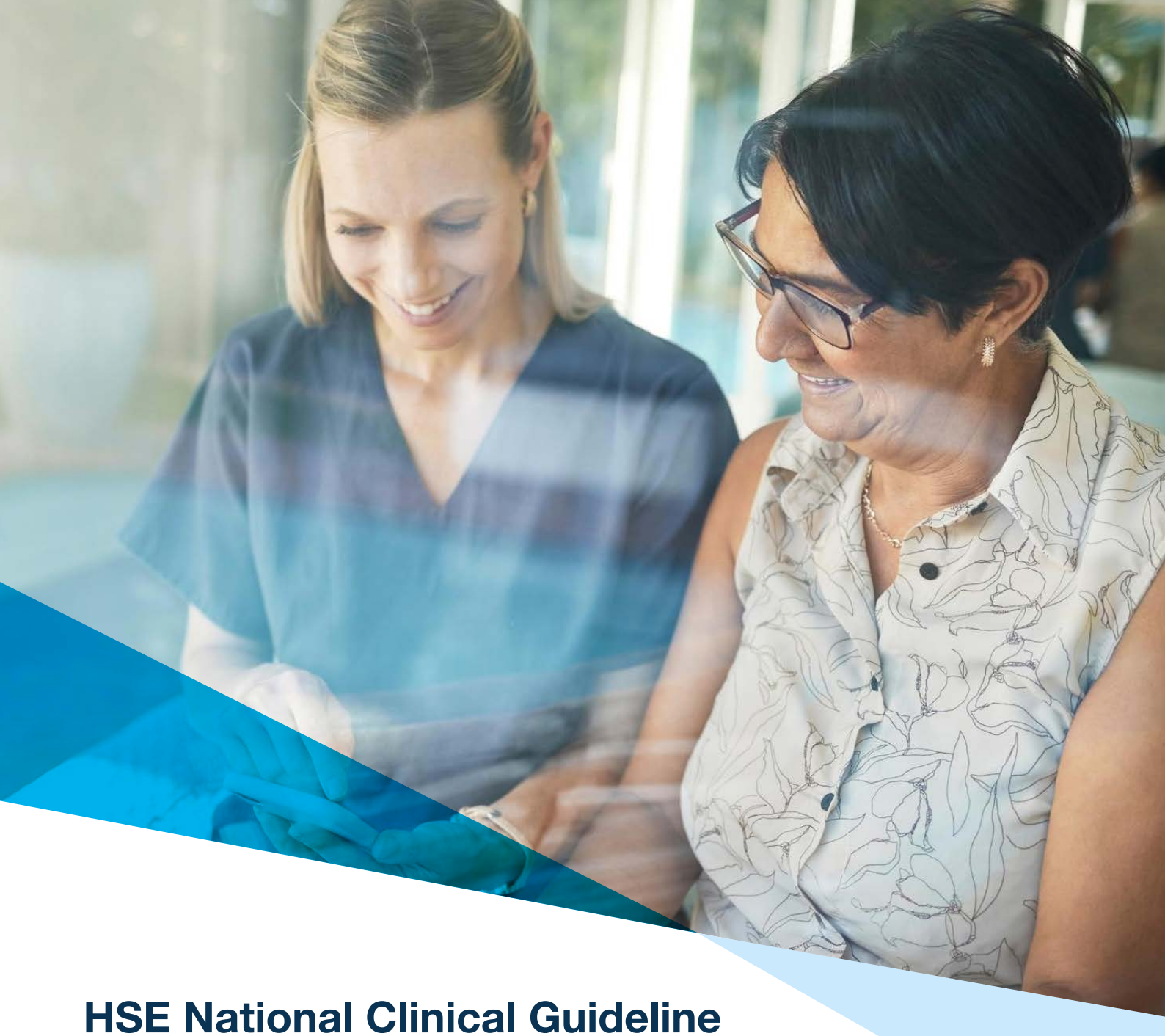

HSE National Clinical Guideline for the Diagnosis and Treatment of Hypoglycaemia in Adults with Diabetes Mellitus in Acute and Non-Acute Settings

National Clinical Programme for Diabetes

November 2025

Clinical Design & Innovation
Person-centred, co-ordinated care

DIABETES

Integrated Care Programme for the Prevention and Management of Chronic Disease

National Policy ☐ National Procedure ☐ National Protoco ☐ National Guideline ☐

National Clinical Guideline ☒

HSE National Clinical Guideline for the Diagnosis and Treatment of Hypoglycaemia in Adults with Diabetes Mellitus in Acute and Non-Acute Settings

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Development Group Name:	Hypoglycaemia Guidelines Development Group
Development Group Chairperson:	Prof. Derek O'Keeffe
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[1] Records the senior management roles involved in the governance and development of the document.

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These clinical guidelines are intended to support healthcare professionals to respond effectively to hypoglycaemic events, optimise blood glucose management, and enhance patient safety.
Description:
Hypoglycaemia is a serious and potentially life-threatening complication of diabetes. Timely recognition and treatment are critical to prevent severe outcomes, including neurological damage, seizures, coma, and in rare instances, death. These guidelines provide a standardised, evidence-based framework to ensure safe, consistent diagnosis and management of hypoglycaemia across clinical settings and are intended to enable healthcare professionals to respond effectively to hypoglycaemic events, optimise blood glucose management, and enhance patient safety.

