

# Obtaining a Blood Glucose Level (BGL)

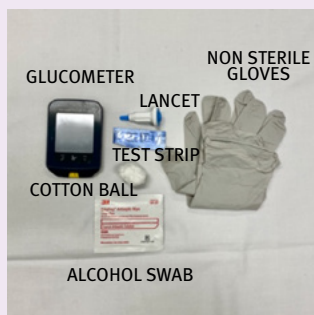
BGL checks are frequently carried out in paediatric patients seen in the emergency department. Infants and young children and children have greater glucose requirements and reduced glycogen stores compared with adults. They are also reliant on others to provide them with adequate fluids and nutrition to keep them hydrated and meet their glucose requirements. These factors combined with illness place infants and children at higher risk of hypoglycaemia than adults. Children may also present with hyperglycaemia.

## Flags for checking a BGL:

- Decreased feeding particularly in neonates
- Increased thirst
- Decreased output or increased urination
- Vomiting or diarrhoea
- Weight loss
- Lethargy, seizure or decreased level of consciousness
- History of diabetes or metabolic illness
- Constipation
- Candida infections (including oral thrush & nappy rash in infants)

1

Gather equipment.



2

PREPARE

Explain the procedure and gain verbal consent. Attend to hand hygiene & don gloves.



3

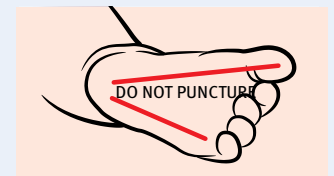
Ensure calibration test strips match the lot number on blood glucose monitor display prior to performing blood glucose level



4

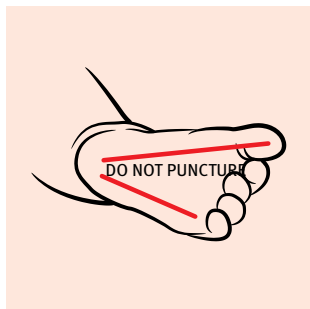
Choose the puncture site

- 0-12 months on the outer aspect of the heel as seen in the illustration below
- Over 1 year on the outer aspect of the fingertip (usually middle or ring finger)




## ALERT

In neonates and infants, the puncture should be no deeper than ~ 2.0 mm and should only be made in the outer aspects of the heel. Penetration of the underlying calcaneus bone can result in necrotising osteochondritis, while repeated trauma may lead to fibrosis and scarring of the heel which may interfere with the neonate's ability to walk later.




**5** PROCEDURE

Firmly support the finger or heel with your nondominant hand.



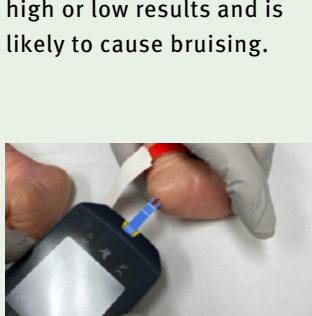
**6**

With your dominant hand clean the selected site with a sterile alcohol wipe allowing time to dry.



**7**

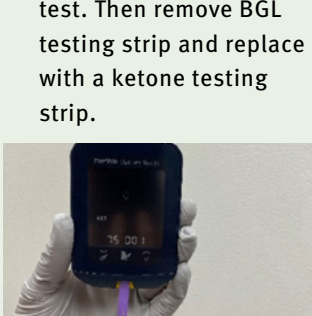
Puncture the site once and direct a blood drop onto the test strip. DO NOT squeeze the lanced site excessively. This can cause artificially high or low results and is likely to cause bruising.



**8**

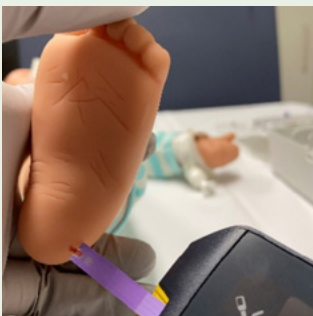
If the blood glucose is:

- Less than 3mmol/L
- Greater than 11mmol/L
- Or the medical officer has requested a ketones test. Then remove BGL testing strip and replace with a ketone testing strip.




**9**

Use the same puncture site to collect a further sample for blood.



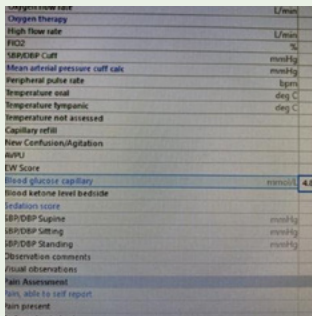
**10**

Apply cotton ball to the site with gentle pressure.





