Un Bae Ar y Cyd
One Bay Way

GIG CYMRU NHS WALES
Bwrdd Iechyd Prifysgol Bae Abertawe
Swansea Bay University Health Board

Admission Pack for a Child with Newly Diagnosed Diabetes

This pack is for use with a child presenting with classical symptoms, signs & investigations consistent with newly diagnosed Type 1 Diabetes. If there is diagnostic uncertainty, discuss individual cases with the diabetes team.

Patient sticker:	Consultant:
Admission Date: Admission Time:	Height (cm) & centile: Weight (kg) & centile:

If the child is in DKA (deep breathing, vomiting, with ketone levels >3mmol/l, BG >11mmol/l, pH <7.3 or bicarbonate <15mmol/l) follow the DKA integrated care pathway initially and fill out this clerking sheet once treatment is underway.

Note: the insulin dosing boxes on page 6-9 of this document can also be used when changing a new patient from IV insulin to SC insulin if presenting with DKA.

Date: **Time:**

Presenting symptoms	**Duration and nature**
Polyuria, polydipsia?	
Bedwetting?	
Weight loss?	
Tiredness, lethargy?	
Skin infections, thrush?	
Constipation?	
Other	
Any recent contact with a health professional (GP, HV, ED etc)?	
Other diabetes related history: (e.g. What did parents think was the problem?	

Past medical history/ previous hospital admissions/ birth history/ immunisations

Drug history/ allergies

Family history	Ask particularly about diabetes, other autoimmune conditions e.g. thyroid disease, coeliac disease. Also about CVD and hypertension

Mother's name: Occupation:	Father's name: Occupation:

School:

Examination and Investigations

Height and Weight are recorded on the front of this pack. Plot on a growth chart.

Observations

Temp: °C	HR:	BP:
RR:	Sats: %	CRT: secs

General appearance (evidence of weight loss, hydration state, drowsiness): AVPU & GCS:

CVS Heart sounds Peripheral pulses Perfusion	
Respiratory Kussmaul breathing (if yes check gases urgently) Expansion Breath sounds	
Abdomen Hepatomegaly	
Neurological	
Pubertal status Is the child in puberty, defined as breast development in a girl and testicular enlargement ≥4mls for a boy	**Yes / No** Findings: (this is essential as insulin dose is calculated accordingly, however **If unsure select NO**)
Other: E.g. skin – evidence of acanthosis nigricans	

Point of Care Testing Result

Blood glucose (mmol/l):

Blood Ketones (mmol/l):

Urine dipstix:

Blood gas: Arterial / Venous / Capillary (please circle)
pH
pCO2
pO2
Standard Bicarbonate
Base excess

Other blood tests		Done (✓)
Request set "Diabetes in child - new diagnosis" is available in electronic test requesting		
Plasma glucose	Fluoride (grey top)	
U+E	Li Heparin (green top)	
HbA1c	EDTA (purple top)	
TFT (TSH, Free T4)	Li Heparin (green top)	
Anti TTG/IgA (coeliac serology)	Plain (white or yellow top)	
GAD, ZnT8, IA2 antibodies	Plain (white or yellow top)	

Please inform the members of the Paediatric Diabetes MDT about the admission as soon as is practical. Please contact the paediatric diabetes specialist nurse and paediatric diabetes specialist dietitian via the diabetes administrator (Mrs Karen Lewis x42101). The diabetes consultants are available via the administrator or via the medical secretary (Mrs Helen Williams ext 30745) or switchboard.

Name of Doctor or Nurse completing the clerking:

Signature:

Date:

Time:

Insulin Dose Calculation Sheet

ALL DOSES MUST BE CALCULATED BY 2 PEOPLE INDEPENDENTLY
(the prescriber plus one other healthcare professional)

Age: years, months	Weight (kg):

Fill in one of the age appropriate boxes below and on the following pages, sign it, have the calculation checked and write up the insulin prescription on the appropriate drug chart.

Under 1 year of age

If the child is **less than 1 year**, the starting dose of insulin should be discussed with the local diabetes team consultant or if out of hours, the on-call Paediatric Consultant (further advice available via Endocrinology Consultant on call; available via UHW switchboard).

After discussion fill in the starting dose:

Total insulin dose per day = …….Units/day of ……..(insulin type)

Basal insulin name: ....., dose ..... units & timing .....

Bolus insulin name: ....., dose ..... units & timing .....

OR

The diabetes MDT may choose to initiate insulin pump therapy from diagnosis

Insulin prescribed: Name: Signature: Date:	Insulin calculation checked by : Name Signature Date

Age 1- 4 years

Estimated total daily insulin dose = **0.7 units/kg/day =** ..... Units/day

40% of this dose as **BASAL:**
Insulin Degludec (Tresiba; 100 units/ml; flextouch disposable pen or 3ml cartridge for Novopen Echo plus) = ... Units/day
(give 1st dose soon after admission, then subsequent doses in the evening)

BOLUS insulin:
Insulin Aspart (Fiasp; 100 units/ml; 3ml cartridge for Novopen Echo plus)
Prescribe variable dose insulin **before all food** (meals and snacks) using carbohydrate (CHO) ratio 1 unit per 20g CHO and insulin sensitivity factor as below

Insulin prescribed by:	Insulin calculation checked by :
Name:	Name:
Signature:	Signature:
Date:	Date:

Example: A 3 year old girl with a weight of 15kg, BG 15.5 mmol/l, diagnosed at 19.00 and wishes to eat:

- Total insulin dose per day (0.7 units/kg/day) = 10.5 units/day
- **BASAL**: 40% of TDD given as Insulin Degludec (Tresiba) = 4 units/day (round up or down to the nearest unit and give immediately and then once daily from the following evening)
- **BOLUS: I**nsulin aspart (Fiasp) administered 2mins before food if the child wants to eat a meal or snack containing carbohydrate (CHO). Each Fiasp dose consists of 2 calculations; one for the amount of CHO eaten and the other for glucose correction
    - **CHO counting**: Prescribe 1 unit of Fiasp for every 20g of CHO.

      E.g. a meal containing 70g CHO would require 70g/20 = 3.5 units of Fiasp for food.
    - **Glucose correction:** Use an insulin sensitivity factor of 1 unit to lower BG by 10 mmol/l.

      E.g. In the child above (ISF=10) a pre-meal blood glucose of 15.5 mmol/L would require 1 unit of Fiasp to achieve a blood glucose of 5.5 mmol/l [(15.5-5.5)/10)]
    - The **total dose** of Fiasp for this meal would thus be 3.5 + 1 = 4.5 units

Prescribe Fiasp on the chart as follows, using the appropriate stickers and a dose range 0 to 5 units:

Age 5-10 years

Is the child in puberty? Yes / No **(If unsure select NO)**

If **in puberty**, total insulin dose per day = **1.0 unit/kg/day** **=** ..... Units/day

If **not in puberty,** total insulin dose per day = **0.7 units/kg/day** **=** ..... Units/day

For both prepubertal and pubertal children give:

40% of this dose as **BASAL:**
Insulin Degludec (Tresiba; 100 units/ml; flextouch disposable pen or 3ml cartridge for Novopen Echo plus)
= ..... Units/day
(give 1st dose soon after admission, then subsequent doses in the evening)

BOLUS insulin:
Insulin Aspart (Fiasp; 100 units/ml; 3ml cartridge for Novopen Echo plus)
Prescribe variable dose insulin **before all food** (meals and snacks) using carbohydrate (CHO) ratio 1 unit per 15g CHO and insulin sensitivity factor as below

Insulin prescribed: Name: Signature: Date:	Insulin calculation checked by: Name: Signature: Date:

Example: A pre-pubertal 10 year old boy with a weight of 40kg, BG 15.5mmol/l, diagnosed at 19.00 and wishes to eat:

- Total insulin dose per day (0.7 units/kg/day) = 28 units/day
- **BASAL**: 40% of TDD given as Insulin Degludec (Tresiba) = 11 units/day (round up or down to the nearest unit and give immediately and then once daily from the following evening)
- **BOLUS: I**nsulin aspart (Fiasp) administered 2mins before food if the child wants to eat a meal or snack containing carbohydrate (CHO). Each Fiasp dose consists of 2 calculations; one for the amount of CHO eaten and the other for glucose correction
    - **CHO counting**: Prescribe 1 unit of Fiasp for every 15g of CHO.

      E.g. a meal containing 70g CHO would require 70g/15 = 4.5 units of Fiasp for food.
    - **Glucose correction:** Calculate the insulin sensitivity factor using the rule: 100 divided by the total daily dose of insulin (100/TDD). The correction dose should be calculated to achieve a target pre-meal blood glucose of 5.5mol/L .

      E.g. In this child on a total daily dose of 28 units insulin. ISF = 100/28 = 4 (round up to next whole number). Therefore 1 unit of rapid acting insulin will be expected to lower blood glucose by 4 mmol/L. In the child above (ISF=4) a pre-meal blood glucose of 15.5mmol/L would require 2.5 units of Fiasp to achieve a blood glucose of 5.5mmol/l [(15.5-5.5)/4].
    - The **total dose** of Fiasp for this meal would thus be 4.5 + 2.5 = 7 units

Prescribe Fiasp on the chart as per page 7, using the appropriate stickers and a dose range 0 to 10 units

Age 11+ years

Is the child in puberty? Yes / No **(If unsure select NO)**

If **in puberty**, total insulin dose per day = **1.0 unit/kg/day** **=** ..... Units/day

If **not in puberty,** total insulin dose per day = **0.7 units/kg/day** **=** ..... Units/day

For both prepubertal and pubertal children give:

40% of this dose as **BASAL:**
Insulin Degludec (Tresiba; 100 units/ml; flextouch disposable pen or 3ml cartridge for Novopen Echo plus) = ... Units/day
(give 1st dose soon after admission, then subsequent doses in the evening)

BOLUS insulin:
Insulin Aspart (Fiasp; 100 units/ml; 3ml cartridge for Novopen Echo plus)
Prescribe variable dose insulin **before all food** (meals and snacks) using carbohydrate (CHO) ratio 1 unit per 10g CHO and insulin sensitivity factor as below

Insulin prescribed: Name: Signature: Date:	Insulin calculation checked by: Name: Signature: Date:

Example: A peri-pubertal 15 year old girl with a weight of 65kg, BG 15.5mmol/l, diagnosed at 19.00 and wishes to eat:

- Total insulin dose per day (1 unit/kg/day) = 65 units/day
- **BASAL**: 40% of TDD given as Insulin Degludec (Tresiba) = 26 units/day (round up or down to the nearest unit and give immediately and then once daily from the following evening)
- **BOLUS: I**nsulin aspart (Fiasp) administered 2 mins before food if the child wants to eat a meal or snack containing carbohydrate (CHO). Each Fiasp dose consists of 2 calculations; one for the amount of CHO eaten and the other for glucose correction
    - **CHO counting**: Prescribe 1 unit of Fiasp for every 10g of CHO.

      E.g. a meal containing 70g CHO would require 70g/10 = 7 units of Fiasp for food.
    - **Glucose correction:** Calculate the insulin sensitivity factor using the rule: 100 divided by the total daily dose of insulin (100/TDD). The correction dose should be calculated to achieve a target pre-meal blood glucose of 5.5mmol/L .

