



Clinical Practice Procedures: Assessment/Blood analysis – Glucose

Policy code	DTP_AS_BAG_1024
Date	October, 2024
Purpose	To ensure a consistent procedural approach to blood analysis – glucose
Scope	Applies to Queensland Ambulance Service (QAS) clinical staff.
Health care setting	Pre-hospital assessment and treatment.
Population	Applies to all ages unless stated otherwise.
Source of funding	Internal – 100%
Author	Clinical Quality & Patient Safety Unit, QAS
Review date	October, 2026
Information security	UNCLASSIFIED – Queensland Government Information Security Classification Framework.
URL	https://ambulance.qld.gov.au/clinical.html

While the QAS has attempted to contact all copyright owners, this has not always been possible. The QAS would welcome notification from any copyright holder who has been omitted or incorrectly acknowledged.

All feedback and suggestions are welcome. Please forward to: Clinical.Guidelines@ambulance.qld.gov.au

Disclaimer

The Digital Clinical Practice Manual is expressly intended for use by appropriately qualified QAS clinicians when performing duties and delivering ambulance services for, and on behalf of, the QAS.

The QAS disclaims, to the maximum extent permitted by law, all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs incurred for any reason associated with the use of this manual, including the materials within or referred to throughout this document being in any way inaccurate, out of context, incomplete or unavailable.

© State of Queensland (Queensland Ambulance Service) 2024.



This work is licensed under the **Creative Commons Attribution-NonCommercial-NoDerivatives V4.0 International License**

You are free to copy and communicate the work in its current form for non-commercial purposes, as long as you attribute the State of Queensland, Queensland Ambulance Service and comply with the licence terms. If you alter the work, you may not share or distribute the modified work. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/deed.en>

For copyright permissions beyond the scope of this license please contact: Clinical.Guidelines@ambulance.qld.gov.au