**11**


Document blood glucose +/- blood ketones results and seek medical advice as required.



SpO2	98%
HR	110
RR	20
Temp	37.5
BGL	4.8

## When to escalate care

-  Urgently seek medical advice in the infant or child with a BGL of 2.6 mmol/L or below or if the machine reads 'LO' which means the result is too low for the device to register.
-  Seek prompt senior nursing/medical advice in the infant or child with a BGL of 3.4 mmol/L or below or above 11 mmol/L

 **ALERT**

Hypoglycaemia is defined as a blood glucose level (BGL) of less than 2.6 mmol/L that is measured by blood gas machine, iSTAT, or formal laboratory testing. Hypoglycaemia is a medical emergency. If left untreated it can cause convulsions, irreversible brain damage and death.



## Tips in children

- Consider the use of oral sucrose in infants, to minimise procedural discomfort. A medical order and parental consent is required prior to use. Please note at selected sites sucrose may be classified as a nurse initiated medication. Check your local policy or procedure for more information. Further tips on nursing considerations in oral sucrose administration can be found in the Paediatric Medication Administration: Sucrose 24%.
- Sit younger children in their care givers lap to provide comfort and a safe space. Utilise distraction techniques where possible e.g. ask a helper to blow bubbles while you undertake the procedure. Distraction techniques may help minimise future distress for children requiring ongoing blood glucose monitoring e.g children diagnosed with Type 1 Diabetes.
- Consider wrapping the chosen lancet injection site in linen from the linen warmer to increase capillary circulation to the area if peripheries are cool.
- If regular blood glucose checks are required ensure puncture site is rotated to minimise tissue damage.
- Be mindful of infants and young children who are fasting for procedures. If procedures are delayed and prolonged fasting occurs a BGL check may be appropriate. If at all unsure, discuss the matter with the treating medical officer or



### ALERT

Hyperglycaemia in children and adolescents is defined by a BGL  $\geq 11$ mmol/L. Prompt treatment of paediatric hyperglycaemia can prevent the metabolic emergency of Diabetes Ketoacidosis (DKA).

Children can present in DKA at the time of first diagnosis of Type 1 Diabetes. Symptoms of DKA include weakness, polyuria/enuresis, polydypsia, vomiting, Kussmaul breathing (fast, deep breathing), confusion and/or loss of consciousness.

## For further information:

[RBWH Guideline: Blood Glucose Monitoring and Management, Neonate](#)

[Queensland Paediatric Guideline: Unexplained Hypoglycaemia - Emergency Management in children](#)

## References:

This Queensland Paediatric Emergency Nursing Skill Sheet was developed by the Emergency Care of Children working group (funded by the Queensland Emergency Department Strategic Advisory Panel) with the help of the following resources:

- Central Queensland Hospital and Health service. (2019, May 23). Blood Glucose and Blood Ketones Testing with Point of Care Meter. Queensland Health Intranet. [https://qheps.health.qld.gov.au/\\_data/assets/pdf\\_file/0028/733483/cq\\_diabetes\\_b1.pdf](https://qheps.health.qld.gov.au/_data/assets/pdf_file/0028/733483/cq_diabetes_b1.pdf)
- Metro North Hospital and Health service. (2020, April). Blood Glucose Monitoring and Management, Neonate. Queensland Health Intranet. [https://qheps.health.qld.gov.au/\\_data/assets/pdf\\_file/0017/2503700/001914.pdf](https://qheps.health.qld.gov.au/_data/assets/pdf_file/0017/2503700/001914.pdf)
- Queensland Health State wide ED Nurse Educator Committee, Pearson, N., Cole, T., & Carney, S. (Eds.). (2016). Unit 6 Cardiovascular. In Queensland Health: Transition Support Program - Emergency. Module 3 - Paediatric Care in the Emergency Department (4th ed., pp. 100–101). State of Queensland (Queensland Health).



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- Advising consumers of their choices in an environment that is culturally appropriate and which enables comfortable and confidential discussion. This includes the use of interpreter services where necessary.
- Ensuring informed consent is obtained prior to delivering care.
- Meeting all legislative requirements and professional standards.
- Applying standard precautions, and additional precautions as necessary, when delivering care.
- Documenting all care in accordance with mandatory and local requirements.

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