

ENDOCRINOLOGY WAIVERS

CONDITION: HYPOGLYCEMIA (ICD9 251.2)

Revised January 2002

AEROMEDICAL CONCERNS: Asymptomatic hypoglycemia may be seen during prolonged fasting, strenuous exercise, or pregnancy. However, symptomatic fasting hypoglycemia is a serious and potentially life-threatening problem and of significant concern in the aviation environment. Fortunately, the true condition of hypoglycemia is quite rare, and the most common cause of hypoglycemia is as a complication of diabetes. Symptoms vary according to the degree of hypoglycemia. Acute hypoglycemia symptoms include weakness, drowsiness, confusion, hunger, and dizziness. Additional symptoms can include paleness, headache, irritability, trembling, diaphoresis, tachycardia, and a sensation of cold. Severe cases can lead to loss of consciousness or coma. Subacute or chronic hypoglycemic symptoms may be subtler with progressive confusion, inappropriate behavior, lethargy, and drowsiness. If the patient does not eat, seizures or coma may develop. The deployment of such an individual to remote field sites with poor nutrition and long duty hours is likely to exacerbate the condition.

WAIVERS:

Initial Applicants and Rated Aviation Personnel: Transient asymptomatic hypoglycemia with a clear underlying etiology does not require waiver or exception to policy and will be filed as information only.

Symptomatic hypoglycemia may be recommended for waiver or exception to policy if the underlying condition is readily controlled. Any underlying medical condition must be evaluated for waiver and fitness for aviation duty.

INFORMATION REQUIRED:

- ❖ Diagnosis of Diabetes must be ruled out as cause. (See Diabetes APL for evaluation).
- ❖ If the individual does not have diabetes, the following must be documented in the AMS:
 - Patient complaint of symptoms consistent with hypoglycemia. (Refer to aeromedical concerns above)
 - Blood glucose levels are measured while the person is experiencing those symptoms and found to be 45 mg/dl or less in a female or 55 mg/dl or less in a male.
 - Symptoms are promptly relieved on ingestion or other administration of glucose.
- ❖ Laboratory: Plasma insulin and serum C peptide, done at the time of hypoglycemia if possible.

FOLLOW-UP: No follow-up is required for asymptomatic hypoglycemia unless the aircrew member develops symptoms or hypoglycemic lab values persist. Follow the procedures outlined in Information Required above. Those with waivers for symptomatic hypoglycemia require an annual internal medicine evaluation and a fasting blood glucose measurement.

TREATMENT: Dietary control of plasma glucose is the primary treatment available. If conscious and able to swallow, glucose-containing foods such as candy, orange juice with sugar, or cookies should be quickly ingested. If unconscious, rapid restoration of plasma glucose must be accomplished by giving 20-50 ml of 50% dextrose intravenously over 1-3 minutes in order to avoid possible permanent brain damage associated with prolonged hypoglycemia.

DISCUSSION: The most common cause of hypoglycemia is as a complication of diabetes. Other rare causes include early pregnancy, prolonged fasting, and periods of strenuous exercise. The entity of reactive hypoglycemia is a condition of low blood sugar with no known cause and in which symptoms appear 2-5 hours after consumption of foods high in glucose. In normal men, plasma glucose does not fall below 55 mg/dl during a 72-hour fast. However, for reasons that are not clear, normal women may experience a fall to levels as low as 30 mg/dl despite a marked suppression of circulating insulin to less than 6 U/ml. They remain asymptomatic in spite of this degree of hypoglycemia, probably because ketogenesis is able to satisfy the energy needs of the central nervous system. Iatrogenic or surreptitious administration of insulin or sulfonylureas may also cause symptomatic hypoglycemia. Other disorders that are associated with hypoglycemias include severe hepatic dysfunction, chronic renal insufficiency, hypocortisolism, alcoholism, some nonpancreatic tumors, and inborn errors of carbohydrate metabolism (glycogen storage disease, gluconeogenic enzyme deficiencies). Nonfasting hypoglycemia can result from occult diabetes, alcoholism, leucine sensitivity, and galactosemia or after alimentary surgery.

A current review of the AEDR for the year 2000 reveals that only three cases of hypoglycemia were reported and all of these were disqualified most likely due to underlying medical conditions.

REFERENCE:

National Institutes of Health Publication No. 95- 3926, *Hypoglycemia*, May 1995 (e-text October 1999) : www.niddk.nih.gov/