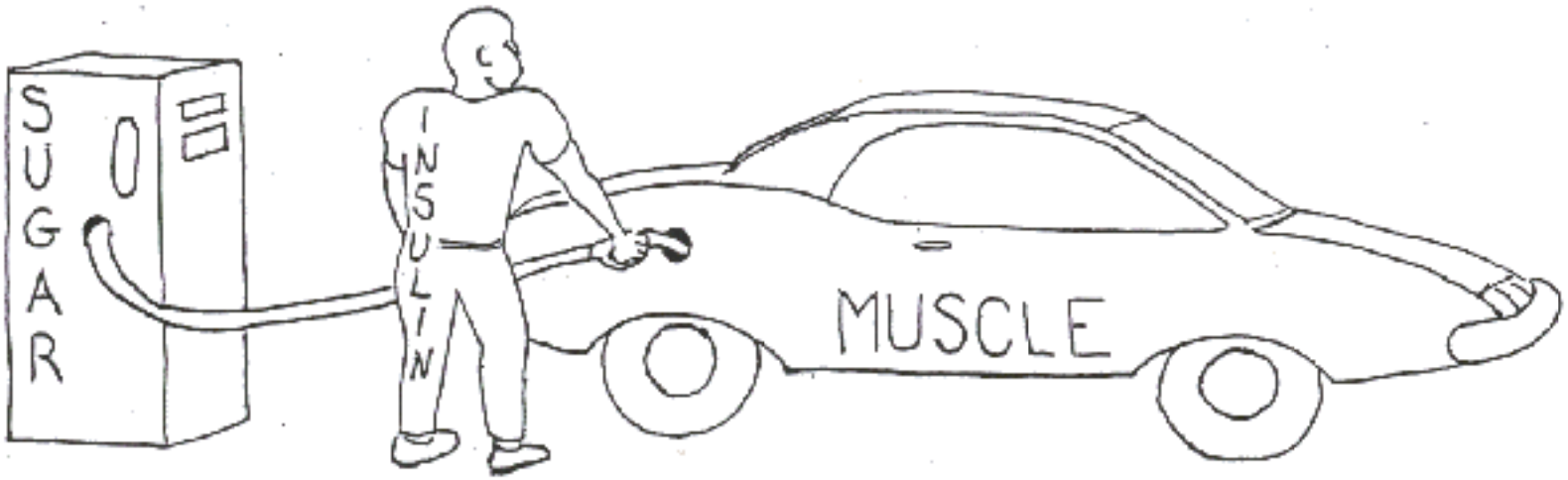




When we bleed, we don't bleed fish and hamburgers.
Our bodies break down the food into sugar.

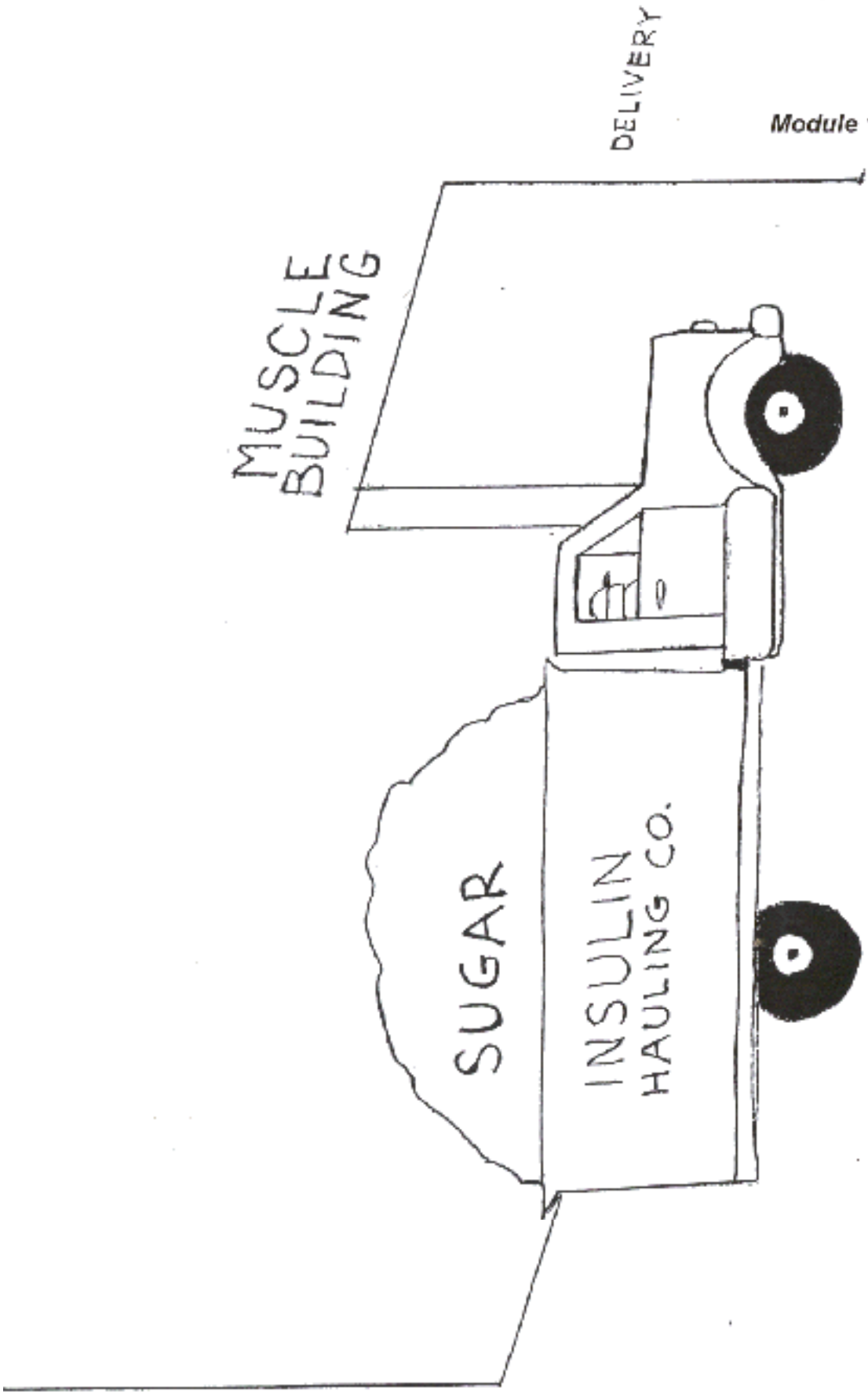


Insulin carries sugar into the muscle cells just like a woman carries the groceries into her house.



Insulin puts sugar into the muscles
like a man puts gas in the car.

Insulin is the key that unlocks the lock on the muscle to let the sugar go into the muscle.



Insulin gets the sugar into the muscles

Show and Tell: High and Normal Blood Sugars

Buy 2 clear plastic baby bottles and several large white plastic beads or styrofoam balls. Fill one bottle with water and color with red food coloring. Drop in 8-10 beads to represent blood cells. This is the ***normal blood sugar level***. Turn bottle upside down and note the free flowing of the beads. Fill the other bottle with partially diluted Karo syrup and color with red food coloring. Drop in 8-10 beads. Shake hard to mix coloring well. Turn bottle upside down to note the slow flowing of the blood cells. This is the ***high blood sugar*** level demonstration. Display is on your desk or teaching table for use in teaching and for promoting discussion.

Apron or Jacket for Diabetes Metabolism Show & Tell

Buy the apron with the body parts important in diabetes metabolism for use in describing diabetes metabolism. Or you can make something similar by gluing or appliquéing the pancreas, stomach, small intestines, blood vessels, muscles, and heart in the correct places on the jacket front and sleeve. If you make openings in the stomach and muscle as a pocket, you can use small cut out pieces of felt for food and sugar. The food is shown to go down the esophagus and into the stomach. The food can be placed in the stomach pocket and the "sugar" drawn out and moved into the blood vessel. From there it can be moved through the blood to the muscle and put into the muscle pocket. It is best to have the muscle on an arm. Velcro on the food and sugar pieces will help them to stick better. You can show and tell the story yourself and then have one of your patients in a group setting put the jacket on and show and tell how the body works.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING

MODULE 2: LIVING WITH DIABETES

Feelings about Diabetes and its Impact upon the Family

I. Purpose

To provide the patient, significant other, and caregiver(s) the opportunity to discuss their feelings about diabetes and the impact of diabetes on the family. To provide positive ways to cope with stress.

II. Educational Objectives

At the end of this session the participant will be able to:

A. Begin to verbalize feelings about diabetes.
B. State that feelings such as denial, anger, or sadness are normal responses to having diabetes and will become less intense as diabetes becomes more a part of everyday life.
C. State five key factors in controlling blood glucose levels.
D. State two situations, which can affect blood glucose levels.
E. Understand that attitude toward diabetes is related to long-term glucose control and dealing with stress.
F. Discuss the role of support networks.
G. Begin to develop a plan to improve coping skills and decreasing stress.

III. Pre-Teaching Guide for the Instructor

A. Review modules 1 and 3-6
B. Review deep breathing exercises, relaxation activity and visual imagery.
C. Play relaxation music with alternative choices that are appropriate to participants attending the class.
D. Secure tapes, tape player, and extension cord (heavy duty).
E. Obtain information on local support groups.
F. Consider inviting an outside resource (e.g., social worker, and/or mental health counselor).
G. Prepare for sessions.

IV. Supplies and Materials Needed for Teaching

A. Relaxation music, tape.
B. Tape player, extension cord.
C. Black board or flip chart (optional)
D. See Handouts and Resources in Section V below.

V. Handouts for Participants and Additional Resources for the Instructor

A. Handouts: "Proven Stress Reducers"
"Relaxation Activity"
B. Instructor Resources:
"Deep Breathing Exercise"
"Relaxation Activity"
"Visual Image

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 2: LIVING WITH DIABETES – APPROXIMATE TIME REQUIRED: 90 MINUTES

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
Participants will understand what is involved or required to "live with diabetes".	**"LIVING WITH DIABETES" means:** **I. Performing certain tasks or forming certain habits, which help to *control* blood sugar.** A. Meal planning and improving eating habits: 1. The right kind of food 2. The right amount of food 3. Eating at correct times B. Physical activity (exercise) C. Taking medications (if needed) D. Self-monitoring of blood glucose E. Lifestyle management **II. Learning to deal with situations which may affect blood sugar levels (raise or lower blood sugar). These factors cannot always be anticipated or prevented, but you can learn to deal with them when they occur so your blood sugar levels stay within the normal range.** A. Physical stress, illness, injury, trauma B. Emotional stress C. Other drugs or other medical conditions **III. Performing certain tasks or forming certain habits, which help reduce the risk of problems from diabetes.** A. Normalizing blood pressure B. Normalizing blood fat levels C. Smoking cessation D. Dental, foot, and eye care E. Taking medications (if needed) **IV. Learning to deal with the stress of having diabetes; understanding the impact of diabetes upon family, friends, lifestyle, and job.**	Cornerstones of blood glucose control: meal planning, activity (exercise), medication, routine blood glucose testing, and lifestyle management. These will be covered in detail in later sessions Situations that impact diabetes will be covered in monitoring. *Module 7* Avoiding or reducing problems from diabetes will be covered in a later session. *Module 9* This session is devoted to discussing and understanding the stress and emotional impact of having diabetes.		15 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 2: LIVING WITH DIABETES

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	"LIVING WITH DIABETES" means **- (IV. Acceptance) (continued)** A. Recognizes reality B. Ready to "make the best" of the situation **V. New complications or health problems may cause "backsliding" to earlier stages of grief. This may happen at any time.** **VI. Emotions often interfere with diabetes self-care.**	Acceptance then predominates, but the other feelings will always "come and go" to varying extent. It is not realistic to expect a time when acceptance will be the only feeling about diabetes. "How do you think these feelings could affect diabetes self-care?"		
Participants recognize the importance of attitude in managing diabetes.	**ATTITUDE** **I. Related to long-term glucose control.** **II. Related to ability to respond and "bounce back" when unexpected situations occur.** **III. Related to ability to deal with stress.**	Ask, "How do you think attitude can make such a big difference in these three areas?"		5 mins.
Participants can discuss ways that diabetes affects the whole family.	**DIABETES AFFECTS THE WHOLE FAMILY** **I. Lifestyle Changes:** A. Food choices B. Exercise/activity C. Schedule of eating, activity and sleep D. Spontaneity **II. Diabetes care impacts family resources:** A. Money B. Time C. Energy **III. Relationships may change:** A. Self-sufficiency of patient may change B. Self-concept of patient may change C. Anger, resentment, or denial may damage relationships	Discussion with participants. Ask, "How does diabetes affect your family?"		15mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 2: LIVING WITH DIABETES

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	DIABETES AFFECTS THE WHOLE FAMILY. (continued) **IV. Support network may help patients and families adjust to having diabetes. The "network" may consist of one or more people.**	Ask each class member to identify support person or network on a piece of paper.		
Participants recognize that stress can effect diabetes and vice versa.	**DIABETES AND STRESS** **I. What is stress?** A. Stress is an event that causes strain, or is a threat. B. A good <u>or</u> a bad change in our life can cause stress. C. The body responds to stress by secreting various hormones, which can affect the blood sugar. D. Dealing with diabetes may increase stress. **II. Effects of stress:** A. May feel more energetic, anxious, or uneasy. B. May increase or decrease blood glucose (because of hormones produced). 1. Usually increases glucose. 2. Monitor blood glucose to see individual reaction. C. May lead to person relieving stress in unhealthy ways. D. May neglect diabetes care when under stress.	Questions: "Do you think that diabetes increases the stress in your life?" List some effects of stress on people with diabetes. Ask "How do I define what is stressful to me?" What are unhealthy ways people handle stress? A. Smoking B. Drinking C. Eating D. Tension (Demonstrate closed fist) List healthy ways to handle stress	Blackboard or flip-chart Outside resource, e.g. social worker and/or mental health counselor	20 mins.
Participants can explain what it means to say that diabetes is a chronic disease.	**III. Living with Diabetes:** A. Diabetes is a chronic disease. 1. Can be managed. 2. No cure. 3. No "vacation" from it – always present.	Questions: "What does it mean when we say that diabetes is a chronic disease?"		

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 2: LIVING WITH DIABETES

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
Participants can discuss positive coping strategies for living with diabetes.	**POSITIVE COPING STRATEGIES** Coping is how we deal with things we cannot change. **I. Utilize available resources.** A. Family and friends. B. Health care professionals. C. Church or social groups. D. Local agencies or support groups. **II. Improve communication.** A. Talk honestly with someone you trust. B. Tell others how they can help you. C. Helpful: Exercise together. D. Not helpful: Nagging E. Talk honestly with health care team. F. See a counselor if you need more professional help. 1. May help to have an "outsider". 2. Does not mean you are "crazy". **III. Reduce stress.** A. Possible stress reducers: regular exercise, meditation, hobbies, gardening, etc. B. Other stress reducers (see handout). **IV. Encourage family and friends to learn more about diabetes.** A. To better understand why self-care is important. B. To learn to be more supportive. 1. What to do in emergencies. 2. Better understand the frustrations. 3. How to support "healthy life style."	Questions: "What are some ways that a person can overcome some of these problems in living with diabetes?" List strategies on blackboard or flip chart. Demonstrate breathing exercise, visualization exercise. Review handout	Black board or flip chart Outside resource, e.g. social worker and/or mental health counselor Handout: "Proven Stress Reducers"	20 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 2: LIVING WITH DIABETES

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
Participants can identify priorities in his/her life and discuss a plan to concentrate efforts on these priorities.	**POSITIVE COPING STRATEGIES (continued)** **V. Set priorities** A. Diabetes self-care requires time and energy. B. Identify the most important things in your life. 1. Discuss priorities with family and health care team. 2. List ways to reduce time and effort spent on other things. C. Make priorities realistic. 1. Concentrate on a few things at one time. 2. Set reasonable goals. 3. Balance priorities. **VI. Set aside some time for things that you enjoy. Be good to yourself.**	Ask each person to list most important things in his life. Questions: "Is good health one of your priorities?" "Do other priorities depend on good health?" Ask each person to list other things that are less important Plan ways to cut down time and effort for less important things. Question: "Is it selfish to set aside some time for yourself everyday?"		
Summary/Question	**Clarifications/Communications** A. What are some common feelings a person/or family member might have about diabetes? B. How does diabetes affect families?			10 mins.
	Ending Session End the session with one of the relaxation exercises: Deep Breathing, Relaxation Activity, and Visual Imagery**.**	Optional: Relaxation tape/music, tape player. Give Class assignment to bring in food labels to the Nutrition Class.	Hand out: "Relaxation Activity"	5 mins.

Proven Stress Reducers

1. Get up fifteen minutes earlier in the morning. The inevitable morning mishaps will be less stressful.

2. Don't rely on your memory. Write down appointment times, when to pick up the laundry, when library books are due, etc. ("The palest ink is better then the most retentive memory" – Old Chinese Proverb)

3. Procrastination is stressful.
   Whatever you want to do tomorrow, do today;
   Whatever you want to do today, do it now.

4. Plan ahead. Don't let the gas tank get below one-quarter full, keep a well-stocked "emergency shelf" of home staples, don't wait until you're down to your last bus token or postage stamp to buy more, etc.

5. Don't put up with something that doesn't work right. If your alarm clock, wallet, shoe laces, windshield wipers – whatever – are a constant aggravation, get them fixed or get new ones.

6. Be prepared to wait. A paperback book can make a wait in a post-office line almost pleasant.

7. Pollyanna-Power! For every one thing that goes wrong, there are probably 10 or 50 or 100 blessings. Count'em!

8. Turn "needs" into preferences. Our basic physical needs translate into food and water, and keeping warm. Everything else is a preference. Don't get attached to preferences.

9. Simplify, simplify, simplify.

10. Make friends with non-worriers. Nothing can get you into the habit of worrying faster than associating with chronic worrywarts.

11. Create order out of chaos. Organize your home and work space so that you always know exactly where things are. Put things away where they belong and you won't have to go through the stress of losing things.

12. Add an ounce of love to everything you do.

13. Become more flexible. Some things are worth not doing perfectly and some issues are well to compromise upon.

14. Eliminate destructive self-talk: "I'm too old to…", " I'm too fat to…", etc.

15. "Worry about the pennies and the dollars will take care of themselves." That's another way of saying "take care of the today as best you can and the yesterdays and the tomorrows will take care of themselves."

16. Do one thing at a time. When you are with someone, be with that person and with no one else or anything else. When you are busy with a project, concentrate on doing that project and forget about everything else that you have to do.

17. If an especially "unpleasant" task faces you, do it early in the day and get it over with. Then the rest of your day will be free of anxiety.

18. Learn to delegate responsibility to capable others.

19. Forget about counting to 10. Count to 1,000 before doing something or saying anything that could make matters worse.

20. Have a forgiving view of events and people. Accept the fact that we live in an imperfect world.

21. Learn to Laugh! Learn to enjoy life independent of where you are and the stresses that surround you.

RELAXATION ACTIVITY

This is a good activity to relax tense muscles and ease some of the physical effects of stress. Take your time-- this exercise should be done very slowly.

1. Get in a comfortable position, both feet on the floor and close your eyes. Select a quite place without distractions. Take a deep breath and as you breathe out, picture all the tension in your body leaving you.

2. Continue to take deep breaths. With each breath, relax each part of your body. Start with your feet, and then go to your legs, thighs, torso, abdomen, chest, arms, shoulders and head. Each breath you take makes you feel more and more relaxed.

3. After you breathe in and out, paying attention to each part of your body, picture yourself in a beautiful green meadow. All you see around you is green grass, trees and beautiful flowers. You can smell the fresh air, smell the fragrant grass and flowers. The sky is clear and blue and you are completely at peace.

4. Take your time to enjoy this special place and keep breathing in and out. When you are ready, open your eyes.

Deep Breathing Exercise

This is a simple, effective relaxation technique. It can be done in a variety of stressful situations in a short time. It is a good technique to use at work or in situations where others are present and you need to feel calm and in control.

Have participants assume a comfortable position with both feet on the floor. First, show them how to locate the diaphragm. Say, "You can find your diaphragm by putting your hands flat on the center of your stomach at the base of your breast bone (where it makes a ^). Now, sniff. As you sniff, you will be able to feel you diaphragm move."

Now lead them through the following procedure:

- Keep both hands flat over your diaphragm.
- Breathe in by pushing out your stomach muscle, (diaphragm) and filling your upper body with air. You should feel your diaphragm move against your hand.
- Breathe out by pulling in your stomach muscles and emptying your upper body of air.
- Count silently, "one" as you breathe in. Say to yourself "and" as you breathe out.
- Do this ten times, and think about your counting, "1 and, 2 and, 3 and, 4 and, 5 and, 6 and, 7 and, 8 and, 9 and, 10 and."

Relaxation Activity

This is a good activity to relax tense muscles and ease some of the physical effects of stress. Have participants assume a comfortable position with both feet on the floor. The room should be quiet, and without distractions. Take your time; this exercise should be done very slowly.

Ask participants to take slow, deep breaths in and then out. Then, tell them to close their eyes and continue to breathe deeply and slowly. Say the following in a clear, slow, calm voice: "Now relax all the muscles in your head and neck. You can feel all the tension leaving your face, neck, and shoulders. Now, tense and relax your arms and hands. You are limp and relaxed like a rag doll. Continue to breathe deeply. Now, tense and relax your back, abdomen, buttocks, thighs, legs, feet and toes. You are totally relaxed. Breathe deeply." Have participants continue relaxing silently for a few minutes, then slowly open their eyes.

Visual Imagery

This is a method of reducing stress by using visual images to relax the mind and body. It is also called a "mental vacation" and will leave you feeling relaxed and refreshed. Have participants assume a comfortable position with both feet on the floor and close their eyes. Ask them to breathe slowly and deeply.

Say, "Travel in your mind to a place in your lives that is beautiful and peaceful. It can be any place where you feel happy, relaxed, and at peace. It may be the beach, or at the park, or a soothing place in your own home. Picture the hands of a clock slowing down. Picture a candle slowly melting. Feel your self relaxed in this special, peaceful place. Feel the warmth of the sun or the cool breeze. What do you feel? What do you hear? What do you smell? What do you see? While you are in this place, feel yourself relaxing." Have participants continue relaxing for a few minutes. Then say, "Gradually let go of the images. Stretch. Open your eyes."

Module 2: Living with Diabetes
Teaching Tool

Behavioral Strategies in Diabetes Education:
The Empowerment Model in Action

Diabetes educators can borrow counseling or psychotherapeutic techniques to enhance educational sessions with people with diabetes. Three strategies are compliments, exception questions, and rating scales. Each one accentuates the positive and helps the patients to do more of what is already working well.

1. **Carefully-worded** compliments help patients feel better about themselves and improve their self-care. People with positive attitudes are more likely to be successful with behavioral changes than those with negative feelings brought about by educational encounters.

   Case Study:
   Miss A talked with the educator about low blood sugar overnight and in the early morning before breakfast. When the educator explained that it is a long time without food between supper and breakfast, Miss A and the educator together decided that trying a bedtime snack might be helpful. Miss A went home and added a bedtime snack of cheese and Crackers. The problem with hypoglycemia disappeared and the educator compliments the patient, "How did you know that adding the particular bedtime snack would help your blood sugar so much?"

2. **Exception questions** enable patients to focus and expand upon what is working well for them rather than what they do incorrectly. Too often patients leave educational encounters focusing on everything they do wrong and all the behaviors that need changing. This can feel overwhelming and, consequently, change may not be attempted.

   Case Study:
   A patient, Mr. B, tells his educator that his diabetes is out of control and that, almost every day the previous week, his blood sugars were too high. The educator responds, "You said every day last week was a mess except for Tuesday. What did you do on Tuesday to make you and your diabetes get along so well?"

3. **Rating scales** help patients define what they can do to improve diabetes self-care in a positive way. People are accustomed to using rating scales from other areas of their lives and can quickly understand their application.

   Case Study:
   The Educator's use of rating scales: "On a scale of 1 to 10…, where would you say you are with your diabetes self-care?… Where would you like to be, at 6 or 7? Can you think of ways you might get there?"

E. Davis, 1998

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING

MODULE 3: HEALTHY NUTRITION, PART I

I. Purpose

To provide the patient, significant other, and caregiver(s) with an overview of the essential role of good nutrition and meal planning in the management of diabetes.

II. Educational Objectives

A. *Concepts/Objectives*

At the end of this session the participant will be able to:

1. Discuss the relationship of food and insulin in diabetes management.
2. State the need for consistent timing for food intake and medication.
3. State the importance of controlling blood glucose and lipids.
4. State advantages of balanced meal planning to achieve good nutrition.
5. Explain the role of dietary fiber in treating or preventing gastrointestinal disorders.
6. State the relationship of salt (sodium) to hypertension and ways to decrease sodium intake, if necessary.
7. State the relationship of overweight to diabetes and benefits of moderate weight loss (10-15 lbs.) for obese people with diabetes.
8. State the importance of reaching and maintaining reasonable body weight.
9. State the importance of eating meals and snacks at consistent times each day.

B. *Patient-Specific Objectives*

At the end of this session the participant will be able to:

1. List the types and amounts of foods to be included in meals as indicated in the meal plan
2. Identify what reasonable body weight might be.
3. State that even moderate weight loss can improve blood glucose levels.
4. State the advantages of consistency in type and amount of foods from the food groups.
5. Demonstrate correct portion sizes for the meal plan using a food scale and measuring cups and spoons.
6. Demonstrate how to plan meals to enhance flexibility in the meal plan, including carbohydrate counting.
7. List caloric and non-caloric sweeteners and foods that contain them as well as describe how they might be used in the meal plan.
8. List food sources of dietary fiber and strategies for adding fiber to the meal plan.
9. List cooking and meal-planning strategies to meet goals of an individualized meal plan.

