

# Therapeutic Diets: Adjusting Nutrients and Texture

**T**HERAPEUTIC DIETS are part of the medical treatment by physicians and dietitians. The therapeutic diets modify nutrient requirements or alter the texture of food. Low-cholesterol diet plans and low-sodium diet plans are widely utilized. You may know someone who is on a therapeutic diet plan. You may have had surgery or know someone who was on a liquid diet following surgery.



## Objective:



Explain the key factors in therapeutic diets and the uses of texture-modified diets.

## Key Terms:



acid reflux diet	electrolytes	low-HDL cholesterol level
cancer	fat-controlled diet	low-sodium diet
cancer diet	food texture	metabolic syndrome
cardiac diet	full liquid diet	puréed texture diet
cholesterol	glycemic index	renal diet
chopped texture diet	ground texture diet	sodium
clear liquid diet	high-fiber diet	steroid
consistent carbohydrate diet	high-triglyceride level	texture-modified foods
diabetes mellitus	low-cholesterol diet	therapeutic diet
dysphasia	low-fat diet	tube-fed diet
	low-fiber diet	

## Understanding Therapeutic Diets

Due to health issues, many people require therapeutic diets to improve their conditions.

## THERAPEUTIC DIET

A **therapeutic diet** is a meal plan prescribed by a physician or dietician that controls the intake of certain foods or nutrients. It is part of the treatment of a medical condition. A therapeutic diet is usually a modification of a regular diet. It is modified or tailored to fit the nutrition needs of a particular person. Therapeutic diets are modified for nutrients, for texture, and/or for food allergies or food intolerances.

Therapeutic diets may be ordered for nutritional reasons, such as:

- ◆ Maintaining nutritional status (e.g., a low-fiber diet to reduce diarrhea or a high-fiber diet to help prevent hemorrhoids)
- ◆ Restoring nutritional status (e.g., increasing protein to preserve muscle mass and healing as well as to improve the immune system)
- ◆ Correcting nutritional status (e.g., an acid reflux diet to prevent gastric acid from the stomach moving up to the esophagus)

Therapeutic diets may be ordered for disease control, including:

- ◆ Controlling diabetes (e.g., balance carbohydrates, fats, and protein)
- ◆ Decreasing the mineral sodium in hypertension diets
- ◆ Decreasing the mineral potassium in renal diets
- ◆ Decreasing the nutrient fat in cardiac diets

Also, therapeutic diets are prescribed for texture modification in elderly patient care (e.g., those with problems with chewing and swallowing).



FIGURE 1. A nutritionist is discussing portion size with a client.

### Acid Reflux Diet

An **acid reflux diet** is a plan that prevents gastric acid from the stomach from “backing up” into the esophagus. This diet plan reduces the gastric acid produced from foods such as caffeine, cola, coffee, alcohol, red pepper, tomato, and vinegar.

Frequent small meals and liquids are recommended. Dietary recommendations and restrictions by food groups are:

- ◆ Milk—Low-fat dairy and no chocolate

- ◆ Meat—Lean meats and no processed meats
- ◆ Vegetables—All but corn, tomatoes, bell peppers, garlic, and onions
- ◆ Fruits—All but citrus fruits
- ◆ Fats—Avoidance of high-fat gravy
- ◆ Beverages—Avoidance of coffee, cola, cocoa, and other caffeinated drinks

## Cardiac Diet

A **cardiac diet** (heart-healthy diet) is a plan that prevents or treats cardiovascular disease. A cardiac diet is prescribed for the following purposes:

- ◆ To lower blood cholesterol
- ◆ To lower blood pressure
- ◆ To reduce body weight

Cardiac dietary recommendations and restrictions by food groups include:

- ◆ Eating a variety of fruits and vegetables
- ◆ Using whole grains
- ◆ Selecting low-fat dairy
- ◆ Making protein choices of lean fish and poultry
- ◆ Making protein choices of nuts and legumes
- ◆ Selecting low-calorie foods
- ◆ Limiting salt

