



Insulin Overdose



Elevated blood levels of insulin are appropriate when glucose is being absorbed from the gut. But when glucose is not being absorbed from the gut, elevated blood levels of insulin can, in fact, be fatal. We pay particular attention here to the brain's fuel supply.

The Insulin Overdose Protocol

Begin by clicking Restart to reset the model's variables to their initial values. Advance the solution 1 hour and record control data. Go to  Diet. Create a fasting state in the dietary goals box by sliding carbs, fat and protein goals down to 0.

Advance the solution for 6 hours and record data for the fasting state. Now it is time for an insulin injection. Go to  Misc. Treatments. In the insulin injection box, set the dose (U) at 40 U and the duration of action at normal (4 Hrs). To inject the insulin, click the Inject Insulin Now button. The total injections count should now be 1.

Advance the solution 10 minutes at a time, recording data at the end of each time period.



Plasma Insulin] (uU/mL)

Plasma Glucagon (pG/mL)



Plasma Glucose (mG/dL)





Brain Glucose Use (mG/Min)

Brain Ketoacids Use (mG/Min)



Blood Pressure (mmHg)

Heart Rate (/ Min)

Neurological Signs



Sympathetic Nerve Activity

Time	12:00	6:00	6:10	6:20	6:30	6:40	6:50
Plasma [Insulin]							
Plasma [Glucagon]							
Plasma [Glucose]							
Brain Glucose Use							
Brain KA Use							
Blood Pressure							
Heart Rate							
Neurological Signs							
Sympathetic Firing							

Where is the glucose coming from and where is it going? Why is the brain not making better use of ketoacids?

Demonstrate the proper clinical intervention in this case -- before it's too late.

