Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust

Newly Diagnosed Type 1 Diabetes in Young Adults 16-24 years of Age (Those not presenting in DKA)

Did you print this document yourself?

The Trust discourages the retention of hard copies of policies and can only guarantee that the policy on the Trust website is the most up-to-date version. **If, for exceptional reasons, you need to print a policy off, it is only valid for 24 hours.**

Executive Sponsor(s):	David Purdue, Chief Nurse
Author/reviewer: (this version)	Dr Anuja Natarajan, Consultant Paediatrician, Dr Shivani Dewan, Consultant Adult. Sarah Balawadjer, Young Adult Diabetic Specialist Nurse Jaye Fish, Young Adult Diabetic Specialist Nurse
Date written/revised:	December 2020
Approved by:	Patient Safety Review Group
Date of approval:	1 October 2021
Date issued:	1 December 2021
Next review date:	December 2023
Target audience:	All adult medical and nursing staff

Amendment Form

Please record brief details of the changes made alongside the next version number. If the procedural document has been reviewed **without change**, this information will still need to be recorded although the version number will remain the same.

Version	Date Issued	Brief Summary of Changes	Author
Version 1	November 2021	New policy created, version 1.	Dr A Natarajan Dr S Dewan BSc Hons, PG Dip S Balawadjer BSc Hons, PG Dip J Fish

Contents

1 INTRODUCTION

This policy provides information for medical and nursing staff to undertake appropriate investigations for children and young people admitted with a history supporting a diagnosis of Type 1 Diabetes.

After treatment of DKA (CEM 01. V1) or in the newly presenting, well, diabetic young adult, we aim to usually keep the patient in hospital for as brief a time as possible but ensuring the young adult is safe to be discharged and care for his/her diabetes at home independently. It is not feasible to stabilise a young adult's control or to teach all aspects of diabetic care while an in-patient, and ideally this should take place at home, although current resources in the community sometimes dictate a stay of around 24 - 36 hours for initial training at week-ends, bank holidays etc.

The policy ensures that young people and parents following diagnosis are educated to a level to facilitate a safe discharge into the community.

2 PURPOSE

To ensure appropriate management of young adult patients with diabetes who are newly diagnosed across the trust.

3 DUTIES AND RESPONSIBILITIES

All medical and nursing staff have a responsibility to work within this policy. Any deviations from the policy, by a senior clinician, to meet individual patient need must be documented within the Integrated Pathway of Care.

4 TREATMENT AND CARE OF NEWLY DIAGNOSED

4.1 Investigations

Please send one bottle for each investigation requested to ensure sufficient sample to process

- Glucose, U&E, HCO_3.
- HbA1C.
- Thyroid antibodies (TAB)
- Coeliac screen
- IgA levels
- Islet cell antibodies.
- GAD antibodies

- TSH, FT4
- C-peptide.
- Microalbumin (urine sample)

4.2 Education

A. Insulin
B. Blood Ketone Testing
C. Blood Glucose (BG) Testing
D. Diet
E. General
F. Equipment
G. Follow Up Arrangements

Ensure that the patient (if of appropriate ability) understands and can perform the following:

A. Insulin

- As a rough guide a new patient will need approximately 0.7 unit/kg/day.
- Insulin needs to be prescribed on the insulin prescription chart.
- Commence the patient on a **Basal Bolus Regime** – discuss with the young adult diabetes team (transitional team) if available. The basal bolus regime is a multiple daily injection regime and entails a long acting background insulin that lasts for approximately 20-24 hours (**Levemir** is encouraged) with rapid acting insulin (either Novorapid, Humalog, Fiasp can be prescribed) for meals.
- Analogue quick-acting for meals and corrections (60% of total daily dose based on 0.7units/kg/day).
- Twice-daily analogue basal insulin from day 1 (40% background insulin based on 0.7 units/kg/day). This falls In line with DAFNE and twice-daily **Levemir** is encouraged.
- Use pre filled pens initially if a re-fillable cartridge pen is unavailable (**Novopen Echo for Levemir and Novorapid or Fiasp <u>or</u> Humalog Luxura for Humalog**). A quick-acting pen should be capable of delivering ½ unit doses as above.
- Background insulin to be given ONLY into legs or buttocks.
- Start carbohydrate counting from admission.
- A reasonable carbohydrate ratio for a newly diagnosed patient is **1 unit of fast-acting insulin for 10 grams of carbohydrate.**
- It is encouraged that the insulin sensitivity factor (correction dose) is **1 unit of fast-acting insulin for a 3mmol/L reduction in blood glucose.**