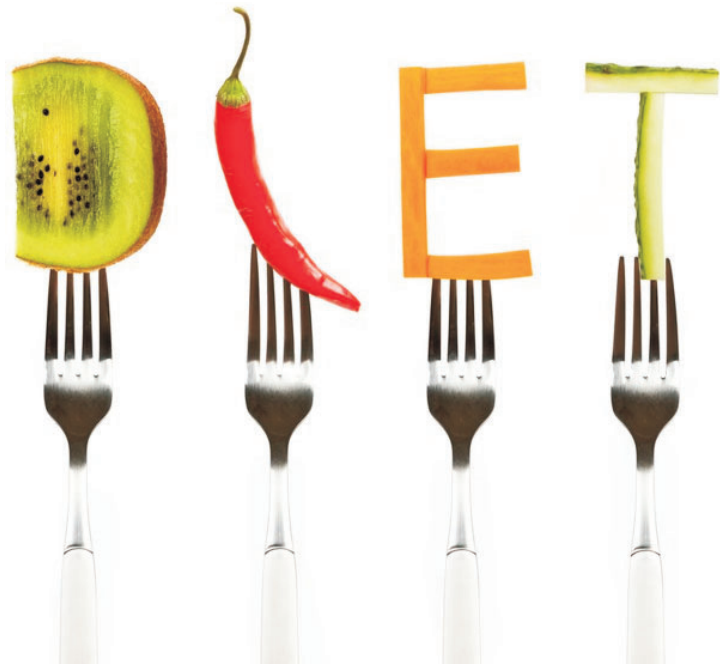


FIGURE 2. Eating a variety of fruits and vegetables is recommended for a heart-healthy diet.



## DIGGING DEEPER...

### UNCOVERING ADDITIONAL FACTS: Top 11 Heart Healthy Foods

What do you think are the top 11 heart healthy foods? Make your list. Then check out the list created at <http://www.webmd.com/food-recipes/11-top-heart-healthy-foods>. How many of these foods do you frequently use in your diet? How could you alter some of your favorite meals to incorporate some of these healthy foods?



## UNDER INVESTIGATION...

### LAB CONNECTION: Heart-Healthy Recipes

Begin your search for heart-healthy recipes at the following websites:

- American Heart Association at [http://www.heart.org/HEARTORG/HealthyLiving/HealthyEating/Recipes/Heart-Healthy-Recipes\\_UCM\\_465114\\_RecipeLanding.jsp](http://www.heart.org/HEARTORG/HealthyLiving/HealthyEating/Recipes/Heart-Healthy-Recipes_UCM_465114_RecipeLanding.jsp)
- Mayo Clinic at <http://www.mayoclinic.org/healthy-lifestyle/recipes/heart-healthy-recipes/rcs-20077163>
- Food Network at <http://www.foodnetwork.com/topics/heart-healthy-recipes.html>

Find some recipes to prepare. Evaluate the food, and compare the taste of the heart healthy recipe to a similar traditional recipe. Keep the recipes you like, and develop a heart-healthy cookbook. Share your favorite recipes with a relative with heart health issues.

### Metabolic Syndrome

**Metabolic syndrome** is a group of risk factors that increase the risk of diabetes, heart disease, and stroke. The metabolic syndrome risk factors are:

- ♦ Abdominal obesity (excessive stomach fat)
- ♦ **High triglyceride level** (a type of fat found in the blood that is in the group of risk factors for diabetes, heart disease, and stroke) or being on medicine to treat high triglycerides
- ♦ **Low HDL cholesterol level** (“good” cholesterol that removes cholesterol from arteries) or being on medicine to treat low HDL cholesterol
- ♦ High blood pressure or on medicine to treat high blood pressure
- ♦ High fasting blood sugar or on medicine to treat high sugar

U.S. News and World Report Wellness website listed the Ornish Diet and the TLC Diet as the best heart-healthy diets.

