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

Introduction

The Diabetes NSF (D.O.H. 2003) highlights the importance children reaching adulthood in the best of health and able to manage their own day-to-day diabetes care effectively. Standard 5 of NSF (D.O.H. 2003) states children and their families "will be supported to optimize the control of their blood glucose." An HbA1c level of > 64mmol/mol (8%) increases the risk of hospital admissions and future health complications related to poor glucose control.

Children and young people with diabetes are vulnerable to short-term and long- term complications, which can cause serious morbidity and mortality. There is good evidence that these are related to the level of blood glucose control.

HbA1c is a measure of the % of haemoglobin in the red blood cells that has glucose bound to it. It reflects an average measurement of the glucose levels over the last 2-3 months providing a summary of glucose control over a period of time (Hanas, 2010). The recommended level for children is generally ≤ 48mmol/mol (≤ 6.5%) (NICE 2015).

HbA1c

In Worcestershire all children and young adults will be 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 will also be offered.

HbA1c 64 – 75mmol/mol (8-9%)

Paediatric Diabetes Specialist Nurse (PDSN) will maintain routine contact with child or young person, highlighting the importance of improving the HbA1c. Assessment of injection technique and sites should be made, and consideration given to the suitability of the type and dose of insulin in relation to the child or young person's age, weight and lifestyle. Growth and puberty should be discussed. Recent illness or missed injections should be considered. Issues relating to injections at school may need addressing.

HbA1C 76- 86mmol/mol (9.1 – 10%)

- Discuss complications and family conflict if appropriate and provide any relevant leaflets. Information about the risk of DKA, and DKA prevention should be reiterated and written information provided to support this.

- Parental supervision of injections is mandatory. Parnets need to look at the diary/meter weekly. Support to parents, if concerns about the level of supervision.
- Offer repeat teaching session on carbohydrate counting
- Consider alternative insulin regimes. Insulin pump therapy should be discussed as an option to improve glycaemic control further
- Consider are other medical issues or associated disorders (eg thyroid disease, coeliac disease) present, which could be compromising control?
- Consider assessment of blood glucose profile by CGMS where causes for elevated blood glucose readings or HbA1c are not apparent from routine assessments. If pump therapy is in use and recurrent severe hypoglycaemia is a problem then assessment for concurrent long term CGMS use must be considered.
- Offer additional regular contacts, by route acceptable to the young person/ family e.g. telephone/email/face to face for more intensive support and emphasize its benefits.
- Consider psychology review.
- Discuss one or two goals with young person and write a clinic letter stressing these goals.

Weekly contact from PDSN initially. Review in MDT in 6 weeks.PDSN will maintain routine contact including one monthly telephone call, and encourage the family to attend 3 monthly clinic appointments. The PDSN will assess the need for further intervention if HbA1C does not improve. Referral for structured education sessions such as carbohydrate counting will be offered as necessary.

Importance and benefits of improving HbA1c should be highlighted. Assessment of injection technique and sites should be made, and consideration given to the suitability of the type and dose of insulin in relation to the child or young person's age, weight and lifestyle. Growth and puberty should be discussed. Recent illness or missed injections should be considered.

Issues relating to injections at school may need addressing.

HbA1C >86mmol/mol (>10%)

- If missing lunch-time doses, consider changing insulin regimen or other strategies such as a no carbohydrate lunch. Discuss alternative available treatment options with patient/ family. MDI/ CSII would be gold standard for intensive insulin therapy, but there are circumstances where MDI with fixed dosing or TDS / BD treatment options may be more appropriate and effective.
- Consider are other medical issues or associated disorders (e.g. thyroid disease, coeliac disease) present, which could be compromising control?
- Goals need to be designed to support the individual improved use of therapeutic medication.
- If not testing, discuss ways to remember testing, involve family
- Consider refer to clinical psychologist for assessment especially if HbA1c is high e.g. HbA1c >100 mmol/l
- Parental injection supervision is usually recommended. Parents also need to look at book and meter weekly to monitor BG levels
  If concerns about level of supervision, or parents require extra support, consider involving children social care services
- Assessment of individual education needs.
- Children and young people should be discussed within an MDT meeting to review their management and progress including contacts and explore strategies for their care (e.g. this may be a clinic meeting or psychosocial meeting)
- PDSN to contact School if appropriate and arrange meeting to discuss factors associated with poor control
- Two goals to work towards improving BG levels (in clinic letter)

HbA1C >97mmol/mol (>11%)

