Using technology to help manage hypoglycaemia for the visually impaired.

Dexcom G6

The dexcom G6 can transmit data wirelessly to smart devices, making the information accessible to patients with visual impairment through the use of standard notification software already a feature of smartphones.

To use the Dexcom G6 CGM with voiceover software in practice,

First ensure the voiceover software is enabled on the iphone by following these steps:

- On any apple iPhone select 'accessibility ' from the settings menu
- Find voiceover and swipe the switch to turn it 'on'.
- Turning voiceover on will alter the gestures regularly used on the iPhone (single tap anywhere on the screen for the iPhone to speak aloud the item which has been tapped; double tap on an item to select it)

With voice over enabled a visual impaired iphone user can perform all the functions that the iphone and its apps have to offer

So, the user can download the Dexcom app in the normal way from the app store.

- After initial installation, the app takes the user through various set up screens.
- Through voiceover, all the controls displayed by the Dexcom app are read out verbally, so that the visually impaired user knows what they are 'looking at' on the app's screen and can interact independently with the app.

Pairing the CGM transmitter to the iphone using Bluetooth:

- The Dexcom app will prompt the user to enter the transmitter code, a six character alphanumeric code found on a label on the box of the transmitter

- The user can feel for this label and use a scanning app called 'seeing A1' to take a picture of the code, then perform optical recognition on it.
- Voiceover can speak the code, which the user can enter manually using the Dexcom app.

Setting up the new sensor:

- Again 'seeing A1' can scan the 4-didgit code on the label on the bottom of the sensor
- Voiceover can speak the code so the user can enter it into the app, before hitting the button to begin the sensor
- An initial 2-hour sensor warm-up period is required after which the glucose level can be easily heard by the user accessing the Dexcom app and using voiceover to hear the blood glucose reading.

Difference in the app when accessed via voiceover;

- The only feature not available to the visual impaired user in the Dexcom app is the graph showing the trend of CGM readings over the last couple of hours
- However the current trend in glucose will be read out by Voiceover when a blood glucose level is checked e.g. 4.5 millimoles per litre and slowly falling
- The audible alarms issued by the Dexcom app can be adjusted for high and low blood glucose readings can be adjusted to fit the user's requirement (the alarm for urgent low level is fixed at 3.1mmol/l and cannot be altered).
- Alarms for rapid change of glucose levels (both upwards and downwards) can be adjusted; the users can use different sounds for different alarm.

Libre.

The freestyle libre link app is designed for use with the libre freestyle sensor and when the text to speech option is enabled the user can translate the visual data to audio

Go to the main menu to access the app settings.

- Turn on the text to speech to have the glucose readings read aloud when you scan the sensor, you will hear the current blood glucose value and trend arrow direction.