

Inpatient Flash Glucose monitoring

Freestyle Libre guidelines

The Libre 1 or 2 system provides a means of measuring the change in glucose levels in the patient's interstitial fluid, rather than the blood. It remains hospital policy that a patient's blood glucose levels be measured using the Precision Pro blood glucose monitoring system. However, with increasing numbers of patients using the Freestyle Libre Flash glucose monitoring systems some guidance has been produced for hospital staff.

Equipment

Libre 1 or Libre 2



Reader



The sensor

Both Libre 1 or 2 sensor contains a thin filament inserted under the patient's skin which measures the change in glucose levels in the patient's interstitial fluid, not the blood.

The sensor can only be applied to the back of a patient's upper arm as sensor placement has not been approved for other sites.

The reader

Either Libre 1 or 2 reader can be used for approximately 4-7 days before it needs to be recharged. A low battery warning will appear on the reader when it needs to be recharged. There is a battery icon on the reader which will indicate battery life. It can be recharged using the supplied charger.

The reader will automatically switch off after 45 seconds.

Please note – some patients have an app on their mobile phone and are able to scan their sensors using their mobile phone and record readings through the app rather than the reader.

Personal care

The sensor is kept in place by adhesive so do not touch or pull on the adhesive around the sensor, even if the adhesive has begun to peel.

Take care not to dislodge the sensor when moving the patient or providing personal care, such as when cleansing around the sensor. The sensor is water-resistant up to 30 minutes during a bath or shower.

Disposal

The sensor lasts for 14 days and should not be removed prior to this.

Please contact the Inpatient diabetes team on 30170 if there are any signs of skin irritation at the sensor site. Do not remove the sensor without advice.

If the Libre sensor is knocked off or removed it needs to be disposed of into a **sharps bin** as it contains a filament that has been inserted into a patient's body. Please handle as per hospital policy for sharps disposal.

Please contact the Abbott helpline on 0800 170 1177 if a sensor is accidentally removed prior to its 14 day expiry date using patient's name and address for information. Abbott may agree to replace the sensor for free if accidentally removed during healthcare procedures or personal care.

Sensors will need removal prior to any CT or MRI scans and surgery. Abbott will provide the patient with a free Libre sensor on these occasions. Please contact on 0800 170 1177 to advise Abbott of this event using the patient's name and address as required information.

To remove a sensor pull up the edge of the adhesive that keeps the sensor attached to the skin and proceed to slowly peel away in one motion. The sensor must be disposed into a **sharps bin** as it contains a filament that has been inserted into a patient's body. Please handle as per hospital policy for sharps disposal.

Replacement

The sensor lasts for 14 days. The time to the end of the sensor wear period is shown on the screen of the meter reader when it is switched on. After the wear period, the sensor will stop working and should be removed and replaced with a new sensor.

The Diabetes centre will not provide any new sensors, these will need to be obtained from the patient's GP surgery.

Staff need to have received training to fit a sensor. Please contact the Inpatient diabetes team on 30170 if a patient requires a new Libre sensor to be fitted and is unable to do so themselves. Please note the Inpatient team will only be able to fit a sensor that has been provided by the GP surgery. The team do not hold a supply for use by inpatients.

The team are also unable to fit any Libre sensors to patients who have not previously been prescribed a Libre system. New Libre prescriptions require a Diabetes MDT decision.

Taking readings

PLEASE NOTE THAT IT REMAINS HOSPITAL POLICY THAT THE PATIENT'S BLOOD GLUCOSE IS MONITORED FOUR TIMES PER DAY PRE MEALS AND BEFORE BED USING THE PRECISION PRO BLOOD GLUCOSE MONITORING SYSTEM AND THIS MUST BE RECORDED ONTO THE HOSPITAL OBSERVATIONS CHART.



1. Turn the reader on by pressing the home button
2. Hold the sensor reader within 1-4 cm of the patient's sensor to scan it. The reader will beep to say it has successfully scanned the sensor. The sensor can be scanned through thin clothing.
3. The sensor reader will display the current glucose reading along with a trend arrow to indicate the direction in which the glucose is going.
4. Scan a minimum of 10 scans a day i.e. pre meals, 2 hours post meals, before bed and overnight.
5. All Libre readings need to be documented onto the Flash glucose readings chart and not the hospital observation chart.
6. ****NEW FOR 2021**** The libre 2 sensor and reader have optional HIGH/LOW and out of range alarms. These are used at the discretion of the individual. Otherwise the sensor and reader are to be used as described above.