III. Pre-Teaching Guides for the Instructor

A. Review diabetes physiology, metabolism and insulin resistance.

B. Review transparencies 1 through 11. Prepare discussion relating the key and car to insulin and body cells. ***Note:*** *Other educational materials, overheads, etc. may be used to teach this concept; for some patient groups the educator may choose not to use the auto analogy.*

C. Review the Diabetes Control and Complications Trial (DCCT) and the United Kingdom Prospective Diabetes Study (UKPDS).
D. Review American Diabetes Association:
   "The First Step in Diabetes Meal Planning"
   "Exchange List for Meal Planning"
E. Review the "Food Pyramid".
F. Review handouts:
   "Becoming Aware of What You Eat"
   "Recording What You Eat"
   "Watch for These on Food Labels"
   "The Scoop on Frozen Desserts"
   "Carbohydrate ("Carb") Counting"
G. Review DHHS-DPH:
   "Eat Foods Low in Salt"
   "Try some new flavors to take the place of salt"
   "Managing High Blood Pressure"
   "Controlling Blood Pressure with Diet"
H. Review and secure samples of food labels.
I. Review overhead transparency and handout: "Measuring Meat and Cheese".
J. Preparation for session.

IV. Supplies and Materials Needed for Teaching

A. Food Models.
B. Food Labels.
C. Food Pyramid.
D. Measuring spoons/cups/food scale.
E. Cap of 32 ounce jar of mayonnaise or salad dressing.
F. Overhead transparencies 1 through 11.
G. See Handouts and Resources in Section V below.

V. Handouts and Resources for Participants

A. Handouts:
   "The Scoop on Frozen Desserts"
   "Becoming Aware of What You Eat"
   "Recording What You Eat"
   "Watch for These on Food Labels"
   "Measuring Meat and Cheese"
   "Carbohydrate ("Carb") Counting"
B. American Diabetes Association: "The First Step in Diabetes Meal Planning"
C. American Diabetes Association: "Exchange List for Meal Planning"
D. DHHS-DPH:
   "Eat Foods Low in Salt"
   "Try some new flavors to take the place of salt"
E. Managing High Blood Pressure
F. Controlling Blood Pressure with Diet

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 3: HEALTHY NUTRITION - APPROXIMATE TIME REQUIRED: 2 Hours

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
The participant will be able to describe the role of meal planning and carbohydrate counting in managing diabetes.	**I. General Comments about meal planning in managing diabetes.** A. Introduction of participants/group assessment. B. Meal planning – essential for management of blood glucose and prevention of complications, both short term (i.e. ketoacidosis, hypoglycemia, and hyperglycemia) and long term (i.e. retinopathy, amputations, etc.). C. Like insulin, your physician prescribes your plan; it must be adapted to <u>your</u> needs by a nutritionist or R.D.; you may have other conditions, which require special meal planning considerations – meal plan should fit the way you live.	Ask group members: Who has ever followed a meal plan? How long have they followed the meal plan? If anyone must also limit salt? If anyone takes insulin or pills for diabetes? Recognize feelings of participants about following a meal plan.		5 mins.
The participant will be describing briefly the relationship of food and insulin in diabetes.	**II. Meal planning and insulin relationships.** A. Review: What is diabetes? 1. Disease in which body does not use food in the right way. 2. Body does not have enough available insulin or insulin does not do its job. B. Effect of food on blood glucose: 1. The food we eat is broken down into sugar and enters the blood stream. 2. Sugar is needed for energy – the body's fuel. Energy comes from three different sources: a. Carbohydrates b. Proteins c. Fats Carbohydrates are the fuel of choice and raise the blood sugar faster than proteins or fats.	Ask group to explain what happens in the body when you have diabetes.		15 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 3: HEALTHY NUTRITION

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	II. Meal planning and insulin relationships – **B. Effect of food on blood glucose. (continued)** 3. Some foods are changed into sugar faster than others: a. Concentrated or simple sugar (jams, jelly, candy). b. Complex carbohydrates (fruits, breads and cereals) are next. c. Delayed effect-meats and fats (like butter and margarine). 4. Insulin is required for sugar in the blood to be used for energy. It opens the body's cells so that sugar can enter the cells giving us energy. C. Problem with insulin function in diabetes: 1. Compare body to car engine. 2. Without insulin action, sugar cannot get in; sugar in blood stream gets higher and higher. 3. Need to plan food intake (and perhaps take insulin or pills) to manage blood sugar. D. Need for balance between food and insulin. 1. Too much food (or too little insulin) can increase blood sugar. 2. Too little food (or too much insulin) can lower blood sugar. 3. The DCCT and UKPDS have demonstrated that good management of diabetes prevents or lessens the complications. a. High blood sugar can affect eyes, kidneys, heart, blood vessels, nerves, lower legs and feet. b. Emphasize need for regular amounts of insulin and food.	Identify protein, fats, and carbohydrates. Display food pyramid. <u>Group Discussion</u> Describe a situation. Have participants give effects on blood sugar: (answers in parentheses) <u>Situation 1:</u> over-eating (blood sugar goes up) <u>Situation 2:</u> skipping a meal (blood sugar goes down)	Diagram: Engine Analogy (Body as engine; food as fuel; insulin as fuel pump for pumping fuel into engine)	

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 3: HEALTHY NUTRITION

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
The participant demonstrates, using the meal assessment, that his/her daily meals include items from each basic food group (meat or meat substitute, bread, vegetable and/or fruit, milk) – according to plan. The participant can name strategies by which to reduce fat intake.	**III. Guidelines for dietary management of diabetes.** A. Balanced meal: 1. Foods from different food groups needed for energy and nutrients. 2. The meal plan should include approximately: a. 50% carbohydrates b. No more than 30% fat c. 20% protein 3. Includes foods the entire family needs for health, so it fits into normal family meals. Emphasize that meal planning may help delay diabetes onset in family members-by controlling weight (pertains to type 2 only). B. Manage total calories to attain and maintain your desirable body weight. Know your desirable body weight. Talk about this with your nutrition counselor. 1. Be aware of what you eat. 2. Be careful of serving sizes. 3. Increase your daily activities. C. Avoid skipping meals. Blood sugar may become too low. D. Eat less fat. 1. Eat fewer fried foods. Avoid adding fat in cooking (i.e. fat meat, butter, margarine, grease, and oil). 2. Prepare all meats by roasting, baking or broiling. Trim off all fat before cooking. Be careful of added sauces or gravy. Remove skin from poultry. 3. Eat smaller servings of meat. Eat fish and poultry more often. Choose lean cuts of red meat. 4. Eat fewer high-fat foods such as cold cuts, bacon, sausage, hot dogs, butter, margarine, nuts, salad dressing, lard, and solid shortening. 5. Drink skim or low-fat milk. (<2%) 6. Eat less ice cream, cheese, sour cream, cream, whole milk, and other high-fat dairy products.	Introduce “Food Pyramid”. Explain food groups. Ask group to define balanced meal planning. Display models of foods in groups as audience responds. Have participants give examples of times when they ate but did not intend to do so. Encourage class members to try activity on handout at home. Refer again to “Food Pyramid”. Have participant’s comment on whether they have additional tips of their own.	“The First Step in Diabetes Meal Planning” – American Diabetes Association Food models Handout: “Becoming Aware of What You Eat” Handout: “Recording What You Eat”	30 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 3: HEALTHY NUTRITION

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
The participant can name strategies by which to increase intake of fiber.	**III. Guidelines for dietary management of diabetes. (continued)** E. Eat more high-fiber foods. Review the role of fiber in preventing gastrointestinal disease, including colon cancer. 1. Choose dried beans, peas, and lentils more often. 2. Eat more vegetables – raw and cooked. 3. Eat whole grain breads, cereals, and crackers. 4. Eat whole fruit in place of fruit juice. 5. Try other high fiber foods, such as oat bran, barley, bulgur, brown rice, wild rice.	Refer again to "Food Pyramid". Have participants comment on whether or not they have tried any of these tips or have additional tips of whole fruit over juices and ways to get whole fruits year round.		
The participant can name strategies by which to reduce use of salt	F. Use less salt. Explain the relationship between sodium intake and hypertension. 1. Reduce the amount of salt you use in cooking. Use less salted meat and fatback. 2. Try not to put salt on food at the table. 3. Eat fewer high-salt foods, such as canned soups, ham, sauerkraut, hot dogs, pickles, and foods that taste salty. 4. Eat fewer convenience and restaurant foods.	Refer again to "Food Pyramid". Share and compare tips for cutting down on salt. Show examples of sodium content of convenience and restaurant foods.	"Eat Foods Low in Salt" DHHS-DPH Try some new flavors to take the place of salt" DHHS-DHP	
The participants can name strategies by which to reduce use of sugar.	G. Eat less sugar. One 12 ounce can of regular soda has nine teaspoons of sugar! High sugar foods include: table sugar, honey, syrup, jam, jelly, candy, sweet rolls, fruit canned in syrup, regular gelatin desserts, cake, pie, cookies or pastries. Do not forget about gum, mints, sugar in coffee, tea, molasses, fruit punch, and lemonade. 1. Choose fresh fruit or fruit canned in natural juice or water. If added sweetness is desired, use alternative sweeteners that do not have any calories, instead of sugar. 2. Foods containing sugar should be used only if substituted for other foods of similar carbohydrate value.		Handout: "Alternative Sweeteners List	

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 3: HEALTHY NUTRITION

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
The participant demonstrates, using the meal plan assessment, that the amount of food from each food group is consistent according to his/her recommended meal plan.	**III. Guidelines for dietary management of diabetes.** – **G. Eat less Sugar. (continued)** 3. Read labels. Know these other words for sugars: Sucrose, glucose, dextrose, corn syrup, corn sweetener, fructose, lactose, maltose. 4. Why concentrated sugars need to be limited. a. To help the body process sugar when insulin is not available. b. To manage calories. c. To allow more healthy foods within the calories prescribed.	Emphasize that words ending with "-ose" refer to sugar. Ask group to explain why concentrated sugar must be limited.	Examples of actual food labels Handout: "Watch for these on food labels	
The participant can recall that weight reduction will help manage blood sugar and may decrease the need for insulin or oral hypoglycemic agents.	H. Eat consistent amounts and types of food and calories to manage blood sugar and weight. 1. Weight reduction often decreases amount of insulin or pills needed. 2. Emphasize the benefits of moderate weight loss (10-15% of ideal body weight). a. Improved blood sugar levels. b. Improved self-image. c. Increased energy. 3. The meal plan has prescribed types and amounts of food and calories at specified times. 4. With excess food, there are excess calories. 5. To better control blood sugars: a. Eat all foods in meal plan each day. b. Eat your meals and snacks about the same time each day. c. Do not skip meals.	Write on easel pad for visual emphasis: weight loss may help to manage blood sugar and weight. Ask group to recall the calorie level of their meal plan. Identify any one in the group who has either decreased insulin or pills with weight loss or managed their diabetes without insulin or pills by losing weight.		

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 3: HEALTHY NUTRITION

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
The participant will understand he/she needs an individualized, prescribed meal plan.	**IV. Knowing what to eat** A. Each person with diabetes should have an individualized meal plan. 1. Calorie level may be prescribed by doctor: a. To maintain or reach desirable weight based on sex, age, height, and activity. 1. Extra calories –store fat 2. Fewer Calories – lose extra fat 2. Meal pattern (breakfast-lunch-supper) based on the way you eat.	Discuss ways to maintain personal preferences while achieving blood sugar and weight goals.		5 mins.
The participant understands the exchange ability of common food items.	**I. Exchange System/Food Groups/Carbohydrate Counting** A. Allows variety in meal planning, but still keeps food and medications in balance. 1. Does not require special foods. 2. Can be worked out to resemble family's usual eating style. 3. Healthy plans appropriate for any family member.	Ask group to identify any food (other than concentrated sugar) that they avoid for their diabetes, (i.e., fruits/breads); reassure that with exchange systems, avoidance may not be necessary.		5 mins.
	B. Overview 1. Six exchange or food groups: a. Foods within each group have about the same food values (calories/nutrients) and can be exchanged or substituted for one another. b. Food in one group <u>can</u> be substituted for a food in another if they have the same carbohydrate value. c. Each food choice has a specific portion size; necessary for one food to be substituted for another.	Describe six exchange groups by arranging food models according to exchange system; rather than portion sizes of foods.	Food Models: will need some from each food group	5 mins.
The participant can recall that food should be cooked with a limited amount of fat because fats may add calories.	C. Explanation of Dietary Exchange System: 1. Identify each exchange group, noting portion size. 2. Point out that each food in the amount listed represents 1 choice.			

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 3: HEALTHY NUTRITION

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	I. Exchange System/Food Groups (continued) 3. Clarify common problem areas: a. Starch/Bread List - includes cereals, noodles, dried beans and peas, and starchy vegetables. b. Vegetable List - give examples of raw vegetables, which are considered free foods. Distinguish between starchy and non-starchy vegetables. c. Fruit List - note varying portion sizes. d. Fat List - note portion sizes; includes foods (bacon, nuts, cream); stress that fat in preparation must be counted; it is best to bake, broil and boil foods to limit fat in cooking.	Ask group to "walk through" exchange booklet.	"Exchange Lists for Meal Planning" (1995) American Diabetes Association, American Dietetic Association	10mins.
Choosing his/her own meal plan, the participant can recall or write a daily menu, specifying the foods and the amounts.	D. Review carbohydrates and basic principles of carbohydrate counting. 1. Carbohydrates are: a. Starches/Breads b. Fruit and fruit juice c. Milk or yogurt d. Starchy vegetables (corn, peas, etc.) e. Desserts/Sweets f. Alcohol (though can often decrease blood sugar) 2. Carbohydrates will raise blood sugar higher and faster than fats or protein. 3. Monitoring carbohydrate intake or "carb counting" is an effective component of diabetes self-management. 4. Foods with the same carbohydrate value may be substituted with one another in the context of a healthy meal plan. However, instructors should emphasize that foods high in processed sugar often have minimal nutritional value.		"Exchange List …" booklets Sample meal pattern Carbohydrate ("Carb") Counting Tear sheet	
	E. Clarification/feedback activities 1. Identification of foods and portion size. a. Introduce activity.		Food models, plates	10 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 3: HEALTHY NUTRITION

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	I. Exchange System/Food Groups (continued) b. Purpose: To become familiar with foods within exchange groups. 2. Menu planning using sample meal pattern. a. Introduce activity. b. Purpose: To gain experience planning a menu using the exchange process, carbohydrate counting and sample meal pattern. 3. Meal planning using client's meal pattern. a. Introduce activity b. Purpose: To involve participants and make session interactive, while also providing realistic examples. 4. Other meal planning methods. a. Individualize: • Exchange Lists may not be right for everyone. b. Other Methods: • Basic Nutrition Guidelines • High fiber • Calorie/fat counting • Sample menus c. Select method based on patient needs interests, and resources.	Display sample meal pattern for a day's intake. Using food models, group selects appropriate foods and portion sizes, which correspond to meal pattern. Identify a few food substitutes. Correct/Clarify. Select member to identify his/her pattern for a particular meal; display on flip chart; group to appropriately select food and portions.	"Exchange List." Booklets Food Models Plates	5 mins.
	II. Food Measurement A. The amount of food is as important as choosing the correct kind of food. 1. Necessary for control of blood sugar and weight. a. The amount of food you eat or drink determines how many calories you are eating. b. Increased portion will increase calories. c. Too much food (or too many calories) means high blood sugar and/or increased weight. Excessive portion size is a common problem in following the meal plan.	Ask group why portion size is so important for persons with diabetes.		15 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 3: HEALTHY NUTRITION

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	II. Food Measurement (continued) 2. Measure all your food until you can tell a serving by looking at it. a. Measurements of Food 1. Grains/starches: usually ½ cup or 1 oz. 2. Fruits: 1 small piece, ½ cup cut-up, ½ cup juice, or ¼ cup dried fruit. 3. Vegetables: 1 cup raw or ½ cup cooked. 4. Milk: 1 cup. 5. Meat/protein: 3 oz. cooked meat (1 egg=1oz, 2 tbsp. peanut butter =1oz, 1 oz meat=1 oz). 3. How to accurately portion food. a. General measurement: use measuring spoons/cups; use for drinks, fats, fruits, vegetables, cereal and other starches. b. Meat measurements. 1. Based on weight on labels of packaged meat. 2. Cap of 32 ounce of mayonnaise/salad dressing holds 3 ounce of cooked meat. 3. Food scale, especially for meats (measure without bone or fat). 4. Pictures-handouts. c. Fruit and vegetable measurement. 1. One handful is approximately ½ cup. 2. About 2 rounded tablespoons of most starchy vegetables is one serving. **III. Mixed dishes and combinations foods.** Many recipes or meals combine foods from several exchange lists. The combination food list shows you how to plan these foods into your meal plan.	Display items standardizing portion size. Food Scale Can also compare to deck of cards or cassette tape size. Distribute handout. Demonstrate how to include a combination food from the list in one of the participants' meal plan.	Measuring spoons/cups Meat food models Cap of 32 ounce jar of mayonnaise or salad dressing Transparencies (#1) and (#2) "Measuring Meat and Cheese" Handout : "Measuring Meat and Cheese" Combination Food List on pg. 23 of "Exchange Lists…"	10 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 6: MEDICATIONS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
Summary Questions	**Clarification/Comments** A. What is diabetes? B. How does food affect **blood sugar?** C. What are the nutrition guidelines for **management of diabetes?** D. Why **is weight reduction indicated for overweight** persons with diabetes? E. When you have diabetes do you need "special" foods? F. What are the food groups or "exchanges"? G. Does the amount of food you eat make a difference in diabetes control? H. What are meal plans? I. What is "carb counting"?	Illustrate other examples from the list using participant's meal plan. Assignment: Bring food labels (from canned or packaged foods) prior to next nutrition class.		5 mins.

The Scoop on Frozen Desserts

BETTER CHOICES

Words to the Wise	Frozen Treats	Calories	Fat	Carbohydrates
• If you crave cold stuff, look for choices, you can fit into your meal plan. • Select products low in calories, fat, and sugar. Read labels. • If more than 20 calories, count as part of your meal plan. 0 - 19 calories = 1 serving free 20 - 49 calories = ½ fruit or ½ carbohydrate 50 - 99 calories = 1 fruit or 1 carbohydrate 100 - 120 calories = 1 ½ fruits or 1 ½ carbohydrate • Watch the amount!	Crystal Light Bars™	14	0	2
	Popsicle Ice Pops™	18	0	5
	Dole Fresh Lites™	25	0	6
	Popsicle (sugar-free)	25	0	6
	Fudgesicle (sugar-free)	35	1	6
	Minutemaid Fruit Juices	60	0	14
	Soft-Serve Frozen Yogurt (½ cup)			
	I Can't Believe it's Yogurt (sugar-free, non-fat)	68	0	12
	TCBY (sugar-free, non-fat)	72	0	20
	McDonald Vanilla	92	1	23
	Dairy Queen (non-fat vanilla)	100	0	21
	Colombo Lite (sugar-free)	95	0	21
	Packaged Frozen Dessert (½ cup)			
	Guilt Free Frozen Yogurt	80	0	20
	Guilt Free Ice Cream	80	0	20
	Simple Pleasures	100	2	20
	Sealtest Free	92	0	21

Adapted with permission from East Carolina School of Medicine

BECOMING AWARE OF WHAT YOU EAT

DO YOU KNOW…

- **How many times a day you eat or drink something?**
- **When you are most likely to snack?**
- **At what meal you eat the largest amount of food?**

You have probably heard people say, "I hardly eat anything, but I can't lose weight." Perhaps you have said this yourself. People who say this may not be aware of how much they eat in a day because they do not seem to eat very much at any one time. Often they eat without thinking about what or how much they are eating.

One of the first steps in regulating weight is becoming aware of how much you are eating every day—and what you are eating. Then you can decide how to plan your daily eating in a way that manages your weight and satisfies your hunger. Start by keeping a detailed record of everything you eat and drink during a day—for several days.

Write down <u>everything</u> that you <u>eat</u> and <u>drink</u> everyday, from the time you get up in the morning until the time you go to bed. Remember to write how the food is prepared (fried, baked, boiled). Be as complete as possible—include food and beverages you have between meals, too!

EXAMPLE:

TIME	WHAT FOOD AND DRINK	HOW MUCH EATEN
7:00	Orange Juice	½ cup
	Egg, fried in margarine	1 egg
	Toast with margarine	1 slice, 2tsp.
	Grits	½ cup

RECORDING WHAT YOU EAT

Write down <u>everything</u> that you <u>eat</u> and <u>drink</u> everyday, from the time you get up in the morning until the time you go to bed. Remember to write how the food is prepared (fried, baked, boiled). Be as complete as possible—include food and beverages you have between meals, too!

TIME	TYPE OF FOOD AND DRINK	HOW MUCH EATEN

WATCH FOR THESE INGREDIENTS ON FOOD LABELS:

All of these are different names for sugar.

Dextrose

Fructose

Lactose

Sucrose

Invert Sugar

Sorbitol

Mannitol

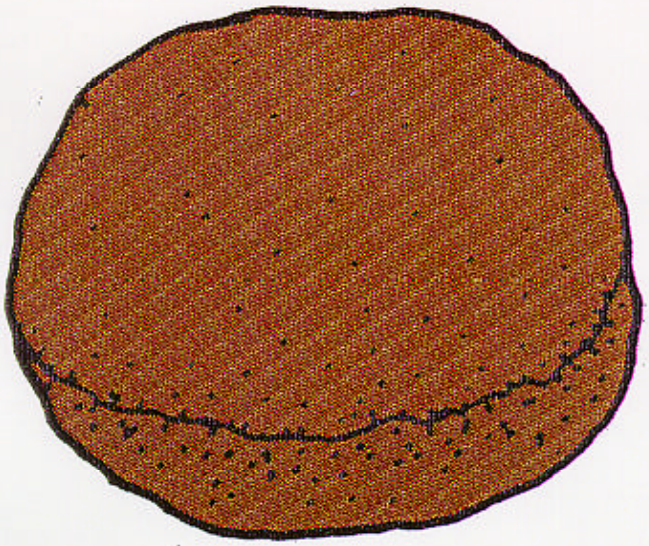
Corn Syrup

Honey

Molasses

Maltose

Measuring Meats and Cheese

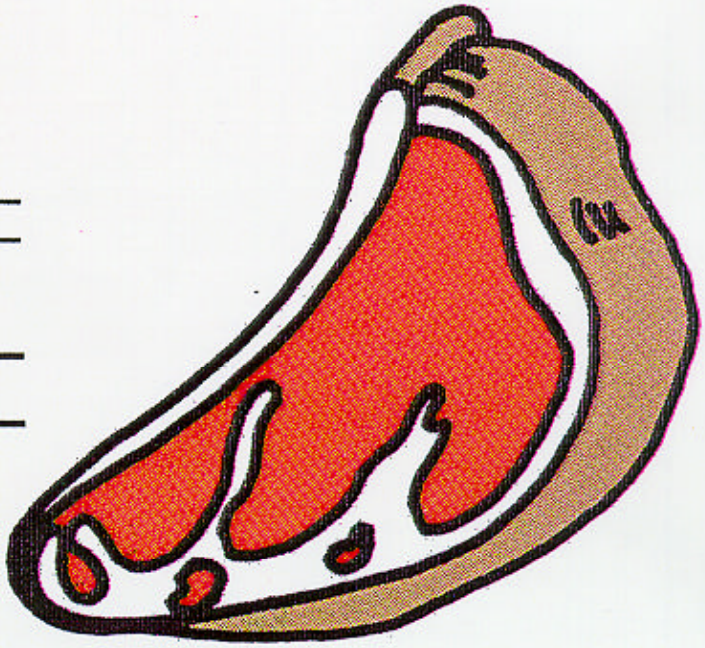


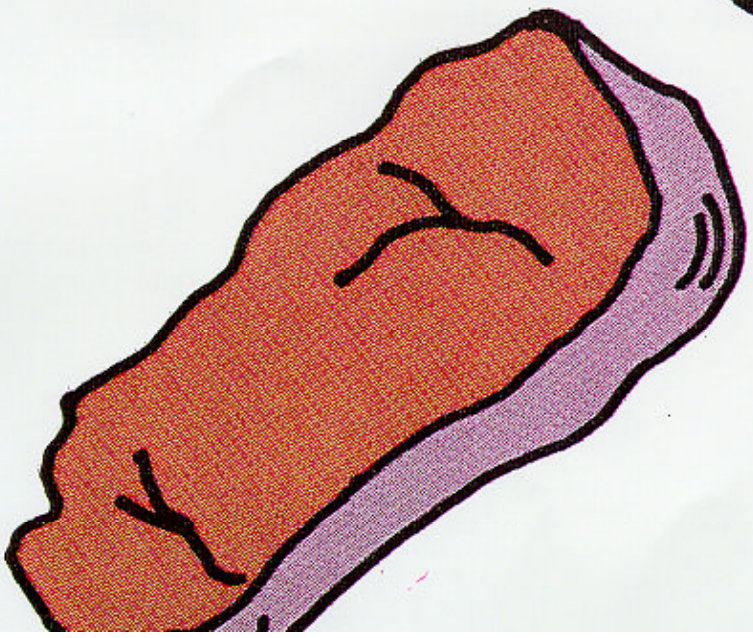
2 oz. This Thick

3 oz. This Thick

2 oz. This Thick

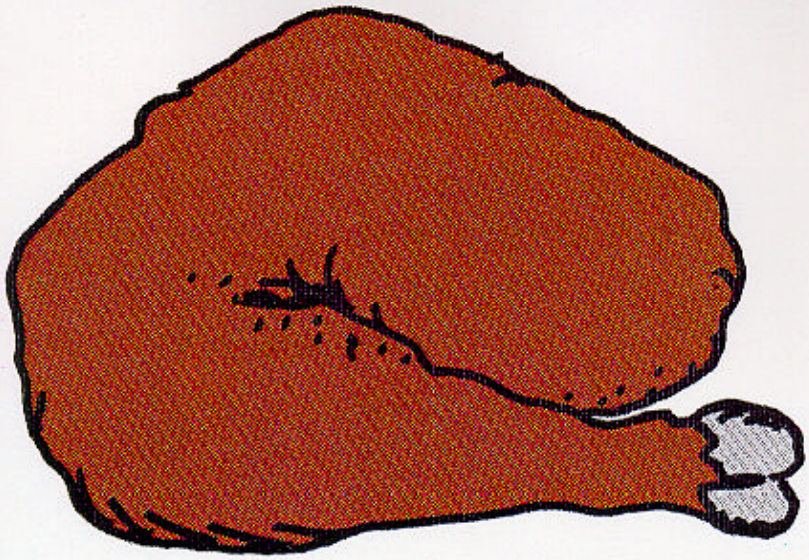
3 oz. This Thick





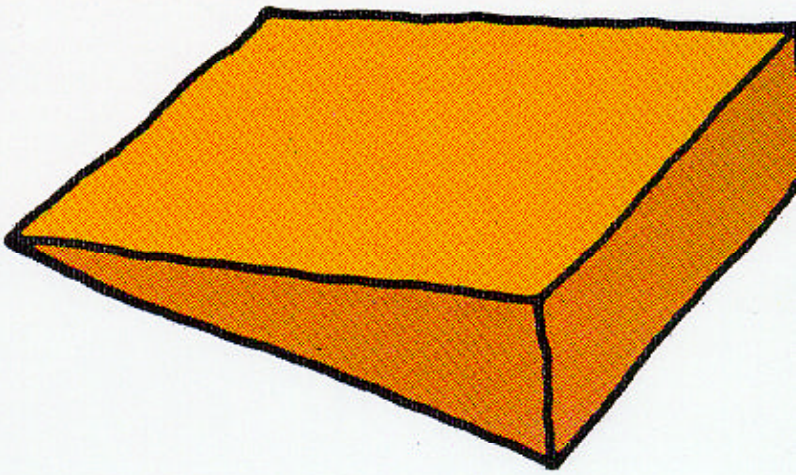
2 oz. This Thick

3 oz. This Thick



3 oz.