Example:
A 74kg adult:

0.7 units/kg/day = 51 units = total daily dose.
40% of 51 = 20 units = 2 x doses of 10 units Levemir (pre-breakfast and pre-bed)
60% of 35 = 31 units to be shared across all meals/snacks as per carbohydrate counting
Before carbohydrate counting fixed doses can be commenced in this example 10,10,10.

- Consider correction doses of quick acting insulin in between meals if BG remains elevated above 8 mmol/mol, **2 hours** after the last insulin injection.
- Target range 4-7mmol/l pre meals, 7-9mmol/l post meal and 7mmol/l before bed.
- Repeat blood glucose levels in 2 hours if quick-acting insulin is administered prior to bed.
- **Avoid** repeated BG testing in the night if the young adult is well. It is sufficient to do a BG 2 hrs after insulin injection and then pre-breakfast, unless any symptoms suggestive of low BG.
- If the **initial bloods suggest dehydration even if the young adult is not in DKA** i.e. raised urea or altered electrolytes, **you must consider intravenous fluids** (maintenance rate- 0.9%saline + 20mmol potassium bags) as once they are asleep they are unlikely to drink fluids and dehydration can tip them into DKA. Rehydration will help bring down the blood glucose levels. Fluids can be discontinued once the young adult is awake and taking oral fluids.

INSULIN PEN TYPES:

TYPE OF INSULIN	**½ UNIT INCREMENTS**	**1 UNIT INCREMENTS**
Novorapid	Penfill cartridges and NovoEcho pen	Penfill cartridges and novo pen 5 **or** Novorapid Flexpen
Humalog	Penfill cartridges and Huma Pen Luxura HD pen	Penfill cartridges and HumaPen Luxura **or** Humalog Quickpen
Fiasp	Penfill cartridges and NovoEcho pen	Penfill cartridges and Novopen 5 or fiasp felxpens
Levemir	Penfill cartridges and NovoEcho pen	Levemir FlexPen, Novo 4 pen
Lantus		Lantus SoloStar pens

B. Blood Ketone Testing

This only needs to be routinely used if BGs are persistently high >14mmols/L and in times of intercurrent illness when the persistence of ketonaemia should prompt the seeking of medical attention.

C. Blood BG Testing

All patients should be able to test the BG. This should be commenced by ward nurse / YA nurse/inpatient diabetes nurses. The young adult should be taught:

- Accurate recording of the values in a diary book should be emphasised.
- How to draw blood from the side (not the pulp) of the finger.
- How to ensure an adequate sample is placed on the strip.
- How to use blood glucose meter (If able, provide combined meter that can do both glucose and ketone tests)
- The importance of providing test results at staggered times through the day, (pre meal and pre bed as a minimum), should be explained.
- BG targets are:
    1. Pre-meal 4-7mmols/L
    2. Target of 5mmol/L in line the DVLA standards for Driving with Diabetes.
    3. Pre-bed target of 7mmol/L.
    4. Correct any blood glucose above 8 mmol/L.

See Appendix 2 and 3 for guidelines for adjusting insulin until DAFNE course attendance and see corrective doses of quick insulin.

D. Diet

The patient should be referred to the diabetes dietitian to be seen as an in-patient preferably.

