NHS Grampian

Guideline For The Management Of Newly Diagnosed Children with Type 1 Diabetes In NHS Grampian Hospitals

Co-ordinators:	Reviewer:	Approver:
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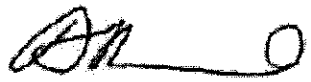		

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MGPG/Guid/RACHDiab/1823	July 2029	July 2026

Policy Statement:

It is the responsibility of all staff to ensure that they are working to the most up to date and relevant guideline, policies, protocols and procedures.

Version 2

Executive Sign-Off

This document has been endorsed by the Director of Pharmacy and Medicines Management

Signature: 

Replaces: NHSG/Guid/RACHDiab/MGPG749, Version 1.1
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Document application: NHS Grampian

Document:

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Revision History:

Revision Date	Summary of Changes	Changes Made
4/08/2023	Updated New patient referral pathway	Pg 3. 2.1: New Referrals
4/8/2023	Update initial investigation list	Pg 4 2.3: Initial Medical Assessment and Management
4/8/2023	Introduced investigation and management flowchart. Updated BSPED DKA guideline link and fluid calculator	Pg 5 2.3: Initial medical assessment and management
4/8/2023	Example calculation for children under 5y introduced	Pg 6 2.4.2: Basal bolus dose calculation
	Blood ketone level requiring Novorapid correction dose updated	Pg 7: 2.4.3: Initial Insulin
	Updated record keeping in accordance to new electronic medical recording	Pg 7 2.5: Initial Nursing Management
	Updated dietary advice and practice	Pg 9 2.6: Diet
	Updated contact details	Pg 12 Appendix 1
	Updated references	Pg 12 Appendix 2
	Updated acronyms	Pg 13 Appendix 3
20/05/2025	Lead Author updated	Front Page
20/05/2025	Updated PDSN phone number/contact details	Pg 3 2.1 New Referrals
20/05/2025	Comment re. no need for testing fasting glucose	Pg 3 2.2 Diagnosis of diabetes

Revision Date	Summary of Changes	Changes Made
20/05/2025	Updated required screening bloods/antibody testing	Pg 4 2.3.1 Initial Medical Assessment
20/05/2025	Updated initial insulin prescription advice	Pg 4 2.3.2 Prescribe insulin
20/05/2025	Updated pathway regarding repeat ketone correction doeses and links to DKA protocol/calculator	Pg 5 Fig 2 Management of new Children
20/05/2025	Updated examples to reflect change of default basal insulin and Levemir no longer used	Pg 6 2.4.2 Basal bolus dose calculation
20/05/2025	Updated advice about ketone correction doses and timings of basal insulin	Pg 7 2.4.3 Initial Insulin
20/05/2025	Updated reference to Diabetes ward folder	Pg 8 2.5.1 First Injection
20/05/2025	Use of both thighs and buttocks for injections	Pg 8 2.5.2 Injection sites
20/05/2025	Updated advice re sugar containing snacks	Pg 10 2.6 Diet
20/05/2025	Updated reference to snack guide and remove reference to sugar free juice/jelly.	Pg 10 2.6.1 Meals and Snacks
20/05/2025	Section removed	Pg 10 2.6.2 Sugar free drinks
20/05/2025	Section removed	Pg 10 2.6.3 Snacks away from ward
20/05/2025	Section removed	Pg 11 2.6.5 Puddings
20/05/2025	Section removed	Pg 11 2.6.7 Special diabetic foods
20/05/2025	Updated details on item needing prescribed by medical team and those provided by diabetes team.	Pg 11/12 2.8 Prepearing for discharge
20/05/2025	Updated phone and email contact details for RACH and Elgin paediatric diabetes staff	Pg 13 Appendix 1 Diabetes Team contact numbers
20/05/2025	Updated link to BSPED DKA guideline	Pg 13 Appendix 2 References
06/11/2025	Adjustment of wording re drinks and snacks based on dietetic team feedback	Pg 10 2.6 Diet 2.6.1 Meals and Snacks
18/06/2026	Reformatting of flow chart	Figure 2
18/06/2026	Addition of discharge template	Appendix 3

