



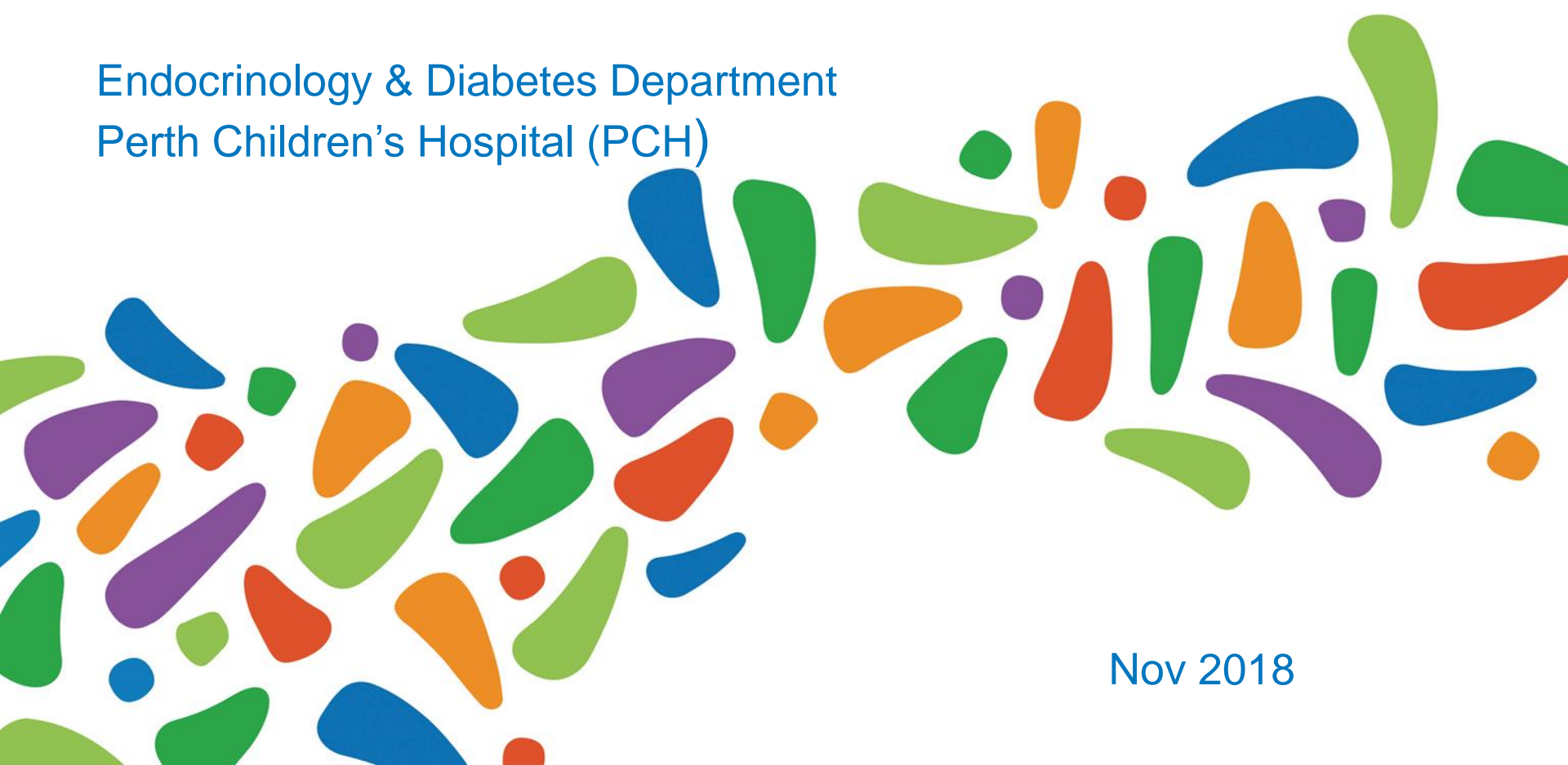
Government of **Western Australia**  
Child and Adolescent Health Service



# Diabetes and schools

## Finding the balance

Endocrinology & Diabetes Department  
Perth Children's Hospital (PCH)



Nov 2018

# Module 2

## Management of Diabetes

### Injections

Please download the appropriate Management and Action Plans from the Diabetes WA website.

