Hyperglycaemia - Full Clinical Guideline

Reference No.:CG-DIABEND/2023/004

PLEASE NOTE THAT THIS GUIDELINE SUPERCEDES THE 'ADULT DIABETES CHART'. PLEASE REFER TO THIS GUIDELINE WHEN MANAGING HYPERGLYCAEMIA.

1. Introduction and Who Guideline applies to

- This guideline applies to adult patients with diabetes
- **This guidance is NOT applicable to patients admitted to a critical care setting OR perioperative patients.**
- This guideline details the management of hyperglycaemia (capillary blood glucose >12mmol/l) in adult inpatients admitted to ward-based clinical areas in UHDB. The guidance is applicable for both medical and nursing staff working in these areas.
- Hyperglycaemia in hospitalised patients increases mortality. Approximately 1 in 4 patients admitted to the hospital have a known diagnosis of diabetes.
- Many patients without pre-existing diabetes will experience stress related hyperglycaemia.
- **All inpatients with known diabetes/hyperglycaemia should have the HbA1c checked if a value measured within 3 months prior to their admission is not available.** This value is useful while discharging a patient from the hospital. If the HbA1c on admission is within acceptable limits it is likely that the patient can be discharged home on their pre-admission regimen. The HbA1c value also aids in the differentiation of patients with stress induced hyperglycaemia and pre-existing diabetes.
- Insulin therapy (administered SC/IV) is the safest and the most effective way of controlling hyperglycaemia in the inpatient setting.
- For patients commenced on steroid therapy - separate guidance exists for hyperglycaemia control (please refer to the DIABETES UK/JBDS guidance - https://www.diabetes.org.uk/professionals/position-statements-reports/specialist-care-for-children-and-adults-and-complications/management-of-hyperglycaemia-and-steroid-glucocorticoid-therapy-october-2014).
- For patients on parenteral nutrition therapy multiple approaches to glycaemic control exist. Please refer these patients to the diabetes team.

2. Guideline Standards and Procedures

2.1 This guideline sets out in a flowchart (see appendix 1) an approach to managing hyperglycaemia for all adult inpatients admitted to adult inpatient wards in UHDB.

2.2 If staff is unsure regarding the management of such patients despite referral to the guidance then they should seek advice from the specialist diabetes team or a senior colleague.

2.3 The Diabetes specialist nurse team can be contacted via Extramed (Derby)ICE (Burton) (electronic referral) or via switchboard (mobile phone) and this is a 7 day service 9-5pm mon-fri at RDH and sat/sun 9-1pm/Mon-Fri 9-5pm at QHB. Diabetes SpR on-call via switch board Mon-Fri 9-5pm. Out of hours medical advice should be via the medical SpR on-call via switchboard.

3. Education and Training

All medical and nursing staff is required to complete safe use of insulin Safety training via essential to role either online or via one stop shops. This training can be accessed via learning passports and needs to be reviewed every 2 years.

4. Monitoring Compliance

Element to be monitored	Lead	Tool	Frequency	Reporting arrangements
Implementation of this guidance in appropriate areas	**Dr Suma Sugunendran Amy Redfern Zara Redfern**	**Case note reviews, Datix incident Reporting, inpatient diabetes dashboard**	**Continuous**	**Report to the Diabetes Safety Group**

5. Supporting References

None required.

