Therapeutic Nutrition

Basic Principles

Therapeutic nutrition is based on the modification of the nutrients or other aspects of a normal diet to meet a person's nutritional needs during an illness. An understanding of the basics of normal nutrition is a prerequisite to the study of the principles of diet therapy. A nurse's background in anatomy, physiology, and pathophysiology will facilitate the clinical application of these principles. The purpose of diet therapy is to restore or maintain an acceptable nutritional status of a patient. This is accomplished by modifying one or more of the following aspects of the diet:

1. Basic nutrient(s)
2. Caloric contribution
3. Texture or consistency
4. Seasonings

The normal diet may be modified:

1- to provide change in consistency as in fluid and soft diets.
2- to increase or decrease the energy values–reducing diets.
3- to include greater or lesser amounts of one or more nutrients–high protein and low fibre diets.
4- to increase or decrease bulk–high and low fibre diets.
5- to provide foods bland in flavour.
6- to include or exclude specific foods as in allergic conditions.
7-to modify the intervals of feeding.

In adapting a normal diet to treat a disease, one or more of these modifications may be needed to restore or maintain the good nutritional status of a given patient. In general, all therapeutic diets must consider physical factors,

clinical disorders, and the patient's total acculturation. In many cases the patient may require an alteration of feeding methods in order to accomplish the stated purpose of diet therapy. It may also become necessary to alter the feeding intervals. The nurse's role is critical in helping a patient adjust to a modified diet by acting as the coordinator, interpreter, and teacher of diet therapy. Meeting the patient's nutritional needs involves the coordination of the medical, dietary, and nursing staff. In larger hospitals, the nurse maintains liaisons among the patient, the physician, and the dietitian; assists the patient at meals; observes the patient's response to foods and beverages; charts pertinent information; and supports and supplements the primary instruction given by the dietitian. In small hospitals, nursing homes, and community nursing services, the nurse may be responsible for planning, supervising, and teaching the modified diet. In many cases, the nurse may need to interpret the diet and make food selections both for the patient and the kitchen personnel. **It is important to emphasize that in the practice of medical nutrition therapy one must consider the following:**

1. The professional healthcare providers in each clinic, hospital, or other medical institution practice diet therapy according to their experience, available resources and cultural preferences of the patients in addition to the medical diagnosis and treatment. So, the details about any dietary regimen may differ from those presented in this book. Your instructor will explain the status where applicable.

2. The Internet is a valuable tool that helps both care providers and patients to learn more about the dietary care the patient is receiving. Therefore, it is important to access a specific Web site using a popular search engine where applicable.

Special Enteral Feedings (Tube Feedings)

Enteral (tube) feedings are used only for patients who have enough functioning of the GI tract to digest and absorb their food. They are also used when the patient cannot eat enough regular food to promote healing, even though the GI tract is functional. Frequently, an oral supplement has been added to the

diet before tube feedings are considered, but it has been insufficient. After careful assessment of nutritional status, tube feedings are added as an additional supplement. Tube feedings must be provided that meet the individual patient's needs. Many new commercial modular formulas are available. A tube feeding is a nutritionally adequate diet of liquefied foods administered through a tube into the stomach or duodenum. These foods are commercially available. From the standpoint of accuracy in measuring, sanitation, and convenience, most hospitals prefer commercial mixtures. These mixtures can be milk-based formulas, lactose-free formulas, meat-based formulas, and residue-free formulas. Tube feedings usually furnish one calorie per milliliter. A 24-hour intake of three liters would furnish 3000 calories.

Enteral feedings have several advantages, including the following:

1. It is more economical to feed enterally than intravenously, considering equipment, time, and foods used.
2. It is safer to feed enterally than intravenously. The risk of fluid and electrolyte imbalances and infection is less than for intravenous feedings.

Some disadvantages of enteral feedings include the following:

1. Nutritional inadequacy for certain patients (not enough protein and calories)
2. Overnutrition for certain patients (excess calories and formula)
3. Diarrhea or constipation
4. Vomiting
5. Problems of preparation and safety. Bacterial contamination can be a factor if preparation is not carefully controlled.
6. Home-prepared tube feedings are not recommended. Prepared formulas are preferred over the use of home blenderized diets, which can clog tubes, are not sterile, and in which nutrient composition is not well defined.

Depending on the patient and the circumstances, some or all of the above problems can be avoided or remedied. There is an increasing movement back toward use of more enteral feedings. Recent studies indicate that the intestinal bacteria will translocate to other areas, become pathogenic, and create sepsis when they are not fed. Enteral feedings depend on enteral formulas.