- ♦ Ornish Diet: Designed by Dean Ornish, professor of medicine at the University of California, this diet is tailored to lose weight and reverse diabetes and heart disease. Foods are divided into five groups (from “1” most healthful to “5” least healthful).
- ♦ TLC Diet (Therapeutic Lifestyle Changes Diet): The National Institute of Health’s National Cholesterol Education Program created the TLC diet. The focus is cutting back on fats and saturated fats to lower cholesterol.

### Cancer Diet

A **cancer diet** is a meal plan specifically focused on the different stages and treatments of the disease; it centers on the use of high-quality nutrients. **Cancer** is a malignant tumor

caused when cells multiply and destroy healthy tissue. The National Cancer Institute estimates that a minimum of 35 percent of all cancers has a nutritional connection. According to the American Cancer Society, nutrition is vital to cancer patients because the illness and its treatments can change eating patterns. The disease and treatments can impact the way people “tolerate certain foods and use nutrients.”

Cancer diets must include high-quality and adequate proteins, fats, carbohydrates, vitamins, minerals, and water. Following cancer treatment (e.g., chemotherapy), extra protein is recommended to help with healing and with the immune system. Protein helps maintain muscle. Patients with more muscle development have fewer negative issues after treatments. Patients should eat carbohydrates and fats for energy and save the protein for muscle development and strength. Common eating problems that must be addressed in a cancer diet are change in appetite, constipation, diarrhea, mouth dryness and sores, nausea, swallowing issues, and taste and smell changes.



FIGURE 3. Five types of cancer are shown in the image.

## Diabetic Diet

**Diabetes mellitus** is a chronic form of diabetes that involves an insulin deficiency. It often results in excess sugar in the blood and urine, hunger, thirst, and gradual weight loss. The inability to metabolize glucose (a form of sugar) is part of this condition. It is a condition that may occur at any age, but it is more common after age 50. Obesity and a lack of exercise are risk factors for this disease.

### Type I

Type I diabetes occurs if the body stops producing adequate levels of insulin. Patients must monitor glucose levels through the use of a blood test taken periodically throughout the day. Insulin is provided by injection. A prescribed diet and exercise program must be strictly followed. Without proper care and monitoring, diabetes may lead to blindness and poor blood circulation that can lead to the amputation of limbs—often the toes or feet.

### Type II

Type II diabetes involves the cells of the body developing a resistance to insulin. However, the body is producing enough insulin. Type II diabetes is a life-long disease that affects the way the body handles glucose in the blood. Twenty-seven million people in the United States have type II diabetes. Eighty-six million people have pre-diabetes or high-normal rates. Patients must follow a strictly regulated diet to prevent disease progression.

- ◆ Weight loss and exercise may help to control the disease.





## FURTHER EXPLORATION...

### ONLINE CONNECTION: #CreateYourPlate

The plate method of diabetic meal planning keeps carbohydrate intake about the same at each meal. Practice the plate method using the American Diabetes Association website at <http://www.diabetes.org/food-and-fitness/food/planning-meals/create-your-plate/>. Add foods into the interactive segments of the plate. Reset and add other types of foods. Snap a photo, and share your plate on social media with #CreateYourPlate.

- ◆ Type II diabetics are insulin resistant (the cells do not use the insulin produced).
- ◆ The pancreas makes insulin. Cells turn glucose from food into energy. In a diabetic patient, the pancreas makes more insulin to get glucose into the cells. Eventually the pancreas cannot keep up and sugar builds up in the blood.

Risk factors of type II diabetes include:

- ◆ DNA genes that affect how the body makes insulin
- ◆ Being overweight or obese (especially extra weight in the stomach)
- ◆ Metabolic syndrome—a group of risk factors that increase the risk of diabetes, heart disease, and stroke

### Consistent Carbohydrate Diet

A **consistent carbohydrate diet** is a meal plan that helps control blood sugar by eating the same amount of carbohydrates at each meal. It uses exchange groups for the daily calorie count and uses no concentrated sweets or added sugar. The consistent carbohydrate diet follows the American Dietetic Association recommendations.

### Glycemic Index

The **glycemic index** is a ranking of carbohydrates according to the way they affect blood glucose levels. Foods are placed in a low-, medium-, and

## Glycemic Index



FIGURE 4. Glycemic index charts are helpful when determining the ranking of carbohydrates.

high-glycemic index. Those on diabetic diets should only eat foods categorized in the low- to moderate-glycemic index (GI).

### Best Diabetic Diets

The U.S. News and World Report Wellness website lists the best diabetic diets as:

**Fertility Diet:** It is a well-designed diabetic diet that also boosts fertility. The goal is to consume more unsaturated fats and to reduce artery-clogging fats.

**Biggest Loser Diet (tied with DASH Diet):** It is a six-week diet plan of cutting calories with healthy food and exercise. This diet provides a start to weight loss while adding the health benefits of reversing diabetes and cutting the risk of cancer and dementia. This diet increases the viability (capability) of the immune system.

**DASH Diet:** This diet prevents hypertension (high blood pressure) and lowers weight. The National Heart, Lung, and Blood Institute (NHLBI) developed the DASH diet. It was rated the best overall diet plan.

### Low-Sodium Diet

A **low-sodium diet** is a meal plan prescribed for patients with edema (water retention), high blood pressure, heart disease, liver disease, and the first stages of kidney disease. Low-sodium diets are based on consumption of 2,000 to 2,500 mg of sodium daily. This is equal to  $\frac{1}{2}$  teaspoon of table salt. The  $\frac{1}{2}$  teaspoon includes what is added at the table, what is added when cooking, and what is added during the processing of foods.

### Sodium

**Sodium** (NaCl) is an essential mineral that regulates fluid balance inside and outside of cells. It helps maintain proper acidic levels and the normal function of nerve cells and muscles. Sodium is a component of table salt—40 percent sodium (Na) and 60 percent chloride (Cl). Salt is found in virtually all foods and is in greater amounts in processed foods and beverages.

- ♦ Most sodium in processed foods is added as a preservative or as a flavoring. The word “sodium” is part of many other words on a nutrition label. Regardless of the form in which it is listed on a label (e.g., monosodium glutamate or MSG), it is still a salt.
- ♦ High-sodium condiments include onion salt, garlic salt, ketchup, barbecue sauce, bouillon, baking soda, mustard, pickles, MSG, and soy sauce. Canned soups and processed foods often have high sodium levels.

### Fat-Controlled Diet

A **fat-controlled diet** is a meal plan that relieves symptoms of diarrhea and flatulence caused by excessive dietary fat. A fat-controlled diet plan varies from 25 grams to 40 grams of fat per day.

A **low-fat diet** is a plan that restricts fat and often saturated fat and cholesterol intake. The intent of a low-fat diet plan is to reduce heart disease factors and obesity. It is also used in some

weight-loss plans. Fat intake should be limited to 1 tablespoon per day. Dietary restrictions for a low-fat diet by food group include:

- ◆ Dairy—Use low-fat dairy.
- ◆ Meats—Eat lean meat with no fried, oil-packed, or processed meats.
- ◆ Grains—Use whole grains low in fat.
- ◆ Vegetables—Serve vegetables without fats or sauces.
- ◆ Fruits—Serve fruits fresh, frozen, or canned (not fried).



**FIGURE 5.** Are you walking the tight rope with fried and greasy foods? Which foods do you need to control in your diet? High-fat diets can lead to obesity, which leads to many health issues.

## Fiber Diet

A **low-fiber diet** is a short-term meal plan to reduce stool frequency and volume. A low-fiber diet is used to control diarrhea. Restrictions by food group include:

- ◆ Dairy—Limit milk to 2 cups or less daily.
- ◆ Meat and meat substitutes—Use low-fat products (including nuts or peanut butter) and no fried or processed meat products.
- ◆ Grains—Use only refined flour and grain breads and no bran or whole grain products.
- ◆ Vegetables—Use cooked, chopped or puréed styles, and no raw vegetables.
- ◆ Fruits—Use strained juices (except prune juice), cooked, chopped, or puréed styles, and no raw fruits.

A **high-fiber diet** is a meal plan that prevents and treats gastrointestinal, cardiovascular, and metabolic diseases (e.g., metabolic diseases, such as diabetes, disrupt the process of converting food into energy). A high-fiber diet is also used to prevent constipation, hemorrhoids, and diverticulitis (conditions of the intestinal complications). Grams of dietary fiber are counted. High fiber diets add 20 to 35 grams of dietary fiber per day. The following foods have high gram counts of dietary fiber:

- ◆ Fruits and vegetables
- ◆ Nuts and seeds
- ◆ Whole grains
- ◆ Dried beans, peas, and lentils



## Low-Cholesterol Diet

A **low-cholesterol diet** is a meal plan that reduces the intake of foods high in cholesterol. To prevent cardiovascular disease and diseases of the liver, gallbladder, and pancreas, it is recommended that patients limit fats to 50 grams (no more than 30 percent of calories) and cholesterol to 300 mg per day. Dietary recommendations and restrictions by food group include:

- ◆ Dairy—Eat low-fat milk products.
- ◆ Meats—Eat lean meats (no fried or processed meats).
- ◆ Breads/grains—Eat nonfat breads/grains (no biscuits, sweet rolls, doughnuts, etc.).
- ◆ Vegetables—Eat fresh, frozen, or canned products (no fried or sauced dishes).
- ◆ Fruits—Eat fresh, frozen, or canned products (no fried fruits).
- ◆ Fats—Select recommended oils and soft margarines (no palm oil).



**FIGURE 6.** This is a low-cholesterol meal of white fish, rice, lemon, and grapes.

Metabolic syndrome is a group of risk factors that increases the risk of diabetes, heart disease, and stroke.

Cholesterol is the most common **steroid** (a dietary lipid or fatty substance containing four carbon rings) in the body and is associated with clogged arteries and heart disease. **Cholesterol** is a waxy fat-like substance found in animal cells. High levels of cholesterol in the body can lead to health problems.

Diets low in saturated fat (foods that are typically liquid at room temperature) tend to reduce the level of dietary cholesterol. In contrast, diets high in saturated fat (foods that are typically solid at room temperature) tend to increase the level of dietary cholesterol. Animal fats are the primary source of saturated fat, which is a fatty acid identified with clogged arteries and heart disease.

## Renal Diet

A **renal diet** is a plan that reduces and monitors sodium, potassium, phosphorus, fluid, and protein intakes. A renal diet is prescribed to:

- ◆ Address those with decreased kidney function or renal failure
- ◆ Avoid fluid and electrolyte imbalance
- ◆ Delay stage five renal failures and dialysis



## EXPLORING OUR WORLD...

### SCIENCE CONNECTION: What Is Chronic Kidney Disease?

Kidneys are bean-shaped organs that regulate the levels of sodium and potassium in the blood. There are five stages of renal disease. Patients with stage five renal diseases must be on dialysis. For more information on kidney disease and a quiz on kidney disease, see WebMD's eMedicineHealth website at

[http://www.emedicinehealth.com/chronic\\_kidney\\_disease/article\\_em.htm#what\\_is\\_chronic\\_kidney\\_disease](http://www.emedicinehealth.com/chronic_kidney_disease/article_em.htm#what_is_chronic_kidney_disease)

A renal diet recommends restricting high potassium foods (and many foods contain potassium). Some high potassium foods are dried beans, potatoes, oranges, dairy products, and bananas.

