Paediatric and Adolescent Diabetes high HbA1C

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Key Amendments

Date	Amendment	Approved by
19th Nov 2020	Document extend for 1 year	Dr J West/Paediatrics
26th March 2021	Document reviewed and approved for 3 years	Paediatric Guideline Review meeting
9th Feb 2024	Document extended for 12 months	Paediatric Guideline Review Meeting
19th Feb 2025	Document reviewed and approved	Paediatric Quality Improvement Meeting

Introduction

Children and young people (CYP) with diabetes are vulnerable to short-term and long-term complications, which can impact on general health, education, performance and psychological wellbeing and, if control is not optimised, can result in serious morbidity and mortality. There is good evidence that the risk of these complications, as well as hospital admission with diabetic ketoacidosis, increases when the HbA1c > 64 mmol/mol.

HbA1c is a measure of the amount of haemoglobin in the red blood cells that has glucose bound to it. It reflects an average measurement of glucose levels over the last 2-3 months providing a summary of glucose control over a period (Hanas, 2010). The recommended level for CYP is ≤ 48 mmol/mol (NICE 2015). Patients are also advised to aim for a time in range (4-10 mmol/l) of ≥70% with less than 4% of levels <4 mmol/l, and glycaemic variability, which can impact on wellbeing, should be minimised.

This guideline outlines the care for CYP with a high HbA1c with the aim of supporting the CYP via a motivational approach to optimise their diabetic control by setting realistic, individualised targets and thereby reducing their HbA1c and risk of complications.

Normal care

In Worcestershire all CYP are offered the opportunity to have their HbA1c tested every 3 months. Patients should also expect monthly contact with a health care professional either in clinic, by telephone or by home visit when required. Access to structured education is also offered.

Amber group: HbA1c 60-68 mmol/mol on two consecutive occasions from 6 months after diagnosis (or with one 60-68 mmol/mol and the next ≥69 mmol/mol)

A Paediatric Diabetes Specialist Nurse (PDSN) will maintain routine contact with the CYP/carers, highlighting the importance of improving their HbA1c by increasing their time in range (if using a FGS/CGM). Family satisfaction with the CYP's current treatment and diabetes care will be explored. CYP on a multiple daily injection regimen will be provided information on optimising their control and will be offered an insulin pump, a continuous glucose monitor and a hybrid closed loop system or an InPen with the Simplera sensor.

As well as a dietary assessment to review meals and snacks and to look for evidence of disordered eating behaviours, patients will be offered a carbohydrate counting refresher session. Recent illness or missed injections should be considered and growth and puberty will be discussed. Issues relating to injections at school may need addressing.

Red/high HbA1c group: HbA1C ≥69 mmol/mol on two consecutive occasions, or three out of four occasions, from 6 months after diagnosis

As well as the actions for children and young people with a HbA1c of 60-68 mmol/mol, the CYP/carer will be informed that they are going on to an enhanced care pathway (which will be reiterated by letter, see below) and the following will also be addressed:

1. Discuss the increased risk of developing DKA. Reiterate how to prevent DKA and provide written information on this. Ensure the CYP/carers are aware of how to seek help in an emergency i.e. if glucose level is high and ketone levels >3 mmol/l.

2. Offer information on the short-term (effects on performance in sport/school, tiredness and energy levels) and long-term complications.

3. Review injection technique and injection/pump sites.

4. Parental supervision of injections/boluses is mandatory, ensure bolusing pre-meals.

5. Address issues relating to bolusing at school. The PDSN may contact school if appropriate and arrange a meeting to discuss factors associated with poor control.

6. Hypoglycaemia awareness, frequency and treatment.

7. Exercise and activity management.

8. Patient/parents review the glucose meter/CGM/pump download weekly aiming for an increase in time in range (if available) by 10% per month until time in range is ≥60%.

9. If using a hybrid closed loop system, ensure time in automated mode is >90% and ensure the total basal insulin in manual mode is similar to that in automode.

10. Consider if other medical conditions (e.g. thyroid disease, coeliac disease) could be compromising control.

11. Psychological issues are explored, and psychological assessment and input is offered.

12. The benefits of peer support are considered and discussed.

13. Weekly reviews by PDSN initially for more intensive support and to emphasise the benefits. CYP/carers will also be taught how to review their glucose profile.

14. Review in MDT clinic in 6 weeks. Discuss one or two SMART, personalised goals with the CYP and include these goals in the clinic letter.

CYP in the high HbA1c group will be discussed in a locality-based MDT meeting once every 1-3 months to review their progress, including contacts, and explore strategies to further improve management. More complex/interesting cases will be discussed in countywide high HbA1c meetings for peer review and to disseminate learning. CYP/families who do not engage with this pathway will be discussed with the safeguarding team.

Other factors to consider:

- Is parental conflict compromising care. If so, consider providing the patient information leaflet 'Working Together for the Best Outcomes: Managing Disagreements or Conflict'.
- Is an assessment of individual educational needs required.
- Is a referral to social care necessary to support the family (e.g. a family support worker or a CAF) or due to safeguarding concerns.

The CYP will exit the high HbA1c pathway when they have 2 consecutive HbA1c's <69 mmol/mol.

Consider admission to Riverbank Ward for stabilisation

CYP with a HbA1c >97 mmol/mol are at a high risk of developing DKA. They should be admitted from clinic, preferably early in the week (Monday or Tuesday). The CYP's carer(s) should be expected to stay with the CYP if possible throughout the day.