Parenteral Feedings via Peripheral Vein

Nutrient fluids entering a peripheral vein can be saline with 5%–10% dextrose, amino acids, electrolytes, vitamins, and medications. Intravenous fluids may be either isotonic, hypotonic, or hypertonic. Both hypotonic and hypertonic solutions create a shift in body fluids. Hypotonic solutions draw fluid from the blood vessels into the interstitial spaces and cells. Hypertonic solutions create the opposite effect; they draw fluids out of interstitial spaces into the blood. When enteral feedings are contraindicated, feeding by a peripheral vein is often used. This type of feeding is safer than feeding by a central vein, but it fails to provide adequate calories and other nutrients for repair and replacement of losses. The dangers of overloading with fluid in order to meet caloric needs are inherent in using solutions via the peripheral vein. Some examples of nutrient quantities in these solutions will illustrate the clinical problem.

Parenteral Feeding via Central Vein (Total Parenteral Nutrition [TPN])

When a patient is severely depleted nutritionally or if the GI tract cannot be used, parenteral feeding via a catheter inserted into a central vein (usually the subclavian to the superior vena cava) can provide adequate nutrition. The solution for TPN is a sterile mixture of glucose, amino acids, and micronutrients. The intralipids are not given in this solution and may be administered via a peripheral vein. The amounts of micronutrients added are based on the individual's blood chemistry. Multivitamin preparations can be added to the TPN solutions, except for B12, K, or folic acid, which are given separately. TPN has many advantages.

It can be used for long periods of time to meet the individual body's total nutritional needs. The solutions can be adjusted according to individual needs by increasing or decreasing any or all of the nutrients. TPN also has many disadvantages. The solutions are very expensive, and they support rapid growth of bacteria and fungi. The rate of infusion must be adhered to rigidly, around the clock. Dressing changes are done using sterile technique. Careful monitoring of the patient's response and corrective measures when needed are mandatory for safe administration of these solutions.

Nursing Implications

The responsibilities or implications for nutritional support by the nursing staff are varied and many. A brief summary of some of these implications follows:

1. Discard all unused, cloudy, or sedimented fluids.

2. Do not add drugs and other mixtures to a solution containing protein.

3. Refrigerate solutions until they are used.

4. Be aware that dates should be on tube feedings, and that they should not be given past 24 hours of date.

5. Be alert for signs of gas, regurgitation, cramping, and diarrhea, and be prepared to intervene.

6. Take necessary precautions when using nutrient solutions because they are excellent sources for bacterial growth.

7. Be especially alert for signs of hypo- or hyperglycemia when TPN is used and intervene if necessary.

8. Assist the patient in adjusting to an alternate feeding method. Many patients experience stress due to fear and concern of unfamiliar feeding methods.

9. Encourage and practice good oral hygiene measures with the patient, even though he or she is not eating by mouth.

10. Encourage early ambulation, which makes use of the muscles and increases the use of calcium and protein. Physical activity also raises morale.

Liquid Diets

Liquid diets consist of a variety of foods that are liquid or liquefy at room temperature. These diets are used in:

1- Febrile states

2- Post operative conditions

3- Wherever the patient is unable to tolerate solid food.

Liquid diets are of two types namely

A. Clear fluid diet

B. Full fluid diet

Clear Fluid Diet

This diet is indicated in:

1- Acute illness

2- Surgery

3 Gastrointestinal disturbances.

A clear fluid diet is usually used for 1 or 2 days. After that a more liberal liquid diet is given. The amount per feeding is 30 – 60 ml/hour. As the patient's tolerance improves, the amounts can be increased.

Foods Permitted

Tea with lemon and sugar, Coffee, Fat free broths, Carbonated beverages, Cereal waters.

Full Fluid Diet

This diet is indicated when a patient is:

1- Acutely ill.

2- Unable to chew or swallow solid food.

This diet includes all foods which are liquid at room temperature. It is free from cellulose and irritating condiments. Iron is provided at inadequate levels. Six or more feedings can be given daily. The protein content of the diet can be

increased by incorporating whole egg, egg white, nonfat dry milk in beverages and soups.

The calorie value of the diet can be increased by adding butter to cereal gruels and soups, glucose in beverages and using ice creams, dessert. If decreased volume of fluid is desired, nonfat dry milk can be substituted for the part of the fluid milk.

Foods Allowed

Beverages — Cocoa, coffee or tea.

Cereal — Fine or strained gruels.

Dessert — Soft custard, gelatin.

Eggs — Raw in broth with fruit juices or milk.

Fruit — All strained juices.

Meat — Strained in soups.

Vegetables — Puree, soups.

Miscellaneous — Butter, cocoa, sugar, salt.

References

- Schiff, W., J. The Nutrition for Healthy Living. 2nd ed., 2011. The McGraw-Hill Companies, Inc.
- Roth, R., A. Nutrition and Diet Therapy. 10th ed., 2011. Cengage Learning com.