Blood analysis – Glucose

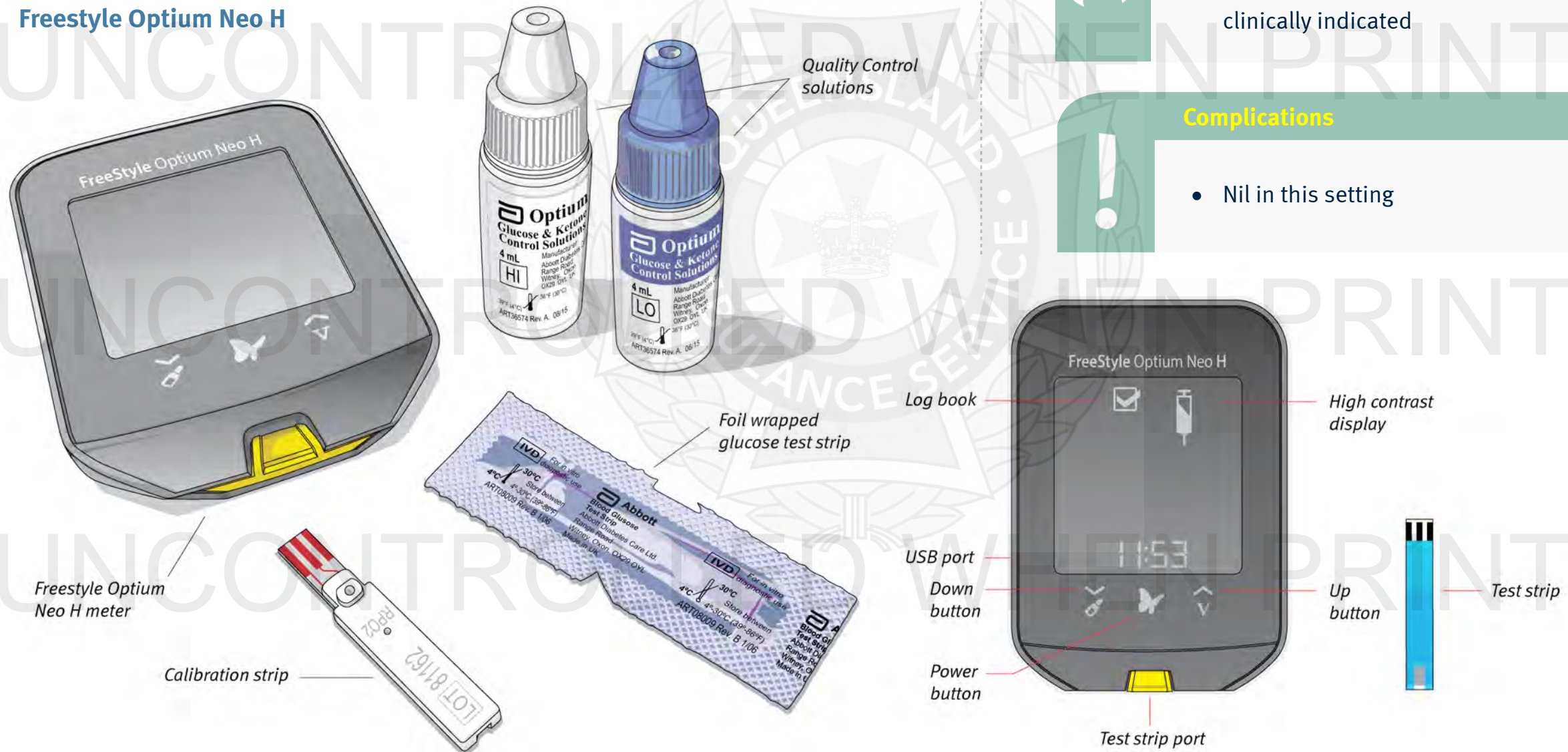
October, 2024

Point of care (POC) glucometry is a quick and convenient, quantitative assessment of a patient's blood glucose level (BGL) used to identify hypo/hyperglycaemia.

'Normal' blood glucose levels vary, however 4–6 mmol/L (fasting) or 4–8 mmol/L (within two hours of a meal) is considered within the normal reference range.

The FreeStyle Optium Neo H is a commercial hospital grade glucometer used to measure POC glucose and ketones (B-hydroxybutyrate) in fresh whole blood.^[1]

Freestyle Optium Neo H



Indications

- POC glucose assessment


Contraindications

- Routine use in newly borns unless clinically indicated

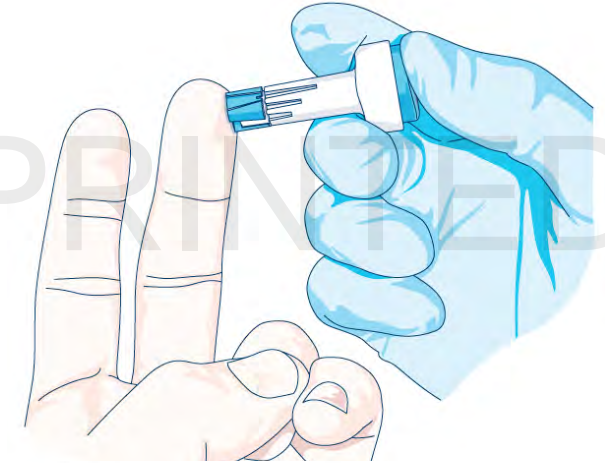
Complications

- Nil in this setting

Procedure – Blood analysis – Glucose

1. Apply required infection control measures (refer to the *QAS Infection Control Framework*).
2. Identify an appropriate sample site (distal lateral aspect of any of the middle fingers) – confirm it is clean, dry and warm.
3. Open the individually foil wrapped 'Blood Glucose' test strip.
4. Gently Insert the test strip into the FreeStyle Optium Neo H meter – the meter will turn on automatically.
5. Confirm the test strip's LOT number (printed on the packaging) is the same as the LOT number shown on the screen. If the numbers differ, perform the calibration procedure described in the additional information section.
6. The blinking  will indicate the meter is ready for testing.
7. Twist and remove the sterility cap from the Accu-Chek® Safe-T-Pro® Plus lancet.
8. Set the desired penetration setting (*low* (1.3 mm), *medium* (1.8 mm) or *high* (2.3 mm)) dependent on skin softness and location.