- Initial information around carbohydrate counting should be given.
- Patient to commence carbohydrate counting whilst in the hospital.
- The emphasis is on “healthy eating”. Initially they should be advised to follow a healthy diet that is low in refined sugars.

- The young adult should meet the dietitian and discuss healthy eating and carbohydrate in the diet. They should understand the influence of food intake on blood glucose.
- They should understand the importance of close adherence to the advised diet and that this may need to be revised frequently as the young adult's lifestyle can change and the pattern of activity changes.
- On discharge, the patient and family if needed should be given information on the date and time of appointment with the dietitian if not seen as an in-patient. This must be as soon as possible from diagnosis.

E. General

- The young adult and parents (if appropriate) should understand how exercise, diet and insulin interact to influence blood glucose.
- The symptoms of hypoglycaemia should be explained (we no longer demonstrate a controlled hypo just prior to discharge). It is important that the patient and parents understand the possible signs of an attack and understand what may be done to terminate the "hypo".
- The patient/parent/partner should know how to use Glucagon (in an emergency)
- A "Glucagen" pack should be given to each patient prior to discharge.
- The family should have the address of "Diabetes UK" and the Diabetes UK School Pack (if appropriate).
- The diabetes team starter pack to be given on diagnosis, normally provided by the inpatient diabetes team.
- The patient (young adult) must understand that they can contact the inpatient nurses between 9-5 Monday-Sunday, and the young adult nurses Monday to Friday between 9-5. To attend accident and emergency if they are worried about their immediate health, or they can be seen in the next nurse/consultant out-patient clinic for less urgent problems.
- Ensure the patient (young adult) have met and know how to contact the Young Adult Diabetes Nurses, who will deal with most day-to-day problems. Young adult nurses will be the key workers for these patients.
- Please ensure that all investigations to be done at diagnosis have been completed before the patient is discharged.
- Please ensure the starred topics on the education checklist are completed before discharge by the ward nurse/ inpatient diabetic nurses.

- It is the responsibility of all ward/medical and nursing staff as well as the diabetes team to deliver education at diagnosis. See appendix 4.

F. Equipment

EQUIPMENT CHECKLIST AT DISCHARGE (*should be prescribed):

Doctors to prescribe:-

- Insulin *
- Glucagen hypo kit pack. *
- BG test strips + lancets
- Insulin pen needles
- Blood ketone test strips
- Spare insulin pens

Provide adequate amount until supply obtained by GP.

Burn bin - given by nursing staff- Patient/Parent/Partner needs to register to order sharps bins regularly by calling 01302 566005

G. Follow up Arrangements

Doncaster - Arrange to see young adult consultants at the next diabetes clinic, inform endocrine sectaries, Diabetes administrator, clinic code STM2P or SK2P or RFT2P (overbook if necessary)

Bassetlaw – Arrange to see young adult consultants at the next diabetes clinic, inform endocrine sectaries, Diabetes administrator, clinic code STM2P or SK2P or RFT2P (overbook if necessary)

In-patient diabetes nurses must refer any newly diagnosed patients 16-24 to the young adult diabetic team via telephone.

The young adult's diabetes team will provide:

Week 1

- One face to face contact during admission if possible if not one telephone contact.

- Book patient into next available nurse led clinic within week one
- Arrange dietetic appointment and liaise with dietitians accordingly.
- Provide patient with contact numbers for all professionals.

Week 2-5

- Book patient into next available nurse-led clinic
- Weekly contacts as required in nurse-led clinic.

Week 6 onwards

- To be booked into the next Young adult clinic (over book if needed, to be within 6 weeks of diagnoses)
- 3-monthly clinic appointments – jointly with doctor, or as often as required ideally for 1st year.
- Liaise with DAFNE administrator and book onto next available course. All doctors should be actively promoting DAFNE and encourage all newly diagnosed patients to attend a course.
- 'Continuity' for at least 12-18 months where possible.