Interpreting readings

The Libre sensor glucose level will lag behind a finger prick blood glucose reading by 2-10 minutes. At times, when the patient's glucose levels are stable the two readings will be similar, but if the patient's glucose levels are rising or falling quickly the two readings will be very different. The Libre becomes less accurate when the glucose levels are changing quickly with an average of 10% difference. When the rising quickly or rising slowly trend arrows are shown on the sensor, a patient's glucose level can be changing by 1 mmol/l every 10 minutes.

A glucose trend arrow on the screen on the sensor reader indicates the direction that the patient's glucose is going i.e. stable, increasing or decreasing.

Trend arrow	Direction glucose is heading	Action
↑	Rising quickly (In 15 mins anticipate a glucose change of >+1.5mmol/l)	Perform a blood glucose reading using Precision Pro blood glucose monitoring system and document on observation chart. Recheck Libre reading in 15 minutes.
↗	Rising (In 15 mins anticipate a glucose change of between + 0.9 to +1.5mmol/l)	Recheck Libre reading in 30 minutes.
→	Changing slowly (In 15 mins anticipate a glucose change of < 0.9mmol/l)	No concern – no action required.
↘	Falling (In 15 mins anticipate a glucose change of between - 0.9 to -1.5mmol/l)	Recheck Libre reading in 30 minutes.
↓	Falling quickly (In 15 mins anticipate a glucose change of > -1.5mmol/l)	Perform a blood glucose reading using Precision Pro blood glucose monitoring system and document on observation chart. Recheck Libre reading in 15 minutes.

Hypoglycaemia messages

If glucose is below 3.9 mmol/l a warning message will appear on screen indicating Low glucose.

If **LO** appears on the reader the glucose is below 2.2 mmol/l.

If these messages appear perform a blood glucose reading using the Precision pro blood glucose monitoring system and document on observation chart. Follow hospital policy for hypoglycaemia treatment.

Hyperglycaemia messages

If glucose is above 13.3 mmol/l a warning message will appear on screen indicating High glucose.


If **HI** appears on the reader the glucose is above 27.8 mmol/l.

If these messages appear perform a blood glucose reading along with a blood ketone reading using the Precision pro system blood glucose monitoring system and document on observation chart. Seek medical advice for elevated blood glucose and ketones.

Please be aware that the Libre sensor will provide less accurate glucose readings for patients that are severely dehydrated.

Error messages and actions

New sensor starting up	Sensor is not ready to read glucose until 60 mins after applied	Wait until 60 minute sensor start-up period has completed.
Scan timeout	The reader is not held close enough to the sensor	Hold the reader within 4cm of the sensor. Bring the screen of the reader close to the sensor.
Sensor ended	The sensor life has ended	A new sensor is required – contact Inpatient diabetes team on 30170.
Scan error	The reader was unable to communicate with the sensor	Try scanning again.
Sensor error	The system is unable to provide a glucose reading	Scan again in 10 minutes.
Check sensor	The sensor tip may not be under the skin	Try to start sensor again. If the reader displays this error message again contact Inpatient diabetes team on 30170.
Replace sensor	The system has detected a problem with the sensor	Contact Inpatient diabetes team on 30170.

Trust Guidelines		 University Hospitals Plymouth NHS Trust
Guidance Title: Inpatient Flash Glucose monitoring Freestyle Libre guidelines		
Date		Version
June 2021		2.0
Accountabilities		
Lead	Suzanne Matthews (DSA)	
Reviewed by (Group)	Diabetes MDT	
Approved by (Lead)	Peter Kelly (Lead Nurse for Diabetes Centre)	
Links to other documents		
Inpatient Freestyle Libre glucose readings chart		
Version History		
1.0	October 2019	Guideline created
1.1	July 2020	Guideline reviewed – no changes
2.0	June 2021	Guideline updated
Last Approval		Due for Review
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