Guideline For The Management Of Children With Diabetes In NHS Grampian Hospitals

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Guideline For The Management Of Newly Diagnosed Children with Type 1 Diabetes In NHS Grampian Hospitals

1 Introduction

There are over 300 children with diabetes in NHS Grampian. Most of these children have Type 1 diabetes and lead a healthy life in the community. At diagnosis, children are admitted for initiation of treatment and education on diabetes management. Admissions will often occur out of hours or at a time when a member of the diabetes team is not available to advise or supervise all aspects of diabetes care.

This document is designed to guide medical and nursing staff in the management of new patients presenting with Type 1 diabetes.

Individual patients might require individualised decisions that differ from those recommended in this document. These decisions should be fully documented and justified in the medical notes. More detailed management decisions can be made in consultation with members of the diabetes team.

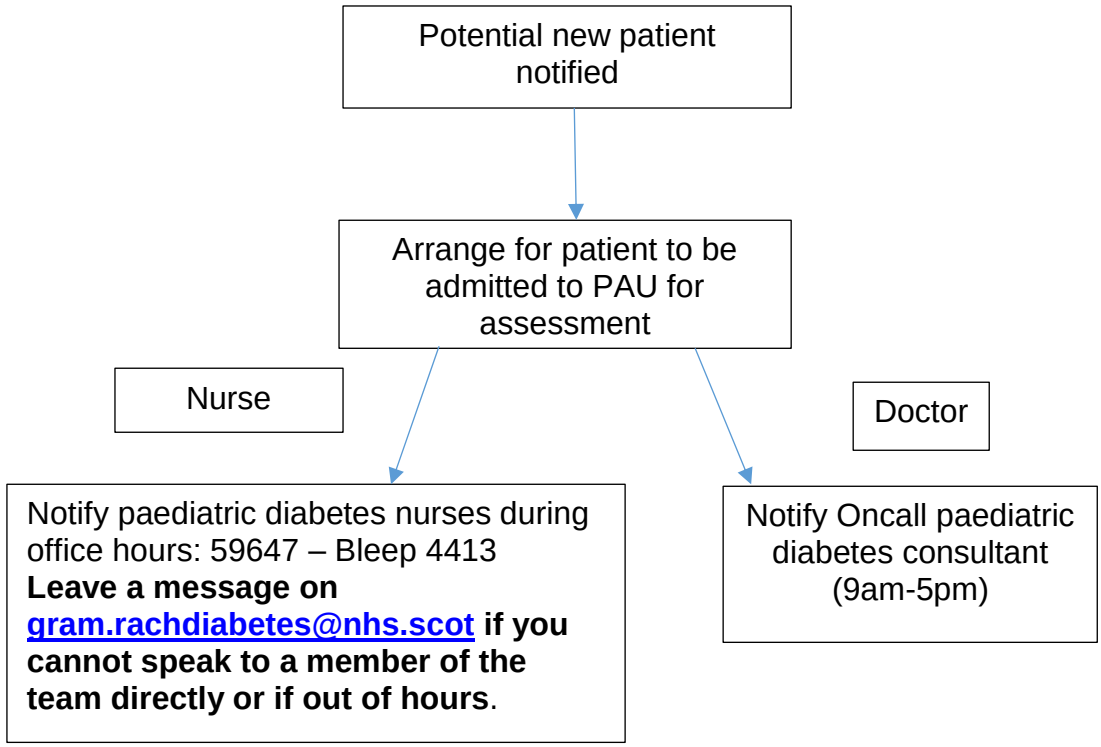
2 Management Of The Newly Diagnosed Child With Diabetes

2.1 New Referrals

- Admit directly to Royal Aberdeen Children's Hospital (RACH) Paediatric Assessment Unit (PAU). Patients presenting to Dr Gray's Hospital in Elgin should be discussed with the RACH Diabetes Consultant as they will need to transfer to RACH.
- Inform the diabetes team when the referral is taken – do not wait until the child is admitted.