- The risk of DKA is much higher once the HbA1c is >97 mmol/mol. Consider admitting to hospital urgently unless there is good reason to think that they will improve in a very short space of time. This may prevent admission with DKA. Admit to ward, preferably from clinic early in week (Monday or Tuesday). Start with their recent dose of insulin. Consider IV administration (0.05 units/kg/hour) of insulin, at least initially. The carer would be expected to stay with the child throughout the day. This would apply to children of all ages
- Are there social or family issues, if so would other support or a CAF be beneficial?
- Do you have any safeguarding concerns? If so these need to be discussed within the MDT and action taken as required.
- Inform psychologists of the date and time of the admission so that she can arrange to spend some time with the young person on the ward or offer a follow-up appointment to establish if further input would be helpful.
- If not admitted, the PDSN need to contact the patient/family within a week to review BG levels and assess if home visit would be helpful
- Inform the dietitian about admission

The aims of an admission are to

- Stress the seriousness of the situation to the young person and the family
- To allow a short break from home life
- To quickly improve BG 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 PDSN, dietician and clinical psychologists on day of discharge
- At discharge the family will be given instructions as to how to adjust doses if necessary once home, as hospital is an artificial environment and BG levels will not be the same at home
- A **written care plan** will be provided for the family (by the PDSN/consultant/registrar) to follow with clear instructions on timing and supervision of injections, frequency of blood glucose testing, dietary advice including routine of meals and snacks as appropriate to insulin regimen, follow up plans etc.

Follow up

- Following discharge, the PDSN will contact the family on weekly basis till BG start improving
- Consider an early MDT clinic appointment
- Clinical psychology to consider a follow-up appointment. She would notify PDSN/consultant about any non-attendance
- There will be regular discussion about these children/young adults in the multi-disciplinary clinics – to see what extra help/encouragement may be appropriate. Indeed discussion about some of these children/ young adults will occur every week!

Responsibility and Duties

The patient's PDSN, Consultant Paediatrican and Dietician are responsible for ensuring the child is offered the appropriate services.

High HbA1c meetings

On alternate months the paediatric diabetes MDT hold a high HbA1c meeting. During this meeting patients with high HbA1c's are discussed in detail for 20 minutes at a time and an action plan is documented on the proforma in Appendix 1. Patients are revisited at subsequent meetings to assess progress. As well as providing peer support this also enables the MDT to share learning.

References

- West Midlands Paediatric Diabetes Network Consensus Guidelines for optimisation of HbA1c and management when HbA1c > 75mmol/mol. 2014
- 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
- IDF/ISPAD (2011): Guideline for the management of Diabetes in Childhood and Adolescence. Brussels. IDF
- ISPAD Clinical Practice Consensus Guidelines 2009
  Rewers M, Pihoker C, Donaghue K, Hanas R, Swift P, Klingensmith GJ. Assessment and monitoring of glycemic control in children and adolescents with diabetes. Pediatric Diabetes 2009: 10 (Suppl. 12): 71–81
- Diabetes (type 1 and type 2) in children and young people: diagnosis and management-NICE guidelines [NG18] August 2015

Appendix 1:

High HbA1c MDT Discussion **Date:**

Name: **DOB:**

Unit no:

HbA1c: **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:

High HbA1c Pathway

Name: **Unit no:** **DOB:** **HbA1c:** **Date:**

HbA1c	Action	Notes	Date	Initials and signature
69 - 75 mmol/mol	Highlight importance of improving HbA1c			
	Assess injection technique and sites			
	Review type and dose of insulin based on age, growth, puberty, lifestyle			
	Discuss possible barriers to good glucose control e.g. fear of hypos, family/peer factors, body weight/image, diabetes 'burnout'			
	Discuss recent illness, missed injections (inc at school)			
76 - 86 mmol/mol As above plus....	Discuss and provide written information on complications, increased risk of DKA and family conflict			
	Advise parental supervision of injections is mandatory			
	Advise parents need to review diary/meter weekly			
	Offer repeat teaching session on carbohydrate counting			
	Consider alternative insulin regimes/insulin pump therapy			
	Consider other medical conditions or associated disorders (eg thyroid disease, coeliac disease)			
	Consider assessment with CGMS			
	Refer to clinical psychology			
	Weekly contact with PDSN, review in MDT in 6 weeks			
HbA1C >86mmol/mol As above plus....	If not testing, discuss ways to remember testing, involve family			
	If concerns about level of supervision, or parents require extra support, consider involving Children's Social Care			
	Assessment of individual educational needs			
	PDSN to contact school if appropriate and arrange a meeting to discuss factors associated with poor control			
HbA1C >97mmol/mol As above plus....	Consider admission for restabilisation			
	Discuss any safeguarding concerns with the MDT and take action as appropriate			

- Agree and document one or two goals with CYP/carer during each consultation.

Dates discussed with MDT: Repeat HbA1c: Date: