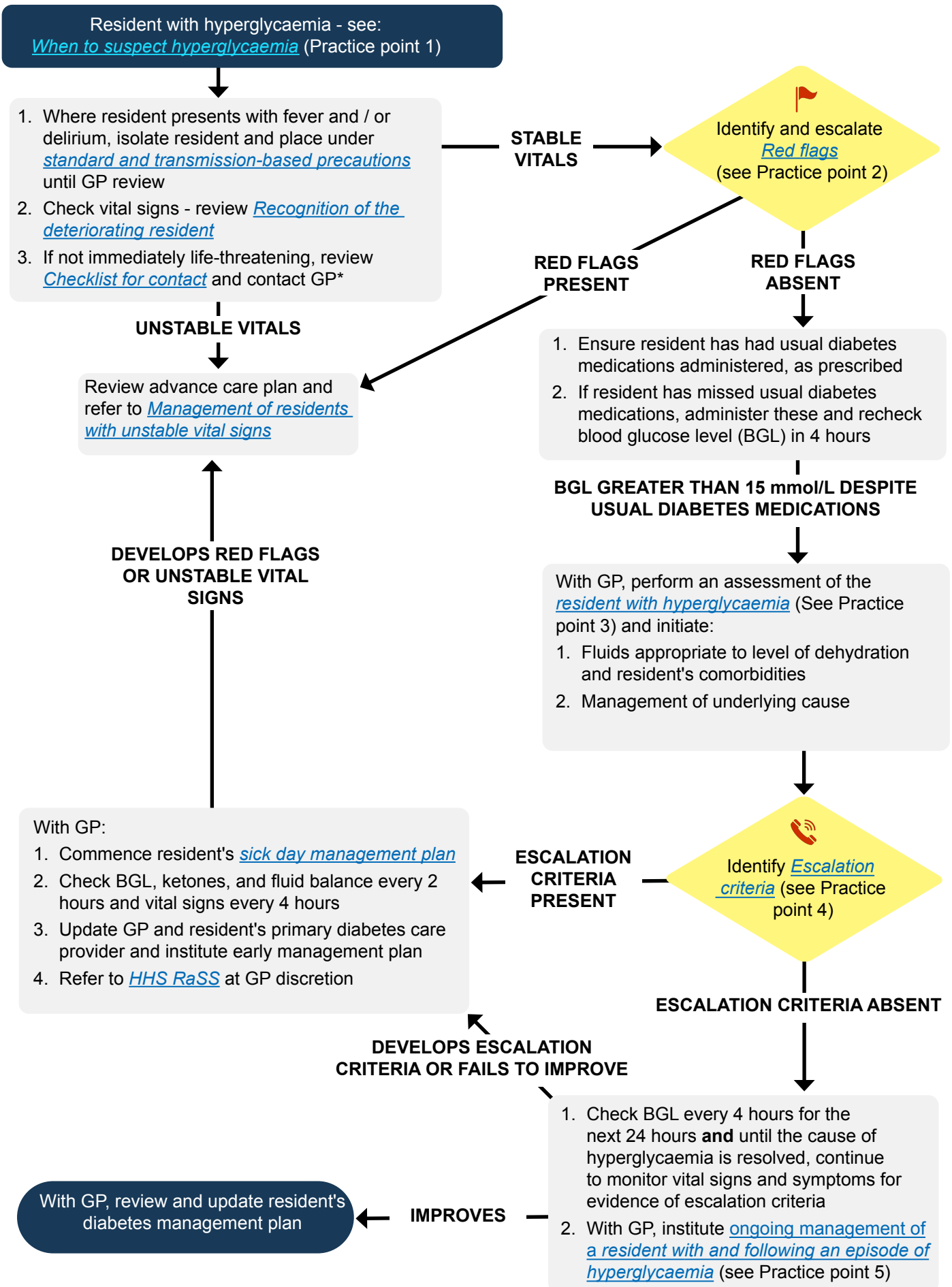


Hyperglycaemia



*Where feasible, arrange telehealth or face-to-face GP review

Hyperglycaemia practice points

1) When to suspect hyperglycaemia

Hyperglycaemia is defined as blood glucose level (BGL) of greater than 15 mmol/L in the older, frail person. Hyperglycaemia has adverse effects on cognitive function, hydration, wound healing, pain and infection risk. Untreated hyperglycaemia increases the risk of hyperosmolar hyperglycaemic state and diabetic ketoacidosis, which are medical emergencies with significant associated morbidity and mortality.

All residents with diabetes should have a blood glucose monitoring plan that tailors frequency and timing to individual need. Hyperglycaemia may be detected through routine checking of BGL.

Additional checking of BGL should occur in any resident with clinical features of hyperglycaemia, including:

1. Polyuria (urinary frequency)
2. Polydipsia (increased fluid intake or thirst - this is often absent in older people)
3. Altered mental state
4. Dehydration
5. Poor wound healing
6. Oral or genital thrush

Regular blood glucose monitoring to identify hyperglycaemia or hypoglycaemia should be undertaken in a resident with diabetes and any of:

1. Recent change to insulin or diabetic medications
2. An intercurrent illness such as infection
3. Recent commencement of [medications associated with hyperglycaemia](#) (see Practice point 3)
4. Change in usual oral intake or physical activity

2) Red flags for deterioration in resident with hyperglycaemia

Red flags for deterioration or an underlying life-threatening cause / complication in residents with hyperglycaemia should prompt review of [Management of unstable residents](#) pathway.