Psychology Input from Diagnosis

- All newly diagnosed patients to be offered IAPT input from diagnosis to come to terms with living with a chronic condition. After the first 3 months we should complete psychological screening.

HbA1c

- Aiming for an HbA1c target of 42-48mmol/mol within the first year of diagnosis.
- Provide HbA1c targets specific to newly diagnosed patients with T1DM.
- Check HbA1c after 3 months of diagnosis and continue until target is reached.
- HbA1c testing should be offered 3-monthly thereafter.

Weight

- Check and record weight at every face to face visit.

PATIENTS LACKING CAPACITY

Sometimes it will be necessary to provide care and treatment to patients who lack the capacity to make decisions related to the content of this policy. In these instances staff must treat the patient in accordance with the Mental Capacity Act 2005 (MCA 2005).

- A person lacking capacity should not be treated in a manner which can be seen as discriminatory.

- Any act done for, or any decision made on behalf of a patient who lacks capacity must be done, or made, in the persons Best Interest.
- Further information can be found in the MCA policy, and the Code of Practice, both available on the intranet.

There is no single definition of Best Interest. Best Interest is *determined on an individual basis. All factors relevant to the decision must be taken into account, family and friends should be consulted, and the decision should be in the Best interest of the individual. Please see S5 of the MCA code of practice for further information.*

5 TRAINING/SUPPORT

Staff are supported to develop skills and knowledge within the sphere of their qualifications and job role, as identified within the staff development plan. Individual training needs and objectives are identified through Annual Performance and Development Appraisal. Clinical Educators support learning and development within the clinical area.

6 MONITORING COMPLIANCE WITH THE PROCEDURAL DOCUMENT

Monitoring of compliance with these guidelines is essential following the reporting of any adverse incident. The Senior Sister/Charge Nurse of the clinical area/Matron/Senior Midwife in charge of the clinical area, in their role as designated departmental head with responsibility to sign off Datix forms, will undertake this with the support of others as appropriate. Any non-compliance with the guidelines will be fed back to the individual staff involved by their Line Manager/Supervisor to ensure reflection and learning. Escalation to Clinical Governance will take place where a patient has suffered harm or a theme identified.

7 DEFINITIONS

BG - Blood Glucose

8 EQUALITY IMPACT ASSESSMENT

The Trust aims to design and implement services, policies and measures that meet the diverse needs of our service, population and workforce, ensuring that none are disadvantaged over others. Our objectives and responsibilities relating to equality and diversity are outlined within our equality schemes. When considering the needs and assessing the impact of a procedural document any discriminatory factors must be identified.

An Equality Impact Assessment (EIA) has been conducted on this procedural document in line with the principles of the Equality Analysis Policy (CORP/EMP 27) and the Fair Treatment For All Policy (CORP/EMP 4).

The purpose of the EIA is to minimise and if possible remove any disproportionate impact on employees on the grounds of race, sex, disability, age, sexual orientation or religious belief. No detriment was identified. (See Appendix 1)

9 ASSOCIATED TRUST PROCEDURAL DOCUMENTS

Trust's Mental Capacity Act 2005 Policy and Procedure
Deprivation of Liberty Safeguards (DoLS) - PAT/PA 19
Privacy and Dignity Policy - PAT/PA 28

10 DATA PROTECTION

Any personal data processing associated with this policy will be carried out under 'Current data protection legislation' as in the Data Protection Act 2018 and the UK General Data Protection Regulation (GDPR) 2021.

For further information on data processing carried out by the trust, please refer to our Privacy Notices and other information which you can find on the trust website: https://www.dbth.nhs.uk/about-us/our-publications/information-governance/

11 REFERENCES

Department of Constitutional Affairs
Mental Capacity Act (2005): Code of Practice, 2007
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/497253/Mental-capacity-act-code-of-practice.pdf

National Institute for Health and Care Excellence (NICE) NG18. Diabetes (Type 1 and Type 2) in children and young people: diagnosis and management August 2015.
https://www.nice.org.uk/guidance/ng18

National Health Service (2018) *Pathway for Adults Newly Diagnosed with Type 1 Diabetes,* Sheffield Teaching Hospitals (version 6, pg 1-2)

APPENDIX 1- EQUALITY IMPACT ASSESSMENT PART 1 INITIAL SCREENING

Service/Function/Policy/Project/ Strategy	Division	Assessor (s)	New or Existing Service or Policy?	Date of Assessment
Children's Diabetes/ Young adult	Children's and families/ Adult Diabetes and endocrinology	Dr A Natarajan	New	12.01.2021

1) Who is responsible for this policy? Name of Division/Directorate: Children's Care Group – Children's Diabetes Team and Young Adult Diabetic Team

2) Describe the purpose of the service / function / policy / project/ strategy? Who is it intended to benefit? What are the intended outcomes?

3) Are there any associated objectives? Legislation, targets national expectation, standards: Yorkshire & Humber network Guidelines

4) What factors contribute or detract from achieving intended outcomes? –

5) Does the policy have an impact in terms of age, race, disability, gender, gender reassignment, sexual orientation, marriage/civil partnership, maternity/pregnancy and religion/belief? Details: [see Equality Impact Assessment Guidance] - No

- **If yes, please describe current or planned activities to address the impact**

6) Is there any scope for new measures which would promote equality? No

7) Are any of the following groups adversely affected by the policy?

Protected Characteristics	Affected?	Impact
a) Age	No	
b) Disability	No	
c) Gender	No	
d) Gender Reassignment	No	
e) Marriage/Civil Partnership	No	
f) Maternity/Pregnancy	No	
g) Race	No	
h) Religion/Belief	No	
i) Sexual Orientation	No	

8) Provide the Equality Rating of the service / function /policy / project / strategy – tick (✓) outcome box

Outcome 1	Outcome 2	Outcome 3	Outcome 4

If you have rated the policy as having an outcome of 2, 3 or 4, it is necessary to carry out a detailed assessment and complete a* **Detailed Equality Analysis form – see CORP/EMP 27.

Date for next review: December 2023

Checked by: Dr Dewan Date: October 2021

APPENDIX 2 - GUIDELINES FOR ADJUSTMENT INSULIN UNTIL DAFNE COURSE ATTENDANCE

	Before–breakfast		**Before mid-day meal**		**Before evening meal**		**Before bed**	
If a pattern i.e blood glucose on 3 consecutive days =	8-12 mmol/L	>12 mmol/L	8-12 mmol/L	>12 mmol/L	8-12 mmol/L	>12 mmol/L	8-12 mmol/L	>12 mmol/L
Consider first…….	Check carbohydrates at bedtime are being covered with quick acting insulin. If blood glucose levels are within range at bedtime but then i.e. rising overnight then.		Is additional CHO being eaten during the morning? (may need additional quick acting insulin with snack) if not then		Is additional CHO being eaten in the afternoon? (may need additional quick acting insulin with 'snack', if not then:		Is additional CHO being eaten during the evening? May need additional quick acting with 'snack' if not then	
Adjust dose of insulin	Increase bedtime dose of basal insulin 1-2 units	Increase bedtime dose of basal insulin 2-4 units	Increase breakfast dose of quick acting 1-2 units	Increase breakfast dose of quick acting insulin 2-4 units	Increase mid-day dose of quick acting insulin 1-2 units	Increase quick acting midday dose 2-4 units	Increase evening dose of quick acting 1-2 units	Increase evening dose quick acting 2-4 units

If blood glucose is below target range doses should be reduced according to these guidelines.

APPENDIX 3 - CORRECTIVE DOSES OF QUICK ACTING INSULIN

A strategy to help reduce high blood glucose at meal time or bedtime is to use 'corrective' doses of quick action insulin, i.e. extra units added to meal time dose or bedtime. The following may be used as a guide initially.