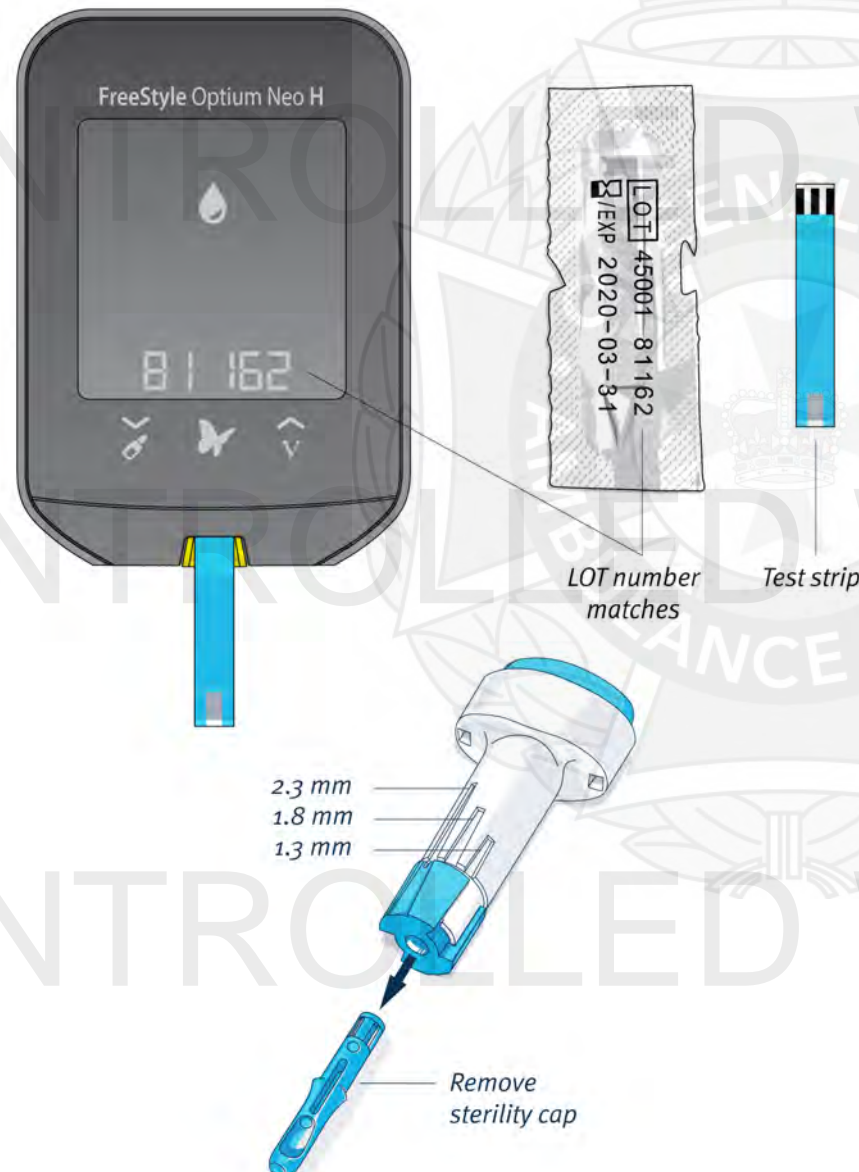
9. Press the lancet device firmly against the desired sample site.
10. Depress the lancet's blue activation button to deploy (and retract) the lancet – dispose of the shielded lancet immediately into a sharps container.





11. Hold the blood capillary sample to the white target area on the test strip until 3 short lines are displayed on the screen (indicating that an adequate amount of blood has been applied).



12. At the end of the 5 second countdown, the BGL reading will be displayed.






Additional information

- The meter will turn off after 3 minutes of inactivity. Remove and insert the unused test strip to restart the meter.
- If the BGL result appears to be inconsistent (lower or higher than expected), there may be a problem with the test strip – repeat using a new test strip to confirm result.^[3]
- If testing glucose on venous blood, press  to mark the test until  appears indicating that the meter is ready for venous blood sampling.
- BGL result outside of the measureable range (1.1–27.8 mmol/L) will be displayed as 'LO' or 'HI'.
- Weekly Quality Control (QC) testing is required. If QC testing is NOT performed, misleading results may lead to inappropriate treatment.
- In the rare situation a newly born required glucometry, the outer surface of the heel is the preferred puncture site.