These should be completed by parent/carer and an agreement reached between parents/carers and school.

[Diabetes Management and Action Plans](#)

Time: 15 minutes

# Treatment of T1DM

## Insulin replacement

AND

- Food intake – healthy eating
- Exercise
- Balanced lifestyle



# BGL checks

- Target range for BGL is 4-8 mmol/L
- *It is NOT uncommon to see levels outside of this range*
- Further action is required if BGL < 4 mmol/L or ≥ 15 mmol/L
- [How to do a BGL check](#)
- Routine BGL checking times are:
  - anytime, anywhere in the school
  - before food
  - anytime a hypo is suspected
  - before vigorous activity
  - before exams and tests.

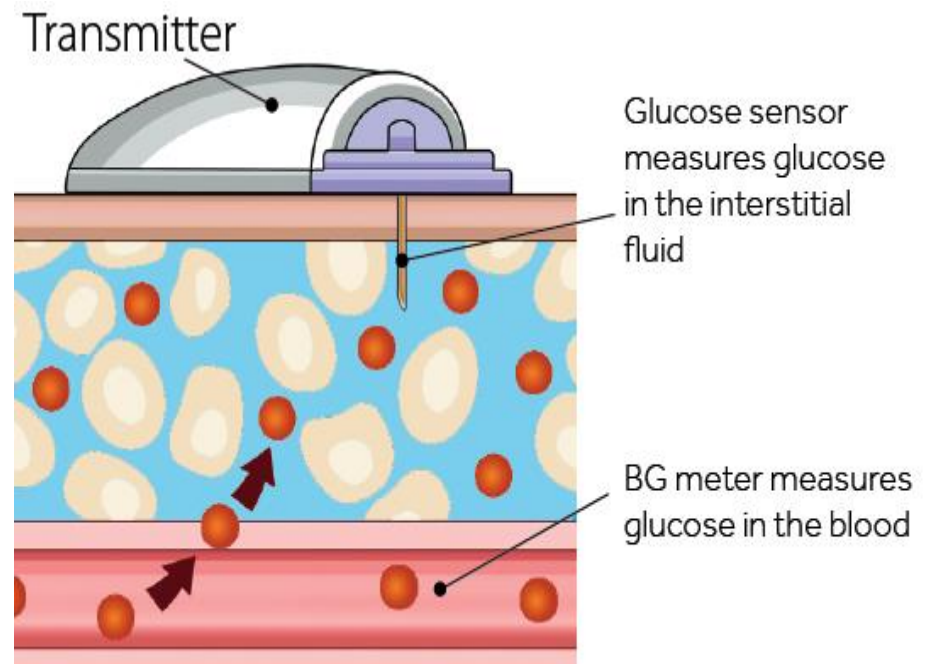
# Monitoring Glucose Levels at School

- BGL monitoring is necessary at school to determine if in or out of target range (4.0-8.0mmol)
- This is generally done by finger prick
- Details are included in Management Plan
- Action Plan shows how to address BGL's below and above target
- May also be supplemented by CGM (see following slides)
- Note: Parents use CGM to manage diabetes and make interventions in management. In a school setting, CGM is generally only used as a monitoring tool. Please see CGM Appendices for device in use. It is the parent's responsibility to provide the CGM Appendix but copies can be found at:

<https://diabeteswa.com.au/professionals/training/diabetes-awareness-in-schools-2/diabetes-action-and-management-plans/>