  Remember that families, and often children, remember the day of diagnosis (what happened and what was said) forever.

Figure 1: New patient referral notification



2.2 Diagnosis of Diabetes

The assessment of a child with possible diabetes is an emergency. Children should be seen on the same day of the referral.

Presenting symptoms:

- excessive urination (polyuria) or nocturnal enuresis
- thirst
- excessive drinking (polydipsia)
- weight loss
- lethargy and tiredness
- abdominal pain.

WHO definition of diabetes:

- **Fasting plasma glucose >7.0 mmol/l**
- **Random or 2- hours plasma glucose > 11.1 mmol/l**

Always test:

- Glucose – blood
- Ketones – blood
- Gas – if blood ketone >3.0 mmol/l.

There is no need to do a fasting blood glucose to diagnose Type 1 Diabetes. There is no need to wait for laboratory glucose result to diagnose diabetes.

If the diagnosis of diabetes is unclear the case should be discussed with a Diabetes Consultant

2.3 Initial Medical Assessment and Management

2.3.1 Exclude Diabetic Ketoacidosis (DKA):

- As above, check lab glucose and ketone
- If ketones elevated, child is unwell or DKA is clinically suspected, check U&E, bicarbonate, pH (venous or capiliiary gas) and other investigations as appropriate.
- All children should have
  - Type 1 diabetes antibodies (automatically includes GAD, IA2 and ZnT8 if the abstract records “As per paediatric diabetes new patient pathway”),
  - Coeliac screen and Immunoglobulin A (IgA)
  - HbA1c
  - Thyroid function (fT4 and TSH, Thyroid antibodies not routinely needed).

These are non-urgent investigations. The child and family should have these screening tests explained prior to blood being taken.

Exclude (Diabetic Ketoacidosis) DKA	
Biochemical indicators	Clinical Pointers
Definition of DKA: • Hyperglycaemia (BG >11 mmol/l) and Ketosis (>3 mmol/l) and Acidosis (pH <7.3 or Bicarbonate < 15 mmol/l)	• acidotic respiration (Kussmaul) • dehydration • drowsiness • abdominal pain/vomiting

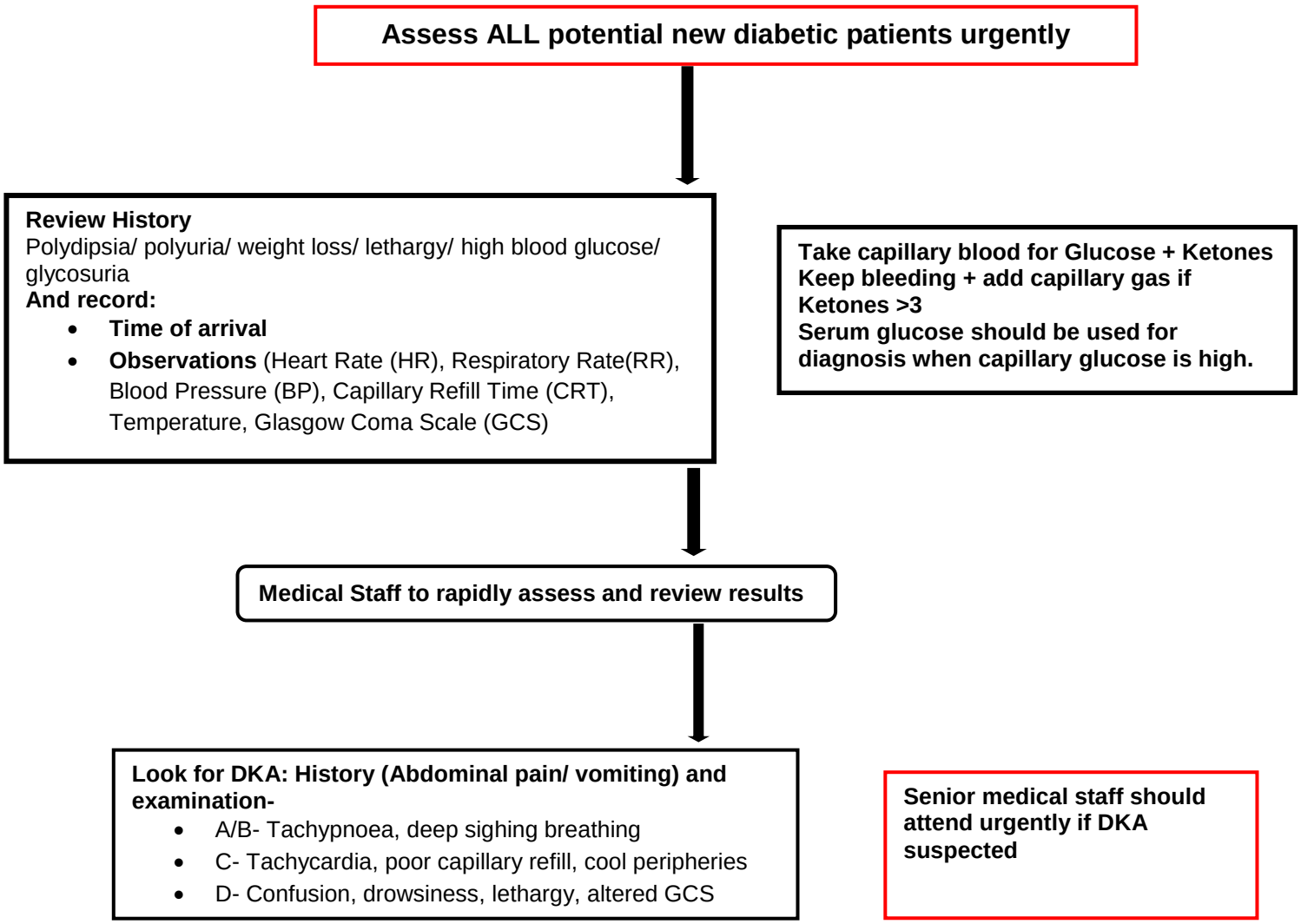
2.3.2 Assess hydration and prescribe insulin

- Assess hydration and need for intravenous fluid.
- If the child is well (not dehydrated or ketotic) start insulin when next dose would be due on the basal bolus regimen (See 2.4.2).
- If mild dehydration (5% or less) with high blood glucose and ketone level >0.6mmol, a correction dose of rapid acting insulin (See 2.4.3) should be given and encourage oral fluids.
- Initial total daily Insulin dose is
  - 0.7 units/kg/day (0.5 units/kg/day in children under 5 years).
  - Typically 50% is given as basal and 50% divided for bolus over 3 meals