A renal diet monitors the following electrolytes: sodium, potassium, and phosphate. **Electrolytes** are salts and minerals that conduct electrical impulses in the body. They are used in every metabolic reaction. The important electrolyte minerals for humans are sodium, potassium, calcium, magnesium, chloride, phosphate, bicarbonate, and sulfate.

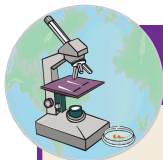
## THERAPEUTIC DIETS FOR ELDERLY PATIENTS AND AFTER SURGERY

### Texture-Modified Diets

**Food texture** is the characteristics of a food sensed by the mouth and the hands (e.g., mushy, soft, grainy, smooth, crunchy, and lumpy). Some people—young and old—may not be able to safely eat foods with regular texture. Patients with eating problems related to chewing and swallowing may require **texture-modified foods** or items that have been mechanically altered (chopped, ground, puréed, mashed, whipped, strained, or otherwise changed from the original texture).

Mechanical texture-modified diets are used for people with dental conditions, missing teeth, or dysphasia. **Dysphagia** is difficulty swallowing. Patients with dysphagia have a swallowing assessment conducted to determine the best type of therapeutic diet. After the patient is evaluated, the type of altered textured food is ordered for the patient. The type of altered textured food varies with the patient's need.

- ◆ A **chopped texture diet** is a meal plan assigned to patients with chewing and cutting problems. Chopped-textured foods may include bite-sized pieces, diced, or finely diced.
- ◆ A **ground texture diet** is a meal plan assigned to patients with chewing and swallowing problems. The food is finely minced and can be mashed with a fork.



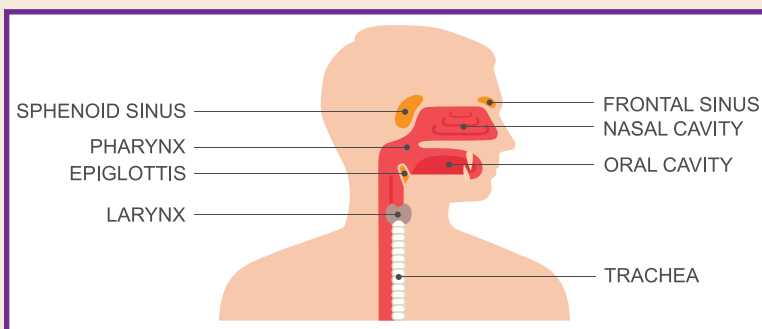
## EXPLORING OUR WORLD...

### SCIENCE CONNECTION: Best Practices for Dysphagia

Dysphagia is difficulty swallowing. Patients with dysphagia must have a swallowing assessment to determine the best type of therapeutic diet. All foods must be consistently prepared. Learn more about dysphagia at

[http://www.dietitians.ca/Downloads/Public/2013-Best-Practices-for-Nutrition,-Food-](http://www.dietitians.ca/Downloads/Public/2013-Best-Practices-for-Nutrition,-Food-Service-an.aspx)

[Service-an.aspx](http://www.dietitians.ca/Downloads/Public/2013-Best-Practices-for-Nutrition,-Food-Service-an.aspx). (See slide 17 or page 14 in text.) The details of a swallowing assessment are found at the Speaking of Speech website at <http://www.speakingofspeech.info/medical/BedsideSwallowingEval.pdf>. Also, you can watch a video of a swallowing assessment at <http://www.stroke4carers.org/?p=2413>.



- ◆ A **puréed texture diet** is a meal plan assigned to patients with swallowing issues that are unable to easily and safely eat a ground texture diet.

#### Liquid Diet

A liquid diet includes fluids or soft foods that melt at room temperature when solid foods are not recommended. A full liquid diet adds soft creamy foods. A liquid diet adds calories and electrolytes during gastrointestinal illnesses, after surgery, and before some medical tests.