Pre meal target 5.0 mmol/L BG mmol/L	**Pre bed target 7 mmol/L** BG mmol/L	**Corrective dose of QA**
8.0-8.9	10.0-10.9	½-1 unit
9.0-9.9	11.0-11.9	1 ½-2 units
10.0-10.9	12.0-12.9	2 units
11-12.0	13-14.0	2-2 ½ units
>12.0	>14.0	3 units

- 1 unit of quick acting insulin may reduce blood glucose by 2-3 mmol/L (or more if 'honeymooning' or insulin sensitive)
- It is suggested that **no more than 3 units** should be taken as a corrective dose at any one time, as it may be unpredictable and increase the risk of hypoglycaemic events.
- Ketones should be checked if blood glucose is >14 mmol

APPENDIX 4 - NEWLY DIAGNOSED EDUCATION PLAN

Doncaster and Bassetlaw Hospitals NHS Foundation Trust

AFFIX LABEL HERE IF AVAILABLE

NHS Number: .....
District Number: .....
Surname: .....
Forename(s): .....
Address: .....
.....
D.o.B.: .....

NEWLY DIAGNOSED YOUNG ADULT DIABETES

EDUCATION PLAN

The ward is responsible for commencing this plan on admission. He/she will receive support and assistance from the Young Adult Diabetic Specialist Nurses. The medical staff will also be involved in this plan.

The young person /parent has been:	**Nurse Print Name/ Signature**	**Parent Signature**	**Date**
*Given the newly diagnosed starter pack			
***What is Type 1 Diabetes**:- lifelong condition, need insulin for life,			
Discuss Type 1			
***Insulin and different types:-**			
Explain how **quick-acting** insulin works – Starts working 10-20 mins, peak of action 1.5 – 2hrs, Gone by 4-5hrs, given before food			
Explain how **long-acting** insulin works – designed to last around 24 hrs, given at same time each day, can be given at same time as quick but different site			
***Discussed control of diabetes:-**			
Target ranges – pre meal (4-7mmols)			
Target range post meal (5-9mmols)			
Target range for bedtime (7mmols)			
***BG Testing**:- *Sides of finger, needle depth (1.5 – 2) changing used needle, wipe first drop, squeeze from bottom, 5-6 tests per day*			
Shown how to use finger pricking device			
Shown how to change needle on finger pricking device			
Demonstration of testing own blood glucose			

Shown competence in testing own blood glucose			
***Using own meter**:- *How to test BG, how to work out a correction dose, how to work out carbs dose, how to input carbs*			
Shown how to use own meter			
Demonstrated using own meter			
Shown competence using own meter			
Given a diary and had it explained			
***Insulin technique**:- *Air shot, depth of needles, advised single use needle, always remove needle after use*			
Shown how to inject insulin			
Demonstrated injecting own insulin			
Shown competence in injecting own insulin			
***Insulin sites**:- *rotation of sites, **quick-acting insulin**- arms, tummy, legs, **long-acting insulin** – legs or bottom*			
Shown rotation of injection sites			
Given rotation template			
***Insulin Pens**:-			
Shown how to load cartridge and change needle			
Demonstrated loading cartridge and changing needle			
Shown competence in the above with own pen			
Hypoglycaemia management:-			
*Discussed leaflet			
Has own supply of treatment			
Hyperglycaemia management:-			
*Discussed high BG management			
Discussed Sick Day Rules			
*Discussed blood testing for ketones			
Dietetics:-			
Discussed carb counting			
Discussed healthy eating			

Discussed Glycaemic Index			
Discussed snacks			
General :-			
Discussed exercise (BG 6-8mmols)			
Discussed disposal of sharps			
Technology:-			
Diasend – Download cable			
- Shown features - weekly downloading - Self-analysis of trends			