



BLOOD SUGAR IN THE WORKPLACE: AVERTING HIGHS AND LOWS

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Introduction

Healthy blood sugar levels are essential for the human body! Sugar (glucose) enters the bloodstream from carbohydrates we eat and is supplied to all your body's cells as a source of vital nutrition and energy.

Normal blood sugar range after fasting 8 hours is 70-100 mg/dL, or 70-140 mg/dL 2 hours after a meal. Maintaining levels in this range helps us stay healthy. However, low and high blood sugar are both health problems that affect millions of people each day. Exact number of hypoglycemia (low blood sugar) and hyperglycemia (high blood sugar) cases is unknown but estimated to be in the millions.

Blood sugar falls and elevations below and above normal are rare in healthy people. However, they are very common for individuals living with diabetes and other health conditions. Considering that over 37 million Americans, almost 6 million Canadians, and about 537 million people worldwide have diabetes, abnormal blood sugars have become one of the most common health issues.^{1,2,3}

Hypoglycemia

Hypoglycemia refers to a blood sugar level less than 70 mg/dL⁵ which constitutes a medical emergency, and can lead to serious health complications and even be fatal if proper treatment is not administered on time. Symptoms of hypoglycemia include:⁵

- › Shaking
- › Sweating
- › Lightheadedness
- › Fatigue and weakness
- › Hunger
- › Anxiety
- › Fast heartbeat
- › Blurred vision
- › Headache

Hypoglycemia is more common in people who take insulin for diabetes. However, individuals without



diabetes may also experience hypoglycemia. The most common causes include certain medications, excessive alcohol intake, critical illness, kidney or liver failure, sepsis (severe infection), prolonged fasting, deficiency of certain hormones such as cortisol or overproduction of insulin by the body.⁶

Treatment for hypoglycemia consists of ingesting sugary food or beverage like honey, candy, fruit juice or regular soda. This is usually followed by the cessation of symptoms and return of blood sugar level to normal range.

If hypoglycemia is not corrected on time and sugar level keeps on going down, the following symptoms begin to appear:⁵

- › Confusion
- › Unusual behavior or inability to complete routine tasks
- › Slurred speech
- › Blurry vision or tunnel vision
- › Nightmares

Treatment remains the same as long as the affected person can consume something sweet to raise their sugar level. However, in the absence of treatment glucose levels may drop dangerously low and lead to:⁵

- › Loss of consciousness
- › Seizures
- › Coma
- › Respiratory arrest
- › Death

Hyperglycemia

Unlike hypoglycemia, hyperglycemia may refer to either a single episode or an ongoing state of elevated blood sugar. Hyperglycemia is a blood sugar level above 125 mg/dL while fasting for about 8 hours, or above 180 mg/dL 2 hrs after a meal.⁴ Just like with hypoglycemia, hyperglycemia can be dangerous and lead to multiple complications.

Hyperglycemia is most common in people with uncontrolled diabetes, but several other conditions can cause abnormally high sugar in non-diabetics. Some of the most common include infections, surgery, trauma, side effects of medication, obesity, excessive consumption of sugar and carbohydrates, lack of physical activity, diseases of the pancreas, polycystic ovarian syndrome (PCOS), Cushing's syndrome, or a combination of any of these conditions.⁷ Typical symptoms of hyperglycemia include:

- › Excessive or constant thirst
- › Excessive or constant hunger
- › Frequent urination
- › Fatigue and weakness
- › Blurry vision
- › Nausea
- › Dry skin
- › Non-healing skin sores

Hyperglycemia does not necessarily constitute a medical emergency, as many individuals can often go about their daily life and function properly with slightly elevated blood sugar levels. However, it's a different story when blood sugar rises considerably.



This can lead to one of two life-threatening conditions - diabetic ketoacidosis (DKA) or hyperglycemic hyperosmolar state (HHS).

Proper intervention for hyperglycemia depends on the cause, particular blood sugar level, individual's symptoms and presumed duration of hyperglycemia. For example, if someone with mild hyperglycemia without severe symptoms is newly diagnosed with diabetes, proper treatment usually consists of initiation of dietary and lifestyle modifications as well as diabetic medications.

If someone with diabetes experiences an episodic spike in their blood sugar, a proper treatment may vary considerably. An intervention for a non-severe hyperglycemia with non-severe symptoms may include temporary restriction of sugar and carbohydrate intake, drinking plenty of water, physical activity such as walking or a small dose of insulin.

In contrast, significantly high blood sugar requires supervised treatment at a medical facility, which may include administration of insulin, correction of electrolyte imbalances, fluid replacement and medications for any other underlying conditions.⁸ Diabetic ketoacidosis (DKA) can be seen with blood sugar just above 250 mg/dL while hyperglycemic hyperosmolar state (HHS) typically occurs with blood glucose over 1,000 mg/dL.⁸ Both of these conditions are very serious. Up to 2% of individuals

with DKA do not survive this condition.¹⁰ HHS is even far more dangerous complication of hyperglycemia with mortality rate of 10-20%.⁹

Workplace safety

Blood sugar spikes and falls are often encountered at the workplace. Some occupations and work conditions may increase the chances of hypoglycemia and hyperglycemia in workers who have diabetes or even in healthy workers. These occupations and work conditions generally include:

- › Sedentary or physically demanding work environments
- › Exposure to significant psychological stress
- › Exposure to certain weather conditions such as heat and high humidity
- › Work demands that restrict access to food, water and medicines
- › Irregular or insufficient break periods
- › Highly variable schedules

Highs and lows in blood sugar level are often preventable. That is why staying mindful about our own and our fellow coworkers' health and making any necessary adjustments to our work environment should be just as vital as being a great team player and as achievable as the goals we set for the work we do.

Sources

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