



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

Name(s) Cole M. Conroy	Project Number J1408
Project Title Diabetes. Insulin. NPH vs. Lantus	
Abstract Objectives/Goals To whether a new long-acting human insulin, Lantus, causes less nocturnal hypoglycemia in a juvenile diabetic than the standard long-acting insulin, NPH. Methods/Materials A juvenile diabetic volunteer with previously stable glucose control performed frequent blood glucose testing for 30 consecutive nights with a standard commercial testing kit. The subject used NPH insulin the first 15 nights, then Lantus for 15 nights. A commercial snack with cornstarch, previously shown to help prevent hypoglycemia, was eaten at the same time each night. Blood sugar levels were recorded through each night and graphed for comparison. Results The number of low blood sugars, defined as 70 milligrams per deciliter (mg/dL) or below, was 10 on the NPH nights and 3 on the Lantus nights. Overall blood sugar levels were much more stable on Lantus. The number of hyperglycemic events, defined as blood sugar over 180 mg/dL, was also much lower with Lantus (5) compared to NPH (32). Conclusions/Discussion Insulins are designed to be absorbed from injection sites at different rates to keep blood sugars at normal levels. Lantus insulin was designed to be absorbed evenly for up to 24 hours. This is compared to NPH, which has a peak absorbtion 8-to-12 hours after injection. A diabetic can have dangerously low nighttime blood sugars at the time of NPH's peak effect. Through my experiment I found that Lantus insulin was better at regulating nighttime blood sugars than NPH.	
Summary Statement My project compares two types of insulin on a juvenile diabetic's nighttime blood sugars.	
Help Received Mother helped take sugars, type report and prepare poster.	