1 oz. This Thick

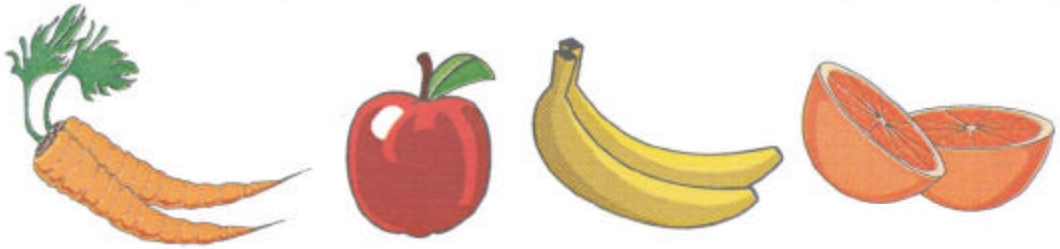


1 oz. This Thick

From: **A Survivial Kit For Diabetes** by Christy et. al. Published by Metropolitan Medical Center, 900 South Eighth St. Minneapolis, Minnesota 55404

Lower Your Blood Pressure...Eat Less Salt

Eat These

Meat, Poultry, Fish and Beans	
Fruits and Vegetables	
Dairy	
Breads	
Spices	

Division of Health Promotion

State of North Carolina • James B. Hunt Jr., Governor
Department of Environment, Health and Natural Resources • Jonathan B. Howes, Secretary

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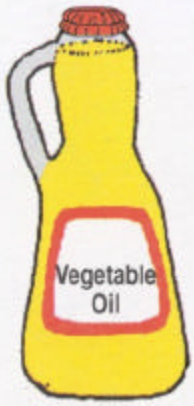
Try Some New Flavors To Take the Place of Salt

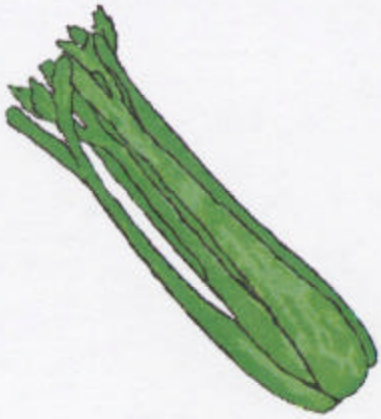
Green or Red Pepper

Lemon or Lemon Juice

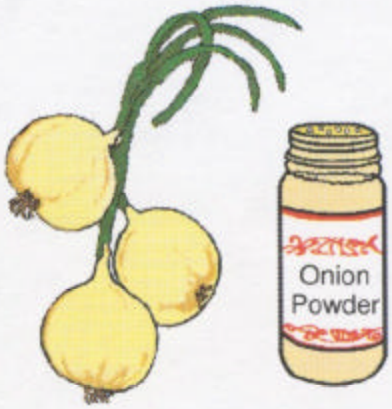
Tomatoes



Vegetable Oil

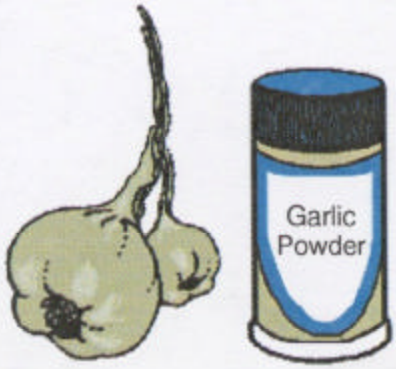


Celery



Onion or Onion Powder

Black Pepper



Garlic or Garlic Powder

Vinegar

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PORTION SIZES

CONCEPT:

What our body considers a "portion/serving" of food may not be what our eyes, our habits, our culture, the restaurant cook, or the manufacturer of a food product considers a "portion/serving" size.

Problem area: marketing, advertising, culture, family influence, and the perception that "bigger is better" influence how many people think about the amount of food on their plate, either at home or when out to eat at a restaurant. Thirty to forty years ago an 8 oz soft drink was the usual serving size of a beverage and 12 oz was the "large size". Today 12-16 oz beverages are the usual size and frequently a 32 oz beverage is the "large" size.

MATERIALS:

- **Colored plates (medium blue works well), especially if teaching on ITV network**
- **Real foods in different sizes:**
  (Examples) Restaurant size baking potato versus a 3 oz baking potato or 4-5 oz bakery bagels versus regular size frozen bagels

Using real foods in the class setting is suggested for three reasons:

- **Actual food items bring a reality to the teaching session that is missing when "play foods" (food models) are used to demonstrate serving sizes.**
- **Food models come in correct portion/serving sizes. Clients look at the models and *automatically* say or think, "That's about the size I usually eat".**
- **Food models become a black blob on an ITV screen and lose their usefulness.**

ACTIVITY:

- **Place two different sizes of the same item on a plate. A large potato next to the correct portion size for a potato.**
- **Have clients identify which size potato they usually eat or which size they would rather have or which size they would probably choose.**
- **Identify the size potato that fits the definition of 1 carbohydrate serving.**
- **Discuss what the body considers a "portion/serving". Remind clients of the influence of culture (family included), emotions, marketing/advertising, habit, etc., on perception of "portion/serving" amount and on choice of potato or other food serving size.**
- **Ask the clients to tell how they think the difference in serving size affects blood sugar and/or weight.**

CONCEPT:

How much we eat or drink effects blood glucose levels AND weight.
Clients can SEE how much a large portion of a food can increase blood glucose compared to a small serving of the same food.

MATERIAL:

- **2 wide-mouth, clear, quart jars**
- **1 quart plus 1 cup water**
- **Red food coloring to make bright red**
- **Black marker OR narrow white tape to mark level of blood sugar before eating the food**
- **2 potatoes (one 3 to 4 oz Potato and one 6 to 8 oz potato)**

ACTIVITY: Instructor or client can do this.

- **Measure 2 ½ cups red water into each jar.**
- **Place a strip of narrow white tape with top of tape at top of water line or make a line with black marker at top of water line.**
- **Place the small potato in one jar.**
- **The small potato will raise the water about the width of one finger. The large potato will raise the water the width of two fingers.**
- **Discuss the "increased blood sugar" of the larger potato compared to the smaller as perceived by the rise of the water level.**

CHANGE THE EATING ENVIRONMENT TO CHANGE EATING HABITS

CONCEPT:

The SIZE of the plate, bowl, or glass affects HOW MUCH is consumed.

MATERIALS:

- **Several bowls of different sizes usually found in the home (dessert, soup, cereal, small serving bowls).**
- **A collection of different sizes of clear drinking glasses found in most homes (tea glasses, water glasses, juice glasses, liquor, and wine glasses.) Include one 8 oz and one 4 oz glass in the collection.**
- **Colored liquid (water with food coloring) in a pitcher or bottle.**
- **Box of flake or puffed cereal.**
- **Measuring cups in different sizes ($^1/_4$ c, $^1/_2$ c, and 1 c).**

ACTIVITY:

- **Have clients identify the size glass they use for caloric beverages like milk and juice.**
- **Ask how much liquid they put in the glass.**
- **Ask how much they think the glass holds when full.**
- **Have the client use a measuring cup to put 8 oz of colored liquid into the glass (if discussing milk) or 4 oz colored liquid into the glass (if discussing juice).**
- **Review how many ounces of juice or milk is a serving/portion.**
- **Fill the 8 oz glass (if using milk for an example) or the 4 oz glass (if using juice as an example) with colored liquid. Compare the difference in appearance of the two glasses. Discuss: a half-full glass can create a feeling of being deprived where a full glass gives the feeling of having plenty.**
- **Discuss how using a large glass can lead to consuming more than they need.**
- **This activity can be done with the bowls and cereal to demonstrate the half-empty and deprived feeling versus the full and satisfied feeling, AND**
- **Since the larger bowl holds more cereal AND more milk, there is a larger rise in the blood sugar and calories.**

A "SPOONFUL" IS MORE THAN A "SPOONFUL"

CONCEPT:

Spoons or utensils called by the same name hold different amounts. " A tablespoon of potatoes" may be more that a tablespoon.

EXAMPLES:

A "teaspoon" can be a measuring teaspoon used to make a recipe OR a "teaspoon" used at the table to stir coffee. The "teaspoon" used to stir coffee can hold 3-5 times as much as the measuring teaspoon. One experience: "1 teaspoon of margarine" on a baked potato was actually 1 2/3 Tablespoons. The client used the spoon she had used to stir her coffee and scooped a heaping spoon of soft-tub margarine onto the potato.

A "tablespoon" can be a measuring tablespoon or a serving spoon used at the table to serve food or at the stove to cook food. The quantity each spoon contains will vary from 1 tablespoon to ½ to ¾ cup! Food records or the verbal statement of a client, "I just had a spoonful…" can be misleading in the actual amount of a food item consumed.

MATERIALS:

- **Measuring spoons, serving spoons, and food preparation spoons of several different sizes**
- **Scoopable food item that can be heaped into the spoons (soft shortening works well and can be re-used)**
- **Measuring cups of different sizes: ¼, ½, and 1 cup**
- **Plates**
- **Small rubber or latex spatula**

ACTIVITY:

Have clients choose a spoon they typically use to put food on their plate. Ask the client to take the spoon and dip the shortening onto a plate. Tell the clients to place the amount of shortening on the plate they would put if this was a bowl of mashed potatoes and they were hungry and getting ready to eat supper.

Use the ½ cup measuring cup and spatula to measure the amount put on the plate OR measure ½ cup (leveled) and place the ½ cup shortening on the plate.

The discussion can then focus on several things:

1. **The difference in the amount they *thought* they put on the plate and the quantity *actually* put on the plate.**
2. **The differences between the amount habit or eyes consider a serving size and the amount the body or the meal plan considers a serving size.**
3. **The effect of blood glucose between smaller and larger amounts of food.**
4. **The effect on weight between smaller and large amounts of food.**
5. **Larger portions raise blood sugar higher than smaller portions.**

CARBOHYDRATE COUNTING AND PORTION SIZE

CONCEPT: Carbohydrate counting can help to guide consistency of CHO intake at meals. Portion sizes of foods are important when using carbohydrate counting for meal plans.

ACTIVITY # 1:

MATERIALS:

- **Food models**
- **Plates**
- **Meal plans with carbohydrate content for each meal**

ACTIVITY:

- **Participants fill a plate with food and amounts, as if eating the meal.**
- **They determine the number of grams of carbohydrate on the plate.**
- **Invent a new menu using the same total number of carbohydrate grams for the meal.**

ACTIVITY # 2:

MATERIALS:

- **Foods (Participants prepare a meal containing single and mixed foods).**
- **Recipe nutrition information written on stand-up cards.**
- **Play money designated as " Carbohydrate bucks", "Fat bucks", or "Protein bucks".**

ACTIVITY:

- **Participants prepare the meal.**
- **Nutrition information cards are placed in front of each completed dish.**
- **Each participant is given the amount of carbohydrate bucks, protein bucks, fat bucks in their doctor-ordered meal plan for that particular meal.**
- **They "spend" their food bucks to buy the amount of each food they want for that meal. They cannot exceed the carbohydrate, protein, or fat limit for the meal because they will run out of money.**

CONCEPT:

Sugar-containing foods can be part of a meal plan when substituted for other foods.

MATERIALS:

- **Plates**
- **Food models**
- **Meal plans for 1500, 1800, 2000 calories**

ACTIVITY:

- **Either the instructor or class member can fill a plate with food models representing a lunch or night meal for each calorie count meal plan (may use just one meal plan if you want to).**
- **Choose a sugar-containing item such as pie, cake, ice cream, or candy bar.**
- **Take a second plate.**
- **Remove all the food the sugar-containing item will replace, including fat, and place on 2nd plate.**
- **Discuss the taste satisfaction from the sugar-containing food versus the loss of feeling of fullness and loss of nutrients in the food that it replaces.**

COMPARING THE FOOD GUIDE PYRAMID AND THE DIABETES FOOD GUIDE PYRAMID

CONCEPT:

Regular Food Guide Pyramid and Diabetes Food Guide Pyramid have one major difference.

MATERIALS:

- **Food models (paper or 3-dimensional)**
- **Two Food Guide Pyramid displays**

ACTIVITY:

- **Arrange food models to demonstrate the usual Food Guide Pyramid and include some starchy vegetables, peas and beans in the vegetable section, and peas and beans in the meat section.**
- **Arrange 2nd Food Guide Pyramid with starchy vegetables and peas and beans in the bread/grain base to illustrate the Diabetes Food Guide Pyramid**
- **Have clients identify the difference between the two pyramids**

NOTE:

If you do not have access to two Food Guide Pyramid boards, food models can be arranged on a tabletop and clients can compare two displays.

STARCHY VERSUS NON STARCHY VEGETABLES

CONCEPT:

ALL VEGETABLES ARE NOT CREATED EQUAL
(Calories or carbohydrate content)

MATERIALS:

- **Food models of starchy and non-starchy vegetables in correct portion sizes.**

ACTIVITY:

- **Compare the carbohydrate and calorie content of 1 serving of starchy vegetable with the equivalent calorie and carbohydrate content in non-starchy vegetables, (usually 3 servings not-starchy vegetable to 1 serving of starchy vegetables)**
- **Can also discuss different vitamins and minerals in each set of vegetables.**

CONVENIENCE FOODS

CONCEPT:

Convenience foods can be used to make healthful, quick, and easy meals.

MATERIALS:

- **Meal plans**
- **Food models**
- **Package covers for frozen meals like Lean Cuisine, Healthy Choice or other low fat, low-cholesterol, reduced sodium, frozen meals.**
- **Package cover for things like Rice-a-Roni, Hamburger Helper, and other rice and pasta mixture foods.**

ACTIVITY # 1:

- **Ask client to choose a frozen meal.**
- **Look at the diabetes exchange information or carbohydrate, protein and fat information from the label and compare it to their meal plan.**
- **Add appropriate food models from starch, fruit, vegetables, etc., to make a complete meal using the convenience food as a base.**

ACTIVITY # 2:

- **Ask clients to choose one of the familiar packaged mixes they use or would like to use.**
- **Identify from the label what needs to be changed to fit their meal plan guidelines (fat, sodium, or carbohydrate).**
- **Discuss ways to add other items to adjust the mix:**
  1. **Add unsalted rice or pasta to increase the quantity and reduce the sodium content.**
  2. **Low-fat or fat-free mayonnaise or fat-free sour cream if it is a salad mix.**
  3. **Leave out or reduce the margarine or oil if it is not a muffin mix.**
  4. **Add vegetables or lean meat to the mix.**
  5. **Use half or less of the seasoning packet if seasoning is packaged separately.**
  6. **If a high-carbohydrate food, add low carbohydrate vegetables or meat or eat a smaller serving.**

TEACHING TIPS

- **Cook in front of a class and let them taste to show it tastes good. Film the long cooking parts to show as a video.**
- **How much we eat depends on the size of the container we use. Collect a variety of different size bowls and pour a serving size of cereal (3/4 cup) into the large and small bowls. The large bowl will almost have the bottom covered. Measure out what we usually put in the large bowl. Then measure to see how much it really is and compare results.**
- **Buy a small bowl to give to each client.**
- **Line up a collection of glasses of different sizes for clients to choose from to select what they believe is 8 oz.**
- **Collect menus and record the number of grams of CHO, fat and protein for various selections. Discuss how to request altering the menu when ordering.**
- **Use the food models to show what to give up in order to have a piece of pie or cake.**
- **"Sometimes the best thing you can exercise is your common sense."**
- **Develop a note card with a stop light in black and white printed on the outside. One of the lights (red, green, or yellow) will be colored to indicate whether the food listed on the card is a good choice (green light), a poor choice (red light) or a cautionary choice (yellow light). On the inside of the card, print information about the food.**
- **Use a clear plastic model of the food pyramid and put food models on the shelves of it to describe the different food groups.**
- **Cut out pictures of food from magazines to use in the food pyramid flat model and prop it on an easel.**
- **Show a "Grands" biscuit vs. a regular size biscuit or a large bakery bagel versus a small, frozen one.**
- **Explain that selecting the correct foods using the food pyramid is "as simple as getting dressed and making change". The "getting dressed" refers to choosing a variety of food groups, like putting on clothes involves choosing a shirt, pants, socks, and shoes. We do not wear 3 shirts and 2 pairs of pants. The "making change" part refers to figuring out what is in the food groups and changing selections. A small potato may be the same as several crackers or corn; just like 4 quarters or 10 dimes make a dollar.**
- **Give rewards, such as a cookbook, for behaviors taught (eating 5 fruits and vegetables, exercising, taking medications correctly) or attending all classes.**

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING

MODULE 4: HEALTHY NUTRITION, PART II

I. Purpose

To give the patient, significant other, and caregiver(s) an overview of the essential role of good nutrition in the control of blood glucose and cholesterol. To provide strategies to maintain diabetes control during special occasions and when away from home.

II. Educational Objectives

A. *Concepts/Objectives*

At the end of this session the participant will be able to:

1. List types of nutrients, their effect on blood glucose and lipid levels, and their relationship to insulin and oral diabetes medications.
2. Explain the importance of reducing total fat as well as saturated fat and cholesterol in the meal plan.

B. *Patient Specific Objectives*

At the end of this session the participant will be able to:

1. Define terms such as dietetic, free foods, sugar free, calorie free, low calorie reduced calorie, and fat free and identify examples of products that might be appropriate for the meal plan.
2. Demonstrate how to evaluate food products using the nutrition facts panel on the food label.
3. State the recommended level of cholesterol.
4. State where saturated fats are found.
5. Describe three ways to reduce saturated fat intake.
6. Demonstrate how to select food when eating out – e.g., restaurants, fast foods, and others' homes – to suit the meal plan.
7. Describe appropriate menus for special occasions – e.g., birthdays, holidays, entertaining, social situation – to suit the meal plan.
8. State the effects of alcohol on blood glucose levels and precautions to follow, if used.

III. Pre-Teaching Guides for the Instructor

A. Review dietetic foods for their ingredients.
B. Secure samples and/or labels in pairs of calorie-reduced and regular products to demonstrate label reading.
C. Secure samples and/or labels of sweeteners.
D. Review cholesterol for its definition and role in diabetes management to prevent long term complications.
E. Review meal-planning strategies to lower cholesterol.
F. Secure model of clogged artery.
G. Secure samples of polyunsaturated and mono-unsaturated fats.
H. Secure samples and/or pictures of foods high and low in fat to demonstrate ways to lower fat intake.

I. Secure sample menus from area food establishments/restaurants.
J. Review guidelines for including alcohol in meal plan.
K. Review strategies for traveling and maintaining diabetes control.
L. Review handouts: "Eating Healthy to Reduce Cholesterol"
"Suggestions For Eating Away From Home"
"Fast Foods Calorie and Exchange Values"
"Alcoholic Beverages"
M. Prepare for Session

IV. Supplies and Materials Needed for Teaching.

A. Food labels of dietetic foods, sweeteners, and fats.
B. Food models.
C. Easel, pad and markers.
D. Sample menus.
E. Clogged Artery Model.
F. See Handouts and Resources in Section V below.

V. Handouts and Resources for Participants

A. "Cooking and Baking with Splenda" -Tips for success adapted from information found at www.splenda.com .
B. "Suggestions for Eating Away From Home"
C. "Fast Food Calorie and Exchange Values"
D. "Alcoholic Beverages"
E. "Eating Healthy to Reduce Cholesterol"

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 4: NUTRITION – APPROXIMATE TIME REQUIRED: 90 MINUTES

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
The participant will be able to recall that dietetic foods are not necessary for person with diabetes.	**I. Special Foods: Label reading.** A. Ingredients are listed in order of decreasing amount. B. Read labels – look at calories, fat, carbohydrate, and sodium per serving. C. Dietetic, fat-free, and sugar-free do not mean free foods. D. These are often higher priced. E. "Dietetic" indicates that ingredients have been changed.	Ask group to name some dietetic foods that are free (less than 20 calories) and some that are higher in calories. Also, show regular product labels, which are acceptable.	Easel pad Write: " Dietetic sugar-free, fat free does not = free food".	10 mins.
The participant will understand how to use the information about ingredients on food labels to make food choices.	F. "Dietetic" foods often contain the same number of calories as regular item and may still raise blood sugar. G. Dietetic cookies, cakes, candy still contain carbohydrate, which turns to sugar. They are not free foods.	Display dietetic foods, which are free, and those which may be substituted in the meal plan. Distribute labels for participants to examine. Have examples of pairs of labels. (i.e., a regular product and a calorie-reduced product), for comparison. Have each participant comment to the group on the labels that they are examining.	Dietetic food labels. Other food labels.	10 mins.
	H. Use of dietetic foods for the person with diabetes. 1. If less than 20 calories, a serving is free. Examples: Sugar free jello, fat free salad dressing. 2. If more than 20 calories, may be substituted for foods on plan. Read label. Examples: Sugar-free cookies, low fat yogurt. 3. Ask dietitian for help.	Use labels for diet cookies or diet ice cream to explain substitution of starch, milk, or fruit exchanges.		5 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 4: NUTRITION

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	II. Sweeteners 1. Nutritive – includes molasses, honey, corn syrup etc. All add calories to food. 2. Non-nutritive – like saccharin, (Sweet'N low, Sugar Twin), aspartame, (Equal, Nutrasweet), and acesulfame K (Sweet One, Sunnett) may be used in moderation. Equal (aspartame) is destroyed by heat. Splenda (sucralose) is made from sugar. Splenda is heat stable and can be used in cooking and baking like sugar with a few modifications to the recipe.	Display examples of the forms in which non-nutritive sweeteners are packaged and sold.	Examples of package of non-nutritive sweeteners. Tips for Cooking and Baking with Splenda.	5 mins.
Participant will define cholesterol and its basic function in the body.	**III. Why Lower Cholesterol?** A. Define cholesterol – soft waxy substance made by the body and used in manufacture of hormones, bile acid and Vitamin D. 1. Cholesterol is present in all parts of the body including skin, muscle, liver, heart, etc. 2. Two main sources of cholesterol. a. The cholesterol your body produces. b. The saturated fat and cholesterol in your diet.	Define Cholesterol.	Model of clogged artery.	30 mins.
Participant is able to state the danger of elevated blood cholesterol.	B. Cholesterol as a risk factor for coronary heart disease. 1. CHD usually caused by atherosclerosis. Cholesterol, fat and other substances build up on artery walls. Deposits narrow the arteries, slowing or blocking the blood flow to the heart. The heart gets less oxygen, leading to chest pain, heart attack or death. 2. Low blood cholesterol level slows fatty build-up on artery walls and lowers the risk for heart attack. 3. CHD is the leading cause of death and disability for both men and women. a. For every 1% reduction in total cholesterol, there is a 2% reduction in the risk of heart attacks.	Explain danger of elevated cholesterol. Explanation.		

