

# The Google and Diabetes Connection



Technology platform giant **GOOGLE**, via their Life Sciences division, is using their expertise in electronic miniaturization along with their data collecting/ sharing abilities to team up with Dexcom, makers of a popular Continuous Glucose Monitoring Sensor shown above (CGMS) to make much smaller continuous monitoring device that might be as small as a dime and worn like a bandage like patch. The data collected will be transmitted to a smartphone. The data can undergo analytics to help direct therapy, not only for the individual, but also due to large data collection, might help with care population based.

Google is also working with pharmaceutical company Novartis on the **Google Contact Lens** that obtains glucose readings through your tears. They have already received the patent on this and it's in the works.



Why is Google in on the **diabetes** monitoring game (besides it being an estimated 17 billion dollar industry)? For one thing,

currently the Dexcom as well as the Minimed/Medtronic pump with continuous glucose sensor have iPhone applications available. Though Minimed is working on getting their app on Android, Google being in on it “ground floor” obviously will help promote Android and the Google brand.

**Source:** Google Developing Bandage Sized Glucose Monitor

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## Why Carbohydrate Counting Doesn't Cut It

Your doctor and/or nutritionist probably has you “carb counting” to help dose your insulin with meals. However, even when you are good with carb counting you are frustrated with the variability in your sugars. Here's why:



A high fat meal increases the amount of free fatty acids (FFAs) in the blood which causes insulin resistance. You will need more insulin to overcome this insulin resistance FFAs chronically elevated due to repeatedly consuming high fat meals, especially high in saturated fats, is associated with persistent skeletal muscle and liver insulin resistance. This is the same insulin resistance seen with obesity. Protein is slowly broken down and some of it is turned into carbohydrates. The higher the protein load in a meal, the greater impact in your blood sugars hours after a meal. The Glycemic Index (GI), or how rapidly a carbohydrate can impact

your blood glucose, can cause a mismatch to the timing of your mealtime insulin peak.



Researches, as reported in the June 2015 issue of Diabetes Care, evaluated the effect of Glycemic Index (GI), protein, and fat composition in meals and effects on post prandial (after the meal) blood sugars in Type 1 Diabetes. They reviewed various studies that used continuous glucose monitoring (CGMS).

The researchers concluded that GI, protein, and fat can drastically affect glucose concentrations in individuals with type 1 diabetes. The effect on three hour postprandial glucose concentrations with the addition of 35 g of fat and 40 g of protein to a meal is equivalent to that resulting from the consumption of 20 g of carbohydrates without insulin. The addition of 50 g of fat to a meal can increase insulin requirements for by greater than two fold.

Study Source: Bell KJ. Impact of Fat, Protein, and Glycemic Index on Postprandial Glucose Control in Type 1 Diabetes: Implications for Intensive Diabetes Management in the Continuous Glucose Monitoring Era. Diabetes Care. June 2015. 38(6)1008-15.