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Quick Reference Guide A

Treatment of Hypoglycaemia in Adults in the Acute Hospital setting

Treatment in an acute setting

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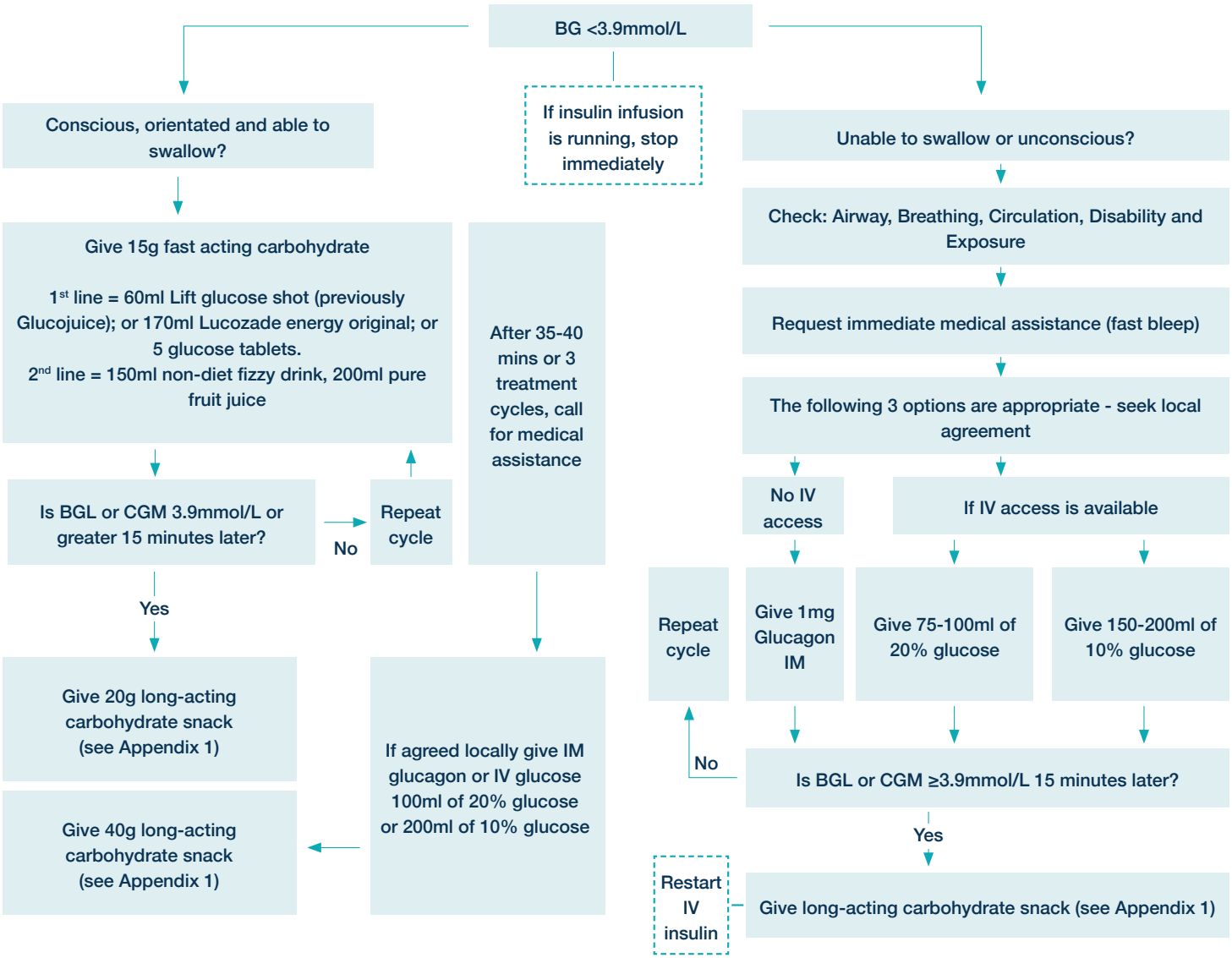


Examples of carbohydrate containing foods*	
20g carbohydrate	**40g carbohydrate** *Choose this option if person has a history of liver disease.* *Always give 40g carbohydrate if person has received Glucagon regardless of medical history*
Choose <u>ONE</u> of the options below; • 1 thick slice of toast • 3 plain biscuits • One piece of medium-sized fruit + 1 plain biscuit • 400ml milk • Next carbohydrate meal if due within 30 minutes	**Choose <u>ONE</u> of the options below;** • 2 thick slices of toast • 6 plain biscuits • 2 pieces of medium size fruit + 1 plain biscuit • Next carbohydrate meal if due within 30 minutes

Quick Reference Guide B

Treatment of Hypoglycaemia in Adults in the Non-Acute setting

Treatment in a non-acute setting

For people displaying symptoms of hypoglycaemia check capillary blood glucose if a glucose meter is available to confirm diagnosis. If a glucose meter is not available and the person is symptomatic then treat as hypoglycaemia

BG <3.9mmol/L

If insulin infusion is running, stop immediately

Conscious, orientated and able to swallow?

Give 15g fast acting carbohydrate

1st line = 60ml Lift glucose shot (previously Glucojuice); or 170ml Lucozade original; or 5 glucose tablets.

2nd line = 150ml non-diet fizzy drink, 200ml pure fruit juice

After 35-40 mins, or 3 treatment cycles, call for medical assistance

Is BGL or CGM 3.9mmol/L or greater or greater 15 minutes later?

No → Repeat cycle

Yes

Give 20g long-acting carbohydrate snack (see Appendix 1)

After 35-40 mins or 3 treatment cycles, call for medical assistance

If agreed locally give IM glucagon

Give 40g long-acting carbohydrate snack (see Appendix 1)

Ensure the person's glucose level is ≥3.9mmol/L before departure from the department / venue and >5.0mmol/L for at least 45 minutes if person is driving

Unable to swallow or unconscious?

Telephone 999/112 for Emergency Ambulance

Check: Airway, Breathing, Circulation, Disability and Exposure

Place in recovery position and do not place anything in persons mouth to prevent risk of aspiration

If agreed locally give 1mg Glucagon IM*

**only licenced for insulin induced hypoglycaemia and may be less effective in people prescribed sulphonylurea therapy and take 15 minutes to take effect*

Repeat cycle

No

Is BGL or CGM ≥3.9mmol/L 15 minutes later?

Yes

The HCP should stay with the person until emergency medical assistance arrives

Give 15g fast acting carbohydrate

1st line = 60ml Lift glucose shot (previously Glucojuice); or 170ml Lucozade original; or 5 glucose tablets.

2nd line = 150ml non-diet fizzy drink, 200ml juice

Give 40g long-acting carbohydrate snack (see Appendix 1)

Examples of carbohydrate containing foods*	
20g carbohydrate	**40g carbohydrate** *Choose this option if person has a history of liver disease.* *Always give 40g carbohydrate if person has received Glucagon regardless of medical history*
Choose <u>ONE</u> of the options below; • 1 thick slice of toast • 3 plain biscuits • One piece of medium-sized fruit + 1 plain biscuit • 400ml milk • Next carbohydrate meal if due within 30 minutes	**Choose <u>ONE</u> of the options below;** • 2 thick slices of toast • 6 plain biscuits • 2 pieces of medium size fruit + 1 plain biscuit • Next carbohydrate meal if due within 30 minutes

1.0 Introduction

This guideline has been formulated to ensure the delivery of safe, effective standardised care, to reduce unnecessary variations in practice and provide an evidence base for the care of adult patients (over 16 years) with diabetes who are at risk of developing hypoglycaemia and/or when hypoglycaemia is identified.

Although many of the studies and evidence relate to the inpatient management of hypoglycaemia in acute hospitals, this guidance can be adapted for use in the community and non-acute settings.

Villani et al (2017) conducted a review of guidelines and evidence for emergency treatment of hypoglycaemia available at that time and found that high-quality evidence for the management of hypoglycaemia is lacking, limiting treatment recommendations.

In general, guidelines and studies were somewhat concordant and recommended 15-20 g of fast acting oral glucose, repeated after 10-15 min for treatment of the responsive adult, and 1 mg intramuscular glucagon for treatment of the unresponsive adult. No evidence was found for other treatment approaches (Villani et al, 2017; ADA 2025).