Red flags include:

- Unstable vital signs including altered level of consciousness
- Severe dehydration: review [Dehydration and subcutaneous fluids](#) pathway
- Nausea and vomiting
- Deep sighing breathing pattern
- Seizures or development of acute focal neurological change (focal weakness, vision loss or other neurological changes)
- Severe abdominal pain
- Chest pain
- Resident with recurrent hypoglycaemia less than 5 mmol/L and resident has been administered a long-acting sulphonylurea (e.g. glibenclamide) within the last 24 hours

Hyperglycaemia practice points (cont'd)

3) Assessment of resident with hyperglycaemia

The goals of assessment of a resident with hyperglycaemia are to:

- A. Identify underlying causes of hyperglycaemia
- B. Identify complications of hyperglycaemia

A. Identify the underlying cause of hyperglycaemia:

Examples of considerations include:

Assessment feature	Differential diagnosis
Chest pain	Acute coronary syndrome or myocardial infarction
Fever	Infection or sepsis
Delirium	
Respiratory symptoms (e.g.cough, shortness of breath)	Consider COVID-19
Medication complication/s	Diabetes medications: missed or inadequate diabetes medication dosing
	Recent change to medications including addition of medication that may increase BGL - most common examples include: <ul style="list-style-type: none">- Corticosteroids (prednisone, cortisone, hydrocortisone, dexamethasone, budesonide)- Antipsychotics
Recent hospitalisation	Recent acute illness, trauma or surgery
Diet	Increased carbohydrate intake
Changes to physical activity	Reduced physical activity
Stress	Pain or psychological distress

B. Identify complications of hyperglycaemia

Hyperglycaemia may be associated with the following complications:

- i. Dehydration - review [Dehydration and subcutaneous fluids](#) pathway
- ii. Diabetic ketoacidosis (DKA) - DKA is more common in residents with type I diabetes or in those taking sodium-glucose transporter (SGLT2) inhibitors (e.g. dapagliflozin, empagliflozin or ertugliflozin). It is suspected clinically where there is:
 - BGL greater than 15 mmol/L
 - Blood ketones elevated
 - Dehydration
 - Rapid and / or deep breathing may be present
 - Altered level of consciousness
- iii. Hyperosmolar hyperglycaemic state - this is more common in type II diabetes. It is suspected clinically where there is:
 - Persistently increasing blood glucose level
 - Dehydration
 - Altered level of consciousness or delirium or focal neurological deficits
 - Seizures (focal or generalised)
- iv. Electrolyte disturbance - consider blood tests to assess renal function and liver function

Hyperglycaemia practice points (cont'd)

4) Escalation criteria

Escalate to [HHS RaSS](#) at GP discretion if any of:

- Presence of ketones (blood ketone monitoring is preferred as urine ketone monitoring is less accurate):
 - Serum ketones greater than 1.5
 - Urine ketones: moderate / large
- Sweet smelling "acetone" breath
- BGL persistently greater than 15 mmol/L for at least 4 hours despite treatment
- Abdominal pain
- Progressive worsening of dehydration
- Development of acute (or acute on chronic) renal impairment
- Electrolyte disturbance requiring replacement therapy
- Underlying cause that is beyond scope of GP / RACF to manage independently

5) Ongoing management of a resident with and following an episode of hyperglycaemia

With GP review / develop individualised diabetes management care plan to address and reduce incidence of hyperglycaemia. Management targets should consider the resident's functional status, life expectancy and comorbidities. The care plan should include guidance for:

- **BGL monitoring frequency**
 - Tailor monitoring to the individual resident's requirements and goals of care
 - Increase monitoring pre-emptively when residents have an acute illness / change in condition or when [medications associated with hyperglycaemia](#) are commenced (see Practice point 3)
 - In general, monitoring should occur prior to meals and / or 2 hours after meals

Resident features	Stability	Recommended BGL monitoring frequency
Diet-controlled diabetes	Stable BGLs	At least daily, alternating times
Oral glucose-lowering medications	Stable BGLs	At least twice daily, alternating times
Insulin	Stable BGLs	At least three times per day, prior to meals
Diabetes with recently prescribed corticosteroids	Potential for instability	At least three times per day, prior to meals
Diabetes with recently prescribed antipsychotic medications	Potential for instability	At least daily, alternating times
Unstable diabetes	Escalation criteria present	2-hourly (prior to meals and 2 hours after meals) - review regimen daily
	No escalation criteria	4-hourly for 24 hours - review regimen daily

- **BGL target range**
 - Generally 6 to 15 mmol/L is appropriate (with a HbA1C target of up to 8.5 per cent appropriate for frail older persons requiring insulin with a life expectancy predicted at less than 5 years)
- **Individual residents' symptoms / signs of hyper- and hypoglycaemia** and related management plans
- **An individualised sick day plan** including adjustment to glucose-lowering medication doses. It is important to note that supplementary sliding scale or sporadic top-up insulin dosing is generally inappropriate in older and / or frail persons due to increased risk of hypoglycaemia. Instead, residents may require judicious adjustments to insulin dosing for the duration of their acute illness

Hyperglycaemia references

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Hyperglycaemia version control

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