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 4: NUTRITION

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
Participant can name at least five of the eight risk factors for coronary heart disease. Participant will state the recommended level of cholesterol.	**III. Why Lower Cholesterol?** **- B. Cholesterol as a risk factor for coronary heart disease. (continued)** 4. Risk factors for CHD. a. Male sex –(2-3 times higher risk than for pre-menopausal females). b. Family history of early CHD – sudden death or MI in parents/sibling before age 55. c. Cigarette use. d. Hypertension. e. Low HDL cholesterol – explain HDL and LDL cholesterol. f. **Diabetes mellitus.** g. Previous personal history of CHD or peripheral vascular disease. h. Overweight. **IV. Cholesterol testing/values vary according to age, sex, and other factors.** A. General values: Recommended less the 200mg/dl Borderline high – 200-239 mg/dl High – more than 240 mg/dl B. Total cholesterol level should be measured in all adults over 20 years of age, at least once every 5 years. 1. If at risk, an annual check is recommended. 2. Cholesterol level may begin to drop 2-3 weeks after beginning a low cholesterol meal plan. However, it may take 3-6 months for a significant reduction in cholesterol. C. LDL recommended level is <100 for persons with diabetes or CVD.			

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 4: NUTRITION

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
Participant can explain the importance of meal planning in treating hypercholesterolemia. Participant will be able to state where saturated fats are found and three ways to reduce intake. Participant will be able to briefly explain the major food changes needed to reduce cholesterol.	**V. Treatment of elevated blood cholesterol.** A. Meal Planning - first line of treatment. Blood cholesterol levels may be lowered by dietary changes. B. Decreasing saturated fats in the diet is more important to lower blood cholesterol than the amount of cholesterol in food. **Saturated** = Fat found in animal products such as fatty meats and most dairy products. Also coconut oil and palm oil. **Poly-unsaturated** = Cottonseed oil, corn oil, safflower oil, soybean oil, sunflower oil. **Mono-unsaturated** = Olive oil, canola oil, peanut oil, nuts. **Ways to lower saturated fats:** 1. Drink skim or 1% milk instead of whole milk. Limit cheeses other than low-fat or fat-free cheese. 2. Choose fish, poultry, and lean cuts of meat more often. Remove skin from chicken and fat from meat before cooking. 3. Use tub margarine or liquid vegetable oil instead of butter, lard and hydrogenated vegetable shortening. Use all fats in moderation. 4. Select snacks or desserts such as fruit, popcorn, raw vegetables, pretzels, sugar-free jello, or low-fat yogurt instead of pies, cakes, ice cream, candy donuts, or chips. C. Lower dietary cholesterol to #300 mg/day: 1. Limit egg yolks to less than 3 weekly. 2. Limit organ meats – liver, brain, kidney. 3. Limit meat to 6 oz. daily (2 servings). D. Increase complex carbohydrates: 1. Eat vegetables and fruits often. 2. Eat more whole grain breads and cereals, rice, pasta, dried peas/beans in amounts consistent with good glucose control. E. Lose weight (if overweight): 1. Limit calories consumed. 2. Exercise to burn extra calories	Review meal plan or suggestions to lower cholesterol. Give examples of saturated, polyunsaturated and mono-unsaturated fats. Explain major food changes needed. Show pictures of food low or high in saturated fat (Examples of ways to lower fat intake).	"Eating Healthy to Reduce Cholesterol" Pictures of labels of saturated, poly-unsaturated fats. Food pictures or labels.	

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 4: NUTRITION

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	V. Treatment of elevated blood cholesterol. **-Ways to lower saturated fats (continued)** F. To continue the benefit of the cholesterol-lowering meal plan, the changes in eating habits must be continued for life. G. A low cholesterol meal plan can be tasty, satisfying and consistent with good nutrition. H. Drug therapy may be prescribed by the physician if adequate trial of diet therapy does not reach blood cholesterol reduction goal.	Activity: "Name some foods that you enjoy which are low in saturated fat and cholesterol."		
The participant can identify at least 3 points to remember when eating out in a restaurant.	**VI. Special Times** A. Eating out: 1. Some major problems eating out are: a. Unknown food content. b. Large portion sizes. c. Temptation of seeing so many high calorie foods. 2. Kinds of foods you should look for – baked, broiled, or grilled lean meats or fish; vegetables without fat, salad with diet dressing. Ask for butter, salad dressings, mayonnaise "on the side" so that you can control the amount used. 3. Know your meal plan – your food choices from each food list, or carry a copy with you. 4. Ask waitress to find out how food is cooked and what ingredients have been added. 5. Remember portion sizes – eyeball serving size and try to stay within your meal pattern. For a meal that is much larger than you usually eat, ask for a carryout box to be delivered with the meal. Divide the meal in half. Put one-third to one-half in the carryout box, close it, and put it aside to take home and eat the next day. Spread the other food out on the plate so your eyes see full plate of food. Eat slowly and enjoy meal. Have the other half of the meal the next day.	Ask group what restaurants they eat in and what they order. Distribute handout.	Handout "Eating away from Home." Menus from local restaurants where clients may patronize.	15 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 4: NUTRITION

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	VI. Special Times (continued) 6. Eat a snack if you are going to eat later than usual and then make adjustment at meal time. a. Fruit or milk choice from supper or; b. Evening snack at supper hour, supper at snack time. 7. Explain how to use information for fast food restaurants.	Distribute handout. Have someone choose a fast food meal consistent with their own meal plan.	Handout: "Fast foods: Calorie and Exchange Values."	
The participant can state how to include alcohol in her/his meal plan (what and when) if she/he chooses to drink alcoholic beverages.	B. Alcoholic beverages 1. Talk with your doctor, - -find out how much and how often 2. Reasons <u>not</u> to drink alcohol: a. Lowers blood sugar and could lead to insulin reaction. b. Masks symptoms of blood sugar imbalance. c. High in calories; may contribute to weight gain. d. Empty calories with no nutrients. 3. Points to remember if you do drink: a. Drink just a little – one beer, one glass of wine, or 1 ounce of liquor. b. Drink with a meal or right after to offset decrease in blood sugar. c. Use sugar-free mixers: water, club soda, diet soda. d. Count alcohol as part of your meal plan: 1 ounce liquor = two fat exchanges.	Distribute handout.	Handout: "Alcoholic Beverages"	5 mins.
The participant states the need to carry a source of concentrated sugar when traveling and names one type of sugar she/he carries.	C. Traveling: 1. Always plan ahead for meals and snacks. 2. Pack a bag meal and/or snack or be certain of restaurants on route.	Ask group to suggest bag meals (i.e., peanut butter sandwich; graham crackers, and nuts; 4 peanut butter crackers (1 bread, 1 meat); unsweetened fruit, raisins). Ask group to name sources of concentrated sugar they can carry.		5 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 4: NUTRITION

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	VI. Special Times – C. Traveling: (continued) 3. If you are on insulin or pills, always carry a source of concentrated sugar for possible low blood sugar reactions –i.e., glucose tablets, Insta-glutose gel, sugar packets, soft sugar mints, gum drops, jelly beans, or honey packets. When you are traveling you may have a low blood sugar episode due to more activity and irregular meals. 4. Small tubes of gel travel well. 5. Also a good idea to carry a pack of cheese crackers or peanut butter crackers in case of flat tire or long delay in meals. Eat the cheese crackers or peanut butter crackers at your regular mealtime to prevent a low blood sugar episode.			
Summary/Questions	**CLARIFICATIONS/COMMENTS** A. What are dietetic foods? Which dietetic foods count as free food? B. What are three points to remember when eating out in restaurants? C. What are three points to remember if a person with diabetes wants to drink alcoholic beverages? D. What type of food should a person with diabetes carry when traveling?	Use Verbally as Pre & PostTest.		5 mins.

Cooking and Baking with Splenda

Tips for Success Adapted from Information found at www.splenda.com

What is Splenda?

Splenda (sucralose) is a new no-calorie sweetener made from sugar.

Splenda Facts:

- Measured just like sugar. 1 cup Splenda is equal to 1 cup sugar.
- Keeps a sweet flavor in baked goods, frozen foods, and cooked foods.
- Does not have an after taste.
- Works best in recipes where sugar is mostly for sweetening instead of providing structure (like angel food cake, meringues, pound cake).
- Comes in two forms: Packets **and** granular.
- May foam or froth when added to liquid.
- Baked goods made with Splenda will last longer if stored in the refrigerator.
- Measure amount of Splenda you need *before* sifting with other ingredients so amount of sweetness is correct. Splenda granules are larger than sugar and sift differently.

General information

Splenda is best used in:

- Hot and cold beverages
- Custards & fruit or custard pie fillings
- Cobblers & cheesecakes
- Sweet sauces & glazes
- Marinades & salad dressings
- Quick breads (banana nut, etc.)
- Muffins, cookies, pies
- Selected cake recipes (yellow cake and chocolate cake require some adjustments)
- When the recipe calls for beating ingredients together, such as butter, sugar and eggs, beat the ingredients and Splenda 2-3 minutes longer to get enough air into mixture to give even texture.
- Low sugar items bake more quickly than high sugar items.
- Do not wait for deep golden brown color on top of item.
- Use wooden toothpick test for doneness. If it comes out clean, the item is done.
- Baked goods can be frozen.

Recipe Tips

Cakes

- For every 1 cup of Splenda, add ½ cup nonfat dry milk powder (sifted) and ½ teaspoon of baking soda. Add this to the remaining dry ingredients.
- Add Splenda granular to the butter and cream the mixture well. Splenda will not cream exactly like sugar with butter and other fats. To get the most yield, beat the fat well with Splenda and then beat the eggs well with the Splenda and fat mixture.
- Cooking: Check for doneness 7-10 minutes earlier than the recipe calls for.

Bar cookies, brownies, muffins and quick breads

- For every 1 cup of Splenda, add ½ teaspoon baking soda.
- Add Splenda granular to the butter and cream the mixture well.
- Add baking soda to the recipe's directions.
- In muffins and quick breads, add 1-2 tablespoons of honey or molasses for extra flavor and moistness.
- Cooking: Check for doneness 3-5 minutes earlier than the recipe calls for.

Cookies

- Retain chewy and crunchy texture by substituting Splenda for white sugar, but not brown sugar.
- In addition to what the recipe calls for, add 1 tablespoon of molasses for every cup of Splenda in the recipe to get the desired browning and flavor.
- Use cinnamon, vanilla, or almond extract to help provide flavor.
- Reduce liquid by ½ tablespoon.
- Cooking: Cookies may not spread as much as usual as they bake. To get the desired thickness, just flatten the cookie before baking.
- Check for doneness 1-2 minutes earlier than the recipe calls for.

Chocolate Cream Pie

¾ cup Splenda granular
3 tbsp. cornstarch
1/8 tsp. salt
1 tbsp. butter flavored granules
2 cups fat-free milk
3 oz. semi-sweet chocolate
1 ½ tsp. vanilla extract
1 tbsp. margarine
1 pre-baked 9" pie crust

Mix together Splenda, salt, butter flavor granules, and cornstarch into a 2-quart microwave safe glass bowl. Microwave on high for 4 minutes. Stir, making sure that the clumps of cornstarch are smoothed out. Microwave on high for 2 minutes. Stir to smooth out cornstarch and add chocolate. Microwave on high 2 minutes. Stir again and add margarine and vanilla. Cover mixture with plastic wrap so that the wrap touches the surface of the filling. Let cool for 15 minutes. Remove wrap and pour filling into pie shell. Cover with plastic wrap and refrigerate for 3 hours. Serves 8.

Serving size: 1/8 pie, Calories 190, Carbohydrates 23g, Total fat 10g, Sodium 195 mg

Thanks to the Jackson County Department of Public Health for providing brochure with the Splenda information.

Suggestions For Eating Away From Home

	ORDER	AVOID
Vegetables:	1. Raw 2. Boiled 3. Steamed	1. Escalloped 2. Creamed 3. AuGratin 4. Fried 5. Sautéed
Potato:	1. Baked 2. Boiled 3. Steamed 4. Mashed	1. Creamed 2. Escalloped 3. Delmonico 4. Home Fried 5. Browned 6. French Fries 7. Potato Salad
Breads:	1. Hard or soft roll 2. Plain Muffins 3. Biscuits 4. Crackers 5. Corn Bread	1. Sweet Rolls 2. Coffee Cake 3. Danish Rolls 4. Frosted Rolls
Meat, Fish, Chicken:	1. Roasted 2. Baked 3. Broiled 4. Boiled 5. Grilled 6. Braised 7. Steamed 8. Blackened	1. Fried 2. Sautéed 3. Breaded 4. With Gravy, or Bacon
Eggs:	1. Soft Boiled 2. Hard Boiled 3. Poached 4. Scrambled 5. Fried – Decrease Butter Allowance	

Suggestions For Eating Away From Home

	ORDER	AVOID
Fats:	1. Low calorie salad dressings 2. Soft margarine (in small amounts)	1. Butter 2. Gravy 3. Fried Foods 4. Foods with cream sauce 5. Salads with oils or dressings already mixed 6. Bacon 7. Cream 8. *Fat-free Salad Dressings
Desserts:	1. Fresh Fruits 2. Angel Food Cake	1. Custards 2. Pies 3. Sweetened canned fruits 4. Pastries
Beverages:	1. Sugar Free Soda 2. Coffee 3. Tea 4. Butter Milk* 5. Skim Milk* 6. Water (plain or with lemon)	1. Postum 2. Cocoa 3. Chocolate milk 4. Milk Shakes 5. Soft Drinks 6. Beverage with unknown ingredients

These have as much carbohydrate as an extra slice of bread at a meal and can frequently increase glucose above target goals

Fast Foods
Calorie and Exchange Values

	CALORIE VALUE	EXCHANGE VALUE		
		BREAD	MEAT	FAT
BURGER KING				
Hamburger	230	1 ½	1 ½	½
Double Hamburger	325	2	3	-
Whopper	630	3	3	4
Whopper, Jr.	285	1 ½	2	1
French Fries	220	2	-	2 ½
Chocolate Milk Shake	365	4 ½	-	1 ½
HARDEES				
Hamburger	270	2	1	1
Cheeseburger	320	2	2	1
All Star Sandwich	660	3	3	5
Frisco Burger	720	2 ½	3	7
French Fries (regular size)	340	3	-	3
Apple Turnover	270	2 ½	-	2

Fast Foods
Calorie and Exchange Values

	CALORIE VALUE	EXCHANGE VALUE		
		BREAD	MEAT	FAT
KENTUCKY FRIED CHICKEN **(Fried chicken, mashed potato, cole slaw, rolls)**				
3 piece dinner-	830	4	6	2 ½
Original	1070	5	6	6 ½
Crispy				
2 piece dinner-	595	3 ½	2	1 ½
Original	665	3	4 ½	3 ½
Crispy				
MCDONALD'S				
Hamburger	251	2	2	-
Cheeseburger	310	2	2	-
Quarter Pounder (Weight before cooking ½ pound)	416	2	3	1
Quarter Pounder with cheese	523	2 ½	4	2
Big Mac	516	2 ½	3	3
Filet-O-Fish	407	2 ½	2	2
French Fries (small)	215	2	-	2
Egg McMuffin	312	2	2	2
Scrambled Eggs	175	-	2	-
English Muffin, buttered	185	2	-	1
Pork Sausage	172	-	1	2

Fast Foods
Calorie and Exchange Values

	CALORIE VALUE	EXCHANGE VALUE		
		BREAD	MEAT	FAT
PIZZA HUT				
(Cheese Pizza)				
Individual-				
Thick crust	**1030**	**9 ½**	**7 ½**	**-**
Thin crust	**1005**	**8 ½**	**6**	**-**
½ of 13”				
Thick crust	**900**	**7 ½**	**7**	**-**
Thin crust	**850**	**7 ½**	**5**	**-**
½ of 15”				
Thick crust	**1200**	**10**	**9**	**-**
Thin crust	**1150**	**9 ½**	**7**	**-**
WENDY’S				
Classic Single Hamburger	**360**	**2**	**3**	**-**
Grilled Chicken Sandwich	**300**	**2**	**3**	**1**
Baked potato, sour cream and chives	**370**	**5**	**-**	**1**
Small Chili	**210**	**1 ½**	**2**	**-**
Frosty	**330**	**4**	**-**	**2**
French Fries (small)	**270**	**2**	**-**	**3**

ALCOHOLIC BEVERAGES

If you want to drink alcoholic beverages, talk it over with your doctor. He or she will tell you how much and how often to drink alcohol.

Here are some general guidelines for counting alcohol:

Alcoholic Beverages	**Food Group** *(varies with individual beverage)*
• **12 ounces beer**	• **1 bread-starch serving and 2 fat servings**
• **12 ounces lite beer**	• **2 fat servings**
• **3 ½ ounces dry wine**	• **½ bread-starch serving and 2 fat servings**
• **2 ounces dry sherry**	• **½ bread-starch serving and 2 fat servings**
• **1 ounce gin, rum, vodka, whiskey**	• **2 fat servings**

Here are some points to keep in mind when you drink alcohol.

- **Do not drink on an empty stomach.**
- **Always have food before or with your alcoholic beverage.**
- **Test your blood sugar to see how you respond.**

Do not drink more than:

- **2 servings gin, rum vodka or whiskey; or**
- **1 serving of beer; or**
- **1 serving of dry wine; or**
- **1 serving dry sherry**

Do not drink this amount more than 3 or 4 times a week.

If you use a mix, use:

- **Sugar free soft drink**
- **Tomato juice**
- **Club soda**
- **Water**
- **Orange juice (count as 1 fruit)**

COMPARING CARBOHYDRATES

CONCEPT: Dietetic, Sugar-free, and Fat-free on label does not always mean "FREE" food.

MATERIALS:

- **Sugar-free candy**
- **Dietetic cookies or candy bar**
- **Fat-free cookies or cake**
- **Foods or food models for:**
  - **½ cup corn or potato**
  - **Small apple**
  - **Small biscuit/slice of bread**
- **Labels from all these food**
- **Ziploc bags (if real foods are used and they will be handled)**

NOTE: Each food or food model should have the same carbohydrate content in the serving size used.

- **Compare the carbohydrate content of each food.**

Some ways to use this:

- **As a permanent display. Use food models arranged in a box with a label showing nutrient content of each food and a picture of a thermometer showing how much each food can raise blood sugar (both individual instruction and class settings).**

- **In a class with real foods.**

LABELS CAN GIVE GOOD INFORMATION OR CAN CREATE A FALSE IMPRESSION

CONCEPT: What you think you see on the label is not always what is in the container.

MATERIALS:

- **Food labels or containers of food with labels intact. Collection should include a 100% fruit juice label-container, and a "fruit drink" where the label shows pictures of lots of fruit and states "provides 100% of vitamin C" but either has no juice or just 5 % or 10% juice.**

- **The impression is " fruit juice". But contents are sugar water with a little color and fruit flavor or 5 % or 10% juice.**

- **Actual food containers with intact food labels make a deeper impression than a brochure or a piece of paper with a food label printed on it.**

ACTIVITY:

- **Give clients labels or containers**
- **Have them read the labels and describe what they think when they look at the label.**
- **Have them read the label carefully and tell what they discovered when they read the fine print on the label.**

DINING OUT

CONCEPT: You must have an idea of the amount of calories, carbohydrate, and fat in a prepared item in order to be able to make smart choices when dining out.

MATERIALS:

- **Meal Plans**
- **Restaurant menus (with exchanges for each menu item typed and inserted) next to the menu item.**

ACTIVITY:

- **Give a menu to each patient**
- **Have them choose a meal or combination of foods from menu and still remain in the parameters set by their meal plan.**

TEACHING TIPS

- **Show how to adjust menus to decrease the fat/calories in the dish. Use a rice and meat dish as one.**

- **Develop monopoly money in $1.00, $5.00, and $10.00 denominations. Label them as CHO bucks, fat bucks and protein bucks – i.e., - 1 CHO buck, 5 CHO bucks, 10 CHO bucks, repeat for fat and protein bucks. Label cooked foods with nutrition information – i.e., serving size, calorie content, CHO gms, protein gms, and sodium mg, so participants know how much each food "costs" in CHO, fat, protein, and sodium.**

- **Allow participants to purchase the amount of food allowed in their meal plan. Allow them to eat the food they "bought".**

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING

MODULE 5: PHYSICAL ACTIVITY (EXERCISE)

I. Purpose

To provide the patient, significant other, and caregiver(s) with an overview of the role of exercise in the management of diabetes and guidelines for safe and effective exercise.

II. Educational Objectives

At the end of this session the participant will be able to:

A. State that regular physical activity helps to control blood glucose, achieve desirable body weight, and minimize the risk factors (e.g., hypertension, hyperlipidemia) for diabetes complications.
B. Determine simple ways to incorporate physical activity into daily activities.
C. State that exercise can affect blood glucose levels (i.e., usually lowers).
D. Understand the need to consult with the healthcare team before beginning an exercise program.
E. State that hypoglycemia can result from exercise (if hypoglycemic medication is used).
F. State that blood glucose level should be checked before, during, and after moderate or strenuous exercise, (if hypoglycemic medication is used).
G. Discuss the rationale for snacks before extra activity.
H. Describe the type and amount of food that can be consumed to prevent hypoglycemia during exercise.
I. State the need to wear diabetes identification while exercising.

III. Pre-Teaching Guides for the Instructor

A. Review modules 1-5.
B. Review the NDIC publication on hypoglycemia.
C. Review Medical Identification products published annually in "Buyers Guide To Diabetes Supplies" by either Diabetes Forecast and/or Diabetes Self-Management.
D. Prepare for session.

IV. Supplies and Materials Needed for Teaching

A. Simple Carbohydrate products.
B. Optional: Glucagon Emergency Kit.
C. See Handouts and Resources in Section V below.

V. Handouts and Resources for Participants

A. List of Exercises.
B. Remember To Do These Things When Exercising.
C. Medic Alert "Prevent Medical Tragedies", or like pamphlet.
D. Identification bracelets and cards.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 5: PHYSICAL ACTIVITY (EXERCISE) – APPROXIMATE TIME REQUIRED: 90 MINUTES

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
Participants can cite the benefits of regular physical activity.	**EXERCISE – *for all people with diabetes, for health and glucose control.***	Overweight is a risk factor for heart disease, high blood pressure, and insulin resistance.		5 mins.
	I. Benefits of regular physical activity: A. Helps reach and maintain ideal body weight. B. Keeps blood vessels elastic. C. Improves blood flow and circulation. D. Improves strength of bones, joints and muscle. E. Relieves tension and stress. F. Improves high blood pressure. G. Lowers high cholesterol (lipids) levels. H. Helps the muscles use sugar more efficiently and require less insulin. I. The usual effect of exercise is to lower blood sugar.	Diabetes can make the blood vessels *less elastic.* Diabetes can impair circulation. Tension and stress can make the blood sugar increase. Blood sugar levels go down when the sugar is used more efficiently.		
Participants understand the need to consult with the health-care team before beginning an exercise program.	**II. Exercise must be suitable for you and must be approved by your doctor. Special care is needed for people with high blood pressure, eye disease, or frequent hypoglycemia (Your provider may recommend a stress test).** A. Stop if you experience any of the following discomforts: chest pain, difficulty breathing, dizziness, chest fullness, joint or muscle pain. B. Use proper footwear and inspect feet daily and after exercise. C. Use other protective equipment if appropriate. D. Avoid exercising in extreme heat or cold. E. Maintain adequate hydration before, during, and after exercise. F. Insulin injected near a muscle that will be used for physical activity, such as the leg, will be absorbed more rapidly than usual.			10 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 5: PHYSICAL ACTIVITY (EXERCISE)

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
Participants know that blood sugar should be checked before moderate or strenuous exercise.	**III. Exercise must be suitable for you …. (continued)** G. Avoid exercise during periods of poor metabolic control. H. Self-monitor blood glucose whenever significantly changing exercise, dietary or medication regimens. I. Be aware of safety issues related to where and when you exercise. Exercise with a friend. Be supportive of each other. **IV. Check blood sugar level before beginning heavy activity or exercise.** A. **Type 1:** If blood sugar is over 240, test for urine ketones. Do not exercise if ketones are positive; wait until blood sugar improves and ketones resolve before exercising. B. **Type 2:** If blood sugar is over 240, wait until blood sugar improves before exercising (moderate or strenuous exercise). C. Blood sugar may continue to fall after exercise is completed; test blood sugar several hours later. **V. Discuss Frequency and Intensity** A. Start slowly in an exercise program. Walk a short time (maybe 5 min.) the first day and gradually increase. B. Up to a point, the greater the level of physical activity or exercise, the greater the physiological benefit, for most patients with diabetes. This may be an especially important consideration for those attempting to lose weight. **VI. Plan activity every day. If possible, build up to 30 minutes. Consistency is important and helps to keep blood sugar more consistent from day to day.** A. Walking – Warm-up first with bends and then stretches. Cool down after the walk (exercise). B. Include other types of activity as allowed by your physician.	Type1: Exercising with high blood sugar and/or ketones may make sugar and ketones go even higher. Post-exercise hypoglycemia may occur as long as 6-12 hrs later. Ask; What kinds of exercise do you get each day? What activity do you enjoy most? Demonstration of exercise, warm up, stretching and cool down. Review common, daily opportunities for increasing physical activity, i.e., gardening, yard or housework, taking the stairs instead of the elevator, etc.)	Handouts: List of Exercise; and "Remember to do These Things When Exercising".	10 mins. 10 mins. 5 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 5: PHYSICAL ACTIVITY (EXERCISE)

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
Participants can state that hypoglycemia may result from exercise if hypoglycemic medication is used.	**VII. If a hypoglycemic medication is taken, hypoglycemia may result from exercise.** A. Snacks may be needed before activity or if activity is more than usual, to avoid low blood sugar levels during exercise. B. (Examples) Balancing the amount of activity with carbohydrate intake: 1. **Light** exercise for ½ hour or less Usually no snack needed 2. **Moderate** exercise for ½ hour to 1 hour 1 carbohydrate serving 3. **Moderate** exercise for **1** hour or more. 2 carbohydrate servings such as: 1 milk & fruit or ½ sandwich or 6 crackers with peanut butter			10 mins.
Participants will recognize the symptoms of HYPOGLYCEMIA (low blood sugar) and identify the possible cause, treatment, and prevention.	**HYPOGLYCEMIA:** Low Blood Sugar **I. Caused by:** A. Too little (or no) food or delayed meal B. Too much exercise, without extra food C. Too much insulin or oral medication (sulfonylurea) D. Too long between medication dose and meal **II. Onset is usually sudden:** **III. Symptoms:** A. Shaky B. Sweaty C. Hungry D. Weak E. Dizzy F. Confused G. Change in behavior—especially in children H. Headaches I. Tingling of mouth and fingers	Question & Answers. Explain. List Symptoms: Ask the class: “Have any of you ever had low blood sugar? How did you feel? Under what circumstance did it occur – during exercise, delayed meal, etc.?		20 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 5: PHYSICAL ACTIVITY (EXERCISE)

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	IV. Symptoms similar to intoxication			
	V. Treatment A. When symptoms occur, confirm with blood sugar test, if possible. B. When in doubt, treat. C. Treat immediately, don't wait! D. If conscious, the simplest, fastest-acting sweet drink or food available should be taken. Allow 10-25 minutes for the sugar to be effective and repeat the same treatment if no improvement seen. Common choices are: 1. Orange juice (½ cup) 2. Regular soda (¾ cup) 3. 4 lumps of sugar 4. 12 jelly beans 5. 3-4 small sugar mints, such as "peppermint swirls" 6. 4 tsp. of sugar, honey or syrup, placed under the tongue (sublingually) 7. Instant glucose (20 grams) 8. 1 tsp. cake icing (carry small tube) place under tongue 9. ¾ - 1 c. milk E. If unconscious, do not force feed. Treat with glucagon injection or take immediately to doctor or emergency room for intravenous glucose. Glucagon is a prescription medicine that raises the blood sugar and is injected in the fatty tissue, under the skin (same sites that insulin can be injected).	Explain. Have demonstration items of simple carbohydrate products. Optional: Demonstrate Glucagon Emergency Kit.	Optional: Demonstrate Glucagon Emergency Kit.	
	VI. People taking insulin or diabetes pills should always have a fast acting food with them, *especially while exercising.*			

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 5: PHYSICAL ACTIVITY (EXERCISE)

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	VII. Prevention A. Avoid sudden changes in diet, insulin and activity. B. Maintain a regular meal plan (eat according to meal plan whether you feel hungry or not). C. Check blood glucose regularly.	Explain		5 mins.
Patent will wear or carry diabetes ID, especially while exercising.	**DIABETES IDENTIFICATION:** card or jewelry **I.** Diabetes ID card and/or bracelet or necklace should be worn at all times to indicate you have diabetes. **II.** This is especially important during exercise, in case an accident or hypoglycemic episode occurs. A. Emergency room personnel must know you have diabetes to be able to give you the most appropriate emergency treatment. B. Hypoglycemia is often mistaken for intoxication and a passersby may be unwilling to offer assistance.	Display sample of identification bracelets, cards and give information on how to obtain. "Prevent Medical Tragedies," or similar pamphlet.	Medic Alert Have client complete form for ID. (Suggest that physicians can write a letter requesting waiver of enrollment if needed.)	10 mins.
Summary/Questions	**Clarifications/Communications** A. How does regular exercise benefit a person with diabetes? B. What should a person with diabetes do to prevent or to treat hypoglycemia while exercising?			5 mins.

LIST OF EXERCISES

Bowling
Biking – Indoors or outdoors
Dancing
Golf
Hiking
Softball
Swimming
Tennis
Team Sports
Walking – Briskly
Yardwork
Housework
Washing the Car
Gardening

Consider these walking activities

- Walk the dog
- Take longer routes
- Take the stairs instead of the elevator
- Walk to the store, mailbox or neighbors
- Park your car farther away
- Hide the TV remote control
- Walk whenever you can !!!

NOTE: Consider your general level of fitness. This includes your aerobic capacity, muscle strength, and flexibility. This information will help you to plan for an appropriate type of exercise and the level or intensity of exercise needed.

REMEMBER TO DO THESE THINGS WHEN EXERCISING

- Know what exercise does to your blood glucose.
- Write your blood glucose in your record book before, during and after you exercise.
- Write down the kind of exercise you did.
- Write down how long you exercise.
- If you exercise with other people, tell them how they can help you if you have a low blood sugar.
- You should always wear your diabetes bracelet or necklace when you exercise.

CONCEPTS: Exercise can help lower glucose levels and hypoglycemia can occur after heavy exercise.

MATERIALS:

- **2 clear flat dishes about 2 or 2 ½ in. deep and larger than the sponges you plan to use**
- **2 dry, light colored sponges (same size and thickness)**
- **1 quart of colored liquid (water and red food coloring work great)**
- **Magic marker (optional)**

ACTIVITY:

- **Place 1-2 cups of colored liquid into each dish (need enough so the drop in water level will be obvious).**

- **The dry sponges represent the muscles after exercise, which experience depleted levels of glycogen.**

- **Place a dry sponge in one of the dishes and watch it soak up the water. This sponge represents the hungry muscles and the way glucose is used to replenish glycogen in the muscle.**

- **Remove sponge from the liquid. Both the swollen sponge and the difference in the level of liquid represent how blood glucose is lowered through exercise.**

- **Explain that muscle glycogen is not replaced as quickly as the sponge soaked up the water.**

- **Over the next couple of days, glucose may be needed from meals to replace lost glycogen.**

Teaching Tips

- How to get a couch potato off the couch. Have them keep a record of blood sugars for one week. Then ask them to exercise (it can be just moving to music) and see the difference. Ask them what they think.

- Teach the "Chicken Walk". This is flapping arms like wings, leaning over to "peck corn" and then walking like an Egyptian with arms like -/ and /^ to get exercise. Also teach patients to stand and walk in place for the first ad of each break in the TV shows they watch. Later they can increase this to the first two ads, and later increase to the whole time period.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING

MODULE 6: MEDICATIONS

I. Purpose

To provide an overview of medications used in the treatment of diabetes and strategies for self-management of diabetes.

II. Educational Objectives

A. *Concepts/Objectives*

At the end of this session, the participant will be able to:

1. Discuss the action of the oral anti-diabetes medications.
2. State that oral anti-diabetes medications are not insulin.
3. Understand the role of multi-medication regimens in the treatment of diabetes.
4. State the action of insulin.
5. State that people with Type 2 diabetes may require insulin injections temporarily or in addition to oral medications.
6. Identify two precautions in choosing over-the-counter (non-prescription) medications or products. (←Sugar-containing, ↑Foot Care Products)

B. *Patient-Specific Objectives*

At the end of this session, the participant will be able to:

1. State the name of medication(s) used (if any), its correct dosage, and when it is to be taken.
2. State the expected onset, peak, and duration of action of medication(s) used (if any).
3. State proper care, storage conditions and disposal for medication(s).
4. For patients that use insulin:
   a. Describe the different types of insulin.
   b. Demonstrate how to draw up and mix the correct amount of insulin.
   c. Demonstrate how to inject insulin correctly.
   d. State where insulin may be injected (injection sites).
   e. Understand importance of taking insulin daily, as directed.
   f. Describe proper disposal of syringes and needles (adapt for local community regulations).

III. Pre-Teaching Guide for the Instructor

A. Review oral medications and insulin preparations for their actions, dosages and side effects.
B. Secure samples of the different types of insulin for display.
C. Collect and prepare materials to demonstrate insulin injection technique.
D. Review supply and equipment-rating chart published annually by either Diabetes Forecast and/or Diabetes Self-Management magazines.
E. Obtain non-prescription medication label with warning and caution for display and discussion.
F. Obtain samples of non-prescription medication that are sugar-free (optional).
G. Obtain information on local ordinances relating to syringe and needle disposal.

H. Review handout "Information About Your Diabetes Medication."
I. Review "Action of Oral Diabetes Medication"
J. Review "Available Insulin Preparations"
K. Prepare for session.

IV. Supplies and Material Needed for Teaching:

A. Injection technique demonstration
    1. Tray
    2. Alcohol swabs (or alcohol and cotton balls)
    3. Sterile saline
    4. Insulin (sample bottles of all types and sources)
    5. Syringes (different sizes, $^{3}/_{10}$ cc, ½ cc, 1 cc)
    6. Magni-Guide® or visual aid devices
    7. Sponge practice pad
    8. Safe-Clip® needle destruction unit
    9. Sharps container/syringe disposal container
B. Blood glucose testing meter and strips (different types)
    1. Blood glucose testing meter
    2. Blood glucose reagent strips (as appropriate for each meter).
    3. Control solution(s): high, normal, and low (as appropriate for each meter)
    4. Lancets
    5. Lancet devices
C. Copy of equipment rating chart published annually by either Diabetes Forecast and/or Diabetes Self-Management magazines.
D. Non-prescription medication label with warning and caution.
E. Samples of non-prescription medications that are sugar-free.
F. See Handouts and Resources in Section V below.

V. Handouts and Resources for Participants

A. Syringe Disposal Booklets.
   Handle with Care: How to Throw out Used Insulin Syringes and Lancets at Home. EPA-/530-SW-90-089. Obtain by calling National Toll Free Number (800) 424-9346. Six to eight weeks for delivery. May order up to 100 at a time. May be copied.
B. Information About Your Diabetes Medicine.
C. Oral Medications

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 6: MEDICATIONS – APPROXIMATE TIME REQUIRED: 2 ½ HOURS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
ORAL ANTI-DIABETES MEDICATIONS Participants will state the action of oral anti-diabetes medications and who can use them.	**I. General comments about the ORAL ANTI-DIABETES MEDICATIONS** A. Meal planning is always the most important part of management, along with exercise. It can be the difference between success and failure with oral diabetes medications! B. Persons who take oral medications often develop a false sense of security and neglect diet and exercise. C. Insulin cannot be given orally because it breaks down in digestion. Oral anti-diabetes medications are <u>not</u> insulin. D. If anti-diabetes medications are needed, usually one drug will be used at first, based on blood sugar patterns and/or symptoms the person has been having. If <u>one drug</u> does not suffice, a second one may be added. (A person may need to take <u>three different drugs</u> to get the desired blood glucose control.) Insulin may be used with oral medications. **II. SECRETAGOGUES** agents (several agents – see resource page) A. Action They stimulate the release of insulin from the pancreas (most important role). These drugs have a <u>very small</u> role in helping the body to use insulin better. B. Who can use these drugs? 1. Individuals with Type 2 diabetes (pancreas is able to produce insulin) 2. Persons not allergic to the specific drug or similar drug (e.g. An allergy to a sulfa drug may cause problems with Sulfonylurea agents). 3. Persons not experiencing infection, trauma (such **as surgery**), or very high blood sugars. 4. Contraindicated in pregnancy and breast-feeding. 5. Can cause hypoglycemia.	Describe body and where each medication works using lecture and drawings.	Review: "Action of Oral Diabetes Medication" Handout: Oral Medications	10 min. 10 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 6: MEDICATIONS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	III. ALPHA-GLUCOSIDASE INHIBITORS (acarbose; miglitol) A. Action 1. These medications slow the breakdown of complex carbohydrates to glucose in the small intestine. This makes the glucose from the carbohydrates enter the bloodstream slower, making the blood sugar rise more slowly after the meal. Carbohydrate breakdown (into glucose), occurs very quickly, which is a major reason why the blood sugar goes up so quickly after a meal. Complex carbohydrates include foods such as starches or starchy vegetables (e.g. peas, corn). 2. Treatment for hypoglycemia during this drug use must be glucose (glucose tablets) or milk, as the breakdown of other sugar sources is slowed by the drug. 3. Must be initiated slowly to avoid GI side effects, particularly flatulence. B. Who can use these drugs? 1. People who have high blood sugars after eating. These drugs lower the after-meal blood sugar levels, but have minimal effect on the before-meal blood sugar levels. 2. People who do **not** control their blood sugar as desired with diet and exercise alone. 3. **People who have no liver disease or intestinal diseases**. 4. Contraindicated in pregnancy and breast-feeding. 5. People with Type 1 diabetes (in addition to insulin). **IV. INSULIN SENSITIZERS** (metformin, rosiglitazone, pioglitazone) A. Action of rosiglitazone, pioglitazone: 1. These drugs work <u>mainly</u> on the muscle and fat cells to make the cells use insulin more efficiently. This means that glucose can enter the cells more easily.			10 mins 10 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 6: MEDICATIONS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	IV. INSULIN SENSITIZERS (continued) 2. These drugs have a minor influence on the reduction of the amount of stored sugar released into the blood by the liver. 3. These drugs make the cells more ***sensitive*** to insulin; they reduce the ***insulin resistance*** of these cells. B. Action of metformin: 1. This drug works <u>mainly</u> to reduce the amount of stored sugar put out in to the blood by the liver. 2. Metformin has a minor action of decreasing insulin resistance in muscles and fat cells. C. Who can use these drugs? 1. People who have a component of insulin resistance, such as those with: a. Obesity b. **Certain** racial/ethnic groups: African-American, Hispanic American, Native American, and Asian-American c. Advanced in age (> 55 or 60) d. Lack of exercise e. Acanthosis nigricans 2. People with Type 1 (in addition to insulin) or Type 2 diabetes with no contraindications. D. Who should not use these drugs? 1. Metformin should not be used in someone with liver disease, kidney disease (lactic acidosis), severe heart and lung diseases or in someone who drinks alcohol in a binging or chronic fashion. 2. Rosiglitazone and Pioglitazone should not be used in liver disease or in severe heart disease (encourage participants taking this medication to ask their provider about regular liver enzyme tests). 3. Rosiglitazone and Pioglitazone should be used with precaution, or not at all, in pregnancy and breast-feeding.	Emphasize the importance of baseline and routine liver function tests when taking Rosiglitazone and Pioglitazone. Encourage people taking the medication to ask their providers about these tests.		

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 6: MEDICATIONS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	V. An addition of a SECOND kind of anti-diabetes medication or a CHANGE TO ANOTHER drug will be made if: A. The dose of a drug reaches the maximum-effective dose without achieving the desired blood glucose levels. For example, in Type 2 diabetes, the pancreas slowly loses its ability to make and secrete insulin. When this happens, exogenous insulin must be used; it may be added to an insulin sensitizer or alpha-glucosidase inhibitor or added to or replace the secretagogue. B. Pregnancy occurs in Type 2 diabetes. Oral agents are not used in pregnancy. Insulin alone is used. C. Severe illness, trauma (e.g., surgery) or stress (e.g., death in family) causes high blood sugars. Insulin will probably be needed until the problem is resolved. **VI. When two or more anti-diabetes drugs are used, the drugs have different mechanisms by which they affect diabetes/blood sugar. For example, common combinations are:** A. Acarbose with a Sulfonylurea. B. Sulfonylurea with an insulin sensitizer. C. Insulin sensitizer with insulin. D. Bedtime insulin with daytime sulfonylurea (BIDS). E. Glyburide (sulfonylurea) and Glucophage (metformin) (now available in combination as “Glucovance”).			

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 6: MEDICATIONS

OBJECTIVE	PRESENTATION/OUTLINE/CONTEN	ACTIVITIES	MATERIALS	TIME
INSULINS Participants will be able to state the role of insulin.	**INSULIN** **I. Insulin action** 1. Insulin helps sugar move into the body cells where it can be used for energy, building cells or for storage for future energy use. **II. Sources of insulin:** A. Human insulin 1. Artificially made 2. Same as human B. Animal Insulin (Beef, pork, mixed. NOTE: beef and mixed beef-pork insulin are being phased out of the American market) C. Human and animal insulin may work slightly different, so it is best to use the same kind consistently. **III. Brands** A. Insulin is made by different companies: Eli Lilly or NovoNordisk B. Different brands may work slightly differently in an individual, so it is best to use the same brand consistently.	Discussion: • Before you had diabetes, your body made insulin whenever it needed it and in the amount needed. Your body's insulin matched your meals and snacks exactly. This does not happen any longer with diabetes. • In diabetes, your body has no control over the action of the insulin that is injected. Once insulin is injected, the peaks occur whether food is eaten or not. Meals and snacks need to match the action of the injected insulin to avoid hypoglycemia.	Review: "Available Insulin Preparations"	30 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 6: MEDICATIONS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	IV. Concentration (strength) of insulin **Insulin sold in America is primarily U-100 insulin, meaning that there are 100 units of insulin in each 1 cc (1ml) of liquid.**			
Participants will state the peak time of effect of each insulin.	**V. Types of insulin** A. Rapid-acting insulin: 1. Lispro Humalog, Aspart-Novolog 2. Clear, colorless appearance 3. Onset of action 10-15 min. 4. Peak action 30-90 min. 5. Duration 2-4 hr. 6. Injection must be given 5 mins. after mixing with another insulin B. Short-acting insulin *Regular insulin* 1. Clear, colorless appearance 2. Has an R on label 3. Onset of action 30 mins. 4. Peak action 2-4 hrs. 5. Duration 6-8 hrs. C. Intermediate-acting insulin 1. *NPH insulin:* has N on label 2. *Lente insulin:* has L on label 3. Milky-white appearance/cloudy 4. Onset of action 1-4 hrs. duration = 10-16 hrs. 5. Peak action in 8-12 hrs. D. Long-acting insulin *Ultralente insulin:* 1. Cloudy appearance 2. Has U on label 3. Onset of action 4-6 hrs. 4. Slight peak action in 18-24 hrs. Duration=24-36 hrs.	Emphasize letter R, L, N or U on bottle. Note that Humalog and Humalog mix are prescription only. Discuss peak times in relation to hypoglycemia and food intake. Give examples of when each insulin would peak, if taken at a certain time.	Bottles of R, L, N and U insulin	

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 6: MEDICATIONS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	V. Types of insulin (continued) E. Insulin for pumps Buffered regular insulin, Velosulin (Regular and Humalog are also used in pumps, although this is "off label" use). F. Basal insulin 1. ***Lantus: Glargine –no peak, long acting insulin*** 2. Clear, colorless insulin 3. Can not be mixed with any other insulin 4. Bottle is taller and thinner than other insulin bottles. Name "Lantus" is in a purple color. 5. Duration 24 hrs. with no peak **VI. Insulin mixtures** A. Extemporaneously mixed insulin. Combinations of 2 or more Types, **withdrawn from** separate bottles into one syringe. B. Premixed (commercially available) in vial or pen. 1. 70/30 insulin: 70% NPH and 30% Regular 2. 50/50 insulin: 50% NPH and 50% Regular 3. 75/25 insulin: 75% NPL (similar to NPH) and 25% Humalog available only in an insulin pen. **VII. External subcutaneous insulin infusion pump** A. Insulin pumps are programmed to deliver one or more basal rates throughout the day. An added amount, a bolus, must be given at mealtime. B. Pumps are indicated for people with Type 1 diabetes, patients who have poor control, hypoglycemic events, dawn phenomenon, hypoglycemic unawareness or during the initial stages as diabetes complications develop. Some people with Type 2 diabetes will benefit from a pump. C. People using a pump must check blood sugar at least 4 times per day or more often.			

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 6: MEDICATIONS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	VIII. Care of insulin A. Store at 45-86 degrees F. B. If refrigerated, keep in the warmest part of the refrigerator, so insulin will not freeze. C. A bottle currently in use may be left out of refrigerator at room temperature (below 86 degrees) for 1 month. D. When traveling, do not allow insulin to freeze or get hot. Never put in glove compartment, trunk, or luggage. Always carry prescription for insulin syringes with you. NC does not require prescription for syringes. Keep and carry box with prescription on it when traveling (not just insulin bottle). E. Examine expiration date frequently. Outdated insulin must be discarded. F. Discard insulin: if insulin is out-of-date, frozen (even if later thawed), or if it changes in color/consistency or if particles are floating in insulin.			
Participants will demonstrate proper aseptic injection technique and disposal of syringe.	**INSULIN INJECTION** **I. Equipment:** A. Alcohol and cotton balls or tissue, or alcohol swabs. B. Insulin as ordered. C. Syringes to accommodate number of units (i.e., 25, 30, or 50-unit syringe for dose under 25, 30, or 50 units, respectively 100 unit syringe for doses 50 to 100 units). **II. Technique:** A. Wash hands. B. To mix gently shake cloudy insulin bottle 20 times or roll between hands and warm insulin for injection. C. Remove cap (if bottle has not been used before) and discard. Clean rubber portion of bottle top with alcohol swab. D. Take cover off needle, hold at eye level, with needle pointing toward the ceiling. Draw air into syringe (equal to amount of insulin ordered).	Demonstrate. Show how to read syringe marking for the correct dose. Use magnifier if a person has a visual problem. Allow person giving insulin for the first time to draw up and give an injection of normal saline to reduce anxiety.	Tray, Insulin, Cotton balls, alcohol, Sponge practice pad, Syringes-different sizes, 1cc, 0.5 cc, 0.3 cc, 0.25 cc Display Magniguide or visual aid devices	40 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 6: MEDICATIONS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	II. Technique: (continued) E. Insert needle into rubber top; push plunger down, expelling air into bottle. F. Leave needle in bottle; turn upside-down so bottle is on top. Make sure needle is in liquid portion of insulin. G. Pull back slowly on plunger, pulling some insulin into syringe. H. Push insulin ***completely*** back into bottle (to reduce formation of air bubbles). I. Pull back plunger; fill syringe with desired number of units of insulin. J. Look for air bubbles. If bubbles are present, push insulin back into syringe again and repeat the previous step making sure needle is completely surrounded by insulin. May tap syringe so bubbles will rise to the top (toward needle), then push air out –adjust withdrawn dose if necessary. K. When no bubbles are present, and dose is correct, pull the bottle away from the needle. L. Clean injection site with alcohol swab. Let dry. M. If person is very thin with very little "fat" at the injection site, pinch up skin between fingers. For most adults, this step is not necessary. If person is thin, insert needle at 45° angle. N. Insert needle quickly, inserting needle into skin at 90° angle (that is, straight in). Push the needle all the way in. Let go of pinched skin. O. Push plunger down to inject insulin. P. Pull needle straight out from skin. Don't rub. Let go of pinched skin. Q. Dispose of the needle and syringe properly (see later in section V).			

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 6: MEDICATIONS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	III. To mix insulin: Complete steps A-E, using bottle #1 (usually the cloudy insulin), inserting into the bottle a quantity of air equal to the dose for insulin #1. Remove needle from bottle #1, and insert needle into bottle #2 (usually the clear insulin). Perform steps C-K using bottle #2, inserting air and withdrawing insulin equal to the dose for insulin #2. Re-insert needle into bottle #1 – in which you have already injected air – and withdraw proper amount of insulin #1. The total amount of insulin will equal insulin #1 plus insulin #2. ***Do not push insulin #2 into bottle #1. Now you are ready to give mixture of insulin.***	Demonstrate only with clients who get a mixed dose. Otherwise omit this section. If syringes are being stored pre-mixed, be sure to roll syringe to mix 2 insulins at time of use.		
	IV. Rotate injection sites: A. **For better absorption of insulin and to prevent tissue damage (i.e. hypertrophy, irritation).** B. **Within the target area by not giving injections closer than 1 inch from the last injection. The abdomen may be recommended for all injections because of its even absorption, which helps in stabilizing glucose levels. Other areas used are:** 1. Arms from 2 fingers above the elbow. 2. Thighs from sitting edge to middle. ***(Muscle movement in arms and legs increases circulation and temperature, thus increasing absorption. For this reason arm and leg sites for injections results in erratic absorption).*** 3. Hip – all (slowest absorption site). C. Avoid hard areas and those with lumps or bumps. Tell your doctor about those at your next visit.	Have participant identify these areas on themselves. Encourage rotation within one given site and not between the sites, i.e. rotate around the abdomen and not between the abdomen, arms and legs.	Booklet from the Environmental Protection Agency: <u>Handle with Care: How to Throw out Used Insulin Syringes and Lancets at Home</u>	5 mins. 5 mins.
	V. Disposal of syringes A. Put syringe directly into a strong plastic or metal container with a tight cap or lid.			

