



Hypoglycaemia

Standardised care process

Objective

To promote evidence-based practice in the response to a hypoglycaemic episode for older people who live in residential care settings.

Why the identification and management of hypoglycaemia is important

There is an increased risk of hypoglycaemia for residents taking glucose-lowering medicines (for example, gliclazide) or insulin (Dunning, Duggan & Savage 2014). Hypoglycaemia can result in cardiac arrhythmias, falls and fall-related injuries, seizure, or coma and, in severe cases, death (Meneilly, Knip, Miller, Sherafali, Tessier & Zahedi 2018; RACGP 2016; 2020). It is important to recognise and treat hypoglycaemia episodes and to reduce the risk of occurrence.

No two older people are alike and every older person with diabetes needs a customised diabetes care plan. What works for one resident may not be the best course of treatment for another.

In the older person with diabetes and multiple comorbidities and/or frailty, strategies should be used to strictly prevent hypoglycaemia, which include the choice of antihyperglycaemic therapy and a less stringent HBA1c target (Meneilly et al. 2018; RACGP 2020).

Definitions

BGL: blood glucose level.

Capillary blood glucose levels: on-site measurement of blood glucose levels using a meter and in-date test strips.

Hypoglycaemic episode: blood glucose level lower than 4mmol/L, or low enough to cause symptoms (Therapeutic Guidelines Limited 2019).

Team

Manager, registered nurses (RNs), enrolled nurses (ENs), personal care attendants (PCAs), leisure and lifestyle staff, general practitioner (GP), allied health professionals (such as a physiotherapist, occupational therapist and exercise physiologist), residents and/or family or carers.

Acknowledgement

This standardised care process (SCP) has been developed for public sector residential aged care services (PSRACS) by the Australian Centre for Evidence Based Care (ACEBAC) at La Trobe University through the Department of Health and Human Services Strengthening Care Outcomes for Residents with Evidence (SCORE) initiatives. This SCP is one of a series of priority risk areas reviewed based on the best available evidence in 2023.



Brief standardised care process

Recognition and assessment

- Identify residents who are at risk of developing severe hypoglycaemia.
- Suspect hypoglycaemia if the at-risk resident presents with symptoms.
- Maintain awareness of neuroglycopenic symptoms.
- Check the resident's capillary BGL to confirm the symptoms are due to hypoglycaemia.
- Check the resident's care plan or medication chart for hypoglycaemia management and standing orders.

Interventions

- Respond to hypoglycaemic episodes as per the flow chart in this SCP.
- Report all episodes to the resident's GP and document this.
- Monitor BGL hourly for the first four hours.
- Consult with the GP prior to omitting scheduled insulin or glucose-lowering medications.
- If the BGL rises but the resident does not recover, seek an alternative diagnosis.
- Identify the possible cause of the hypoglycaemic episode.
- Assess the resident's fitness to drive (where appropriate).
- Implement an individualised risk reduction and prevention plan.
- Older people with diabetes should have an individualised hypoglycaemia management plan, which may need to include an order for glucagon.
- Maintain an appropriately equipped hypoglycaemia management kit.

Referral

- GP
- Emergency medical assistance (ambulance service) if the resident is, or becomes, unconscious
- Dietitian or diabetes educator
- Pharmacist

Evaluation and reassessment

- Medical review: consider a review of resident's target blood glucose range
- Ongoing frequency of BGL monitoring
- Report fluctuations in BGL (outside the resident's target range) to their GP

Resident involvement

- Educate the resident about diabetes, including diet and medication action and management.
- Involve the resident in discussions about target BGLs.
- Involve the resident in discussions aimed at determining the cause of hypoglycaemic episodes.
- Allow the resident to self-monitor BGLs if they are able to manage the procedure, and report to staff any abnormal readings.

