

Abbott's Euro approved wearable glucose monitor is different than anything on the market

[David Ahn, MD \(@AhnCall\)](#) September 9, 2014

One of the latest innovations in glucose monitoring for diabetes became reality this past Wednesday with the [announcement](#) that Abbott's Freestyle Libre Flash Glucose Monitoring System had received a CE mark of approval by European health care authorities.

The Freestyle Libre Flash is a small circular wearable sensor worn on the back of the upper arm that samples glucose from the interstitial fluid every 5 minutes via a 5mm filament that protrudes into the skin. The sensor is waterproof and can be worn for up to 14 days. Waving an iPhone-like wand over the sensor transmits a current glucose reading, an 8-hour history, and the direction of glucose trend.



The Libre Flash's key distinguishing feature is the promise of minimizing the need for finger sticks, as it does not require finger sticks for calibration. Unbeknownst to many health care providers and potential users, current continuous glucose monitors (such as the Dexcom G4 Platinum and Medtronic Enlite) require a fingerstick every 12 hours for calibration.

Trade-Offs With Current Continuous Glucose Monitors

By utilizing the wand system that requires some user involvement to elicit a glucose reading, the Freestyle Libre Flash employs a "hybrid" approach that appears to offer several advantages compared to existing continuous glucose monitors (aka CGM).



L to R: Dexcom G4 Receiver, Transmitter, Sensor with Applicator

For a quick overview of current CGM's, they consist of 3 components:

1. A temporary **sensor** that consists of a filament sampling interstitial fluid (*the large pictured contraption includes the sensor applicator*)
2. A **transmitter** that snaps onto the sensor and wirelessly transmits data to the receiver
3. A **receiver** is an iPhone-like device that displays glucose and historical trends



Freestyle Libre Flash, from a slide at EASD 2013

Compared to existing models, the Freestyle Libre Flash sensor is less bulky by abandoning the wireless transmitter, and has FDA approval to be worn for much longer (14 days as opposed to 6-7 days of current CGM's), and in a potentially more appealing location (the back of the upper arm, whereas current CGM's only have approval in the abdomen).

The biggest advantage of the Freestyle Libre Flash system is the potential to eliminate painful finger sticks, unlike current CGM's which require a fingerstick for calibration every 12 hours. Of note, promotional material includes the following footnote: "A finger prick test ... is required during times of rapidly changing glucose levels when interstitial fluid glucose levels may not accurately reflect blood

glucose levels or if hypoglycaemia or impending hypoglycaemia is reported by the System or when symptoms do not match the System readings”

Another potential advantage is the need for user intervention to check sugars by waving the receiver over the sensor. In the age of the [Quantified Self](#), I'm a believer that user intervention involves the patient and makes them more involved with their disease management.

However, this need for user intervention is also a significant downside to the Freestyle Libre Flash. One of the most important indications for Continuous Glucose Monitors in my patients is frequent hypoglycemia or hypoglycemia unawareness (hypoglycemia without symptoms), and the Libre Flash's lack of an alarm or warning system would render the device less useful for such patients. Abbott's take is that they are reducing alarm fatigue, which is also a real frustration with current CGM users.

Regardless, studies [show](#) that people with insulin-requiring diabetes improve their glycemic control with increased frequency of sugar checks, and a fingerstick-free system like the Abbott Freestyle Libre Flash should dramatically help diabetics reduce hyperglycemic excursions.

The Abbott Freestyle Libre Flash will be coming soon to market in France, Germany, Italy, Netherlands, Spain, Sweden and the United Kingdom. The system has not earned FDA approval for sale in the USA, but Abbott hopes to eventually bring the Libre Flash stateside.

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