



## Video Study Guide

### Food, Activity and Insulin

This study guide is intended to be a general guide that will help you understand the key elements of this video. Each diabetes camp operates under detailed policies and procedures which follow Board of Health and national accreditation standards that ensure the health and safety of children with diabetes. It is essential that camp staff familiarize themselves with the policies and procedures specific to the diabetes camp at which they will work or volunteer, ask questions and use good judgment at camp as they provide diabetes management supervision and educate youth with diabetes. While doing so, it is equally important that camp staff not lose focus – camp is a place for youth to have fun with peers – to feel supported and understood, and to feel part of a passionate community.

People with diabetes do not have the hormone insulin. Insulin is what the body needs to regulate blood sugar levels. When people eat, the body converts food to glucose. The body's cells use glucose as fuel. Insulin is a transport agent, helping glucose get into cells. Without insulin, the body cannot use glucose effectively so it builds up in the blood, causing blood glucose (or blood sugar) levels to be extremely high. This is a life-threatening condition. Without insulin, a person can die.

People with type 1 diabetes must balance what they eat (which turns into glucose) with the amount of insulin they take by injection or pump, and the amount they exercise. All of these components have an effect on blood glucose levels. At camp, the camp routine is balanced around food, activity and insulin. Staff and campers are careful to monitor and adjust the levels of food, activity and insulin to keep blood glucose levels balanced. This is the educational goal.

For instance, campers learn that when they go to the dining hall and eat, blood sugars go up. When they go out and play, their blood sugars go down. When they take insulin, their

blood sugars go down. By monitoring the amounts and times of each of these choices, they can learn from doing. These are teachable moments.

Campers arrive at camp with an “insulin-to-carbohydrate” ratio. This is a “prescribed” amount of insulin that they typically take for an amount of ingested carbohydrate; for instance, 1-to-15 would mean that the camper would take one unit of insulin for every 15 grams of carbohydrate ingested.

Some campers arrive at camp taking insulin by injections and others receive insulin by infusion through an insulin pump. Insulin pumps are more and more common. There are multiple types of pumps. There are also insulin pens in which campers may “dial up” a dose of insulin instead of “drawing it up” through a syringe.

There are many types of insulins. Most campers will take an “analog” insulin, a rapid acting insulin that “covers” what they eat (for instance in the insulin-to-carbohydrate example). They will also take “basal” insulin, a long-acting insulin that administers a longer action and helps maintain blood glucose throughout the full day. The “action time” of insulin refers to the length of time the insulin works in the body. Analog insulins have a short action time, peak in 1-2 hours and are gone in 4-6 hours. Basal insulins have a long action time, no peak and last up to 24 hours. There are many other types of insulin, including intermediate action insulins, but most campers will take short and long-acting.

Diabetes might be a bit simpler if a person ate exactly the same thing every day, did exactly the same thing every day, took exactly the same amount of insulin every day and felt (emotionally) the same way every day. That is not the case. It is not true at camp, either. At camp, staff and campers work to adjust insulin, food and activity to bring blood glucose into “target range.” Target range is the range that the camper’s family and health care team (and camp health care team) has determined to be best for that camper.

Sometimes, surprises happen at camp. We might plan for an active day and plan a high carbohydrate meal accordingly. Then it rains and the activity levels are lower, requiring increased insulin amounts. On the other hand, a surprise hiking adventure might be proposed and campers may need to reduce insulin and increase food. Campers and staff should always have food and insulin available in case there is a need to balance a camper’s blood glucose, either on the low or high side.

We would not know blood glucose values without blood glucose monitoring. At camp, campers monitor blood glucose at least four times a day and whenever symptoms of low or high blood glucose are present. It is extremely important to know the symptoms of low or high blood glucose and to check a camper’s blood glucose at the first sign of changes.

Blood glucose monitoring times are wonderful opportunities for teaching. When a camper's blood glucose is out of target range or during insulin administration times when decisions need to be made about doses, educational opportunities exist. Campers and staff can talk about upcoming activities, choices for food and decisions about dose adjustments together.

Food is a critical component of the camp experience. It is important for camps to accommodate picky eaters and campers with allergies and to have food choices that campers like.

Fast acting carbohydrates and low blood glucose treatment supplies should always be on hand for emergency use.

Balancing food, activity and insulin can empower youth for life. Diabetes camp can help that happen.