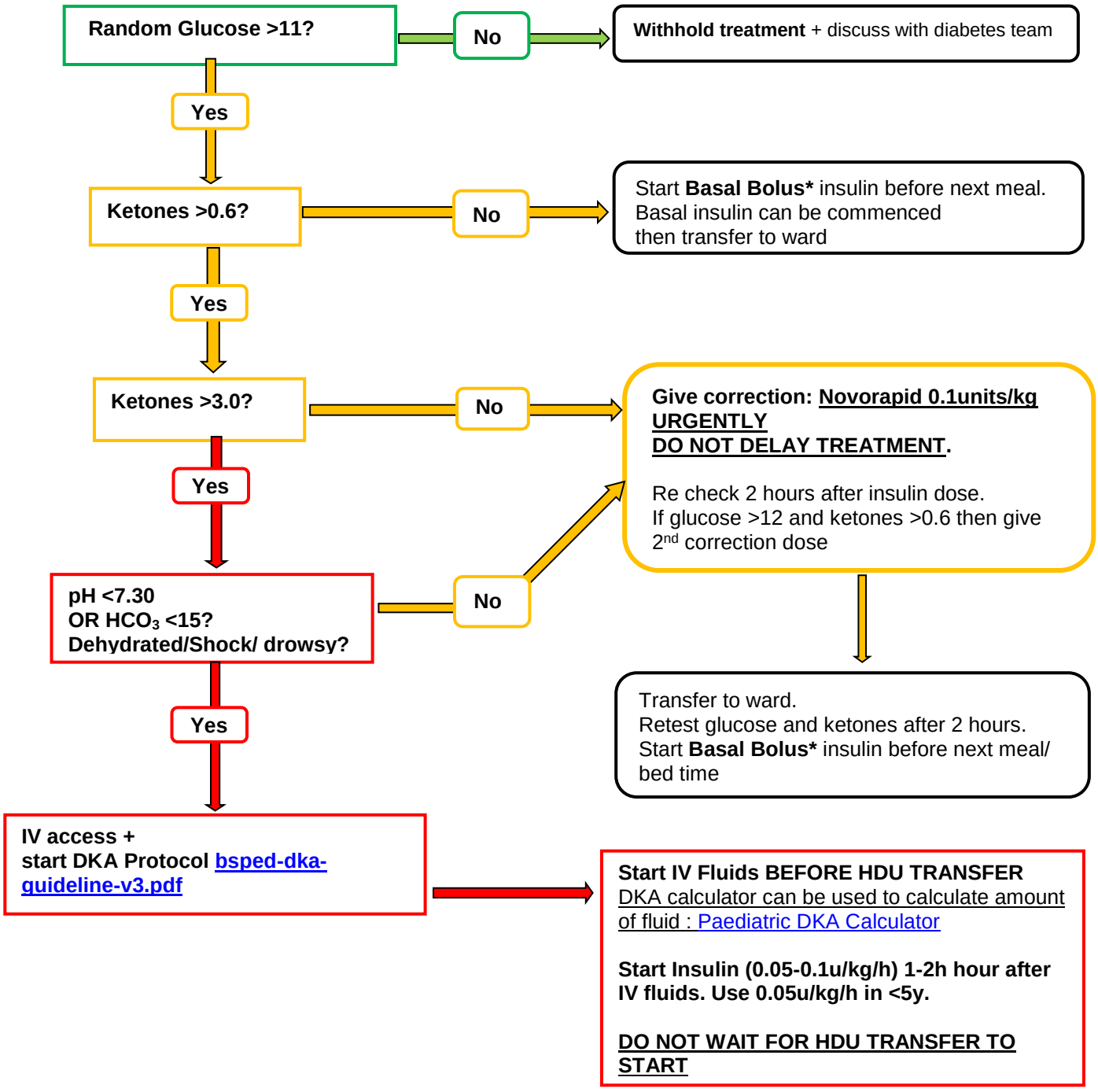
A senior doctor or member of diabetes team should explain the diagnosis to the child and their family. Those out with the diabetes team may be less familiar with current developments in management and understanding of diabetes, so should be cautious about providing specialty advice.

A new diagnosis of diabetes represents a significant event for both child and parent so the explaining of the diagnosis should not be rushed and must be undertaken sensitively.

Figure 2: Management of New Children with Suspected Diabetes in RACH



Deciding initial treatment:

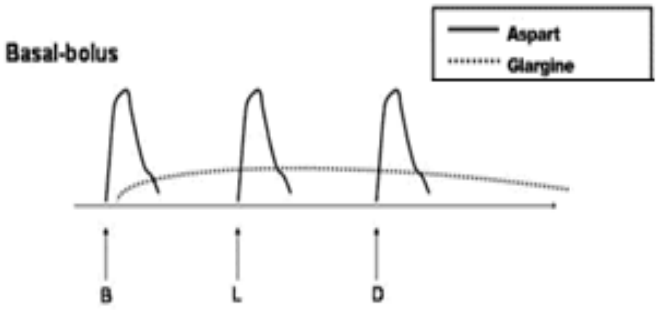


2.4 Insulin

Insulin prescribing is the responsibility of medical staff. Nursing staff should be aware of the different regimens, reasons for administration and action of the insulin administered.

2.4.1 Basal bolus regimen*

All children should be started on a **basal-bolus insulin regimen** unless there are special circumstances that require a different insulin regimen.



- Tresiba® (insulin Degludec) - 50% of total daily dose at a fixed time in the evening.
- Basal insulin should be prescribed as a time (e.g. 20.00) rather than "before bed"
- NovoRapid® (Insulin Aspart®) - 50% of total daily dose divided equally between 3 main meals and taking into account size of meals
- The duty diabetes consultant may advise about additional bolus doses for snacks.

2.4.2 Basal bolus dose calculation

Total daily dose (TDD) of insulin is 0.5 - 0.7 units/kg/day (Pre-school children 0.5 units/kg/day)

Example 1: 4 year old weighing 13kg

Total daily dose of insulin 0.5 x 13 = 6.5 units, divided as:

Half as long acting Tresiba® = 6.5 x 0.50 = 3 units

Half as Fast acting Novorapid® divided throughout the day = 3.5 ÷ 3 = 1-1.5 unit

- Tresiba® - 3 units at 1900
- NovoRapid® - 1 unit before breakfast, 1 unit before lunch and 1.5 unit before evening meal

Example 2: Twelve year old boy weighing 32 kg

Total daily dose of insulin 0.7 x 32 = 22.4 units, divided as:

Half as long acting Tresiba®= 22.4 x 0.5= 11.2 units

Half as Fast acting Novorapid® divided throughout the day = 11.2 ÷ 3= 3.7 units

- Tresiba® - 11 units at 2000
- NovoRapid® - 4 units before breakfast, 3.5 units before lunch and 4.0 units before evening meal.

Starting insulin depends on the time of day the child is admitted and whether there are ketones present.

- If ketones are negative or low (<0.6 in blood), the first dose of fast-acting (Novorapid) insulin can be given at the time dictated by the next dose due on the basal bolus regimen (i.e. admitted 2 p.m., give first dose at teatime).
- If BG >12 and ketones high (> 0.6 in blood), then give a correction dose to reduce glucose and clear ketones. A dose of 0.1 units/kg of fast acting insulin (NovoRapid®) should be given immediately. This can be repeated after 2-3 hours if ketones remain >0.6mmol/L and BG >12mmol/L. Treatment should be given on an urgent basis and NOT deferred until the patient is transferred to the ward. The basal bolus regimen is then commenced and the next bolus injection would be given when the next dose is due on the regimen.
- The first dose of Tresiba should not be delayed until the evening, and should be given when the patient arrives. The next dose should be prescribed for the following day at the preferred time (ensuring a second dose is not given in the same day).

2.5 Initial Nursing Management

On admission to the Paediatric Assessment Unit:

- It is important to record height, weight and routine observations under "Observations" on TrakCare
- Explain need for regular glucose and ketone tests
- Test blood for ketone and record result on Diabetic Prescription and TrakCare
- Test blood glucose and record result on Diabetic Prescription and TrakCare.
- Liaise with medical staff regarding any immediate treatment required.
- Medical staff will confirm diagnosis of diabetes with parents/carers and child and give an outline of treatment. Parents often may not retain information given. It is helpful for a nurse to be present to support the family as they will usually ask more questions later.

Do not give any information unless you are sure that you are correct. If in doubt, say less to avoid causing confusion by giving wrong information e.g. discharge dates. Any questions you are not sure of can be answered by the Diabetes Team.

2.5.1 The First Injection

As the child and family would be upset by the diagnosis, a nurse should give the first injection. If possible, **parents/carers should be present when insulin is administered** as learning to give injections is one of the main objectives of the admission. A clear explanation of why it is required and demonstration of how the injection is administered should be given. This should include:

- Use of pen injection devices including setting up pen, the "air shot" and appropriate sites for injection. There is guidance in the Diabetes Ward Folder to support with this.
- Injection technique – checking the dose, administering the insulin and waiting 10 seconds before removing the needle.