Staff knowledge and education

- Diabetes
- Risk factors for hypoglycaemia
- Proactive development of a personalised hypo-management plan
- Recognition of hypoglycaemia in the older person
- Immediate response to a hypoglycaemic episode
- Glucagon administration



Full standardised care process

Recognition

Identify residents who are at risk of developing severe hypoglycaemia, that is:

- residents with diabetes
- residents on insulin therapy or glucose-lowering drugs from the sulfonylurea class of medicines (such as gliclazide)
- residents with low dietary intake on insulin therapy or glucose lowering drugs

HBA1c targets need to be individualised. Tight blood glucose control increases the risk of hypoglycaemia

In the older person with diabetes and multiple comorbidities and/or frailty, strategies should be used to strictly prevent hypoglycaemia, which include the choice of antihyperglycemic therapy and a less stringent HBA1c target (Meneilly et al. 2018; RACGP 2020).

Assessment

Hypoglycaemia should be suspected if a resident presents with any of the following symptoms:

- weakness, trembling or shaking
- dizziness or light-headedness
- sweating
- headache
- hunger
- irritability
- difficulty in concentrating
- numbness or tingling around the fingers, face, and lips
- anxiety or fear.

Severe hypoglycaemia may present with these symptoms:

- slurred speech
- confusion and disorientation
- behaviour change (irritability or aggression)
- lack of coordination
- reduced or loss of consciousness
- seizures.

Symptoms to be aware of in older people include:

- napping before meals
- cognitive and behaviour changes
- falls.

Older people often present with neuroglycopenic symptoms because the brain does not receive enough glucose during hypoglycaemia. It is important to:

- check the resident's capillary BGL to confirm symptoms are due to hypoglycaemia and document this in their medical record and progress notes
- check the resident's care plan or medication chart for hypoglycaemia management and a standing order for glucagon
- identify the resident's specific signs and symptoms of hypoglycaemia and document these in their diabetes management plan
- identify residents who have impaired awareness of hypoglycaemia symptoms.

Interventions

The aim is to quickly return and maintain BGLs within the resident's target range, to relieve symptoms and to eliminate risk of injury. Interventions should include the following:

- Respond immediately to a hypoglycaemic episode as per the *Immediate response to a hypoglycaemic episode* flow chart.
- Report any incident to the resident's GP and document this.
- Monitor the resident's BGL hourly for the first four hours.
- Consult the GP prior to omitting scheduled insulin or glucose-lowering medications.
- If BGL rises but the resident does not recover, consider an alternative diagnosis.
- Seek a possible cause of the hypoglycaemic episode, for example:
 - too much insulin/medication or taking it at the incorrect time in relation to food intake
 - long gaps between meals or a missed meal
 - increased activity/exercise levels
 - excess alcohol
 - changes in medication and/or dosages
 - weight loss or decreased appetite
 - vomiting
 - underlying illness (for example, chronic kidney disease).



Implement or review the resident's existing individualised hypo-risk reduction and prevention plan:

- Establish and document the resident's blood glucose range.
- Undertake regular blood glucose monitoring.
- Consider a review of the resident's medication (for medicines that lower blood glucose), including complementary medicines.
- Consider a dietary review.

Maintain an appropriately equipped hypoglycaemic management kit containing:

- blood glucose monitoring equipment
- carbohydrates
- glucose gel
- glucagon 1 mg IM plus equipment for administration (needle, syringe, skin cleansing swab)
- intravenous set (cannula, syringe, sharps container, gloves and skin cleansing swab).

Referral

- Refer for emergency medical assistance (ambulance service) if the resident is, or becomes, unconscious.
- Refer to the GP once treatment has been administered.
- Referral to a dietitian and/or diabetes educator may assist if insufficient carbohydrate intake is the cause of the hypoglycaemic episodes.
- Refer to a pharmacist for a medication review.

Evaluation and reassessment

- Organise a medical review of the resident's target blood glucose range.
- Monitor BGLs, with the frequency determined in conjunction with the resident and their GP.
- Report BGL fluctuations (outside the resident's target range) to the GP.