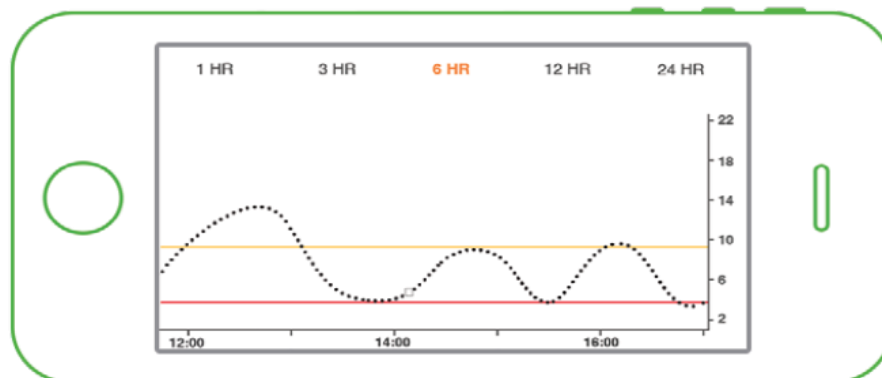
# What is Continuous Glucose Monitoring (CGM)?

- Measures interstitial glucose (fluid around the cells) constantly
- Transfers reading every five minutes
- Shows rate and direction of change
- Glucose information can be linked to a receiver, a smart phone app or pump.



# What CGM shows you

- Real-time continuous sensor glucose readings every five minutes.
- Provides readings that can help find trends and patterns in glucose levels.
- Allows you to see where glucose levels have been, which direction they are headed, and how fast they are rising or falling.



# Mobile phones for CGM

- Most students will require a mobile phone to be used as the receiver
- The mobile phone will need to be within **six metres** of the student for the CGM to work via Bluetooth
- Often parents are 'following' their child's BGL remotely on their own mobile phone and therefore mobile data is necessary
- Teachers may follow the student (however it should not be an expectation from parents)
- Students often need access to their CGM data during exams so an agreement between school and the family will need to be discussed prior.



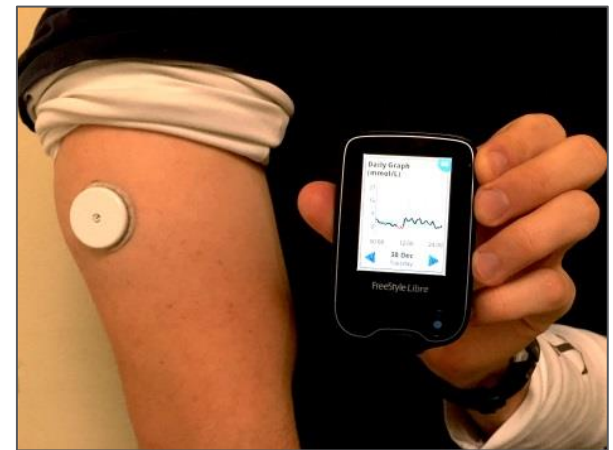
# What is Flash Glucose Monitoring (FGM)?

Abbott Libre Sensor is a form of FGM.

A small sensor is inserted into the upper, outer arm. The sensor tip sits under the skin, and measures glucose levels in the fluid surrounding the cells (interstitial fluid) like CGM.

The sensor measures glucose every minute and stores this glucose data every 15 minutes.

When scanned, the sensor will provide the wearer with the most current glucose reading, a glucose trend arrow and data from the previous eight hours. This will not provide alerts on highs and lows.