2.5.2 Injection Sites

The thighs and buttocks are used for injection. It is important to encourage good site rotation and use of both of these injection sites from diagnosis. **Arms are not recommended for use in paediatrics and use of the abdomen should be avoided until discussed with the diabetes team.**

2.6 Diet

There is no special diet for children with Type 1 diabetes. A healthy balanced diet is recommended for all children. Food containing high amounts of sugar should be avoided e.g. fruit juice, sweets and drinks.

Children and young people with diabetes are often hungrier after diagnosis. This resolves after 2-3 weeks. It is important to encourage a good fluid intake.

2.6.1 Meals and Snacks

Children are encouraged to have a good mealtime routine. They will be taught from a very early stage to identify and count carbohydrate (CHO) containing foods. The diabetes team will advise on matching insulin dose to the amount of CHO the child chooses to eat. This is called the insulin:CHO ratio (e.g. 1:10g ratio means 1 unit for every 10g CHO eaten).

Children should not be offered snacks which are high in added sugars, e.g. sugary ice lollies, sweets, sugar containing drinks or jelly.

Children with Type 1 diabetes on basal bolus insulin regimes do not require snacks to maintain their blood glucose levels. Snacking is a personal choice and only required if a child is hungry between meals. For small children and following diagnosis, snacks may be required to meet nutritional requirements. At diagnosis, **one** under 10g of carbohydrate snack between meals does not require additional insulin initially. Snacks containing more than 10g CHO and multiple snacks between meals will need additional insulin. This should be discussed with the family and the diabetes team. A Snack guide is available in the Diabetes Folder.

If the child is looking for bigger snacks, the on-call diabetes consultant may advise a snack dose of insulin in addition to the meal time boluses.

2.6.2 Food when blood glucose is high

When children are newly diagnosed with diabetes they are often very hungry. Even if their blood glucose is high food should not be restricted but additional insulin boluses are likely to be needed if eating between meals.

The on-call diabetes consultant may advise on a mealtime correction doses for those whose levels run consistently high. Correction doses should not be given out with meals e.g. overnight. Correction doses do not replace the management of high glucose levels when ketone levels are elevated.

2.6.3 Bedtime

Bedtime snack is not essential for children with diabetes. Some children routinely have a bedtime snack at home. This is not a problem but families need to be aware they may need fast acting insulin to cover the CHO eaten at bedtime. The amount of bed time snack a child can have without insulin cover is 10g CHO. Discuss with a dietitian or a member of the diabetes team if in doubt.

2.7 Education

The Newly Diagnosed Checklists should be placed with the child's folder/ recordings and completed by the appropriate staff as education progresses.

It is anticipated that education takes at least 2-3 working days after moving to the ward. In some cases this can be longer. Staff should avoid telling families when they can be discharged until confirmed by the diabetes team.

2.8 Preparing for Discharge

At discharge, a new patient will require a prescription which includes insulin that are used for their treatment as well as treatment for moderate and severe hypoglycaemia. The patient must be provided with an adequate supply of the following to last until their repeat prescription is available. The Diabetes Team will provide the following items before discharge:

- Insulin pen needles
- Blood glucose strips
- Lancets
- Blood ketone strips
- Sharps bin

The new patient email template (appendix 3) should be used to ensure all information is shared with the patient's GP Practice.

The following items need to be prescribed by the Medical Team for discharge:

	Description	Prescribe	Timing
Insulins	Long lasting insulin	**Tresiba® - 3mL penfill cartridges**	Once daily
	Rapid insulin	**NovoRapid® - 3mL penfill cartridges**	Before meals
Hypo treatment	Glucose gel	**Glucogel 1 box (3x25g tube)**	
	Glucagon injection	**Glucagen HypoKit®** • <8yrs or body weight less than 25kg **: 0.5mg** • >8yr or body weight over 25kg **: 1mg**	