      E.g. In this child on a total daily dose of 65 units insulin. ISF = 100/65 = 2 (round up to next whole number). Therefore 1 unit of rapid acting insulin will be expected to lower blood glucose by 2 mmol/L. In the child above (ISF=2) a pre-meal blood glucose of 15.5mmol/L would require 5 units of Fiasp to achieve a blood glucose of 5.5mmol/l [(15.5-5.5)/2].
    - The **total dose** of Fiasp for this meal would thus be 7 + 5 = 12 units

Prescribe Fiasp on the chart as per page 7, using the appropriate stickers and a dose range 0 to 15 units

Ongoing care from the Children's Diabetes team

Blood glucose targets

Patients should receive consistent advice to aim for blood glucose targets of 4-7 mmol/l pre meal, 5-9 mmol/l 2h post meal and 6-10 mmol/l before bed. Diabetes teams should aim to achieve target blood glucose levels within 7 days of diagnosis and a HbA1c of less than 48 mmol/mol by 3 months post diagnosis.

Dose Adjustment

Both in hospital and following discharge, the starting doses of insulin will need to be frequently adjusted according to blood glucose levels. Some children will be sensitive to insulin and need dose reductions once normal glucose is achieved. Others may need dose increases initially to achieve blood glucose targets.

Structured Education

The all Wales structured education (SEREN) resources will be used for newly diagnosed patients.

Carbohydrate counting

Carb counting education will start on the ward from the day of diagnosis and from the first dose of rapid insulin. The target is to support children and families to be confident and competent at counting carbohydrates and adjusting insulin doses themselves before discharge.

All meals and snacks will need to be carb counted and rapid insulin (Fiasp) given (see carbohydrate counting SOP).

Resources available to ward staff include the carbs and cals app and book. An e-learning package is available on ESR: "The Management of Paediatric Type 1 Diabetes from Diagnosis".

Hypoglycaemia

The hypoglycaemia guideline on management of low blood glucose (less than 4 mmol/l) is available here: https://tinyurl.com/465wrj65

Psychological support

The Paediatric Diabetes team have access to Clinical Psychology to support children, young people and their family. It is very normal to experience a very wide range of emotions at the point of diagnosis and this takes some time to settle. The team can support families with this adjustment and make a referral to psychology if this would be helpful.

CONTINUATION SHEET- to be used by any team member

Date/Time	

Discharge

All boxes should be completed and signed prior to discharge.

	Yes	No	N/A	Signature
Seen by medical team				
Seen by PDSN				
Seen by paediatric specialist dietitian				
Structured education initiated using SEREN resources				
Cannula removed (if inserted)				
Follow up appointment to be arranged by PDSN				
Confirm new diagnosis bloods have been taken				
TTH given and explained				
HV/School nurse form completed				
Parents understand how much insulin to give and what times to give it				
Brecon register consent form completed and sent				
GP letter sent / given to parents (including communication of prescriptions and devices according to local pathways)				

Time and date discharged home:	
Any other comments:	
Name	
Signature	Date

Please code the admission episode at discharge (this allows correct ICD Patient Episode Data). Tick the correct box.

CODE			**USE FOR**
E10.9	☐	Diabetes without complications	Newly diagnosed patients with hyperglycaemia and no other complications
E10.1	☐	Diabetes with Ketoacidosis	If a new patient has presented with DKA

4th Edition

Reviewed and updated in March 2024 in SBUHB

This care pack for the management of newly diagnosed type 1 diabetes in children has been adapted from the original produced by the Children and Young People's Wales Diabetes Network (& Brecon group). The original was adapted from guidelines developed and freely shared by the Children's diabetes teams at Oxford University Hospitals and Cardiff and Vale University Health Board, for which we are grateful.

Any clinical comments or suggestions may be addressed to:

[redacted] *OR* Dr Christopher Bidder
Lead paediatric diabetes nurse Consultant paediatrician

Department of Child Health
Morriston Hospital
Swansea
SA6 6NL

[redacted] [redacted]

COIN clinical online information network

Swansea Bay University Health Board

Authorisation Form for Publication onto COIN

PLEASE ENSURE THAT ALL QUESTIONS ARE ANSWERED – IF NOT APPLICABLE PLEASE PUT N/A

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Please provide a brief description/abstract of the document.	Use with a child presenting with classical symptoms, signs and investigations consistent with newly diagnosed Type 1 Diabetes.
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