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 6: MEDICATIONS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	V. Disposal of syringes (continued) B. Clip needle off of syringe using a needle destruction unit such as the B-D Safe-Clip® (optional, but recommended). C. When the container is full and tightly sealed, throw it out in the trash. D. Check with local ordinances before discarding syringes in trash or dumpsites.			
Participants will recognize that other medications may interact with diabetes medicines.	**OTHER MEDICATIONS – Prescription** **Some medicines affect blood glucose levels, (i.e. corticosteroids, some diuretics, some blood pressure medicines) Beta-blockers and hormones do not aggravate or change blood glucose levels.**			5 mins.
Participants will recognize that non-prescription medicine may contain ingredients that can affect diabetes. Participants can cite two precautions in choosing over-the-counter (non-prescription) medications.	**OTHER MEDICATIONS – Non-prescription** **I. Non-prescription medications may contain some ingredients that add calories. Other ingredients can raise or lower blood sugar. These products can make control of diabetes difficult.** **II. When choosing non-prescription medications:** A. **Read all labels carefully. Check the list of ingredients!** Check all warnings or cautions! Check with your pharmacist about over-the counter medications to see if they are appropriate for someone with diabetes to take. B. **Avoid products containing SUGAR.** Sugar adds calories and increases blood sugar. Many products have sugar in them, but do not list it on the label or use a different word. Buy **SUGAR-FREE products.** C. Choose products containing little or no ALCOHOL. D. If you have a choice, use tablets or capsules (pills) rather than liquid medicine. Pills are better since they contain no alcohol and little or no sugar. E. Avoid products that contain **DECONGESTANTS.** These can raise blood sugar and blood pressure and should be used only if ordered by your physician.	List on blackboard.	Samples of warnings or caution on label Optional: samples of SUGAR-FREE products	10 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 6: MEDICATIONS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
Summary/Questions	**CLARIFICATION/COMMENTS:** A. Who can take oral medications for diabetes? B. How does insulin help control diabetes?			5 mins.

ACTION OF ORAL DIABETES MEDICATION

DRUG EQUIVALENT THERAPEUTIC DOSE (mg)	USUAL MINIMUM AND MAXIMUM DAILY DOSAGE	MEAN HALF-LIFE	DURATION OF ACTIVITY	METABOLISM AND EXCRETION	COMMENTS
Secretagogues: First generation - *Sulfonylurea*					
Chlorpropamide 100/250 (Diabinese)	0.1 – 0.5 gm. single dose	35 hours	24-72 hours	Extensive metabolism to compounds with unknown activity. 20% excreted unchanged, which may vary widely	Caution in elderly and patients with renal impairment. High frequency of alcohol-flushing, hyponatremia and perhaps other side effects.
Tolazmide 250/500 **(**Tolinase)	125 –1000 mg. single or divided doses	7 hours	10-14+ hours	Some metabolites have weak activity excreted via kidney	Like actechixamide, some patients are controlled on a single daily dose.
Tolbutamide 500 (Orinase)	0.5 –2 gm. divided doses	7 hours	6-12 hours	Totally metabolized to compounds with negligible activity	Useful in patient with renal impairment
Secretagogues: Second-Generation - *Sulfonylurea*					
Glyburide (DiaBeta) (Micronase)	1.25-20 mg. single or divided doses	10 hours	24 hours	Metabolized to inactive compounds	Fewer side effects and some drug interactions. Take 15 min - 30 min before meals. May cause hypoglycemia
Glynase- Pres Tab	1.5-12 mg. single or divided doses	4 hours	24 hours	Metabolized to inactive compounds	Fewer side effects and some drug interactions. Take 15 min - 30 min before meals. May cause hypoglycemia.
Glipizide (Glucotrol)	2.5-40 mg. Single or divided doses	2-5 hours	12-16 hours	Metabolized to inactive compounds	Take on an empty stomach 15-30 mins. before meals
Glucotrol XL	5-20 mg. Usually given in single doses	Extended Release	24 hours	Most metabolites inactive (80%)	Take on an empty stomach 15 mins - 30 mins. before meals. May cause hypoglycemia.
Amaryl	1-8 mg. Once daily dose	Extended Release	24 hours	Completely metabolized by oxidative biotransformation and excreted in urine and feces	Can be taken with meals or 15-30 mins. before. Those with impaired renal function may be more sensitive to the glucose-lowering effect of Amaryl. May cause hypoglycemia.
Nateglinide (Starlix)	60-120 mg. Before meals	1 hour	4 hours	75% excreted in urine by 6 hrs.	Taken 1-30 minutes prior to the three main meals.
Repaglinide (Prandin)	1.5-16 mg. Before meals	1 hour	4 hours	Completely metabolized and excreted primarily in urine	Taken 0-30 minutes prior to meals. Useful in patients with renal impairment.

ACTION OF ORAL DIABETES MEDICATION (continued)

DRUG EQUIVALENT THERAPEUTIC DOSE (mg)	USUAL MINIMUM AND MAXIMUM DAILY DOSAGE	MEAN HALF-LIFE	DURATION OF ACTIVITY	METABOLISM AND EXCRETION	COMMENTS
Insulin Sensitizers					
Metformin (Glucophage)	500-2550 mg. Divided doses with meals	6 hours	24 hours 2-3° per dose	Excreted unchanged in the urine and does not undergo hepatic metabolism.	Does not act on pancreatic beta cells suppresses hepatic production of glucose. Does not produce hypoglycemia. Works alone and is synergistic with a sulfonylurea and diet. Rare occurrence of lactic acidosis; contraindicated in patients with renal disease , metabolic acidosis, impaired liver function, severe cardio pulmonary dysfunction.
Rosiglitazone (Avandia)	4-8 mg. Single or divide dose	3-4 hrs	Not related to dose	Extensively metabolized and excreted in the urine and feces	Monitor liver enzyme levels.
Pioglitazone (Actos)	15-45 mg. Single dose	3-7 hrs	Not related to dose.	Extensively metabolized and excreted in the urine and feces.	Monitor liver enzyme levels. Warn anovulatory pre-menopausal women to use birth control as increased estrogen bioavailability may result in pregnancy.
Alpha-Glucosidase Inhibitors					
Miglitol (Glyset)	25-300 mg. Three divided doses.	2 hrs.	Peak 3-6 hrs.	Excreted by kidneys unchanged	Titrate dose upward slowly to decrease Gastrointestinal side effects.
Acarbose (Precose)	25-300 mg. three divided doses, taken with first mouthful of meal	2 hrs.	6 Hr.	Metabolized in kidneys	Titrate dose upward slowly over several months. GI side effects are common at first. Note: if hypoglycemia occurs when given with another OHA, treat with glucose or milk (not sucrose).
Combination Oral Agent					
Metformin/Glyburide (Glucovance)	1.25/250 everyday 20/200 everyday	10 hrs.	24hrs.	Excreted in urine and feces	

AVAILABLE INSULIN PREPARATIONS

PRODUCT (MANUFACTURER)	FORM
SHORT-ACTING (ONSET HOURS, DURATION HOURS 4-6*)	
Human Insulin	
Novolin R. (Regular) (Novo Nordisk)	Human **
Humulin R. (Regular) (Lilly)	Human**
Velosulin R. (Regular) Novo Nordisk)	Human**
Purified Insulin	
Regular Purified Pork (Novo Nordisk)	Pork
Regular Iletin II (Lilly)	Pork
Standard (Conventional) Insulin	
Regular lletin I (Lilly)	Mixed beef & pork
Regular Standard (Novo Nordisk)	Pork
INTERMEDIATE-ACTING (ONSET 1-4 HOURS, DURATION HOURS 10-16)*	
Human Insulin	
Novolin L (Lente) (Novo Nordisk)	Human **
Novolin N (NPH) (Lilly)	Human**
Humulin N (NPH) (Lilly)	Human**
Humulin L (Lente) (Lilly)	Human**
Purified Insulin	
Lente Purified Pork (Novo Nordisk)	Pork
Lente lletin II (Lilly)	Pork
NPH Purified Pork (Novo Nordisk)	Pork
NPH lletin II (Lilly)	Pork
Standard Insulin	
Lente Standard (Novo Nordisk)	Beef
Lente lletin I (Lilly)	Mixed beef & pork
NPH lletin I (Lilly)	Mixed beef & pork
NPH Standard (Novo Nordisk)	Beef
LONG-ACTING (ONSET 4-6 HOURS, DURATION HOURS 24-34)*	
Human Insulin	
Humulin Ultralente (Lilly)	Human**
Protamine Zinc lletin I (Lilly)	Mixed beef and pork
Basal Peakless Insulin	
Glargine-Lantis (Aventis)	Insulin analog

PRODUCT (MANUFACTURER)	FORM
RAPID ACTING (ONSET 15-30 MIN, DURATION HRS 3-4)	
Insulin Analog	
Human	
Aspart – Novolog (Novo Nordisk)	Human**
Lispro-Humalog (Lilly)	Insulin analog
MIXED INSULINS	
70/30 Insulin	
Novolin 70/30 (Novo Nordisk)	Human**
Humulin 70/30 (Lilly)	Human**
50/50	
Novolin 50/50 (Novo Nordisk)	Human**
Humulin 50/50 (Lilly)	Human**
75/25	
Humalog 75/25 Mix	Human**
INSULIN FOR SPECIAL USE	
Buffered Insulin (for pumps)	
Humulin BR	
Velosulin	
Refills for Novolin Pen	
Novolin R PenFill	Human**
Novolin N PenFill	Human**
Novolin 70/30 PenFill	Human**
Prefilled Pens	
Novolin R Prefilled	Human**
Novolin N Prefilled	Human**
Novolin 70/30 Prefilled	Human**
Humalog Prefilled	Insulin analog
Humalin N Prefilled	Human**

∗ Onset and duration are rough estimates. They can vary greatly within the range listed and from person to person.

∗∗ Lilly's human insulin is made by recombinant DNA technology.

NOTE: "ppm" means parts per million; "<" means less than; "≤" means less than or equal to.

INFORMATION ABOUT YOUR DIABETES MEDICINE

Ask your health care provider to fill in the following information about your diabetes medicine:

Drug Name _____ Strength_____

Direction: Take _____ U **Tablet** U **Capsule _____ time(s) a day.**

Take U **before meals (_____minutes)** U **with meals** U **after meals**

POSSIBLE SIDE EFFECTS (please check)

What to do:

Low blood sugar: <u>treat with sugar source/contact health care provider</u>.

Rash, itching: _____

Nausea/vomiting/cramping/stomach upset: _____

Leg swelling: _____

Loose stools/diarrhea: _____

Gas/flatulence: _____

Headache: _____

Change in taste or appetite: _____

Tiredness, fatigue: _____

Body aches, pains: _____

Sensitivity to sunlight: _____

Weight gain or loss:_____

Other: _____

- **If a dose is missed: _____**
- **Best times to test blood sugar while on this drug: _____**
- **How soon to expect changes in blood sugars: _____**

Take medication on a regular, daily schedule. Continue to take medication even when you are sick (see Sick Day Rules).

ORAL MEDICATIONS

Some diabetes medicines can be taken by mouth (oral) as a tablet or capsule. Insulin must be taken by injection (shots). There are many kinds of oral diabetes medicines, but none are the same as insulin.

The oral medications work in different ways:

- Some work by helping your body secrete more insulin
- Some work by helping your body cells use insulin better
- Some work by changing the way or the speed that food is absorbed from the intestines.

Often, different kinds of drugs are used together to get the benefits of each. Some of the oral drugs are combined with insulin injections to improve glucose control.

Your diabetes care provider will teach you about your diabetes medicine(s) and how to take it (them) safely.

Teaching Tips

Insulin Action-

1. Analogy – Carbohydrates are the body's main fuel source and are converted to glucose in the body. Use the example of a car representing the body and fuel representing the glucose.

2. Analogy – Insulin is the key that opens the body cells and allows the glucose to enter the cells and be burned as fuel. Use the analogy of a key unlocking a door or a key starting a car.

Insulin Types-

1. Outline the action of different insulin via the use of a graph or other visual.
    A. Diabetes Day board
    B. Educator drawn

2. Humalog insulin-instructing patients who have problems with hypoglycemia to inject <u>after</u> eating (pediatrics, elderly).

Injection Technique-

1. Plastic "pencil" case-vials of each type of insulin, syringes, and a sponge to practice injecting.

2. Stuffed bears with patches at possible injection sites can teach children where to give their shots.

3. TIE stands for "test, inject, eat", to remind patients of the order of doing things.

4. To assess the literacy of patients, hand them a brochure or paper in fairly large print upside down. If the person does not turn it over to look at it, he cannot read.

5. Use a Styrofoam cup with paper towels in it to practice giving shots. Hold the cup at the body part where the shot is to be given, and give the shot through the Styrofoam.

When to Inject-

1. TIE-Test, Inject Insulin, Eat

Patients Who Omit Insulin Due to Hypoglycemia-

1. For the patient who omits his/her evening insulin because of late afternoon hypoglycemia – Analogy – 2 children fighting – parent chooses the wrong child to blame/discipline. Now parent has two problems – still have 2 fighting children and now the added problem of wrongly accusing a child.

Oral Medications-

1. Combining oral agents to take advantage of different mechanism of action.

2. Medication calendar/schedule.

3. Pillboxes are perfect for diabetes patients, too.

4. For low literacy patients, tape onto a calendar an example of the pills they are taking in the correct order so they can follow the dosing regimen. Patients who are unable to identify their medications can be helped by providing a large card onto which a sample of each pill they take is glued or taped with the name of the medication to show all health care providers.

LESSON PLAN FOR DIABETS SELF-MANGEMENT TRAINING

MODULE 7: MONITORING

I. Purpose

To provide an overview of methods for self-monitoring of blood glucose and urine ketones (type 1), and strategies for using self-monitored results to improve diabetes control. To provide an overview of the glycosylated hemoglobin (Hb A1c) test as a physician-monitored test to assess overall or "average" diabetes control during the past two months.

II. Educational Objectives

A. *Concepts/Objectives*

At the end of this session the participant will be able to:

1. State two advantages of self-monitoring of blood glucose.
2. Discuss the term hemoglobin A1c or glycosylated hemoglobin.
3. State when and why urine ketone testing should be performed (type 1).
4. State when and how often blood glucose monitoring should be preformed.

B. *Patient-Specific Objectives*

At the end of this session the participant will be able to:

1. Demonstrate how to test for urine ketones (type 1).
2. Demonstrate how to perform a blood glucose test, including quality control procedures.
3. Record self-monitored results appropriately.

III. Pre-Teaching Guide for the Instructor

A. Secure and prepare materials to demonstrate urine testing for ketones.
B. Secure and prepare various meters and supplies to display for discussion and demonstration of self-monitoring of blood glucose.
C. Review supply and equipment-rating chart published annually by either Diabetes Forecast and/or Diabetes Self-Management magazines.
D. Review handout "Target Goals for Glucose Control".
E. Prepare for Session.

IV. Supplies and Materials Needed for Teaching:

A. Urine testing demonstration

Tray
Urine cups
Watch or clock with a second hand
Urine Ketone Test Product
Disposal container

B. Blood glucose testing meter and strips (different types)

Blood glucose testing meter
Blood glucose reagent strips
Control solution(s): high, normal, and low (as appropriate for each meter)
Lancet

Lancets devices

C. Copy of equipment rating chart published annually by either Diabetes Forecast and/or Diabetes Self-Management magazines.
D. See Handouts and Resources in Section V below.

V. Handouts and Resources for Participants

A. Diabetes Flow Sheet for recording test results
    1. Diet Control
    2. Insulin or Oral Medication Control
B. Target Goals for Glucose Control

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 7: MONITORING – APPROXIMATE TIME REQUIRED: 90 MINUTES

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
URINE GLUCOSE TESTING - Since urine glucose testing is generally not recommended, this section should be taught **only if local physicians request that patients be taught.** Participants will demonstrate the knowledge of the limitations of urine glucose testing. URINE KETONE TESTING – Type 1 diabetes Participants will demonstrate the knowledge of the necessity for urine testing for ketones and the recording of test results.	**I. How glucose gets into the urine.** A. Urine does not normally contain glucose. B. Glucose will "spill into " the urine when the blood glucose level exceeds approximately 180mg/dl. C. After urine is made by the kidneys, it remains in the bladder until urination occurs (bladder is emptied). D. Even if the blood glucose level returns to normal, any urine remaining in the bladder will contain glucose (from when the blood glucose was elevated). Thus, a urine test may be positive for glucose hours after the blood glucose levels have been elevated. E. A urine test will only suggest that the blood glucose levels were or are elevated. The test gives no information regarding normal or low blood glucose levels. F. **Urine tests for sugar are not usually recommended.** **II. How ketones get into the urine.** A. When there is a significant lack of insulin, glucose cannot be used for energy. B. The body starts to use stored fat (starts to "burn fats") as a source of energy. C. When fat is "burned", ketones are produced as a by-product, into the blood. D. The kidneys try to remove ketones from the blood by secreting them into the urine. This is when ketones show up in the urine. E. If fats continue to be burned because of a lack of insulin, the kidneys cannot remove all the ketones from the blood. F. In diabetes, the buildup of ketones in the blood and a high blood sugar can lead to ketoacidosis – diabetic coma and possible death. G. Ketones develop with a total lack of insulin or relative lack of insulin (in the presence of stress hormones –e.g. during illness- decreasing insulin's action, causing a need for greater amounts of insulin).	Explain when blood sugar is too high, sugar spills into the urine. Discuss the fact that urine tests are not as good as blood tests. The information from a urine glucose test does not tell the actual sugar level.		10 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 7: MONITORING

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	II. How ketones get into the urine. (continued) H. Early detection of urine ketones is important. It can be an early warning sign that ketoacidosis may occur soon. **III. When to test for ketones** A. In general, anytime blood sugar is more than 240 mg/dl, at least once daily when sick, or with each a.m. urine during pregnancy. B. Medical provider should be consulted whenever there are ketones in the urine. C. Personal physician may give specific guidelines for each patient. **IV. Methods of testing urine for ketones** A. Ketositx (foil-wrapped for infrequent use) B. Chemstrips UK C. Acetest tablets **V. Recording of test results** A. Record ketone results as indicated on bottle. **VI. Contact physician if ketones are positive.** **VII. Self Monitoring Blood Glucose** A. Essential part of a management program designed to help keep the blood glucose levels within a normal range. 2001 American Diabetes Association (ADA) standards of care-glycemic control for people with diabetes: Time – Goal Before meals – 80 - 120 Bedtime – 100 – 140 B. SMBG – helps create a feeling of being in control of diabetes. C. Blood testing is an important part of self care 1. Confirms balance of food, activity and medications. 2. Alerts when changes are needed.	Optional: Demonstration. Explain why blood glucose testing is an important part of self-care program.	Ketostix. Chemstrips UK Acetest Handout: “Target Goals for Glucose Control”	5 mins. 60 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 7: MONITORING

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	VIII. Self Monitoring Blood Glucose (continued) 3. Confirms when "feelings" are due to abnormal glucose. 4. Always take meter and self-monitoring record to appointment when seeing doctor or diabetes educator. D. Testing fundamentals. 1. Wash hands with warm water and soap or wipe with alcohol. Dry fingers. 2. Pierce side of finger. (If necessary, lower hand towards floor to increase blood in tip of fingers). 3. If necessary, milk finger downward. 4. Follow specific brand of meter's directions exactly. 5. Apply blood to designated area on test strip. 6. Follow meters quality control and cleaning directions exactly. E. Usual testing frequency (recommended by doctor and diabetes team). 1. Type 1 Diabetes Test 2-6 times/day 2. Type 2 Diabetes Test 1-4 times/day 3. During Pregnancy Test 4-7 times/day F. More frequent testing needed. 1. During illness. 2. During pregnancy. 3. During times blood glucose is out of control. 4. When more information about blood glucose is needed. 5. When activity level changes.	Optional: Demonstrate procedures. Applicable to type insulin or medication being used.	Meters Strips Control solution to be used in testing Rating chart of strips and meters Display lancet & devices Safe clip/disposal container	

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 7: MONITORING

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	VIII. Self Monitoring Blood Glucose (continued)			
	G. When to test.		Instructor Resource: " Recommended Times for Blood Glucose Testing"	
	1. Talk with your provider and healthcare team about the best times to monitor blood glucose levels. These should be based on clinical circumstances, the form of treatment and the response to treatment (ADA Clinical Practice Recommendations, 2001).			
	2. Postprandial monitoring (1-2 hrs. after a meal) is also beneficial.			
	3. Other monitoring options include:			
	a. Fasting blood glucose before breakfast and medications (fasting is defined as $\geq$ 8 hrs. without caloric intake).			
	b. Before meals			
	H. Record test results.			
	1. Show them to your doctor and educator (May explain computer downloading options).	Demonstrate how to keep a record.		
	2. Contact doctor if blood sugars continue >180.			
	I. Cost	Discuss costs of strip and meters.		
	1. Strips 50 – 75 cents each		Sample advertisements or equipment/cost review published by *Diabetes Forecast* and Self-Management magazines	
	2. Meters to read strips $35 –$200			
	3. Medicare, NC Medicaid and most private insurance companies in NC cover the cost of meters and strips.	Explain insurance coverage.		
	J. Self-monitored blood test will read a little differently from laboratory blood test.			
	1. Serum or plasma glucose is 10 to 15% higher than corresponding whole blood concentrations. Explain that many new meters report serum glucose levels.			
	2. Meters for home use are less than the high-tech, expensive laboratory equipment.	Review circumstances when glucose goals may change.		
	3. Discourage meter to meter comparison of results.			
	K. Doctor and patient should agree on blood glucose goal individualized for patient (Example 80 –150)	Review causes and treatment of high or low glucose.		
	1. Goals may change as needs change.			
	2. Causes of high or low glucose (See Module 1).			
	3. How to treat high or low glucose (See Module1).	Discuss.		

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 7: MONITORING

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
Participants will recognize term Hgb A_{1c} and know the importance of periodic tests.	**VI. Hemoglobin A_{1c}** A. Hemoglobin is a substance found in the red blood cells of your body, that carries oxygen to the tissues. B. It joins with glucose (sugar). C. The glucose stays attached for the life of the cell, about 3 months. D. A test of hemoglobin blood glucose level for that period of time is utilized as the "average" blood sugar for a 2-3 month period. E. Normal – (4 – 6%) . F. State lab 3.7 – 6.4 (Different lab values may vary slightly). G. 2001 ADA Standards of Care for Hemoglobin A1C –goal is below 7.0%. H. Explain that an A_{1c} Level of 7% is approximately equal to an average blood sugar of 150mg/DL. For each 1% increase there is approximately a 30mg/dl corresponding increase in the average blood sugar. (i.e. 8% = 180. 9% = 210, etc.)	Encourage participants to talk with their provider, determine what their A_{1c} level is, what is should be, and how to get there.		**10 mins.**
Summary/Questions	**CLAIRFICATION/COMMUNICATION** A. Why should people with diabetes monitor their blood glucose levels? B. When and how often should people with diabetes monitor? C. When is urine ketone testing appropriate? D. What is the A_{1c} test, how often should it be performed, and what is the goal?			5 mins.

Target Goals for Glucose Control:

You need to check your blood glucose levels every day and write down the results. This will help you know how you diabetes control is progressing at home. The following guidelines will help you know if your blood glucose level is in good control. **Your diabetes care provider will review these with you and set specific goals for your blood glucose based on your medical condition and the meter you are using.**

Fasting	80 – 120 mg/dl
Pre-meal	120 mg/dl or less
1-2 hours after completing a meal	less than 160 mg/dl
Bedtime	100 –140 mg/dl
Pregnancy fasting	60 – 90 mg/dl
Pregnancy –2 hour after a meal	120 mg/dl

You need to call your Diabetes Care Provider if you:

- Have frequent low or high blood glucose readings
- Have questions or concerns
- Notice that changes in insulin, food or exercise do not seem to improve blood glucose values
- Are sick or have positive urine ketone readings

Name:_____
Phone:_____
Doctor:_____

FLOW SHEET FOR HOME GLUCOSE MONITORING

Insulin or Oral Medication Control

Date	Fasting (Before eating)	1-2 hrs after breakfast	Just before lunch	1-2 hrs after lunch	Just before supper	1-2 after supper	Bedtime	3:00 a.m.	Comments	Insulin a.m. dose	Insulin p.m. dose

Blood Sugar Goal

Before Meals: _____ **2 Hrs. After Meals:** _____ **Before Bed:** _____

Module 7: Monitoring
Handout

Name: _____
Phone: _____
Doctor:_____

FLOW SHEET FOR HOME BLOOD GLUCOSE MONITORING
Diet Control
Fasting is before breakfast and before taking medication.

DATE	FASTING	2 HOURS AFTER BREAKFAST	BEFORE SUPPER	2 HOURS AFTER SUPPER	MEDICATION A.M. DOSE	MEDICATION P.M. DOSE	COMMENTS

Blood Sugar Goal

Before Meals: _____ **2 Hrs. After Meals:** _____ **Before Bed:** _____

RECOMMENDED TIMES FOR BLOOD GLUCOSE TESTING

	IDEAL	MINIMAL
Type 1	**Before eating or taking insulin** **Breakfast** **Lunch** **Dinner** **Before bedtime** **Random tests:** **2 hours after eating (Rotate meals)**	**3 – 4 times Daily:** **Before eating meals or taking insulin** **Random test: 2 hours after eating. (Rotate meals)** **Individualized plan**
Type 2 on insulin	**Before eating or taking insulin** **Breakfast** **Lunch** **Dinner** **Before bedtime** **Random tests: 2 hours after eating (Rotate meals)**	**Same as ideal** **Individualized plan**
Type 2 Taking oral agents	**Before eating or taking insulin** **Breakfast** **Lunch** **Dinner** **Random tests: 2 hours after eating (Rotate meals)**	**Alternate:** **Day 1: Before Breakfast** **Day 2: Before Lunch** **Day 3: Before Dinner** **Day 4: 2 hours after eating (Rotate meals)** **Individualized plan**
Type 2 No mediation	**Before breakfast** **2 hours after largest meal of the day**	**Alternate:** **Day 1: Before Breakfast** **Day 2: 2 hours after largest meal of the day** **Individualized plan**

In addition to the time suggested above, the patient should check blood glucose if he/she experiences symptoms of hypoglycemia or any "unusual" feelings. Notes should be made on the blood testing record to indicate unusual feelings, periods of exercise, illness, and changes in food intake or other events that may affect glucose readings.