- Inform psychologists of the date and time of admission so that she can arrange to spend time with the CYP on the ward or offer a follow-up appointment to establish if further input would be helpful.
- If not admitted, the PDSN should contact the CYP/family within a week to review blood glucose levels and assess if a home visit would be helpful.
- Inform one of the diabetes dietitians about the admission.

The aims of admission are to:

- Stress the seriousness of the situation to the CYP and their family.
- To allow a short break from home life.
- To quickly improve blood glucose levels and make the young person feel better.
- To allow time to discuss the most appropriate insulin regimen.
- To allow time for a psychological review if possible.
- Provide re-education as appropriate.

Discharge

- Inform PDSNs, dieticians and clinical psychologists on day of discharge.
- Because hospital is an artificial environment and glucose levels will not be the same at home, the family will be given instructions on how to adjust insulin doses post-discharge.

Follow up

- Following discharge, the PDSN will contact the family on a weekly basis until the glucose levels/time in range are improving.
- Consider an early MDT clinic appointment.
- Clinical psychology to consider a follow-up appointment.

Monitoring and Compliance

This section should identify how the Trusts plan to monitor compliance with and the effectiveness of this Treatment pathway. It should include auditable standards and/or key performance indicators (KPIs) and details on the methods for monitoring compliance.

WHAT?	HOW?	WHO?	WHERE?	WHEN?
These are the 'key' parts of the process that we are relying on to manage risk.	*What are we going to do to make sure the key parts of the process we have identified are being followed?*	*Who is responsible for the check?*	*Who will receive the monitoring results?*	*Set achievable frequencies.*
The management of type 1 diabetes in children and young people	Submit data to the National Paediatric Diabetes Audit	Dr James West	The paediatric multidisciplinary diabetes team and the paediatric department. The CCG's.	Annually
The management of diabetic ketoacidosis in children and young people	Submit data to the West Midlands Paediatric Diabetes Network DKA audit when requested. If not regularly requested a local audit will be performed.	Dr James West and Dr Naeem Ahmad	The paediatric multidisciplinary diabetes team and the paediatric department.	Annually
Paediatric & adolescent diabetes transitional care	Submit data to the West Midlands Paediatric Diabetes Network transition audit when requested. If not regularly requested a local audit will be performed.	Dr James West	The paediatric multidisciplinary diabetes team and the paediatric department.	Every 2 years

References

- West Midlands Paediatric Diabetes Network Consensus Guidelines for optimisation of HbA1c and management 2024
- Hanaas, R. (2015) Type 1 Diabetes in Children, Adolescents and Young People (6th ed). Class. London.
- D.O.H. (2003) National Service Framework for Children, Young People and Maternity Services. London. Department of Heath
- ISPAD Clinical Practice Consensus Guidelines 2022
- Nice guideline (NG18): Diabetes (type 1 and type 2) in children and young people: diagnosis and management May 2023

Appendix 1: High HbA1c checklist

i. Risk of DKA and other complications discussed	
ii. Review suitability of current treatment regime?	
iii. Assessment of knowledge of carb counting	
iv. Assessment of diet and routine	
v. Consideration of other medical conditions (thyroid/coeliac disease)	
vi. Injection/cannula sites checked	
vii. Injection technique checked	
viii. Insulin timing	
ix. If using a closed loop, review time in automode and review manual basal rates	
x. Hypo awareness and frequency considered	
xi. Exercise and activity management discussed	
xii. Psychological factors considered and assessment offered	
xiii. Weekly blood glucose levels review taught	
xiv. Know HbA1c targets	
xv. Know blood glucose/TIR targets – aim to increase TIR by 10% per month until ≥60%	
xvi. Intensive contact offered – weekly PDSN reviews, 6 weekly MDT clinic appointments	
xvii. Explore peer support	
xviii. Social issues explored – do they need Early Help, are there safeguarding concerns	
xix. What further support would the CYP/family like	

Appendix 2: Letter to CYP/family

Worcestershire Royal Hospital
Charles Hastings Way,
Worcester
WR5 1DD

DATE

Dear PATIENT'S NAME,

Thank you for attending clinic on ENTER DATE. Your HbA1c has been XX mmol/mol and XX mmol/mol on the last 2 occasions. We explained that this increases your risk of developing DKA as well as having other short-term complications, such as reduced energy levels, which can impact on your ability to do activities and function at school. We explained that if your glucose level is over 14 mmol/l and your ketone levels are above 1.5 mmol/l, please contact your PDSN on telephone number or Riverbank Ward on telephone number 01905 760588.

We agreed that because, like us, you are concerned about your HbA1c, you will go onto our enhanced care pathway so that we can work more closely with you to better optimise your diabetes care.

Whilst you are on the enhanced care pathway we will:

- Review your glucose profile more regularly (initially weekly) and adjust insulin doses accordingly.
- Offer you support from our diabetes dietitians and clinical psychologists.

We hope that by doing so we can increase your time in range (the percentage of glucose levels 4-10 mmol/l), gradually reduce your HbA1c, improve how you are feeling and minimise the impact that diabetes has on your quality of life, now and in the future.

Your sincerely,

Your Diabetes Team

Cc GP

Appendix 3: High HbA1c MDT discussion template

Name: **DOB:**

Unit no:

HbA1c's: **Date:**

What are the main concerns of the MDT?

What do the YP / parents think?

What are the main barriers to good control?

Are there any family/educational/social concerns impacting on control?

Action Plan:

1.
2.
3.
4.
5.

Review date: