

PE1619/A

JDRF Letter of 6 January 2017

Introduction

The petition describes two different types of glucose monitoring. The Freestyle Libre system given as an example is a new type of monitoring glucose levels known as 'Flash Glucose Monitoring'. Continuous Glucose Monitoring is a separate system of monitoring glucose levels and is not covered in this response.

Since its launch in late 2014, Flash Glucose Monitoring has been extremely popular with people with type 1 diabetes. At the moment Abbott's Freestyle Libre is the only device of its kind on the market. We have not seen any research or figures from the manufacturer showing how many people are using the device but we can say with confidence that uptake has been swift in the UK and other geographies where the product has launched. JDRF has followed the progress of the Freestyle Libre system closely, meeting with users, the manufacturer and healthcare professionals with an interest in the system.

We have heard testimony from hundreds of users of the device. The vast majority of feedback has been positive, with users commonly describing it as 'life-changing'.

What is Flash Glucose Monitoring?

Essentially a new way of checking glucose levels - an alternative to finger-prick testing and continuous glucose monitors.

A sensor the size of a £2 coin sits on the back of the arm with a sensor just under the skin. By scanning or 'flashing' the sensor with a scanning device you get a) your glucose level b) a graph of your glucose level for the last 8 hours c) a direction arrow showing if your levels are going up or down. The device also stores your data so that it can be viewed later.

Abbott has also released an app called Librelink. This allows people with most NFC-enabled smartphones to scan the sensor with their smartphone as well as or instead of the reader.

What are the benefits of the system?

The most commonly reported advantages have been:

Reduction in hypoglycaemia

The major advantage of the Freestyle Libre to come out of the IMPACT study, published in the Lancet journal,¹ was that it resulted in a large reduction (38%) in the average time a person spent in a state of hypoglycaemia. Hypoglycaemia is the most common and most concerning short-term daily complication of type 1 diabetes. As the brain runs on glucose, acute interruption of this supply produces marked cognitive impairment and if untreated can lead eventually to coma and death.²

By showing trend arrows and graphs, users have been able to identify when their glucose levels are heading low, and take pre-emptive action to avoid hypoglycaemia. By identifying patterns over time users have also been able to more accurately calculate insulin doses, further reducing the risk of hypoglycaemia.

More frequent testing / Reduction in pain / More convenient

These three benefits are closely intertwined. The Lancet study also showed that people using the system would check glucose levels much more frequently (approx. 15 times per day) when compared to traditional testing methods. People do less tests using traditional methods, largely because it is inconvenient, time-consuming and can be painful, especially for small children. Finger pricking can also result in a loss of sensitivity in the finger tips over time. Users have reported that it is much easier and more convenient to scan; and that this is particularly true in situations where finger pricking can be difficult (during the night, when playing sports, travelling, at school or work and in the rain or snow).

We would welcome the Scottish Government assessing the costs and benefits of Freestyle Libre versus traditional systems based on this frequency of testing (15 times per day) as the cost comparison would be on a more like for like basis. Whilst JDRF is not in a position to carry out the modelling needed, we believe it to be likely that the Freestyle Libre would be cost-saving or cost-neutral on this basis, given the 91% reduction in finger pricking shown in the Lancet study.

Improvements in glycaemic control and HbA1c

¹ Novel glucose-sensing technology and hypoglycaemia in type 1 diabetes: a multicentre, non-masked, randomised controlled trial. Available [here](#)

² Mini-review: Impact of recurrent hypoglycemia on cognitive and brain function
Ewan C. McNay and Victoria E. Cotero. Available [here](#)

Users of the device have reported substantial improvements in HbA1c results over time. The graphs and trend arrows of the device allow users to more easily avoid periods of high blood glucose or reduce their duration and more frequent checking aids improved glucose control.

The aforementioned Lancet study did not show an improvement in HbA1c, but this is due to the fact that the participants in the trial were selected for already having well controlled glucose levels. It is probable that a broader study representing the whole population of people with type 1 would show a reduction in HbA1c.

Easier for carers

Parents of children with type 1 find it difficult to prick their children's fingers. This is especially true in neonates and infants. Parents will also often test their child's glucose level while they are asleep. It is much easier and the child is less likely to wake up when this is done by scanning rather than finger-pricking. The system could also be used more easily by professionals in school settings who often take on a level of 'carer' responsibility.

Additional benefits for insulin pump users

The device also makes setting basal insulin levels testing much easier. Basal testing is an important process for people using an insulin pump, to set their background insulin level hour by hour. The ability to view an eight-hour graph negates the need to wake up multiple times during a single night to perform finger prick tests.

Summary

The Freestyle Libre system has been hugely popular amongst people with type 1 diabetes and initial peer-reviewed research backs up the reported benefits. At the moment those benefits can only be realised through self-funding and the £1,268 annual cost puts the system out of reach for many people living with type 1 in Scotland today.

We would welcome the Scottish Government conducting a study of the potential costs and benefits of providing access to the system on prescription as per the petition.