6. Key Words

Hyperglycaemia, Diabetes, Adult inpatients

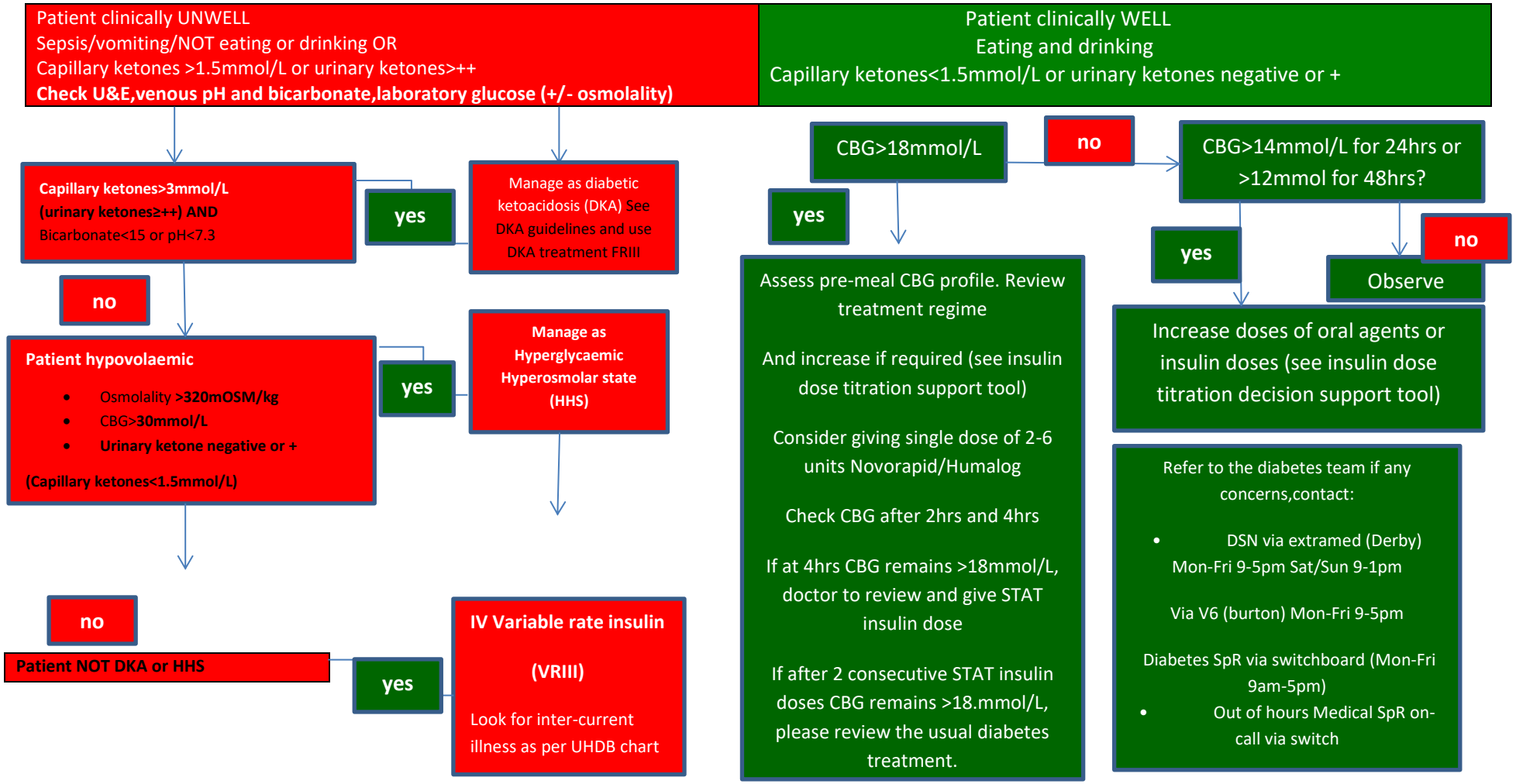
Documentation Controls

Development of Guideline:	Dr Sugunendran, Diabetes Safety Group
Consultation with:	Diabetes Safety Group Endocrinology consultants Diabetes inpatient specialist nurses
Approved By:	Diabetes Safety Group - 21/10/2020 Medical Division – 28/10/2020 Reviewed no change - DSG- Dec 2023 Medicine Division -
Review Date:	December 2026
Details of changes made during review:	None
Key Contact:	Dr Sugunendran Clinical Lead for inpatients

DIABETES DECISION SUPPORT TOOL

Management of Hyperglycaemia- High Capillary Blood Glucose Levels (CBGs) in Patients With Diabetes

- Pre meal blood glucose (CBG) >12mmol/L-review patient and CBG readings. Check CBG pre-meal and bedtime as a minimum
- Check for ketones (capillary or urine) in ANY patient known to have diabetes, who is clinically unwell or in patients who are clinically well if CBG> 18mmol/L
- Look for the cause- Illness related hyperglycaemia (e.g. sepsis), missed/incorrect dose of oral hypoglycaemic agents or insulin, steroid therapy, NG feeds
- T2DM (any patient on SGLT2 inhibitors (Empagliflozin, canaglflozin,dapaglfiflozin) STOP SGLT-2 inhibitors if prescribed these can be re-started on discharge once patient is clinically well.
- Doctor to review patient and advise treatment according to below.



INSULIN DOSE GUIDANCE FOR PATIENTS WITH DIABETES WHO ARE CLINICALLY WELL AND CBG>18mmol/L

- **Standard CBG target** for inpatients with diabetes **6-12mmol/L (4-12mmol/L acceptable)**
- **Conservative CBG target:** Frail older patients moderate/severe frailty and end of life **8.0-15mmol/L**
- **Guidance for STAT insulin doses** given in table below right.
  For patients with conservative target range please consider reducing STAT insulin dose (lower end of recommended dose) to avoid hypoglycaemia

Note: **As a guide, 1 unit of Novorapid will reduce CBG by 3mmol/L**

Caution: Some patients with Type 1 diabetes are very sensitive to insulin-particularly if slim, newly diagnosed, or on a very small amounts of regular insulin. Review STAT dose in context of their usual insulin dose. Renal impairment prolongs insulin elimination-use reduced doses.

CBG (mmol/L)	STAT insulin dose (Units)
18.1-25	2-3
≥ 25.1	3-6

Think

Dose the patient need STAT insulin dose? Consider on an individual patient basis.

If NO: Doctor to document

If YES: Doctor to prescribe **ONCE ONLY** dose of Novorapid 2-6 units SC repeated a maximum of 4hrly

On an 'as required' basis of ICM/V6 chart

Review ONCE only doses daily as insulin doses can increase risk of hypoglycaemia.

- **Note to Nursing staff**

Please repeat BG testing 2-4 hrs **AFTER DOSE**

If NO doses Required in 48hr period

- **Stop as required Novorapid Insulin**

If <2 doses given in 48hr period:

CONTINUE STAT insulin dosing and

- Review daily
- Refer to Diabetes Team via extra med (Derby) or V6 (Burton) if any concerns

If >2 doses given daily in 48hr period:

Doctor to review insulin +/- other diabetes medication. Increase doses of insulin by 10-20% and review patterns

Allow **DAFNE/BERTIE trained patients to adjust if well enough**

Refer to Diabetes Team via extramed (Derby) or V6 (burton) if any concerns

In ALL patients look for cause of Hyperglycaemia: Consider illness, missed/incorrect hypoglycaemic agents for eg less insulin/consider recent steroid therapy. Refer to diabetes team for all patients confirmed with DKA/HHS contact SPR and DNX Via Extramed (Derby) V6 (Burton)