

Medical Nutrition Therapy Diet for Hypoglycemia

1. Purpose

a. Nutrition Indicators:

Hypoglycemia is an abnormally low blood glucose level generally less than 70 mg/dL. It occurs when glucose is utilized too rapidly, glucose release rate falls behind tissue demands, or excess insulin enters the bloodstream. (Nelms, 601)

b. Criteria to Assign the Diet:

History of hypoglycemic symptoms, fasting blood glucose less than or equal to 40 mg/dL, and immediate recovery upon administration of glucose. (Nelms, 603)

c. Rationale for Diet:

Effective treatment of reactive hypoglycemia requires dietary modification to help delay glucose absorption and gastric emptying. (Nelms, 603)

2. Population

a. Overview:

Reactive hypoglycemia may occur in individuals with diabetes due to administration of too much insulin or oral diabetes medications. In those without diabetes, reactive hypoglycemia may occur due to a sharp increase in insulin release after a meal. It usually disappears when the individual eats something.

Fasting hypoglycemia usually results from excess insulin or insulin-like substance from external factors such as alcohol or drug ingestion. (Nelms, 601).

b. Disease Process:

Fasting hypoglycemia can be a primary or secondary manifestation. Fasting hypoglycemia primary causes include hyperinsulinism due to pancreatic beta-cell tumors or surreptitious administration of insulin or oral diabetes medications, and non-insulin producing extra-pancreatic tumors. Secondary fasting hypoglycemia may be caused by certain endocrine disorders such as hypopituitarism, Addison's disease, or myxedema, liver disorders such as acute alcoholism or liver failure, and renal failure.

Postprandial or reactive hypoglycemia is often observed after gastrointestinal surgery, particularly with dumping syndrome after gastrectomy. (Nelms, 602)

c. Biochemical and Nutrient Needs:

Anticholinergic agents may be used in treatment of reactive hypoglycemia in order to slow gastric emptying and intestinal motility and inhibit vagal stimulation of insulin release. Surgery and drug therapy are generally necessary for fasting hypoglycemia. Medications may include nondiuretic thiazides, such as diazoxide to inhibit insulin secretions; streptozocin; and hormones, such as glucagon or glucocorticoids. Nutrition therapy is used to help control the timing of intake and amount. (Nelms, 603)

3. General Guidelines

a. Nutrition Rx:

Small, frequent meals of complex carbohydrates, fiber, and a protein sources.
 If the blood glucose level falls below 70 mg/dL treat with 15 g of carbohydrate, which is equivalent to: 3 glucose tablets, ½ c of fruit juice, 6 saltine crackers, or 1 T. of sugar or honey. Wait 15 minutes are retest. If the blood glucose level remains less than 70 mg/dL then treat again with 15 g of carbohydrate.

b. Adequacy of Nutrition Rx:

The diet should be adapted to individuals energy, carbohydrate and protein needs. Since most patients who suffer from hypoglycemia are diabetes the use of carbohydrate counting may be helpful in regulating total carbohydrate intake. (American Dietetic Association 2000)

c. Goals:

The goal of nutrition therapy is to keep blood glucose levels above 70 mg/dL and fasting glucose above 40 mg/dL. This will help to avoid the symptoms of weakness, fatigue, sweating, and tachycardia. (Nelms, 602)

d. Does it Meet DRI:

This will help to meet the target plasma glucose levels:

Glycemic Indicator	Normal	Goal
Preprandial glucose	< 100 mg/dL	90 – 130 mg/dL
Postprandial glucose	< 130 mg/dL	< 180 mg/dL
A1C	< 6%	< 7%

4. Education Material

a. Nutrition Therapy

Self monitoring blood glucose is essential for prevention and treatment of hypoglycemia. Changes in insulin injections, eating, exercise schedules, and travel routines cause an increased frequency of monitoring.

Counting carbohydrates may be helpful in regulation the total carbohydrate intake.

Small, frequent meals distributed throughout the day consisting of complex carbohydrates, protein and fiber.

b. Ideas for Compliance

Give them a list of quick easy snack ideas to have with them when their blood glucose gets low.

Use a diary to record blood glucose levels to help with the self-monitoring.

5. Sample Menu

a. Foods Recommended

Complex carbohydrates such as whole grain breads, pastas and rice.

b. Foods to Avoid:

Simple carbohydrates, such as candy, sugar, jam, jelly, syrup, honey, and soft drinks, as well as alcohol should be avoided. It may be beneficial to restrict caffeine, which may reduce cerebral blood flow and consequently glucose supply to the brain. (Nelms, 603)

c. Example of a meal plan

Breakfast	Lunch	Dinner
<ul style="list-style-type: none"> - ½ Orange Juice - ¾ cup Cornflakes - 1 Slice Whole wheat toast - 1 t. margarine - 1 t. Sugar-free jelly - 1 c. skim milk - coffee with creamer and sugar substitute 	<ul style="list-style-type: none"> - 2 oz lean hamburger - 1 hamburger bun - lettuce & tomato slice - ½ c. cooked carrot - tossed salad with 1 T. Italian dressing - 1 medium apple - ½ c. sugar-free gelatin - 1 c. skim milk 	<ul style="list-style-type: none"> - 2 oz baked chicken breast - ½ medium baked potato - ½ c. green beans - ½ c. sliced strawberries - 1 small dinner roll - 1 t. margarine - 16 oz diet cola
Snack	Snack	Snack
<ul style="list-style-type: none"> - 1 medium orange 	<ul style="list-style-type: none"> - 1 c. skim milk - 3 graham crackers 	<ul style="list-style-type: none"> - 1/3 c. apple juice - 1 T. peanut butter - 6 saltine crackers

6. Websites

a. Organizations with Websites:

American Diabetes Association - <http://www.diabetes.org/living-with-diabetes/treatment-and-care/blood-glucose-control/hypoglycemia-low-blood.html>

American Dietetic Association - <http://www.eatright.org/search.aspx?search=hypoglycemia>

Mayo Clinic – <http://www.mayoclinic.com/health/hypoglycemia/ds00198>

b. Government Websites:

Medlineplus - <http://www.nlm.nih.gov/medlineplus/diabetes.html>

National Diabetes Information Clearinghouse (NDIC) - <http://diabetes.niddk.nih.gov/>

U. S. Food and Drug Administration - <http://www.fda.gov/ForConsumers/default.htm>

U.S. National Library of Medicine - <http://www.nlm.nih.gov/medlineplus/diabetes.html>

7. References

a. Journal articles references

Del Carmen Soler, Maria. "Recommendations for Hypoglycemia." *Journal of the American Dietetic Association* 105.7 (2005). Web. 16 Apr. 2010.

Franz, Marion J., and John M. Bantle. "American Diabetes Association Position Statement: Evidence-based Nutrition Principles and Recommendations for the

Treatment and Prevention of Diabetes and Related Complications." *Journal of the American Dietetic Association* (2002). Web

Goldberg, Teresia, and Alfred E. Slonim. "Nutrition Therapy for Hepatic Glycogen Storage Diseases." *Journal of the American Dietetic Association* 93.12 (1993). Web.

Hayes, Charlotte. "Pattern Management: A Tool for Improving Blood Glucose Control with Exercise." *Journal of the American Dietetic Association* 97.10 (1997). Web.

Loghmani, Emily, and Rickard A. Rickard. "Alternative Snack System for Children and Teenagers with Diabetes Mellitus." *American Dietetic Association* 94.10 (1994). Web.