3 References

1. ISPAD Clinical Practice Consensus Guidelines 2022: Insulin treatment in children and *adolescents with diabetes. Pediatr Diabetes. 2022;23:1277-1296*
2. ISPAD *Clinical Practice Consensus Guidelines 2022: Nutritional management in children and adolescents with diabetes. Pediatr Diabetes. 2022;1-25*
3. SIGN 116. Management of Diabetes. A National Clinical Guideline. March 2010
4. NICE guideline [NG18] Diabetes (type 1 and type 2) in children and young people: diagnosis and management Aug 2015 (updated May 2023). https://www.nice.org.uk/guidance/ng18
5. NICE Quality Standard [QS125] Diabetes in children and young people. March 2022.
6. BSPED Guideline for the Management of Children and Young People under the age of 18 years with DKA, Nov 2021. bsped-dka-guideline-v3.pdf

4 Consultative Group

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Alison Wilson	PDSN, DGH

5 Distribution list

RACH diabetes team
Dr Gray's hospital diabetes team
RACH paediatric pharmacist
RACH A & E
Dr Gray's hospital A & E
RACH Paediatric Assessment Unit
RACH High Dependency Unit
RACH Medical ward
Dr Gray's Hospital ward 2

Appendix 1 - Diabetes Team Contact Numbers

Role	Telephone	e-mail address
RACH Consultant	Bleep via switchboard or Secretary 50125	Personal email or gram.rachdiabetes@nhs.scot (email should not be used for time sensitive issues but can be helpful when providing additional explanation)
RACH Paediatric Diabetes Specialist Nurses	52734 answerphone 59647 internal 4413 Bleep	gram.rachdiabetes@nhs.scot
RACH Paediatric Dietitians	52630	gram.rachdiabetes@nhs.scot
Dr Gray's Paediatric Diabetes Specialist Nurse	67422 Answerphone 67441 internal	gram.elginpaedsdiabetes@nhs.scot
Dr Gray's Dietitian	67350	gram.moraydietitians@nhs.scot

Appendix 2 - Acronyms

BG	Blood Glucose
BP	Blood Pressure
BSPED	British Society for Pediatric Endocrinology and Diabetes
CHO	Carbohydrate
CRT	Capillary Refill Time
DKA	Diabetic Ketoacidosis
GCS	Glasgow Coma Scale
Glu	Glucose
HbA1c	Haemoglobin A1c: A fraction of the total Haemoglobin content of the blood with glucose stuck to it. This measurement is used to monitor diabetes control
HCO_3	Bicarbohate
HDU	High Dependency Unit
HR	Heart Rate
Hypo	Hypoglycaemia
IgA	Immunoglobulin A
ISPAD	International Society for Pediatric and Adolescent Diabetes. See 'References' for their consensus document
IV	Intravenous
PAU	Paediatric Assessment Unit
RACH	Royal Aberdeen Children's Hospital
RR	Respiratory Rate
Temp	Temperature
TDD	Total daily dose (of insulin)
U&E	Urea and electrolytes
WHO	World Health Organisation

Appendix 3 - New Patient Prescription Email Template

Re

CHI

Address

Dear Dr

Please add the following items to repeat prescription and make available for collection at local pharmacy asap:

- Novorapid penfill
- Tresiba penfill
- Novopen echo plus - 1x red (*Red- PIP Code: 419-6671), 1xblue (*Blue- PIP Code: 419-6663)
- BD microfine ultra 4mm needles
- Fastclix lancets x 3boxes
- Glucofix Tech B-Ketone test strips x2 boxes
- Accu-chek instant test strips x4 boxes
- Lift 60ml bottles (pack of 12) Berry flavour
- Lift 60ml bottles (pack of 12) Lemon and Lime flavour
- Lift Chewable tablets orange flavour
- Lift Chewable tablets raspberry flavour
- Glucogel (25g tubes) triple pack x2 boxes
- GlucaGen hypokit 1mg (Glucagon)
- Freestyle Libre 2 Plus Sensor 2 Sensors/30 days
- Lift Plus 360 Medical Adhesive Remover Spray

Kind regards

PDSN