1.1 Rationale

Hypoglycaemia results from an imbalance between glucose supply, glucose utilisation and current insulin levels. Hypoglycaemia is the commonest side-effect of insulin and sulphonylurea therapy used to treat diabetes. Because of their modes of action, other diabetes medications such as metformin, pioglitazone, DPP-4 inhibitors, acarbose, SLGT-2 inhibitors and GLP-1 analogues prescribed without insulin or an insulin secretagogue (sulphonylurea and repaglinide) are unlikely to result in hypoglycaemia.

Hypoglycaemia must be excluded in any person with diabetes who is acutely unwell, drowsy, unconscious, unable to co-operate, presenting with aggressive behaviour or a seizure. For this reason, a capillary or venous blood glucose measurement forms part of the systematic initial approach to the management of the acutely ill adult.

Hypoglycaemia is a medical emergency, which can lead to acute neurological, cardiovascular and inflammatory effects, and in severe cases seizures, injuries and, rarely, death (Mitrakou et al, 1991, Verhulst et al, 2022, Chow et al 2018). Therefore, prompt recognition and treatment as well as prevention strategies are imperative. (Demirbilek et al 2023).

The goals of treatment for hypoglycaemia are to detect and treat a low blood glucose level promptly by using an intervention that provides the fastest rise in blood glucose to a safe level to relieve symptoms quickly.

1.2 Aim

The aim of this guideline is to provide evidence-based practical advice on the steps necessary to support Health Care assistants, Registered General Nurses/Midwives/, Health & Social care professionals and Medical staff who are involved in adult diabetes care, in the education and care of patients who have developed an episode of hypoglycaemia.

1.3 Objective

The objective of this guidance is to:

- Provide evidence-based practical guidance to all staff on the diagnosis, treatment and management of hypoglycaemia in patients with diabetes.
- To promote early assessment and reduce risks of hypoglycaemia.
- To promote awareness of signs and symptoms of hypoglycaemia.
- To treat hypoglycaemia effectively.

1.4 Scope

This guideline applies to medical staff, registered nurses/midwives and student nurses/midwives under the strict supervision of a registered nurse, health care assistants with appropriate training, Health and Social Care Professionals who are involved in adult diabetes care, in the education and care of patients with diabetes who are at risk of developing hypoglycaemia.This guideline is designed to enable adaptation to suit local healthcare practice as required.

This treatment guideline **PART A** is for use by clinical staff working with people with diabetes in acute healthcare settings services not including critical care units or emergency departments.

This treatment guideline **PART B** is for use by clinical staff working with people with diabetes in non-acute healthcare settings/services. Including but not limited to Chronic Disease Management Hubs, outpatient clinics, group based self-management education and support programmes.

This guideline can be used in Community Hospital / residential settings with local adaptation and approval if required.

1.5 Outcome

By adopting the principles and adapting where necessary, these guidelines will help ensure good quality, timely and effective treatment for people with diabetes. Provide clear guidance to healthcare professionals in the identification, treatment and management of hypoglycaemia in adults with diabetes in the acute and non-acute setting.

2.0 Classification of hypoglycaemia

The ADA classifies hypoglycaemia into three levels;

Level 1 hypoglycaemia

This is defined as a measurable glucose concentration <3.9 mmol/L but ≥3.0 mmol/L. A blood glucose concentration of 3.9 mmol/L has been recognized as a threshold for neuroendocrine responses to falling glucose in people without diabetes. Because many people with diabetes demonstrate impaired counter regulatory responses to hypoglycaemia and/or experience hypoglycaemia unawareness, a measured glucose level <3.9 mmol/L is considered clinically important (independent of the severity of acute hypoglycaemic symptoms).

Level 2 hypoglycaemia

This is defined as a blood glucose concentration <3.0 mmol/L. This is the threshold at which neuroglycopenic symptoms begin to occur and requires immediate action to resolve the hypoglycaemic event. If a person has level 2 hypoglycaemia without neurogenic or neuroglycopenic symptoms, they likely have hypoglycaemia unawareness (discussed further below). This clinical scenario warrants investigation and review of the medical regimen.

Level 3 hypoglycaemia

This is defined as a severe event characterized by altered mental and/or physical functioning that requires assistance from another person for recovery irrespective of blood glucose level.

- Level 1 Glucose <3.9 mmol/L and ≥3.0 mmol/L
- Level 2 Glucose <3.0 mmol/L
- Level 3 A severe event characterized by altered mental and/or physical status requiring assistance for treatment of hypoglycemia irrespective of blood glucose level

Note: For the purpose of this document and taking into consideration patient safety hypoglycaemia will be referred to as any blood glucose level less than 3.9 mmol/l.

3.0 Patient Assessment

Assess patient for risk factors and signs and symptoms of hypoglycaemia. This can be done in parallel with the measurement of capillary blood glucose or via continuous glucose monitoring (CGM).

3.1 Risk Factors

Risk Factors for Hypoglycaemia (not in order of importance)

Medication related causes

- Excessive, inappropriate or ill-timed insulin or sulphonylurea dosage.
- Tight glycaemic control
- Lipohypertrophy

Reduction in exogenous glucose caused by

- Missed meals or snacks
- Food malabsorption

Insulin independent glucose utilization is increased due to

- Exercise
- Weight reduction

Comorbidities

- Impaired renal function
- Impaired liver function
- Hypothyroidism
- Untreated glucocorticoid or growth hormone insufficiency
- Hypopituitarism

Other potential causes

- Alcohol consumption
- Inter current illness
- Untreated sepsis
- Breastfeeding
- Impaired hypoglycaemic awareness

3.2 Signs and Symptoms

Assess for signs and symptoms of hypoglycaemia (Table 1)

Table 1: Signs and symptoms of hypoglycaemia

Neurogenic (usually the first symptoms)	**Neuroglycopenic** (later as a result of brain glucose deprivation)
• Sweating • Palpitations • Shaking • Fatigue • Tingling lips • Pallor • Hunger	• Confusion (or worsening confusion in someone with dementia) • Drowsiness • Behaviour change • Dizziness • Irritability • Speech difficulty • Incoordination • Impaired / loss of consciousness • Seizures • Hemiplegia

Some patients may be asymptomatic (i.e. Hypo Unawareness). However treatment must still be carried out

Capillary blood glucose and Continual Glucose Monitoring (CGM)

For people displaying symptoms of hypoglycaemia, check capillary blood glucose if a glucose meter is available to confirm diagnosis. If a glucose meter is not available and the person is symptomatic then treat as hypoglycaemia.

If a person with diabetes is using a CGM sensor and symptoms are inconsistent with the reading, glucose values should be confirmed with a capillary blood glucose measurement. (El-Abd & Poole, 2023)

4.0 Treatment of Hypoglycaemia

This section comprises 3 parts:

- Part A; Treatment of Hypoglycaemia in an Acute Setting
- Part B: Treatment of Hypoglycaemia in a Non-Acute Setting
- Responsibilities of the Healthcare Profession following an episode of hypoglycaemia
- Hypo Treatment Boxes for Clinical Areas

Specific guidance on the treatment of hypoglycaemia in patients receiving enteral feeding regimes or Nasogastric feeding is in appendix 3.