It is best for patients to do testing every day. If this is impossible, plan a schedule for testing and recording blood glucose at least 2-3 times per week, rotating times of day. The monitoring plan must be individualized for the patient's needs at a particular time.

Module 7: Monitoring
Teaching Tools

Monitoring

1. Downloading HBGM data into computers for printout reveals authenticity and provides summary reports.

2. HBGM versus HBA1c – test grades versus the end of course grade – the end of course grade is an average of each individual test score just as the HBA1c is an average of blood glucose values.

3. Fructosamine- similar to the above analogy, however, gives a more intermediate answer (over a 2 week period) (pregnancy)

4. Painful finger sticks – vacuum device using alternate sites.

5. Holding the finger stick site tightly for 30 seconds or so after getting blood will prevent a bruise, which is the cause of soreness.

LESSON PLANS FOR DIABETES EDUCATION

MODULE 8: MANAGEMENT OF ACUTE PROBLEMS (HYPOGLYCEMIA, HYPERCLYCEMIA, SICK DAYS)

I. Purpose

To give the patient, significant other, and caregivers an overview of the management of acute and unanticipated changes in blood glucose control, and an overview of the management of diabetes during periods of illness.

II. Educational Objectives

At the end of this session the participant will be able to:

A. State signs and symptoms of low blood sugar (hypoglycemia).
B. Describe strategies to prevent and to treat hypoglycemia.
C. State signs and symptoms of high blood sugar (hyperglycemia).
D. Describe strategies to prevent and to treat hyperglycemia.
E. State the importance of monitoring and reporting blood and urine tests during illness.
F. State three factors which determine when to call the doctor during illness.
G. State the need to carry and wear diabetes identification.

III. Pre-Teaching Guides for the Instructor

A. Review modules 1-7.
B. Review NDIC publication on hypoglycemia.
C. Review handouts on sick days.
D. Review preventative care practice – flu and pneumonia (see Module 9).
E. Obtain and review participant's registration materials to determine need for demonstrating or display of the Glucagon Emergency Kit.
F. Prepare for session.

IV. Supplies and Materials Needed for Teaching

A. Optional: Ketodiastix
B. Baby Bottles
   1. Styrofoam balls, Karo Syrup, red food coloring – High Blood Sugar
   2. Styrofoam balls, water, red food coloring – Normal Blood Sugar
C. Optional
   Glucagon Emergency Kit
D. See Handouts and Resources in Section V below.

V. Handouts and Resources for Participants

A. Sick Day Guidelines (for those not on medication)
B. Sick Day Guidelines (for those on insulin or diabetes medication)
C. Sick Day Food

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 8: MANAGEMENT OF ACUTE PROBLEMS – APPROXIMATE TIME REQUIRED: 90 MINUTES

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
Participants will recognize the symptoms of HYPOGLYCEMIA (low blood sugar) and identify the possible cause, treatment, and prevention.	**HYPOGLYCEMIA:** Low Blood Sugar **I. Caused by:** A. Too little (or no) food or delayed meal B. Too much exercise, without extra food C. Too much insulin or oral medication D. Too long between medication dose and meal **II. Onset is usually sudden.** **III. Symptom:** A. Shaky B. Sweaty C. Hungry D. Weak E. Dizzy F. Confused G. Change in behavior – especially in children H. Headaches I. Tingling of mouth & finger **IV. Symptoms similar to intoxication** **V. Treatment:** Immediate When symptoms occur, confirm with blood sugar test if possible. **VI. When in doubt, treat** A. If conscious, the simplest, fastest-acting sweet drink or food available should be taken (15-20 gms CHO). Allow 10-15 minutes for the sugar to be effective, retest blood and repeat the same treatment if no improvement seen. Common Choices are: 1. 3-4 glucose tablets 2. Orange juice (½ cups) 3. Regular soda (¾ cup) <u>(not diet)</u> 4. 4 lumps of sugar	Questions and Answers. Explain List symptoms: Ask for class participation: “Have any of you ever had a low blood sugar?” ”How did you feel?”		20 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 8: MANAGEMENT OF ACUTE PROBLEMS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	VI. When in doubt, treat (continue) 5. 3-4 small sugar mints, such as "peppermint swirls" 6. 4 tsp. of sugar, honey or syrup, placed under the tongue (sublingually) 7. Instant glucose (20 grams) 8. Small tube of cake icing gel 9. ¾ - 1 c. milk B. If unconscious, do not force feed. Treat with glucagon injection, place sugar gel icing, honey, syrup against cheek and gum for absorption by cheek blood vessels, or take immediately to doctor or emergency room for intravenous glucose. Glucagon is a prescription medicine that raises the sugar and is injected in the fatty tissue, under the skin, like insulin. **VII. People taking insulin or diabetes pills should always have a fast acting sugar source with them.** **VIII. Prevention** – Maintain a regular meal plan. Eat according to meal plan. Eat according to meal plan whether you feel hungry or not. Check blood sugar regularly. Plan for extra activity by adjusting insulin or adding snack. Do not increase insulin without permission/training from doctor.	Optional. Demonstrate Glucagon. Emergency Kit. Explain.	Optional Glucagon Emergency Kit and Cake icing gel	
Participants will recognize the symptoms of HYPERGLYCEMIA (high blood sugar) and identify the possible cause, treatment, and prevention.	**HYPERGLYCEMIA:** High Blood Sugar **I. Caused by:** A. Too much food B. Too little insulin or pills C. Decrease in activity D. Illness, injury or stress E. Common cause is not taking insulin when ill **II. Onset: Gradual, usually over a period of hours or days.**	List causes. Class participation. Ask: "Has anyone had this problem? How did you feel? Ask: "How can too much food or how can too little medicine cause this?		20 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 8: MANAGEMENT OF ACUTE PROBLEMS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	III. Symptoms – You may: A. Have a dry mouth and be very thirsty. B. Urinate frequently. C. Be very tired. D. Have nausea and vomiting. E. Have abdominal pains. F. Have an acetone (fruity) odor to the breath. G. Become confused. H. Blurred *Vision (always wait 6-8 weeks after hyperglycemia resolves before having eye exam to change eyewear prescription)*. **IV. Results of high blood sugar** A. Dehydration (fluid and weight loss). B. May have ketones (dangerous chemicals) in urine and blood (type 1). C. May go into coma (DKA or ketoacidosis—type 1 or nonketotic coma—type 2). **V. Treatment:** when blood sugar is noted to be increasing— A. Test blood sugar every 3 to 4 hours. B. Test urine for ketones (type 1). C. Call doctor immediately if urine is positive for ketones or blood glucose is dangerously high. D. Contact a physician or health care provider if you are severely ill. E. Your doctor may need to increase your insulin dose or pills and may have other instructions for you. F. Diabetic ketoacidosis or non-ketotic coma is a medical emergency and will require hospital care for intravenous insulin and replacement of fluids and electrolytes.	Demonstrate high and low blood sugar. Explain. Usually blood sugar over 250 or 300 is set as “call doctor” level, but will vary according to doctor’s directions.	Blood glucose simulation- Baby Bottle # 1 (High blood sugar) And Baby Bottle # 2 (Normal blood sugar)	

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 8: MANAGEMENT OF ACUTE PROBLEMS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
Participants will understand how to provide self-care during a minor illness.	**VI. Prevention:** A. Always take your usual daily dose of insulin or pills (unless instructed otherwise). Do not omit it when feeling ill. Remember that even when you are unable to eat, your liver is releasing glucose or certain hormones are raising you blood sugar, resulting in the need for insulin. B. Test blood for sugar on a regular basis as directed by health care provider. Record results and review for trends. C. Adhere to all diabetes care recommendations (meal plan, activity, insulin, etc) to keep the blood as normal as possible. D. Treat all illnesses as soon as possible and follow sick day rules (see below).			10 mins.
Participants will understand how to provide self-care during a minor illness.	**SICK DAY RULES** **I. Should be followed for short-term illnesses such as diarrhea, nausea and vomiting, fever, sore throat, flu, etc.** **II. If not improved after 24-48 hours, see your doctor.** **III. During illness, try to eat the usual daily amount of carbohydrate, even if your appetite is decreased.** A. Eat your regular meal plan, or B. If stomach upset or appetite is low, eat soft foods or C. If unable to keep any solid food down, drink 15-20 gms. of CHO, fruit juice and beverages containing sugar or other simple carbohydrates every hour until meal amount is replaced. **IV. Always take your insulin or oral medication because being sick raises blood sugar and increases your need for insulin. Take your dose even if you can not eat.** **V. Drink 1-cup sugar-free fluids every hour to prevent dehydration.**	Encourage pneumonia and annual flu shots for all persons with diabetes. Ask "What liquids/foods are high in carbohydrates and would also taste good when you are sick?" Refer to list of sick day foods.	Handouts for sick days Handouts: Sick Day Food Handout: Records for sick Days, CDC	20 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 8: MANAGEMENT OF ACUTE PROBLEMS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	VI. Check your progress and <u>write it down.</u> A. Every four hours, check and record temperature, blood sugar, and symptoms. B. Type 1: While sick check urine for ketones at least once daily and every time blood sugar is over 240.	Optional: Demonstrate how to test urine for ketones. Discuss normal body temperature.	Ketone Test agents	
	VII. Know how to contact your doctor at night and on weekends.			
	VIII. Call your doctor if: A. You are unable to keep down fluids for 4 hours. B. You have severe vomiting or diarrhea. C. Your blood sugar is higher than usual (usually patients are told to call if blood sugar is over 240-300 while ill). D. Type 1: If you have positive ketones.	Discuss when to call; have your record nearby.		
	IX. Tell your doctor: A. Your blood sugar levels. B. The medicines you have taken (including non-prescription products). C. Your temperature. D. Ketone results, if taken.			
	X. If you can't reach your doctor, go to the emergency room, or call for help if you are alone. If you get confused and act as if you don't know where you are, your family should take you to the emergency room right away or call 911.	Discuss the importance of seeking care.		
	XI. Prevention A. It is difficult to prevent most types of illness. B. Important prevention strategies include: 1. Maintaining good diabetes control. 2. Practicing healthy lifestyle habits. 3. Keep current on flu, pneumonia, and all other vaccinations and immunizations.			

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 8: MANAGEMENT OF ACUTE PROBLEMS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
Patient will wear or carry diabetes ID.	**DIABETES IDENTIFICATION:** card or jewelry **I. Diabetes ID card and/or bracelet or necklace should be worn at all times to indicate you have diabetes.** **II. This is especially important in case an accident or hypoglycemic episode occurs.** A. Emergency room personnel must know you have diabetes to be able to give you the most appropriate emergency treatment. B. Hypoglycemia is often mistaken for intoxication, and passersby may be unwilling to offer assistance.	Display sample of identification bracelets, cards and give information on how to obtain. "Prevent Medical Tragedies" or like pamphlet.	Refer to previously distributed handout in Module 5 Medic Alert Have client complete form for ID (Suggest that Physicians can write a letter-requesting waiver of enrollment if needed)	10 mins.
Summary/Questions	**CLARIFICATIONS/COMMUNICATIONS** A. Why should people who take a hypoglycemic medication carry some form of fast-acting carbohydrate at all times? B. What should a person with diabetes do when sick?			10 mins.

SICK DAY GUIDELINES
(For those not on medication)

1. Plan ahead. Know how to contact your doctor at night and weekends as well as during the day.

2. If vomiting or unable to tolerate food for more than 4 hours, CALL **YOUR DOCTOR AT ONCE.**

3. Test your urine for ketones daily when sick and when glucose is greater than or equal to 240 mg/dl. Test blood glucose at least four times a day **– BEFORE** each meal and at **BEDTIME.** Write down the time and results.

4. **Call your doctor if:**
   1. Your urine shows moderate or large ketones
   2. Or if Blood Glucose is above 240 for more than one day.

5. Rest, keep warm and **do not exercise**.

6. Drink 1 cup of sugar-free fluid every hour.

Water	Sugar free Tea or Coffee
Broth	Sugar free Soft Drinks
Bouillon	Sugar free Flavored Drink Mix (such as Kool-Aid, Crystal Light, Wyler's, etc.)

7. **Try to eat as you usually do, even if you are nauseated and vomiting. <u>This is important.</u>** If this is not possible, take small amounts (15 – 20 grams carbohydrate) of the following, mainly liquids and soups.

1	cup creamed soup	½	cup grape juice
¾	cup tomato soup	1/3	cup apple juice
2/3	cup regular lemonade	1½	cup chicken noodle soup
6	Saltines	1/3	cup sweetened gelatin or Custard

8. Although <u>uncommon</u>, **DIABETIC KETOACIDOSIS** and coma can develop in diabetes patients treated with diet alone or diet plus pills. During illness, follow the Sick Day Guidelines.

Call your doctor for advice, if needed.

Dr. _____

Emergency phone number_____

SICK DAY GUIDELINES
(for those on insulin or diabetes medication)

1. **ALWAYS TAKE YOUR INSULIN OR DIABETES MEDICINES.** Illness usually causes blood sugar to rise.

2. **TEST YOUR BLOOD SUGAR FREQUENTLY.** Most people need to test every 4 hours while awake. If blood sugar is higher that 240, you should plan to check during the night also.

3. If your blood sugar is higher then 240 two times in a row, then **CHECK YOUR URINE FOR KETONES** every 4 hours until your blood sugar come down to 240 or below and ketones are negative.

4. Call your doctor:
   If your blood sugar is higher than 300 two times in a row, or
   If you have moderate or large ketones in your urine, or
   If vomiting or diarrhea continues for more that 24 hours, or
   If you are unable to keep down any food or fluid for more than 4hrs, or
   If you feel that you need help.

5. Drink 1 cup of sugar-free fluids every hour.

Water	Sugar free tea or coffee
Broth	Sugar free soft drinks
Bouillon	Sugar free flavored drink mix (such as Kool-Aid, Crystal Light, Wyler's, etc.)

6. If you cannot eat regular foods because of nausea or vomiting, you need to replace the carbohydrate from your diet to avoid a hypoglycemia reaction (low blood sugar). Eat or drink one of the

following choices each hour while awake until you are able to eat regular meals:

6	Saltine Crackers	½	cup ice cream
1	cup creamed soup	¼	cup sherbet or pudding
¾	cup tomato soup	1	pudding pop
1½	cup chicken noodle soup	1	cup regular soft drink
1 1/3	cup sweetened gelatin	2/3	cup regular lemonade or custard
½	cup grape juice	1/3	cup apple juice

7. **IF YOU HAVE VOMITING OR DIARRHEA, THE FLUID, SODIUM, AND POTASSIUM MUST BE REPLACED.** If possible, drink free fluids in addition to the fluids required to replace your food. Avoid fluids, which are very hot or very cold, because they may increase nausea, vomiting or diarrhea. Take small amounts at a time until nausea decreases.

   TO REPLACE SODIUM include:
   Saltines, broth, bouillon, soup

   TO REPLACE POTASSIUM include:
   fruits, juices, milk, creamed soup, tomato soup, pudding or custard

8. As nausea decreases, gradually return to your regular diet plan. Divide meals into 2 or 3 small feedings at first. Continue to drink extra free fluids until you feel well again.

Call your doctor for advice, if needed.

Dr. _____

Emergency phone number_____

SICK DAY FOOD

FOOD	AMOUNT	GRAMS OF CARBOHYDRE
Soft drinks, regular	½ cup	15
Orange juice	½ cup	15
Apple or pineapple juice	½ cup	15
Grape or prune juice	½ cup	15
Milk	1 cup	12
Ice cream, vanilla	½ cup	15
Cereal, cooked	½ cup	15
Gelatin, regular	½ cup	18
Sherbet	½ cup	30
Popsicle	1 double	24
Sugar	1 teaspoon	4
Coffee, tea, bouillon, broth	1 cup	0
Soup (thin)	1 cup	15
Soup (thick, chunky)	1 cup	20
Cream soup (made with water)	1 cup	15
Cream soup (made with milk)	1 cup	27
Pudding, regular	½ cup	30
Pudding, sugar-free	½ cup	15
Yogurt, plain or artificially sweetened	1 cup	12
Yogurt, fruit-flavored	1 cup	40

Window-Panes for Effective Learning

The mind thinks in pictures, and people tend to remember that which is different or unusual. By having the audience participate in this activity, and making the experience relevant and enjoyable, learning occurs.

According to studies, imagery is one of the most powerful aids in the direct facilitation of behavior change. Windowpanes can be used for any aspect of diabetes instruction: gaining knowledge (cognitive); learning sequencing or skills (psychomoter); or changing attitudes about self-management (affective).

The panes can be pre-drawn with appropriate pictures or symbols of the learning activity, and the participants can play various "memory games" until the association occurs (e.g. ball toss, picture puzzle, reciting, etc).

For a more challenging activity after the initial teaching session, have groups of participants formulate their own pictures or symbols to correspond to the learning outcome, and display or demonstrate them to the other participants.

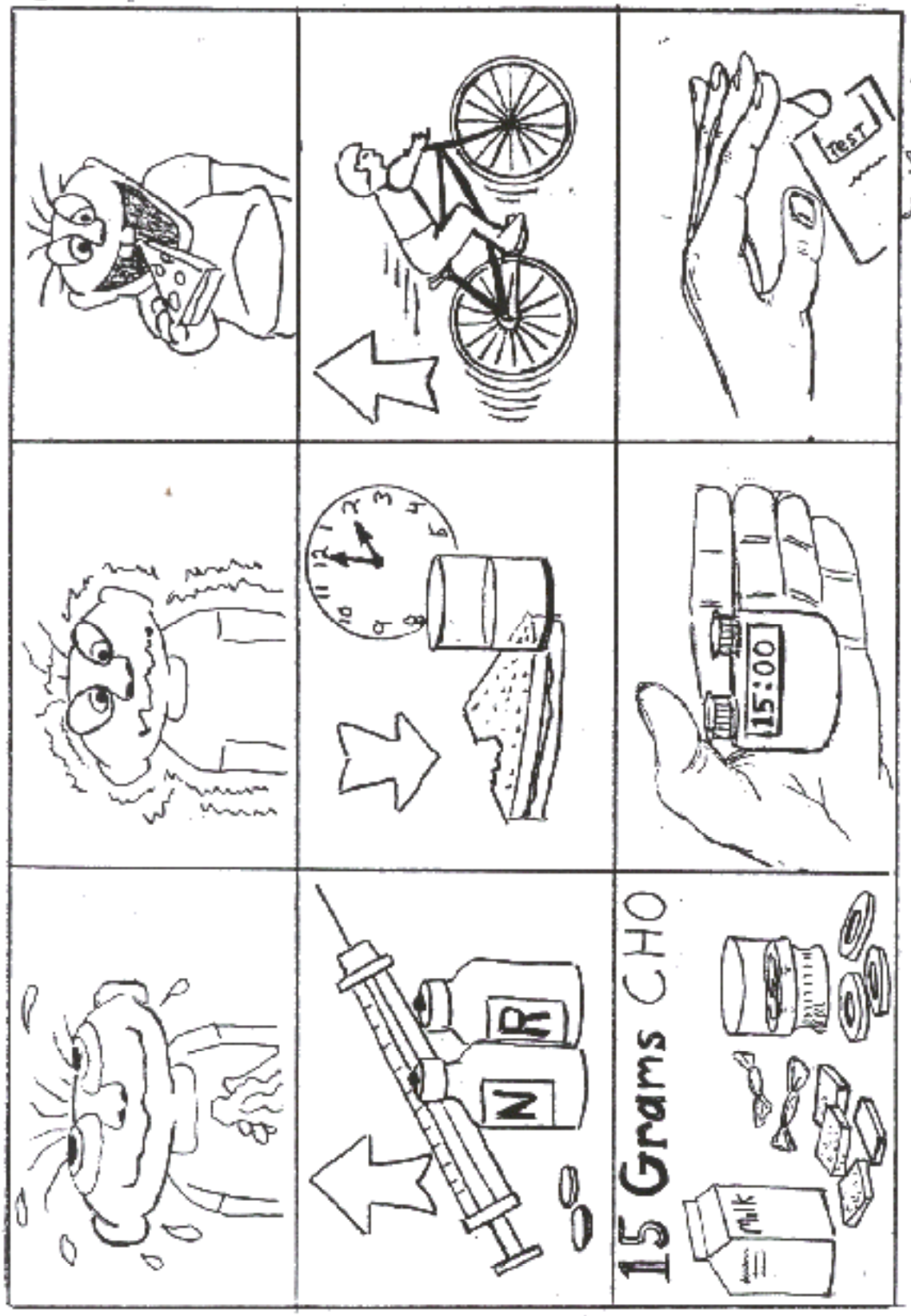
If the participants work in groups, knowledge is reinforced because they become actively involved in the process of learning, and the activity provides immediate feedback. Doing equates to remembering, and that is a primary goal in diabetes self-management. And – activities are fun!!

The completed "window-panes" picture activity is an example of how to teach about hypoglycemia – signs/symptoms of low blood sugar, causes of, and treatment.

Teaching Tips

- Use in a group setting: put the signs and symptoms of hypoglycemia and hyperglycemia on felt with Velcro on the back. Have group members put the words on a felt board under the words "hyperglycemia" or "hypoglycemia".

- Treating Hypoglycemia
    1. Encourage patients to keep a "hypoglycemia" kit
    2. Plastic "pencil" case-glucose tabs, glucose gel, tube of cake icing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Milk

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING

MODULE 9: PREVENTION, DETECTION, AND TREATMENT OF LONG-TERM COMPLICATIONS

I. To provide an overview of the major complications of diabetes. The intent is not to frighten the patient or caregiver but to stress the good news that diabetes self-management with the goal of optimal diabetes control can help to delay the onset and reduce the severity of the complications of diabetes.

II. Educational Objectives

At the end of this session the participant will be able to:

A. Describe at least four long-term complication of diabetes.
B. Discuss the relationship of diabetes control to the problems of diabetes.
C. State the relationship of high blood pressure, elevated levels lipid, and high blood glucose levels with regards to the problems of cardiovascular disease (CVD), renal disease, retinopathy and neuropathy.
D. State the importance of an annual dilated eye exam by an eye care professional.
E. State the importance of good personal hygiene and skin care.
F. State the importance of routine dental and mouth care.
G. State that smoking is contraindicated for someone with diabetes.
H. Describe a plan for preventive diabetes foot care.
I. State the importance of getting the recommended flu & pneumonia vaccine
J. Understand the importance of regular blood/urine tests including the A1c, lipids and albuminuria.

III. Pre-Teaching Guides for the Instructor

A. Review the long-term complications of diabetes.
B. Obtain model of eye from local eye care health professional for use during this session (if possible).
C. Review the handouts:
   1. "Diabetes – Prevent the Problems"
   2. "Tobacco Use and Diabetes"
   3. NDEP "Be Smart About Your Heart Control the ABC's of Diabetes" brochure
   4. Diabetes Check 4Mate
E. Centers for Disease Control and Prevention
   1. "Take Charge of Your Diabetes: Things to do at Each Visit With Your Health Care Provider"
   2. "Take Charge of Your Diabetes: Things to do at Least Once a Year"
   3. "Take Charge of Your Diabetes: Prevent Foot Problems"
   4. "Take Charge of Your Diabetes: Vaccinations"
   5. Flu and pneumonia brochures
F. Review the Diabetes Control and Complications Trial (DCCT), and the United Kingdom Prospective Diabetes Study (UKPDS). Prepare for providing the rationale for the DCCT and the UKPDS translation to persons with Type 2 diabetes.
G. Review the NDIC publications on:
   1. Diabetes Neuropathy

2. Kidney Disease

H. Review the National Oral Health Information Clearinghouse "Diabetes: Dental Tips" and "Diabetes and Periodontal Disease".