- ◆ A **clear liquid diet** is a meal plan comprised of transparent fluids—water, broth, and plain gelatin—that are easy to digest and leave little undigested residue in the intestinal tract. A clear liquid diet may include juice without pulp, Jell-O™, and broth. A clear liquid diet is used immediately after surgery or for fluid and electrolyte replacement after diarrhea.
- ◆ A **full liquid diet** is the second step (after a clear liquid diet) used to restart oral feeding and includes creamy fluids and milk products. Patients with lactose intolerance should not use this diet. Some foods on a full liquid diet are:
  - Cooked cereal (thinned)
  - Cream pudding
  - Cream soup (strained)
  - Custard
  - Ice cream
  - Juice with pulp



## ON THE JOB...

### CAREER CONNECTION: The Final Rule

The Centers of Medicare and Medicaid Services (CMS) revised a provision that allows registered dietitians (RDN) to order patient diets independently without physician supervision. Therefore, hospitals allow qualified dietitians to order patient diets, run lab tests to monitor diet effectiveness, and make subsequent modifications based on results. This rule will save hospitals resources since physicians will not have to supervise menu changes. In addition, it will allow physicians more time with patients.

For more information, see the Academy of Nutrition and Dietetics website at <http://www.eatrightpro.org/resource/advocacy/quality-health-care/consumer-protection-and-licensure/faqs-cms-final-rule-related-to-therapeutic-diet-orders#q7>.

Not all states allow RDN to determine patient dietary needs and have privileges at the hospitals. In a map diagram, green is for states with no impediments; yellow is for states with some impediments; and red is for states that exclude the RDN having hospital privileges. For example, Illinois is a green state and utilizes the Dietitian Nutritionist Practice Act. See the Academy of Nutrition and Dietetics website and map at

<http://www.eatrightpro.org/resource/advocacy/quality-health-care/consumer-protection-and-licensure/therapeutic-diet-orders-state-status-and-regulation>

### Tube-Fed Diet

A medical device is the vehicle for a tube-fed diet. A **tube-fed diet** is a meal plan provided to those patients who cannot eat or drink by mouth. A tube leading to the stomach provides nutrition to the patient. Patients must be “weaned off” the feeding tube.



FIGURE 7. This baby is being tube-fed in the ICU.

### Summary:



Physicians or dietitians prescribe therapeutic diet plans. Therapeutic diet plans either alter nutrient intake for a medical issue or adjust the texture of foods. Each diet plan is unique. A diet plan may be needed to reduce fat or salt intake. Other diets may require increasing fiber or protein. Follow dietary instructions for the best possible health. Controlling what is eaten and following the therapeutic diet plan may help control or reverse the medical issue.

## Checking Your Knowledge:



1. What is a therapeutic diet?
2. Why are therapeutic diets prescribed for patients?
3. Name five therapeutic diets that alter nutrients for medical issues. Describe the medical issue for each therapeutic diet.
4. Explain the difference between diabetes type I and type II.
5. Name and describe three therapeutic diets that alter the texture of food for elderly or after-surgery patients.

## Expanding Your Knowledge:



Many types of diets are prescribed to help the GI tract. The GI tract is our gastrointestinal tract that digests foods, absorbs nutrients, and eliminates waste. Those with Irritable Bowel Syndrome (ISB), Irritable Bowel Disease (IBD), Ulcerative Colitis (UC), Crohn's disease, Celiac disease, Gastroesophageal Reflux Disease (GERD), and a case of diarrhea need diet plans to calm the GI tract. Research three of the listed conditions. Create a PowerPoint summarizing them and indicating which diet type would be most appropriate for those people.

## Web Links:



### BRAT Diet

<http://familydoctor.org/familydoctor/en/prevention-wellness/food-nutrition/weight-loss/brat-diet-recovering-from-an-upset-stomach.html>

### Gastroesophageal Reflux Disease Diet

<http://gicare.com/diets/gerd/>

### Specific Carbohydrate Diet

<http://www.webmd.com/digestive-disorders/features/specific-carbohydrate-diet-review>