To perform a Quality Control test (required every 7 days):


1. Open the individually foil wrapped glucose test strip.
2. Gently Insert the test strip into the FreeStyle Optium Neo H meter – the meter will turn on.
3. Confirm the test strip's LOT number is the same as the LOT number shown on the screen.
4. When the  blinks press the  button until the  icon appears.

5. Confirm the QC solutions (HI and LO) are suitable for use (< 90 days since opening OR within expiry date – whichever is earlier).
6. Gently invert the QC bottle to mix the 'LO' QC solution.
7. Remove the cap from the 'LO' level QC bottle and gently wipe the nozzle with a clean gauze.
8. Apply a sample of 'LO' level QC solution to the white target area on the test strip – 3 short lines will be displayed.
9. At the end of the 5 second countdown the 'LO' level QC result will be displayed and stored within the meter memory.
10. Confirm the results are within the acceptable range printed on the blood glucose test strip insert (specific to individual test strip boxes).
11. Remove the test strip and repeat the procedure for the 'HIGH' level QC solution.
12. Record the results in the meter's QC record book. If results are outside of acceptable ranges, contact Customer Service.






LOT

Expected Results for Use with Control Solutions

	Low	0.4 — 0.8 mmol/L
	Mid	1.8 — 2.8 mmol/L
	High	3.3 — 5.3 mmol/L

Setting the date/time:

1. Turn the meter on by pressing .
2. Press and hold the time (11:50) on the screen for 3 seconds until the screen changes.
3. Set time format to 24 hr clock by pressing the up or down and  to continue.
4. Repeat these steps until the hour, minute, month, day and year have been set. Press  to save.

Meter calibration procedure

1. The calibration procedure programs the meter with the lot number, expiry date and test strip technology.
2. Remove the supplied calibration strip from the new blood glucose test strip packet.
3. With the lot number facing upwards, gently insert the calibration strip into the meter – the meter will turn on automatically.
4. Check the lot number on the meter display window matches the number on the test calibration strip and the last five digits on both the test strip foil packet and test strip insert.
5. Retain the calibration strip for the duration of that glucose test strip packet.



Error messages (if errors continue, contact Customer Care)

MESSAGE	MEANING	TROUBLE SHOOTING GUIDE
E-1	The temperature is too hot or too cold for the meter to operate.	<ol style="list-style-type: none"> 1. Move meter and test strips to a location where the temperature is within the acceptable range. 2. Wait for the meter and test strips to adjust to the new temperature. 3. Repeat the test using a new strip
E-2	Meter error	<ol style="list-style-type: none"> 1. Turn the meter off. 2. Repeat the test using a new test strip.
E-3	Blood drop is too small; OR Incorrect test procedure; OR a problem has been identified with the test strip.	<ol style="list-style-type: none"> 1. Review testing instructions. 2. Repeat the test using a new test strip.
E-4	The BGL may be too high to be read by the meter; OR a problem has been identified with the test strip.	<ol style="list-style-type: none"> 1. Repeat the test using a new test strip.
E-5	Blood sample was applied to the test strip too soon.	<ol style="list-style-type: none"> 1. Review testing instructions. 2. Repeat the test using a new test strip.
E-6	Calibration; OR Test strip error	<ol style="list-style-type: none"> 1. Check the date setting on the meter. 2. Check the expiration date on the test strips foil packet. 3. Repeat the calibration using the calibration strip that was supplied with the test strips in use.
E-7	Test strip may be damaged, used or not recognised by the meter.	<ol style="list-style-type: none"> 1. Check that the correct test strips are being used. 2. Repeat the test using a new test strip.
E-7 / E-8	Meter error	<ol style="list-style-type: none"> 1. Turn off the meter 2. Repeat the test using a new test strip.