# Insulin replacement

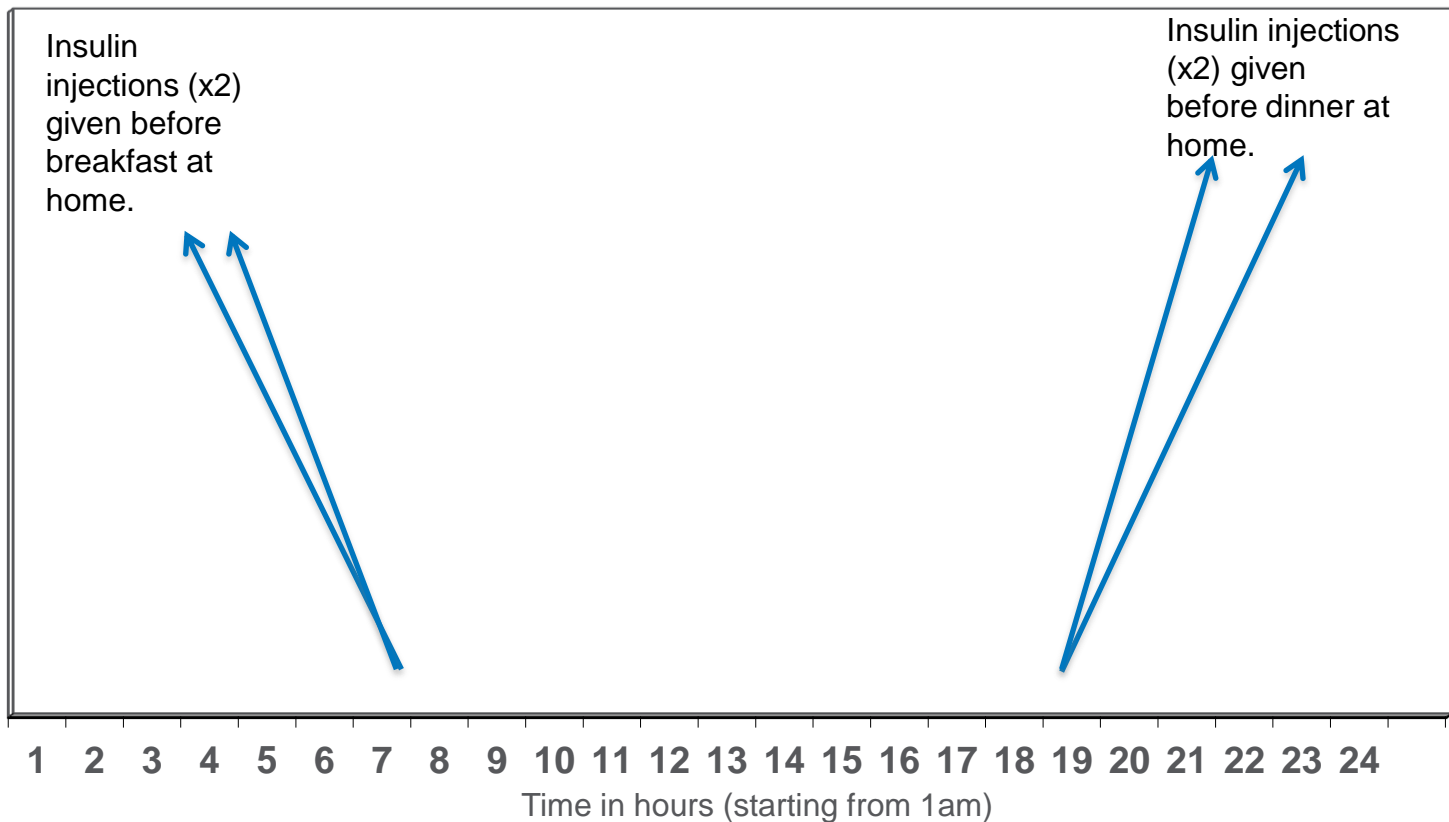
## Insulin injections



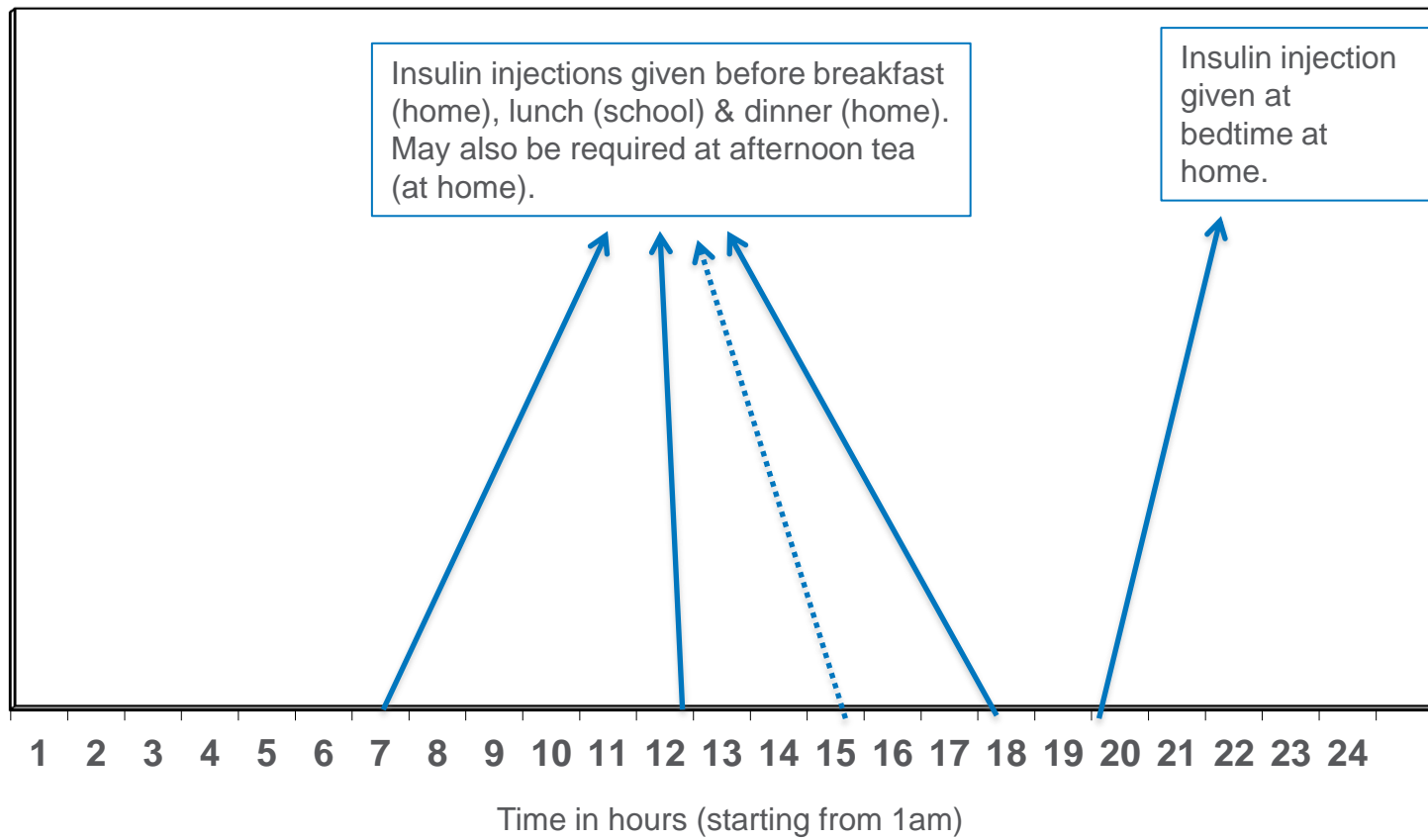
- Twice daily (two injections, twice per day), Multiple daily (4 or more injections per day)
- Two or more insulin types are used (rapid, intermediate and/or long-acting insulin)
- Given with an insulin syringe or pen
- Given before meals.

Insulin is given into the subcutaneous tissue (fat)

# Twice daily Insulin injections



# Multiple daily Insulin injections



# Hypoglycaemia 'Hypos'

Low BGL < 4 mmol/L

Most common causes of hypos:

- too much insulin
- not enough carbohydrate at meals or snacks
- delayed or missed meals or snacks
- increased activity
- illnesses like gastroenteritis which cause decreased oral intake.