4.1 PART A: Treatment of Hypoglycaemia in an Acute Setting

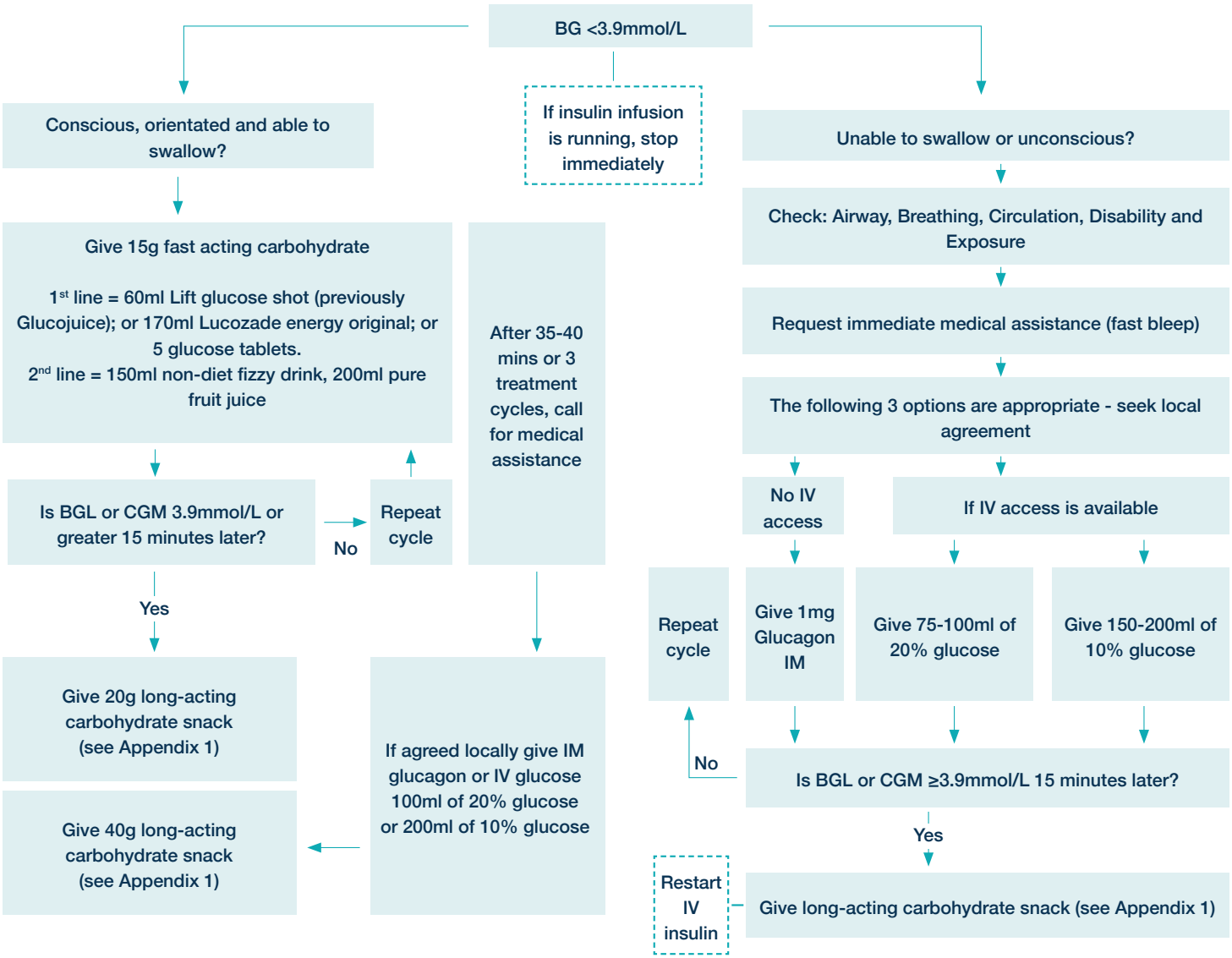
Part A comprises 4 sub-sections:

- Adults who are conscious, orientated and able to swallow
- Adults who are not able to swallow and/or unconscious or are uncooperative / aggressive
- Adults on a Hybrid Closed Loop Insulin (HCL) Pump Therapy
- Adults who are 'Nil by Mouth'

PART A - Treatment of Hypoglycaemia in an ACUTE setting

Treatment in an acute setting

For people displaying symptoms of hypoglycaemia check capillary blood glucose if a glucose meter is available to confirm diagnosis. If a glucose meter is not available and the person is symptomatic then treat as hypoglycaemia



Examples of carbohydrate containing foods*	
20g carbohydrate	**40g carbohydrate** *Choose this option if person has a history of liver disease.* *Always give 40g carbohydrate if person has received Glucagon regardless of medical history*
Choose <u>ONE</u> of the options below; • 1 thick slice of toast • 3 plain biscuits • One piece of medium-sized fruit + 1 plain biscuit • 400ml milk • Next carbohydrate meal if due within 30 minutes	**Choose <u>ONE</u> of the options below;** • 2 thick slices of toast • 6 plain biscuits • 2 pieces of medium size fruit + 1 plain biscuit • Next carbohydrate meal if due within 30 minutes

4.1.1 Adults who are conscious, orientated and able to swallow

If the person with diabetes in hospital has an insulin infusion in situ, stop the infusion immediately. Continue to follow the guidance below. Restart the insulin infusion once the hypo has been fully treated. Consider reviewing insulin infusion requirement and dosing.

Step 1: Give 15g of fast acting carbohydrate orally.

Preferred choice is:

1 bottle (60ml) of glucose drink Lift juice shot (this is previously known as Glucojuice),
Or 170ml (3/4 glass) Lucozade Energy Original non-diet drink
Or 5 Glucose tablets.

Second line choice is:

150ml non-diet fizzy drink

Or

200ml pure fruit juice

Step 2: Repeat capillary blood glucose / CGM measurement 15 minutes later.

Step 3:

3a) Once glucose level is **≥3.9mmol/L** and the person has recovered:

Give a long- acting carbohydrate snack (20g) of the person's choice where possible, taking into consideration any specific dietary requirements. See Appendix 1 for examples.

People given glucagon require a larger portion of long-acting carbohydrate (40g) to replenish glycogen stores.

3b) If the glucose level is still less than ≥3.9mmol/L:

Repeat from step 1 and if the glucose remains <3.9mmol/L after 35-40minutes or 3 cycle treatments, call for medical assistance*.

Step 4:

If agreed locally give IM glucagon or IV glucose 100ml of 20% glucose or 200ml of 10% glucose.

4.1.2 Adults who are not able to swallow and/or unconscious or are uncooperative / aggressive

Step 1: Quickly check the following

A). Airway
B). Breathing
C). Circulation
D). Disability including and capillary blood glucose

Step 2: If the patient has an insulin infusion in situ, stop immediately

Request immediate assistance from medical staff (e.g. "fast bleep" a doctor – follow local protocol)

The following three options (i-iii) are all appropriate; local agreement should be sought:

i) If IV access available, give 100ml of 20% glucose. If an infusion pump is available use this, but if not readily available the infusion should not be delayed. Repeat capillary blood glucose measurement 15 minutes later. If it is still less than 3.9mmol/L, repeat.

ii) If IV access available, give 150-200ml of 10% glucose. Repeat capillary blood glucose measurement 15 minutes later. If it is still less than 3.9mmol/L, repeat.

iii) If no IV access is available then give 1mg glucagon via S/C or IM route. Glucagon may be less effective in patients prescribed sulfonylurea therapy and may take up to 15 minutes to take effect. Glucagon mobilises glycogen from the liver and will be less effective in those who are chronically malnourished (including those who have had a prolonged period of starvation), abuse alcohol or have severe liver disease. In this situation IV glucose is the preferred option.

Step 3: Once the blood glucose is greater than ≥3.9mmol/L and the patient has recovered give a long-acting carbohydrate of the patient's choice where possible, taking into consideration any specific dietary requirements. See Appendix 1 for examples.

Step 4: DO NOT omit insulin injection if due (However, insulin regimen review may be required).

Step 5: If the patient was on IV insulin, continue to check blood glucose every 15 minutes until 3.9 mmol/L or above, then re-start IV insulin after review of dose regimen to try and prevent hypoglycaemia recurrence. Consider concurrent IV 10% glucose infusion and/or stepping down the insulin increments on the variable scale if appropriate (check local guidance). If the hypoglycaemia was due to sulphonylurea or long acting insulin therapy then be aware that the risk of hypoglycaemia may persist for up to 24-36 hours following the last dose, especially if there is concurrent renal impairment.

Step 6: Document event in patient's notes. Ensure regular capillary blood glucose monitoring is continued for at least 24 to 48 hours. Ask the patient to continue this at home if they are to be discharged. Give hypoglycaemia education or refer to CNS as per local referral pathway.

4.1.3 Adults on a Hybrid Closed Loop Insulin (HCL) Pump Therapy

The automated feedback loop between CGM and pump insulin delivery means that, in the event of falling glucose levels or impending hypoglycaemia, insulin delivery is slowed or suspended, helping to avoid hypoglycaemia or limit its severity. The half-life of rapid-acting insulin is very short and, once suspended, insulin is cleared very quickly, allowing the glucose level to stabilise rapidly and then to rise again. HCL users require less glucose when treating hypoglycaemia. If glucose < 3.9mmol/l and minimal insulin on board (IOB), then 8-10g of carbohydrates is all that is required. If glucose < 3.9 mmol/l but there is a lot of IOB from bolus/autocorrections, need to counteract IOB with carbohydrates based on ICR

Treatment of the unconscious / incapacitated / uncooperative patient:

Initial treatment of hypoglycaemia is as per standard protocol. If persistent hypoglycaemia occurs, remove the cannula and the pump. Once normoglycaemia has been re-established then re-start insulin, either by CSII if patient now alert and able to self-manage, or if not an alternative regimen; this is needed to prevent the development of ketoacidosis.

Stopping and Re-starting CSII

Stopping

- The pump together with its tubing may be removed leaving only the SC cannula in place, unless cannula site is infected or in surgical field. Clearly this will not apply to CSII without external tubing such as the Omnipod®. It is important not to cut tubing or disconnect the pump from the tubing as the remaining insulin in the tube may infuse quickly risking hypoglycaemia.
- Place the CSII into a suitable container and do not attempt to turn off; the amount of insulin "lost" into the container will be minimal.
- Document where the CSII is stored, or to whom it has been given.
- The insulin in a CSII is very short acting therefore alternative insulin must be started immediately i.e. within an hour (see below) to avoid risk of ketoacidosis.
- If the patient is able to do so, he/she should make a record of their current basal and bolus settings, as this data may be lost if the pump is stopped for any significant length of time.

Restarting

- The person with diabetes is ideally best placed to restart the CSII because they will have received training in this process and will be experienced. If this is not possible, and CSII has been only temporarily removed or suspended (i.e. no IV insulin infusion has been required) and SC cannula still in position, the patient should perform a "fixed prime" to refill the dead space within the tubing, then simply reconnect CSII, and restart basal infusion.
- If capillary glucose >10mmol/l, he/she should bolus a correction dose once CSII re-connected, using their personal correction ratio or ISF (insulin sensitivity factor).

- If transferring from IV insulin infusion: ask patient to insert new cannula and re-start CSII after performing a fixed prime (there is no need to wait until a meal); wait 60 minutes before discontinuing IV insulin.
- If transferring from subcutaneous insulin: patient inserts new cannula, performs a fixed prime and re-starts CSII. CSII settings may need to be reprogrammed. Patient may need to temporarily reduce background insulin infusion rate (e.g. drop to a 70% temporary basal rate for 24hrs) while long acting subcutaneous insulin is still active - increased glucose monitoring may be required.
- No further subcutaneous insulin doses should be required once CSII restarted.
- Re-check blood glucose 1-2 hours after CSII re-start. Contact the diabetes team for further advice.

See Diabetes Technology Network (DTN) UK Clinical Guidelines for further details.

4.1.4 Adults who are 'Nil by Mouth'

Step 1: If the patient has a variable rate intravenous insulin infusion, adjust as per prescribed regimen, and seek medical advice. Most variable rate intravenous insulin infusions should be restarted once blood glucose is above ≥3.9mmol/L although an infusion rate adjustment may be indicated.

Step 2: Options (i) and (ii) for intravenous glucose, as outlined above in section 4.1.2 are both appropriate treatment options.

Local agreement should be sought.

Step 3: Once blood glucose is greater than ≥3.9mmol/L and the patient has recovered consider intravenous infusion of 10% glucose (refer to Appendix 5 for administration details) until patient is no longer 'Nil by Mouth' or has been reviewed by a doctor.

Step 4: If the hypoglycaemia was due to sulphonylurea or long acting insulin therapy then be aware that the risk of hypoglycaemia may persist for up to 24-36 hours following the last dose, especially if there is concurrent renal impairment.

Step 5: Document event in patient's notes. Ensure regular capillary blood glucose monitoring is continued for at least 24 to 48 hours. Ask the patient to continue this at home if they are to be discharged. Give hypoglycaemia education or refer to CNS as per locally agreed pathway.

4.2 PART B: Treatment of Hypoglycaemia in a non-acute setting

Part B comprises the following guidance:

4.2.1. Adults who are conscious, orientated and able to swallow

4.2.2 Adults on a hybrid closed loop insulin (HCL) pump therapy

4.2.3 Adults who are not able to swallow and /or unconscious or uncooperative/aggressive

PART B - Treatment of Hypoglycaemia in a NON-ACUTE setting

Treatment in a non-acute setting

For people displaying symptoms of hypoglycaemia check capillary blood glucose if a glucose meter is available to confirm diagnosis. If a glucose meter is not available and the person is symptomatic then treat as hypoglycaemia

BG <3.9mmol/L

If insulin infusion is running, stop immediately

Conscious, orientated and able to swallow?

Give 15g fast acting carbohydrate

1st line = 60ml Lift glucose shot (previously Glucojuice); or 170ml Lucozade original; or 5 glucose tablets.

2nd line = 150ml non-diet fizzy drink, 200ml pure fruit juice

After 35-40 mins, or 3 treatment cycles, call for medical assistance

Is BGL or CGM 3.9mmol/L or greater or greater 15 minutes later?

No → Repeat cycle

Yes

Give 20g long-acting carbohydrate snack (see Appendix 1)

After 35-40 mins or 3 treatment cycles, call for medical assistance

If agreed locally give IM glucagon

Give 40g long-acting carbohydrate snack (see Appendix 1)

Ensure the person's glucose level is ≥3.9mmol/L before departure from the department / venue and >5.0mmol/L for at least 45 minutes if person is driving

Unable to swallow or unconscious?

Telephone 999/112 for Emergency Ambulance

Check: Airway, Breathing, Circulation, Disability and Exposure

Place in recovery position and do not place anything in persons mouth to prevent risk of aspiration

If agreed locally give 1mg Glucagon IM*

**only licenced for insulin induced hypoglycaemia and may be less effective in people prescribed sulphonylurea therapy and take 15 minutes to take effect*

Repeat cycle

No

Is BGL or CGM ≥3.9mmol/L 15 minutes later?

Yes

The HCP should stay with the person until emergency medical assistance arrives

Give 15g fast acting carbohydrate

1st line = 60ml Lift glucose shot (previously Glucojuice); or 170ml Lucozade original; or 5 glucose tablets.

2nd line = 150ml non-diet fizzy drink, 200ml juice

Give 40g long-acting carbohydrate snack (see Appendix 1)

Examples of carbohydrate containing foods*	
20g carbohydrate	**40g carbohydrate** *Choose this option if person has a history of liver disease.* *Always give 40g carbohydrate if person has received Glucagon regardless of medical history*
Choose ONE of the options below; • 1 thick slice of toast • 3 plain biscuits • One piece of medium-sized fruit + 1 plain biscuit • 400ml milk • Next carbohydrate meal if due within 30 minutes	**Choose ONE of the options below;** • 2 thick slices of toast • 6 plain biscuits • 2 pieces of medium size fruit + 1 plain biscuit • Next carbohydrate meal if due within 30 minutes

4.2.1. Adults who are conscious, orientated and able to swallow

Step 1: Give 15g of fast acting carbohydrate orally;

Preferred choice:
1 bottle (60ml) of glucose drink Lift juice (this is previously known as Glucojuice); or 170ml (3/4 glass) Lucozade Energy Original non-diet drink;

Or 5 Glucose tablets.

2nd line choices include:
150ml non-diet fizzy drink; or 200ml pure fruit juice

Step 2: Repeat capillary blood glucose / CGM measurement 15 minutes later.

Step 3:

- **3a)** Once glucose level is ≥3.9mmol/L and the person has recovered, give a long acting carbohydrate snack (20g) of the persons choice where possible, taking into consideration any specific dietary requirements.
- **3b)** If the glucose level is still less than 3.9mmol/L, repeat from step 1.

If the glucose remains <3.9mmol/L after 35-40minutes or 3 cycle treatments, (steps 1 and 2 above) call for medical assistance*

Step 4: If agreed locally give IM glucagon

Step 5: Ensure the person's glucose level is ≥3.9mmol/L before departure from the department / venue and >5.0mmol/l for at least 45 minutes if person is driving (as per Road Safety Authority Guidelines)

See Appendix 1 for examples of 20g and 40g Carbohydrate Foods

4.2.2 Adults on a hybrid closed loop insulin (HCL) pump therapy

The automated feedback loop between CGM and pump insulin delivery means that, in the event of falling glucose levels or impending hypoglycaemia, insulin delivery is slowed or suspended, helping to avoid hypoglycaemia or limit its severity. The half-life of rapid-acting insulin is very short and, once suspended, insulin is cleared very quickly, allowing the glucose level to stabilise rapidly and then to rise again.

HCL users require less glucose when treating hypoglycaemia. If glucose <3.9mmol/l and minimal insulin on board (IOB), then **8-10g** of carbohydrates is all that is required.

If glucose <3.9 mmol/l but there is a lot of IOB from bolus/autocorrections, need to counteract IOB with carbs based on ICR.

Unlike patients on long acting insulin, follow-up with long acting carbohydrates is not usually needed. Pump infusion rates may need adjustment, especially if there is a history of recurrent hypoglycaemia: consult diabetes team.

Any person unconscious or unable to swallow with HCL in situ 999 or 112 should be called for immediate transfer to acute care.

See Diabetes Technology Network (DTN) UK Clinical Guidelines for further details.

4.2.3 Adults who are not able to swallow and /or unconscious or uncooperative/aggressive

Step 1: Telephone 999 /112 for Emergency Ambulance

Step 2: Quickly assess the following:

A) Airway
B) Breathing
C) Circulation
D) Disability and capillary blood glucose
E) Exposure

Step 3: Place in recovery position and ensure airway is clear. Do not put anything (including glucose) in person's mouth to prevent risk of aspiration

Step 4: If agreed locally give glucagon via the sub cutaneous or IM route (Glucagen hypo kit 1mg prn) . Glucagon is only licensed for insulin induced hypoglycaemia and may be less effective in for people who are prescribed Sulphonylurea therapy (it may take up to 15 minutes to take effect).

Step 5: Repeat capillary blood glucose measurement 10 minutes later.

Step 6: Once blood glucose is above ≥3.9mmol/L and the person is conscious and able to swallow give 15g of rapid-acting carbohydrate orally followed by slow acting carbohydrate snack (40g).

Step 7: The health professional to stay with patient until emergency medical assistance arrives.

4.3 Responsibilities of Healthcare Professional following a Episode of Hypoglycaemia

The treatment healthcare professional should:

- Record the event and treatment given in the persons records.
- Advise the person to contact their healthcare professional responsible for their diabetes care for further assessment / education / titration of medication to prevent further episodes of hypoglycaemia. This may be their local diabetes team or their General Practitioner (GP).

4.4 Hypo Treatment Box for Clinical Areas

All clinical sites should maintain a 'Hypo Box' for the immediate management of hypoglycaemic episodes.

- The Hypo Box should be clearly identifiable, kept in an accessible safe area and all clinical staff should be aware of its location and contents.
- The Hypo box contents should be checked on a weekly basis - ensure it is clean, contents complete and in date and check list documented.
- It is the responsibility of the member of staff who uses any contents to replenish them after use.
- Clean box after every use as per local infection control guidelines.

Hypo treatments should be checked regularly to make sure they remain in date within date.
Food labels should be checked regularly re carbohydrate content as manufacturers may change carbohydrate content

Contents of a Hypo Box in an Acute Hospital Setting

Copy of hypoglycaemia treatment flowchart (laminated and attached to inside of lid)

Preferred treatments:

- Lift Glucose drinks (3 x 60ml bottles)
- Glucose tablets - 2 packets e.g. Dextro Energy 3g CHO per tablet or Lift gluco chews CHO 3.7g per tablet
- 1 x (380ml) bottle of Lucozade Energy Original (bottle must be replaced after single use)
- 1 small (~200ml) carton of orange juice (20g CHO)
- 2 x Glucagon hypokit (in box or can be kept in fridge)
- 20% glucose IV solution (100ml vial) with infusion set
- 1x green cannula 18G l
- 1x grey cannula 16G l
- 1x 10ml sterile syringe l 3 x 10ml sodium chloride 0.9% ampoules for flush l
- 1x green sterile needle 21G
- l Chlorhexidine spray/alcohol wipes l 1x IV dressing (cannula cover)
- l 10% glucose for IV infusion (500ml bag) with infusion set

Contents of a Hypo Box in a Non-Acute Clinical Setting

Copy of hypoglycaemia treatment flowchart (laminated and attached to inside of lid)

Preferred treatments:

- Lift Glucose drinks (3 x 60ml bottles)
- Glucose tablets - 2 packets e.g. Dextro Energy 3g CHO per tablet or Lift gluco chews CHO 3.7g per tablets
- 1 x (380ml) bottle of Lucozade Energy Original (bottle must be replaced after single use)
- 2nd line oral treatment - 1 small (~200ml) carton of orange juice (~20g CHO)
- 2 x Glucagon hypokit (in box or can be kept in fridge)

Please Note: If stored out of the fridge the Glucagon hypokit needs to be labelled with a reduced expiry date of 18 months

For staff who are working ‘off site’ e.g. a home visit or education session it is suggested that they have an appropriate oral treatment for hypoglycaemia with them.

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Glossary of terms

Hypoglycaemic Episode	Blood glucose level less than <3.9mmol/L
Hypoglycaemia Unawareness	Characterised by deficient counter regulatory hormone release and a diminished autonomic response. Patients are unable to recognise, articulate, and/or manage their hypoglycaemic symptoms. An inability to detect the onset of hypoglycaemia because of a total absence of warning symptoms.
Insulin	Insulin is a peptide hormone produced by beta cells of the pancreatic islets. Insulin injection is a pharmaceutical preparation of the protein hormone insulin for use in the management of Diabetes.
Lipohypertrophy	Fatty tissue, which develops under the skin from injecting in the same area. It, is one of the most common complications of insulin therapy. It affects insulin absorption causing unexplained hypoglycaemia or hyperglycaemia
Type 1 Diabetes	Type 1 diabetes is an autoimmune condition leading to beta cell destruction and absolute insulin deficiency. The only treatment is insulin
Type 2 Diabetes	Type 2 diabetes is a condition characterised by progressive loss of insulin secretion on the background of insulin resistance Treatmens for Type 2 Diabetes is lifestyle changes, oral hypoglycaemic agents, noninsulin injectable therapies, and/ or insulin therapy.
Sulphonylureas	Oral hypoglycaemic agent used in the treated of type 2 diabetes. They are insulin secretagogues, stimulating insulin secretion. These drugs increase the risk of hypoglycaemia in patients with diabetes.
Meglitinides	Oral hypoglycaemic agents used in the treatment of type 2 diabetes. They act similarly to sulfonylureas by regulating adenosine triphosphate-sensitive potassium channels in pancreatic beta cells, thereby causing an increase in insulin secretion. These drugs increase the risk of hypoglycaemia in patients with diabetes.

Abbreviations

Abbreviation	Definition
ADA	American Diabetes Association
CHO	Community Health Organisation
CGM	Continual Glucose Monitoring
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CNS	Clinical Nurse Specialist
CSII	Continuous Subcutaneous Insulin Infusion
DKA	Diabetic Ketoacidosis
ED	Emergency Department
GDM	Gestational Diabetes Mellitus
GP	General Practitioner
HbA1c	Glycosylated haemoglobin
HONK	Hyperosmolar non-ketotic syndrome
HSE	Health Service Executive (Ireland)
HCL	Hybrid Closed Loop
IDF	International Diabetes Federation
IES	Irish Endocrine Society
INDI	Irish Nutrition and Dietetic Institute
ISF	Insulin Sensitivity Factor
IV	Intravenous
MOC	Model of Care
MARD	Mean Absolute Relative Difference
NCNM	National Council for the Professional Development of Nursing and Midwifery
NICE	National Institute for Health and Clinical Excellence (England and Wales, UK)

NMBI	Nursing and Midwifery Board of Ireland
OHA	Oral hypoglycemic agent
PCCC	Primary Community and Continuing Care
PWD	Person with diabetes
PHN	Public Health Nurse
PN	Practice Nurse (General Practice)
RANP	Registered Advanced Nurse Practitioner
RGN	Registered General Nurse
S/c	Sub Cutaneous
SMBG	Self-monitoring of blood glucose
T1DM	Type 1 Diabetes mellitus
T2DM	Type 2 Diabetes mellitus
WHO	World Health Organisation
VRII	Variable Rate Insulin Infusion

2.0 Appendices

Appendix 1: Examples of Carbohydrate Foods

It is important to always check the food label as the carbohydrate content of foods vary across brands and manufacturers may change the carbohydrate contents of products.

Examples of carbohydrate containing foods*	
20g carbohydrate	**40g carbohydrate** Choose this option if person has a history of liver disease. Always give 40g carbohydrate if person has received Glucagon regardless of medical history
Choose ONE of the options below; • 1 thick slice of toast • 3 plain biscuits • One piece of medium-sized fruit + 1 plain biscuit • 400ml milk • Next carbohydrate meal if due within 30 minutes	**Choose ONE of the options below;** • 2 thick slices of toast • 6 plain biscuits • 2 pieces of medium size fruit + 1 plain biscuit • Next carbohydrate meal if due within 30 minutes

Appendix 2: Hypoglycaemia Management in Adults requiring Enteral Feeding

Risk factors for Hypoglycaemia in patients receiving enteral feeding regimes or nasogastric feeding:
• Blocked / displaced feeding tube - anyone with a blocked tube should seek urgent advice from their appropriate team • TPN or IV glucose discontinued • Feed intolerance • Vomiting • Feed paused • Increase of physical activity e.g. during physiotherapy or procedures • Change in feed regimen or reduced carbohydrate intake if feed volume reduced • Change in time or duration of feed rest period • Enteral feed discontinued • Diabetes medication administered at an inappropriate time relative to feed • Changes in medication that cause hyperglycaemia e.g. steroid therapy reduced/stopped • Deterioration in renal function • Severe hepatic dysfunction

Assessment

Quickly check the following.

A) Airway

B) Breathing

C) Circulation

D) Disability (including blood glucose)

Treatment is to be administered via a feeding tube. Do not administer this treatment via an intravenous TPN line. Local arrangements should be made regarding the supply of the necessary equipment and the person responsible for administering the treatment.

Treatment – To be administered via feed tube

Step 1: Commence treatment if blood glucose <3.9mmol/L

Step 2: Check to see is the enteral tube blocked or displaced

- If the enteral tube is blocked or displaced give 1mg IM Glucagon.
- If the patient is not conscious give 1mg IM Glucagon
- If enteral tube is not blocked or displaced and the patient is conscious give **15g fast acting carbohydrate via enteral tube:**

Preferred choice: 60ml Lift glucose; or 50-70ml juice based oral nutrition supplement e.g. Fortijuice/Ensure Plus Juice/Fresubin Juicy/Altrajuice.

Second line choice = 150-200ml pure orange juice.

Step 3: Flush the feeding tube with water as per feeding protocol

Step 4: Repeat these procedures every 10-15 minutes until blood glucose is 3.9mmol/L or greater.

Step 5: After 35-40 mins or 3 treatment cycles if the blood glucose is not above 3.9mmol/L:

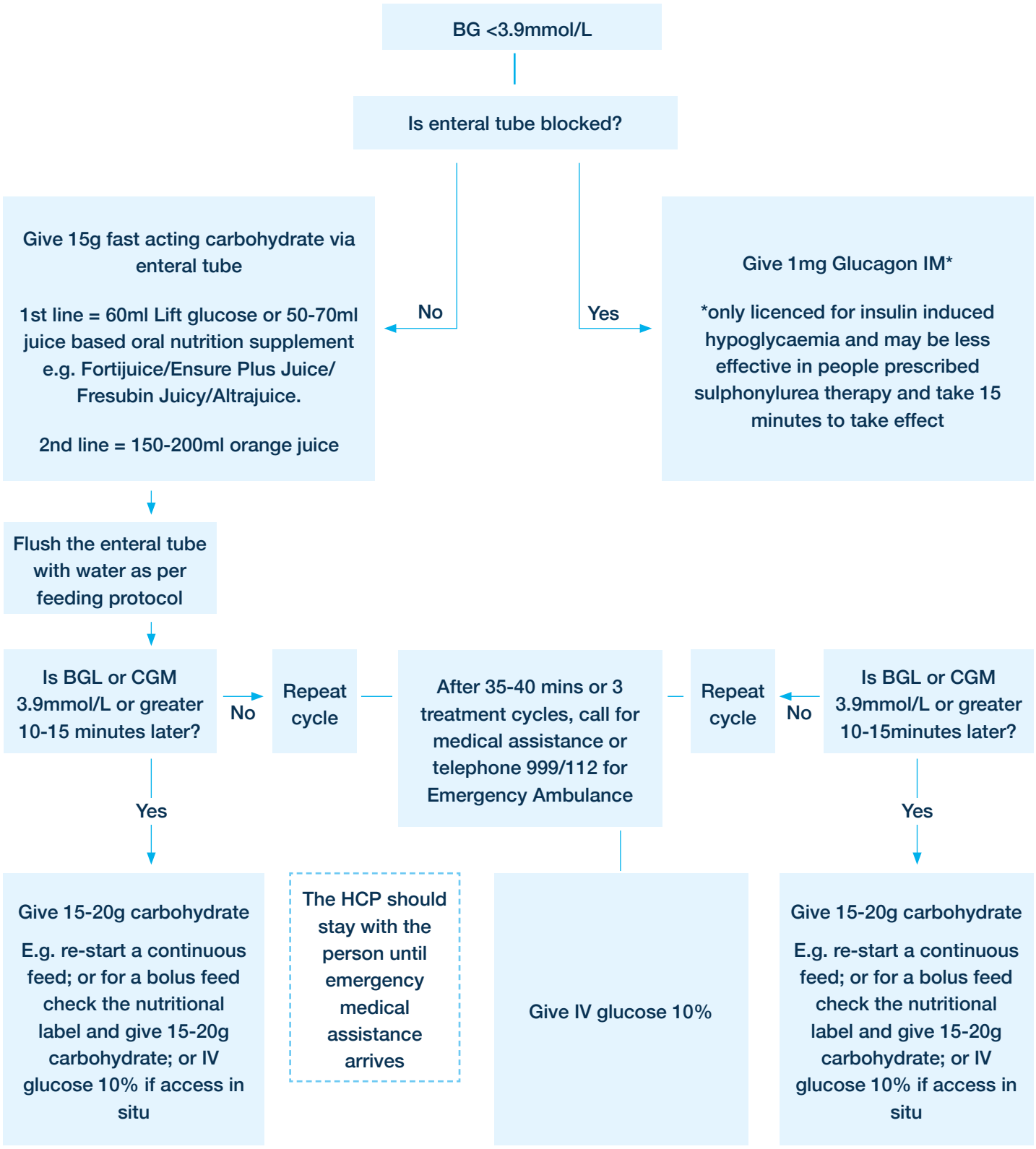
- In the acute setting call for medical assistance.
- In the non-acute setting telephone 999 /112 for Emergency Ambulance.
- Health professional to remain with the patient until medical assistance arrive.
- **In an acute setting only**- if blood glucose remains less than 3.9mmol/L after 30-45 minutes (or 3 treatment cycles) give 100ml Intravenous 20% glucose or 200ml of 10% glucose.
- Take in to account cardiac / renal status of the patient using smallest amount of volume possible.

Step 6: Once blood glucose is 3.9mmol/L or greater, give 15-20g carbohydrate. For example:

- re-start a continuous feed;
- or for a bolus feed check the nutritional label and give 15-20g carbohydrate;
- or Acute setting only IV glucose 10% IV access is in situ

Step 7: Document the event in patient's records and advise the patient or carer to continue regular blood glucose monitoring for 24-48 hours & not to omit subsequent doses of insulin

Algorithm for Patient Receiving Enteral Feed



Appendix 3: Membership of Development Group

The Development Group met throughout 2024 and 2025 to develop, review and finalise the content with contributions from the members listed below.

Membership of Hypoglycaemia Development Group (2024-2025)	
Name	**Role / Position**
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