I. Prepare for teaching session.

IV. Supplies and Materials Needed for Teaching

A. Optional: Model of Eye

B. Department of Health and Human Services,
   1. "Diabetes Prevent the Problem"
   2. "Tobacco Use and Diabetes"

C. Center for Disease control and Prevention
   1. "Take Charge of Your Diabetes: Things to do at Each Visit With Your Health Care Provider"
   2. "Take Charge of Your Diabetes: Things to do at Least Once a Year"
   3. "Take Charge of Your Diabetes: Prevent Foot Problems"
   4. "Take Charge of Your Diabetes: Vaccinations"
   5. Flu and Pneumonia brochures/Handouts

D. National Diabetes Information Clearinghouse, "Diabetes Control and Complication Trials (DCCT)"

E. National Institutes of Health
   1. "Don't Lose Sight of Diabetic Eye Disease"
   2. "Diabetes: Dental Tips
   3. "Diabetes and Periodontal Disease"

V. Handouts and Resources for Participants

A. Department of Health and Human Services
   1. "Diabetes Prevent the Problem"
   2. "Tobacco Use and Diabetes"

B. Center for Disease control and Prevention
   1. "Take Charge of Your Diabetes: Things to do at Each Visit With Your Health Care Provider"
   2. "Take Charge of Your Diabetes: Things to do at Least Once a Year"
   3. "Take Charge of Your Diabetes: Prevent Foot Problems"
   4. "Take Charge of Your Diabetes: Vaccinations"
   5. Flu and Pneumonia brochures/Handouts
   6. NDEP "Be Smart About Your Heart Control the ABC's of Diabetes"
   7. Diabetes Check 4Mate

C. National Institutes of Health
   1. "Don't Lose Sight of Diabetic Eye Disease"
   2. "Diabetes: Dental Tips
   3. "Diabetes and Periodontal Disease"

D. Additional Resources for the Instructor
   1. National Kidney and Urologic Diseases Information Clearinghouse, "Kidney Disease of Diabetes"
   2. National Diabetes Information Clearinghouse, "Diabetic Neuropathy: The Nerve Damage of Diabetes"

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 9: PREVENTION, DETECTION, AND TREATMENT OF LONG TERM COMPLICATIONS
APPROXIMATE TIME REQUIRED: 2 HOURS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
LONG TERM COMPLICATIONS Participant will cite at least 4 long-term complications of diabetes. Participant will understand relationship of diabetes control to complications. Participant will understand importance of prevention and/or early detection.	**INTRODUCTION** A. Diabetes is a chronic condition; it does not go away, but can be controlled. B. Over time, if blood glucose levels are not controlled, serious complications can occur. After extended periods of elevated blood glucose levels, damage occurs to the blood vessels and nerves that serve various body organs and tissues. C. New clinical studies (DCCT and UKPDS) have determined that controlling blood sugar can prevent or delay the onset of these serious complications. D. Most importantly, decreasing blood glucose even a small amount and maintaining this, can make a difference. A 1% decrease in A1c can greatly decrease the risk of developing: 1. Cardiovasular disease and stroke 2. Retinopathy 3. Neuropathy 4. Nephropathy E. Most people with diabetes do not die from diabetes, but from cardiovascular-related events; therefore, people with diabetes should remember to control: 1. A1c to less than 7% 2. Blood Pressure to less than 130/80 mm/Hg 3. LDL Cholesterol to less than 100mg/dl **I. DIABETIC EYE DISEASE** A. Diabetes is the leading cause of blindness in the US. A person with diabetes may develop: 1. Glaucoma 2. Cataracts 3. Retinopathy	Discuss results of DCCT and UKPDS. Emphasize the importance of decreasing A1c even a small amount,. The patient may never gets to his/her goal, but a 1% reduction in A1c can be extremely beneficial in decreasing the risk of complications. If possible, invite community specialists to participate in this module (i.e., podiatrist, ophthalmologist, cardiologist, etc.). Review the NDEP "Control the ABC's of Diabetes" brochure. List and discuss.	NDEP “Be Smart About Your Heart Control the ABC’s of Diabetes” brochure Optional: Model of Eye Handout: “Diabetes – Prevent the Problem” DHHS: DCH	15 mins. 15 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 9: PREVENTION, DETECTION, AND TREATMENT OF LONG TERM COMPLICATIONS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	4. Blurred vision – This is usually directly related to hyperglycemia and should improve when blood glucose levels return to normal. **Always wait 6-8 weeks after hyperglycemia resolves before having eye exam to change eyewear prescription.** B. **Symptoms/Detection:** Most eye problems (except blurred vision) have no symptoms until damage is advanced. Best detection is a dilated pupil eye examination by an eye care professional at least once a year. C. **Prevention:** A blood glucose level consistently close to normal is the best prevention strategy. This minimizes risk of problems but does not guarantee the person will never have eye problems due to diabetes. ∗ ***High blood pressure and tobacco use (any form of nicotine) increase the risk of diabetic retinopathy! Thus, prevention includes blood pressure control and smoking/nicotine cessation.*** D. **Treatment:** Treatment of diabetic eye diseases is most effective if started early, before damage is advanced. In most cases, vision loss can be prevented or minimized! **II. KIDNEY AND BLADDER** A. Urinary tract infection (UTI). 1. **Symptoms/Detection:** Persons may experience burning or painful urination, urinary urgency or frequency, cloudy or bloody urine. Physician may need to test urine sample, to determine if UTI. 2. **Prevention:** High blood sugar levels make it easier for infection to occur. Good glucose control and urinary hygiene are the best prevention.	Discuss the DCCT and UKPDS. Visit eye doctor annually for dilated eye exam.	Handout: "DCCT" NDIC Pamphlet: "Don't Lose Sight of Diabetic Eye Disease" Handout: "Tobacco Use and Diabetes"	15 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 9: PREVENTION, DETECTION, AND TREATMENT OF LONG TERM COMPLICATIONS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	II. KIDNEY AND BLADDER (continue) 3. **Treatment:** Antibiotics will be needed. Inform physician promptly if UTI symptoms occur. B. Diabetic bladder (bladder atony; neurogenic bladder) – this is a form of diabetic nerve damage. 1. **Symptoms/Detection:** The bladder does not respond to the body's signals (nerve impulses) to empty. It thus becomes distended and does not empty the urine completely. Persons may not feel the urge to urinate. Urine may stay in the bladder for prolonged time, which favors bacteria growth and leads to urinary tract infection. 2. **Prevention:** Empty your bladder every 3-4 hours. Drink at least 6-8 glasses of water every day. Good glucose control will help prevent the nerve damage, which causes bladder atony. 3. **Treatment:** May respond to certain medications, which improve the bladder's response to nerve impulses. C. **Nephropathy** – Serious kidney disease which can cause permanent kidney damage and kidney failure. 1. **Symptoms/Detection:** Early signs of nephropathy may not be noticed by patient. Changes in kidney function can be detected by blood tests and urine tests, by physician. People without known renal dysfunction should have an annual urine test for microalbumin. This simple test detects small amounts of protein and can assist in identifying impending kidney disease at an earlier stage. 2. **Prevention:** high blood sugar levels make it easier for infection to occur. Good glucose control and urinary hygiene are best prevention.	Encourage participants to ask for an annual test for microalbumin.		10 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 9: PREVENTION, DETECTION, AND TREATMENT OF LONG TERM COMPLICATIONS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	II. KIDNEY AND BLADDER (continue) ∗ ***High blood pressure and tobacco use (<u>any</u> form of nicotine) increases the risk of diabetic nephropathy! Thus, prevention includes blood pressure control and smoking/nicotine cessation.*** a. The use of drugs called "ACE-Inhibitors" (blood pressure drugs), are used to decrease the progression of diabetic kidney disease. 3. **Treatment:** Improvement in diabetes control, reduction of blood pressure, and medications, are used to decrease the progression of diabetic kidney disease. Dialysis will be needed if kidney failure occurs. **III. NEUROPATHY** A. *Peripheral neuropathy: damage to the nerves in the arms, hands, legs, and feet.* 1. **Symptoms/Detection:** Numbness, coldness. tingling, pain, sensitive skin of the feet, legs and thigh, or foot-drop. Physicians can detect changes in the nerves in the feet and legs by special monofilaments. 2. **Prevention:** Best practice is to keep blood glucose levels close to normal. Keep blood pressure below 130/80 Avoid drugs, which may aggravate nerve damage, such as alcohol. 3. **Treatment:** a. Symptoms may improve if blood sugar is better controlled. b. Medications may help. c. Keep hands and feet warm; wear socks to bed.	Describe how monofilaments are used to assess protective sensation of the feet.		15 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 9: PREVENTION, DETECTION, AND TREATMENT OF LONG TERM COMPLICATIONS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	III. NEUROPATHY (continue) B. *Autonomic neuropathy – damage to the nerves of the heart, intestines, and other organs.* 1. **Symptoms/Detection:** Heart burn, acid reflux; nausea, vomiting, feeling full after eating only a little bit; frequent diarrhea; chronic constipation; (gastroparesis); feeling faint when standing (orthostatic hypotension); difficulty exercising without getting winded or fatigued, inability to feel chest pain, impotence. 2. **Prevention:** Best practice is to keep blood glucose levels close to normal. Keep blood pressure below 130/80. Avoid drugs or foods, which may aggravate symptoms. 3. **Treatment:** Medications may help. **IV. CARDIOVASCULAR COMPLICATIONS** – Diabetes contributes to nearly half of the annual heart disease deaths in the US. A. **Symptoms/Detection:** Chest pain, severe dizziness, fainting, swollen ankles or legs, leg cramps, difficulty in breathing, pain in jaw or shoulder. However, there may be NO symptoms or minimal symptoms if there is damage to the nerves of the heart (as discussed above). Therefore, even minor symptoms should be reported to physician. B. **Prevention:** 1. Best practice is to keep blood glucose levels close to normal. 2. ***High blood pressure, tobacco use (<u>any</u> form of nicotine) being overweight, and high lipid levels (triglycerides, cholesterol, LDL) increase the risk of diabetic heart disease. Thus, prevention includes blood pressure control, smoking/nicotine cessation, weight reduction, and lowering lipid levels.***			15 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 9: PREVENTION, DETECTION, AND TREATMENT OF LONG TERM COMPLICATIONS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	IV. CARDIOVASCULAR COMPLICATIONS (continue) C. **Treatment:** 1. Improvement in diabetes control. 2. Normalization of blood pressure, weight, and blood lipids. 3. Smoking cessation. 4. Medications may be needed.			
	V. SKIN – A. **Symptoms/Detection:** Various skin lesions, discoloration, and/or infections. B. **Prevention:** Stress good skin care through: 1. Checking skin daily for lesions, discoloration, ulcers, or abrasions 2. Wear clothing or gloves as appropriate to protect skin from abrasions. 3. Lanolin-based creams may be helpful (except between toes). C. **Treatment:** See your physician for treatment.			5 mins.
	VI. Women with diabetes may have frequent VAGINAL INFECTIONS. A. **Symptoms/Detection:** Severe vaginal or genital itching, burning or foul smelling discharge. B. **Prevention:** 1. Maintaining good glucose levels helps maintain resistance to infection. 2. Good personal hygiene. 3. Wear 100% cotton underwear or those with cotton crotches. C. **Treatment:** Use a non-prescription anti-fungal product. If symptoms persist and/or get worse see your physician. Only the physician can diagnose fungal from other types of vaginal infections.			5 mins.

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OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	VII. PERIODONTAL DISEASE (gum disease) can lead to tooth loss. A. **Symptoms/Detection:** red, swollen gums; may bleed easily; may have some pus formation. B. **Prevention:** Good dental hygiene and regular dentist visits are recommended. Make sure your dentist is aware you have diabetes. C. **Treatment:** See your dentist for treatment. Antibiotics may be needed.		Pamphlets: National Oral Health Information Clearinghouse "Diabetes: Dental Tips" and "Diabetes and Periodontal Disease"	5 mins.
Participants will report sexual changes to physician.	**VIII. SEXUAL DYSFUNCTION** A. **Symptoms/Detection:** Always report any unusual signs and symptoms of sexual changes to the physician. A urologist may be needed to evaluate origin and extent of dysfunction, and to determine appropriate treatment. 1. Males: erectile dysfunction or impotence. 2. Females: inability to receive sexual pleasure;dryness. B. **Prevention:** 1. Good glucose control minimizes the chance of this complication. 2. Avoid drugs, which may aggravate sexual dysfunction, including alcohol. Talk with your doctor to determine if any of your meds are causing sexual problems. It may be possible to change to a different medication. C. **Treatment:** Varies; may range from accessory devices, medications, lubricants or surgery.	Discussion: Sexual problems can manifest themselves in many ways. Some people find that they feel tense, angry or very sad when they are no longer able to have sex as they once could. Their partners may also feel unhappy, not satisfied.		10 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
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OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
Participants will be able to describe at least 3 aspects of good foot care.	**IX. FOOT and LOWER LEG PROBLEMS.** Usually caused by a combination of nerve damage and circulation changes from diabetes. Foot problems, if left untreated, may lead to amputation. A. **Symptoms/Detection:** See discussion above for symptoms of nerve damage. Circulation damage may cause pain in calf after walking short distances; discoloration of skin of lower legs; persistent coldness in feet. B. **Prevention** = Meticulous foot care! 1. "Keep your blood sugar under good control" (DCCT showed that intervention group had 60% less problem with neuropathy than control group, so if people did nothing but kept sugars under good control, they would be ahead of the game). Keep blood pressure below 130/80. 2. Inspect feet daily. 3. Wash feet daily with a mild soap and pat dry. If you need to use moisturizing lotion, do not put between toes. 4. Avoid soaking feet– If wish to soak feet, limit to less than 10 minutes in warm, not hot, water without any added ingredients. Soaking softens the feet making them more vulnerable to injury. 5. File toenails straight across, or with slight curve matching the natural shape of the nailbed. 6. Wear shoes that fit well, break in new shoes slowly. 7. Do not use "colored" ointments/medicine on feet. These may mask problems. 8. Do not remove corns or calluses yourself. See your doctor or podiatrist. 9. Wear shoes indoors and outdoors. 10. Do not apply heat to your feet, including hot water bottles, heating pads; do not prop feet close to fire or heater. Do not apply ice, cold packs or very cold water if you have neuropathy; they can cause damage also.		Handout: "Take Charge of Your Diabetes: Prevent Foot Problems" CDC	20 mins.

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OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	IX. FOOT and LOWER LEG PROBLEMS (continue) 11. Before putting on shoes, look and feel inside. Check for loose objects, torn linings and rough areas. 12. Wear clean, comfortable socks, and change daily. For exercise, wear padded socks of synthetic or cotton synthetic blend. Avoid tight socks, knee high hose, tight garters and girdles. 13. **Don't smoke! Nicotine causes blood vessels to become more narrow, making circulation worse.** 14. See physician quickly for any wound treatment. C. **Treatment:** Depending upon type and severity of foot problems. 1. Medications 2. Off-loading of weight 3. Surgery **X. INFLUENZA AND PNEUMONIA** A. For people with diabetes, the flu and pneumonia can mean longer hospitalizations, illness and even death. 1. Diabetes makes the immune system more vulnerable to severe cases of the flu. 2. People with diabetes are almost 3 times more likely to die with influenza and pneumonia. 3. During flu epidemics, deaths among people with diabetes increase 5-15%. 4. People with diabetes are 6 times more likely to be hospitalized with flu complications. 5. Each year 10,000-30,000 deaths among people with diabetes are associated with influenza and pneumonia. 6. Flu vaccines do not contain a live virus so they cannot infect a person; however, some people coincidentally catch a cold a week or two following immunization. This is not a result of the flu vaccine.		CDC Influenza and Pneumonia brochure and inserts	5 mins

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	X. INFLUENZA AND PNEUMONIA (continue) 7. Sometimes, despite receiving the flu vaccine, a person may develop the flu; however, the vaccine will still help prevent lower respiratory tract involvement or other secondary complications, reducing the risk of hospitalization and death. 8. Both flu and pneumoccal vaccines are covered by Medicare, Part B. B. **Symptoms/Detection Flu:** Sudden high fever, body aches, chills, sore throat, runny nose, dry cough and headache. C. **Prevention:** Everyone with diabetes should have an annual flu vaccine (unless contraindicated) and a pneumonia vaccine. People with diabetes should have a pneumonia vaccine at least once. People under 65 with diabetes should ask their doctor about another shot in 5 years after the first one.			
Participants will be able to name two ways they can help reduce complications.	**XI. HEALTHY LIFESTYLE BEHAVIORS,** along with good diabetes control, are the most effective strategies to reduce risk of diabetes complications: A. Regular check-ups with health care professionals: medical provider, eye care professional, dentist, and in some instances, podiatrist. B. Follow meal plan – attain/maintain normal weight. C. Get regular physical activity. D. Follow prescribed regimens for diabetes and other medical conditions. E. Monitor blood glucose. F. Do not smoke or use nicotine products. G. Attain/maintain normal blood pressure, lipids, and A1c levels.	Discuss removing socks/or stockings during medical care visits to facilitate foot examination by the health care provider. Write additional questions down.	Handout: "Take Charge of Your Diabetes: Things to do at Each Visit With Your Health Care Provider", "Take Charge of Your Diabetes: Things to do at Least Once a Year" CDC, 1997 Diabetes Check 4Mate	5 mins.

LESSON PLANS FOR DIABETES SELF-MANAGEMENT TRAINING
MODULE 9: PREVENTION, DETECTION, AND TREATMENT OF LONG TERM COMPLICATIONS

OBJECTIVE	PRESENTATION/OUTLINE/CONTENT	ACTIVITIES	MATERIALS	TIME
	XI. HEALTHY LIFESTYLE BEHAVIORS (continued) ∗***Good news! These activities do <u>more</u> than help to decrease, delay or prevent complications. These activities lead to overall better health, allowing you to have the energy and stamina to lead the active and busy life you want!***			
Summary/Questions	**Clarification/Comments:** A. What are the long-term complications of diabetes? B. Why should good control be discussed with medical care providers? C. Name three health care behaviors which impact blood sugar control.	ASK: "Is there anything more you would like to know?		10 mins.

Tobacco Use and Diabetes

- **Using tobacco is especially deadly for people with diabetes.**

  - **Cigarettes**
  - **Snuff**
  - **Chewing Tobacco**

- **Diabetes can narrow blood vessels, and tobacco can make them even more narrow. Your body becomes "choked" because it can't get the oxygen it needs. This can lead to:**

  - **Heart Disease or Stroke**
  - **Foot Infections or Amputations**
  - **Blindness**

- **Tobacco can also prevent insulin from working as well. Therefore your body needs even more insulin when you use tobacco.**

- **If you don't use tobacco now, <u>DON'T START!!</u>**

- **If you do use tobacco now, <u>STOP!!</u> Talk with your diabetes care provider about ways to stop.**

Cut here if you want to take only this page to visits with your health care provider.

Each Visit

Have your health care provider do these tests and set goals with you.
(Record dates and results in the boxes below.)

Tests and Goals	Dates and Results						
Blood Glucose (mg/dl)							
Hemoglobin A1c Test/Goal (%)							
Weight/Goal (pounds)							
Blood Pressure (goal: ___/___mm Hg)							
Foot Check							

Centers for Disease control and Prevention
Take Charge of Your Diabetes. 2nd Edition, Atlanta: US Department of Health and Human Service, 1997

Things to Do At Least Once a Year

- Get a flu shot (October to mid-November).
- Get a pneumonia shot (if you've never had one).
- Get a dilated eye exam.
- Get a foot exam (including check of circulation and nerves).
- Get a kidney test:
  - ❑ Have your urine tested for albumin.
  - ❑ Have your blood creatinine measured.
  - ❑ Get a 24-hour urine test (if your doctor advises).
- Get your blood fats checked for:
  - ❑ Total cholesterol.
  - ❑ High-density lipoprotein (HDL).
  - ❑ Low-density lipoprotein (LDL).
  - ❑ Triglycerides.
- Get a dental exam (at least twice a year).
- Talk with your health care team about:
  - ❑ How well you can tell when you have low blood glucose.
  - ❑ How you are treating high blood glucose.
  - ❑ Tobacco use (cigarettes, cigars, pipes, smokeless tobacco).
  - ❑ Your feelings about having diabetes.
  - ❑ Your plans for pregnancy (if a woman)
  - ❑ Other _____

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(Cut here if you want to take only this page to visits with your health care provider.)

At Least Once a Year

Have your health care provider do these tests and other services for you.
You may want to set some goals for these.
(Record the dates and results in the boxes below.)

Tests and Other Services	Dates and Results									
Flu Shot										
Urine Protein or Albumin (mg)										
Blood Creatinine (mg/dl)										
Total Cholesterol (mg/dl)										
HDL Cholesterol (mg/dl)										
LDL Cholesterol (mg/dl)										
Triglycerides (mg/dl)										
Tobacco Use										
Eye Exam (dilated)										
Foot Exam										

DIABETES: PREVENT THE PROBLEMS

EYES

Have your eyes checked every year. Diabetes can cause problems in your eyes before you know it. Older people and those who have had diabetes for a long time are most likely to have eye damage. In most cases an eye doctor can treat problems to prevent loss of vision.

BLOOD PRESSURE

Get your blood pressure checked at every doctor's visit. Many people with diabetes also have high blood pressure. High blood pressure can lead to a heart attack, stroke, or kidney damage. It can also damage your eyes. **If you have high blood pressure follow your doctor's advice.** You may need to take medicine, get regular exercise, and make changes in your diet.

SMOKING

Do not smoke. It can increase the damage to your blood vessels. If you can't stop smoking by yourself, contact your doctor or clinic for help.

WEIGHT

Stay close to your ideal body weight. Being overweight will usually increase your blood sugar and your blood pressure. Get help in losing weight. Contact your doctor or clinic.

EXERCISE

Get regular exercise. It can improve the circulation of your blood and help to lower your blood sugar. Before your start, ask your doctor about the type and amount of exercise that would be right for you.

DIET

Reduce the saturated fat and cholesterol in your diet. Cut down on fat meat, grease, lard, butter, fried foods, gravy, bacon, eggs, sausage, cheese and cream.
Increase the fiber in your diet. It can help to control your blood sugar and reduce the build-up of fat in your blood vessels. Use dried beans or peas, and whole grain breads often. Raw fruits and vegetables also contain fiber. Include at least one serving every day of food high in fiber.

SKIN AND FEET

Take care of your skin and feet. Diabetes can damage the blood vessels and nerves that go to your skin and feet. You may injure your skin or foot and not even feel it. Infections caused by injury may not heal properly. Care for your skin and feet every day. If you have an injury that is not healing, call your doctor or clinic immediately.

BLOOD SUGAR AND A1c

Control your blood sugar. Continued high blood sugar will increase your risk of problems. Follow your doctor's advice about diet, exercise and medicine. Check your blood sugar regularly. If your blood continues to show high readings for sugar, call your doctor or clinic. **Get an A1c test at your doctor's office at least twice a year.** This test will tell you your average blood sugar over a two to three month period.

Foot Care Basket Contents	
Items to Include	**Rationale**
Flip flop sandal	Mark big X across showing that it is not recommended because there is no support. Open toed shoes should not be worn.
Water shoe	Protect feet with shoes with somewhat of a sole and nothing between the toes.
Mirror	To have people check underneath their feet.
Stockings without seams	To demonstrate to people/seams can cause pressure problems and potential damage to defensive layer of the skin and risk infection.
Lotion	To keep soft-do not apply between toes To keep feet healthy – dryness can lead to cracking and potential infection.
Powder	To keep feet dry – Apply only lightly between the toes. Do not cake on.
Nail clipper	Teach people to cut their toe nails straight across, never into the corners. Cut at angle of the toe.
Monofilament	Use to assess the presence or loss of sensation to areas of each foot. Touch foot with the monofilament until filament bends and ask person to state when pressure is felt.
Bacitracin/colorless antiseptic	Antiseptics like betadine, iodine have dyes that change the color of the skin and therefore make it difficult to detect signs of infection.
Tape measure	To assess reddened area and document size of sore.
Gauze	Clean non-adhesive. Use to make "home-made" band-aid along with paper tape.
Emery board	To demonstrate how to file sharp corners rather than cut them.
HANDOUTS	
Monofilament assessment form	For nurse/MD to use to document finding. Put + or – in area circled indicating findings.
Foot care handout Hyper/hypoglycemia Other, as desired Personal diabetes care card	For education purposes.

Use of the Monofilament

How to use the monofilament

1. Show monofilament to patient. Demonstrate that it does not hurt. Touch hand/arm with monofilament.
2. Have patient turn head, close eyes or look at the ceiling.
3. Ask client to inform you when he/she feels the monofilament touching the foot.
4. Hold monofilament perpendicular to the skin of the toe and use 3-second sequence.
    1. Touch the skin.
    2. Filament bends.
    3. Lift from the skin.
5. Do not use rapid movement.
   Use in random sequence for toes of each foot (great toe is the most indicative).
   If client does not say yes when a certain area is touched, continue on in your sequence. After you have completed, return to the area that was assessed as poor sensation and repeat the test.

Care of the monofilament

1. The filament will last indefinitely, if returned to its plastic case.
2. Cleaning the filament should be done between patients using sodium hypochlorite (household bleach 1:10).

How the monofilament works

1. The 5.07 filament applies 10 grams of pressure to a small point on the skin.
2. If the patient does not feel it that means that sensation loss has occurred in that area.
3. The filament is calibrated to bend when 10 grams of force has been applied.

Who should the monofilament be used with?

1. All patients with diabetes should have a monofilament test done annually.
2. The ADA and LEAP recommend visual foot exams/inspections at each visit.

Education plays a major role in the prevention of amputations and problems of the lower extremities

Long Term Complications

Complications:

1. Baby bottles – one filled with Karo syrup, one filled with red colored water each with a stryofoam ball in the liquid.
2. Sick days
    a. Envelope – sick day guidelines, monitoring sheets
    b. Sick day kit – have patients create their own

Foot Care:

1. Teach patients the use of mirrors:
    a. Hand-held
    b. Large mirror propped against wall or piece of furniture

2. Perform foot screens with the 5.07 nylon filament.

3. Lansinoh 100% cream for very dry foot skin works very well. This is found in the pharmacy among the maternity supplies (it is sold for use on cracked nipples of nursing mothers).

4. A bowl of rice and very small safety pins mixed together can show the difficulty of distinguishing things with neuropathy. Instructed people to not look and try to feel the difference between the rice and safety pins. The mixture can be put into a Tupperware container for easy travel.

5. Collect a bag of "good " and "bad" foot care products and a trash can. Ask the person or group about each product. Should it be kept and used or not? The bad ones are dumped in the trash can in front of the person(s).

6. Foot models

7. Harris Foot Mat

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