# Signs of mild / moderate Hypoglycaemia

- Tiredness
- Hunger (ravenous)
- Pallor (pale skin)
- Shakiness/trembling
- Sweating (cold and clammy)
- Confusion
- Poor coordination
- Poor concentration
- Behaviour/mood change
- Dizziness
- Headache
- Slurred speech
- Blurred vision
- Irritability



# Signs of severe Hypoglycaemia

- Drowsiness
- Unable to swallow
- Loss of consciousness
- Seizure

# Treatment of Hypoglycaemia

## Injections

Check BGL, if it is less than 4 mmol/L :

**Step 1:** Sit down and rest under supervision

**Step 2:** **Immediately give fast-acting glucose** which is the fastest and safest option.

The amount will depend on age and weight as per PCH Diabetes Team recommendation:

- Children  $\leq$  5years old will require 5g
- 6-12 year old children will require 10g
- Children over 12 will require 15g

See school management plan for specifics for each child.

Some examples for fast-acting glucose are (choose one):

- Lemonade - 5g per 60mls
- Glucose tablets which include:
  - Glucodin - 1.5g per tablet
  - Trueplus - 4g per tablet



# Treatment of Hypoglycaemia

## Injections

**Step 3:** Re-check the BGL in 15 minutes. Rest until all symptoms are gone. If the level is still below 4 mmol/L, then repeat steps 2 and 3.

**Step 4:** Once the BGL is 4mmol/L and above, follow up with approximately 15g of a slow-acting carbohydrate containing snack to help prevent another hypo. Some examples are (choose one):

- 1 piece of fruit (*except strawberries and other berries*)
- 1 slice of bread
- 1 cup of milk
- 1 muesli bar
- 100mls yoghurt

**Note:** If the hypo occurs up to 15-20 minutes before a meal or morning tea/ afternoon tea, your meal can be your follow up slow-acting carbohydrate once the BGL is > 4mmol/L.

# Severe Hypoglycaemia

Rarely the child will become too drowsy to eat or drink safely or will not be able to swallow. This is known as severe hypoglycaemia. If this occurs, **DO NOT** put anything in their mouth as they are at risk of choking.

A severe hypo can also cause a seizure (fit) or your child becoming unconscious. Place the child in the recovery position and check DRSABC:

- Danger
- Response
- Send for help
- Airway
- Breathing
- Circulation (pulse)



- ✓ Put the child in coma position
- ✓ Call an ambulance and parent

The current recognised National Training Requirement Unit in first aid and the expected level of competency to be achieved is [HLTAID-003 Provide first aid](#).

All employees responsible for first aid are required to undertake this training and update it every three years thereafter.

# Hyperglycaemia 'Hyper'

## High BGL $\geq 15.0$ mmol/L

A high glucose level in the blood.

Possible causes of hyperglycaemia:

1. Too little insulin
2. Too much carbohydrate food
3. Inactivity
4. Stress
5. Illness

These are not always evident.

# Signs and symptoms of Hyperglycaemia

Symptoms may include:

- increased thirst
- extra toilet visits
- poor concentration
- irritability
- tiredness.

These are not always evident.