Resident involvement

- Educate the resident about diabetes, including diet and medication action and management.
- Involve the resident in discussions about target BGLs.
- Involve the resident in discussions aimed at determining the cause of hypoglycaemic episodes.
- Allow the resident to self-monitor BGLs if they are able to manage the procedure, and report to staff any abnormal readings.

Staff knowledge and education

- Diabetes
- Risk factors for hypoglycaemia and proactive identification of a resident's hypo risk
- Proactive development of a personalised hypo-management plan
- Recognition of hypoglycaemia in the older person
- Immediate response to a hypoglycaemic episode
- Glucagon administration



Flow chart: Immediate response to a hypoglycaemic episode – symptomatic and asymptomatic

If symptoms present or if BGL < 4mmol/L, inform RN and check the resident's safety				
Resident tolerates normal diet	Resident requires thickened fluids	Enteral therapy: nasogastric or PEG tube	Resident is drowsy or unconscious. Unable to swallow safely	
Administer 15 g of quick-acting carbohydrate orally either: <ul style="list-style-type: none"> • half a can of soft drink (not sugar-free) • half a glass of fruit juice • 6–7 jelly beans • 3 teaspoons of sugar or honey • glucose tablets equivalent to 15 g of carbohydrate 	Give glucose gel (15 g on a spoon) orally	Give half a can of soft drink (not sugar-free) or half a glass of fruit juice via nasogastric or PEG tube	Check ABC. Place resident on their side (recovery position). Administer 1 mg glucagon if prescribed (either subcutaneously or intramuscularly as ordered)	Call triple zero (000). State it is a diabetic emergency and request a MICA ambulance
Review capillary blood glucose test in 15 minutes				
If blood glucose level < 4mmol/L and the resident is conscious , give another quick-acting carbohydrate (as above) If blood glucose level > 4mmol/L, move to next step		Failure to respond: administer another 1 mg glucagon 20 minutes after first dose		
Complex (low GI) carbohydrate: If next meal is more than 15 minutes away give either: <ul style="list-style-type: none"> • a sandwich • a piece of fruit • a glass of milk or soya milk • 2–3 pieces of dried fruit • 1 tub of low-fat yoghurt • 6 small dry biscuits and cheese 	Complex carbohydrate: thickened fluid or immediate vitamised meal	Complex carbohydrate: one serve of nutritional supplement	When resident regains consciousness, give a quick-acting carbohydrate as for conscious person treatment	
Test BGL every 1–2 hours over the following four hours and notify the GP if the BGL is outside the resident's reportable range				



Evidence base

Alberta Health Services 2021, *Treatment of hypoglycaemia – Adult*, <<https://www.albertahealthservices.ca/scns/Page13361.aspx>>

Alberta Health Services 2021, *Glycaemic management – Adult*, <<https://www.albertahealthservices.ca/scns/Page13361.aspx>>

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Further reading

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Sircar, M, Bhatia, A & Munshi, M 2016, 'Review of hypoglycaemia in the older adult: Clinical Implications and management', *Canadian Journal of Diabetes*, vol. 40, pp. 66–72.



Important note: This standardised care process (SCP) is a general resource only and should not be relied upon as an exhaustive or determinative clinical decision-making tool. It is just one element of good clinical care decision making, which also takes into account resident/patient preferences and values. All decisions in relation to resident/patient care should be made by appropriately qualified personnel in each case. To the extent allowed by law, the Department of Health and the State of Victoria disclaim all liability for any loss or damage that arises from any use of this SCP.

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Authorised and published by the Victorian Government, 1 Treasury Place, Melbourne.

© State of Victoria, Department of Health, April 2023. (2308532)

ISBN 978-1-76096-817-5 (pdf/online/MS word)

Available from the department's website at <<https://www.health.vic.gov.au/residential-aged-care/standardised-care-processes>>.