Name(s)	Project Number
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Project Title

Out of Control: Blood Glucose Meter Accuracy

Abstract

Objectives/Goals

After noticing differences in my glucose meter readings I was worried about their accuracy, so I chose to test blood glucose meter accuracy. My hypothesis was that blood glucose meters from different manufacturers will produce similar results when testing the same sample of blood. I was also testing to see if blood glucose meters met the FDA standards set in 2014.

Methods/Materials

I prick my finger and apply the blood to test strips for the Nova Max Plus, Contour Next EZ, One Touch Verio IQ, Accu Chek Aviva Connect, and Precision Xtra blood glucose meters. I record the measured values and then plot each one relative to the meter and trial number in Excel. The order blood is applied is randomized for each trial.

Results

The blood glucose measurements showed significant variability between the meters especially at high blood glucose levels. In some cases meter readings were different by more than 50%. Each of the meters had at least one measurement at or above 20% variability. This means that according to the FDA guidelines none of these meters would pass.

Conclusions/Discussion

The variability between meter results could lead to huge differences in how a diabetic manages their diabetes. In my results it was possible that for one meter a diabetic would administer 2 units of insulin, while for the same blood sample another meter would indicate a need of nearly 4 units. The first could lead to a hyperglycemia and the other hypoglycemia.Hyperglycemia and hypoglycemia create unhealthy and sometimes very unsafe situations. This study shows that meter accuracy needs greater scrutiny and likely follow-up testing.

Summary Statement

I compared five blood glucose meters with each other and to see if they are accurate relative to FDA guidelines.

Help Received

My dad helped me with some of the graphs.