# Hyperglycaemia management

## Injections

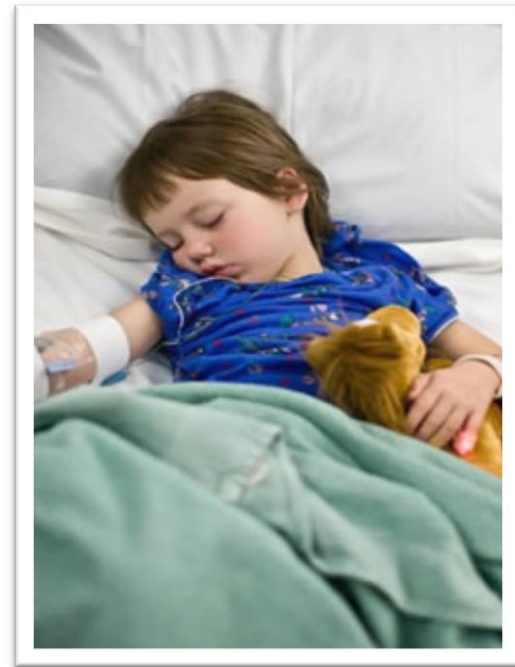
- Check BGL (at least 2 hours after eating carbohydrates as it is not abnormal to see higher results if carbohydrate was consumed in the last 2 hours). Make sure student's hands are clean
- **If student is well**, re-check in two hours, encourage water intake and return to class.
- If student is still  $>15$  mmol/L in two hours, check for ketones, call parent/carer for advice
- **If student is unwell**, check for ketones in the blood
  - blood ketone testing is preferred, however urine ketone testing strips may be used if blood strips are unavailable.
- If ketones are positive  $\geq 1.0$  (pink or purple on the urine strip) child **MUST** go home and parents/carer will need to follow up with the diabetes team.

# Signs of Diabetic Ketoacidosis (DKA)

If the build-up of ketones is not addressed, they can rise to life-threatening levels. This is called Diabetic Ketoacidosis (DKA). The build-up of acids in the blood causes a dangerous internal imbalance of electrolytes and fluids and severe dehydration. DKA requires **urgent medical attention, as soon as possible** as a child can deteriorate and become extremely unwell very quickly.

Signs and symptoms include:

- dehydration
- abdominal cramping
- nausea and vomiting
- ketones in the urine or blood
- sweet smelling breath (acetone)
- rapid laboured breathing
- change in conscious state.



# Illness and Diabetes

Things to do if a child complains they feel unwell:

- take a blood glucose level
- check for ketones
- contact the parents
- do not leave the child unattended
- send home to be cared for by their parents.

**Vomiting is a diabetes emergency so contact parents or diabetes clinic immediately.**

# PCH Diabetes Department

## PCH Diabetes Triage Nurse

### Contact details:

Phone: (08) 6456 1111

### Hours:

Monday - Friday

8.30am – 4.30pm

Press '2' – please leave a clear message

*Consent will be required if discussing a specific child/adolescent.*

*General information can be given if required.*

Email: [pchdiabetestriage@health.wa.gov.au](mailto:pchdiabetestriage@health.wa.gov.au)

## School Special Educational Needs:

## Medical and Mental Health Diabetes Liaison Teachers

### Contact details:

Phone: (08) 6456 0383

Email: [ssenmmh@education.wa.edu.au](mailto:ssenmmh@education.wa.edu.au)

Website: [ssenmmh.wa.edu.au](http://ssenmmh.wa.edu.au)

## PCH Diabetes Doctor On Call

### Contact details:

Phone: (08) 9483 6959

PCH Switchboard: (08) 6456 2222

24 hours, emergencies only!

## Helpful websites

- [pch.health.wa.gov.au](http://pch.health.wa.gov.au)
- [diabetes.telethonkids.org.au](http://diabetes.telethonkids.org.au)
- [Diabetes Management and Action Plans](#)



# Module 2 Quiz

## Treatment of Diabetes

#	Question	True	False
1	An insulin pump is a delivery system that aims to mimic normal pancreatic function for people with T1DM.		
2	If a child has a high BGL they SHOULD always be sent for a run around the oval to help it go down.		
3	A student with high ketones is a medical emergency.		
4	A blood glucose level below 4mmol/L is considered a hypo?		
5	Glucose should be given if the BGL is above 15mmol/L?		
6	Honey should be put in the mouth if someone with T1DM is unconscious or unresponsive?		
7	Increased thirst and extra toilet visits are signs/symptoms of hyperglycaemia.		
8	It is a good idea to do a BGL every hour.		

# Module 2

## Quiz Answers

1. True
2. False
3. True
4. True
5. False
6. False
7. True
8. False