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Admission pack for a child with

newly diagnosed diabetes

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

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

**If the child is in DKA (deep breathing, vomiting, with ‘point of care’ ketone levels >3mmol/l, BG >11mmol/l, pH <7.3) 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, 7 & 8 of this document can also be used when changing a new patient from IV insulin to SC insulin if presenting with DKA.**

**Date:** **Time:**

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

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

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| Drug history/ allergies |

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

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| Mother’s name:Occupation: | Father’s name:Occupation: |

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| School: |

**Examination and Investigations**

Height and Weight are recorded on the front of this pack.

**Observations**

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

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

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| **CVS**Heart soundsPeripheral pulsesPerfusion |  |
| **Respiratory**Kussmaul breathing (if yes check gases urgently)ExpansionBreath sounds |  |
| **Abdomen**Hepatomegaly |  |
| **Neurological**(if needed) |  |
| **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 |  |

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| **Point of Care Testing Result**Blood glucose (mmol/l):Blood Ketones (mmol/l):Urine dipstix: Blood gas: Arterial / Venous / Capillary (please circle)pHpCO2pO2Standard BicarbonateBase excess |

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| **Other blood tests** |  | Done (✓) |
| 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 | Plain (white or yellow top) |  |
| Anti GAD antibodies | Plain (white or yellow top) |  |
| Islet cell antibodies | Plain (white or yellow top) |  |

Please inform the members of the Paediatric Diabetes MDT about the admission as soon as is practical.

Please telephone the paediatric diabetes specialist nurse 44525 (Richmond house); and leave voicemail

Diabetes consultant (via secretaries) Dr Hawkes, Dr Venkat, Dr Goyal, Dr Manikonda &

 Dr Goel

Paediatric diabetes dietitian RGH 44288

If out of hours or a weekend leave a message.

Name of Doctor or Nurse completing the clerking:

Signature:

Date:

Time:

**Insulin Dose Calculation Sheet**

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**ALL DOSES MUST BE CALCULATED BY 2 PEOPLE INDEPENDENTLY**

**(the prescriber plus one other healthcare professional)**

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| 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.**

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| **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 .......................ORThe diabetes MDT may choose to initiate insulin pump therapy from diagnosis |
| Insulin prescribed: Name:Signature:Date: | Insulin calculation checked by :Name SignatureDate  |

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| **Age 1-4 years**Total insulin dose per day = **0.7 units/kg/day =** …................. Units/day**One third of this dose** is given as **BASAL** Insulin Detemir (Levemir) = …......... Units/day(give 1st dose soon after admission and then subsequent doses in the morning)**Remaining two-thirds** given as **BOLUS** Insulin. E.g. Insulin Aspart (NovoRapid), Insulin Lispro (Humalog) or Insulin Glulisine (Apidra) = …............Units/dayThe total daily bolus dose is initially divided into three roughly equal amounts before breakfast, lunch and tea. Half units can be used.Pre-breakfast bolus dose =…......................UnitsPre-lunch bolus dose =…............................UnitsPre-tea bolus dose = ..................................Units |
| Insulin prescribed:Name:Signature:Date: | Insulin calculation checked by :Name:Signature:Date:  |

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| Example: A 3 year old male child with a weight of 15kg diagnosed at 19.00 and wishes to eat:* Total insulin dose per day (0.7 units/kg/day) = 10.5 units/day
	+ **One third given as Insulin Detemir (Levemir) = 3.5 units/day (round up or down to the nearest half unit if necessary and give immediately)**
* The remaining two thirds (7 units/day) given as bolus insulin (e.g. NovoRapid) in three divided doses (round up or down to the nearest half unit and only administer if the child wants to eat

food containing some carbohydrates)* + - * Pre breakfast 2.5 units
			* Pre lunch 2.5 units
			* Pre tea 2.5 units
	+ **Therefore, following admission also give 2.5 units NovoRapid with the evening**

**Meal*** The following morning the child should receive a further 3.5 units of Detemir (Levemir) and 2.5 units NovoRapid with breakfast
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| **Age 5-11 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/dayIf **not in puberty,** total insulin dose per day = **0.7 units/kg/day =** ............... Units/day**For both prepubertal and pubertal children give:****One third of this dose** as **BASAL** Insulin Glargine (Lantus) = ............... Units/day(give 1st dose soon after admission, then subsequent doses in the evening)**Remaining two-thirds** as **BOLUS** Insulin. E.g. Insulin Aspart (NovoRapid), Insulin Lispro (Humalog) or Insulin Glulisine (Apidra) = ............... Units/dayThe total daily bolus dose is initially divided into three roughly equal amounts before breakfast, lunch and tea. Half units can be used.Pre-breakfast bolus dose =.........................UnitsPre-lunch bolus dose =...............................UnitsPre-tea bolus dose = ..................................Units |
| Insulin prescribed: Name:Signature:Date: | Insulin calculation checked by:Name:Signature:Date:  |

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| Example: A 10year old pre pubertal female child with a weight of 40 kg diagnosed at 12.00 and wishes to eat:* Total insulin dose per day (0.7 units/kg/day) = 28 units/day
	+ **One third given as Insulin Glargine (Lantus) = 10 units/day (round up or down to nearest unit if necessary and give immediately)**
* The remaining two thirds (18 units/day) given as bolus insulin (e.g. Humalog) in three divided doses (round up or down to the nearest unit if necessary)
	+ - * Pre breakfast 6 units
			* Pre lunch 6 units
			* Pre tea 6units
	+ **Therefore, following admission give 6 units Humalog with lunch**
* 6 units of Humalog should be given with subsequent meals and further doses of 10 units Glargine (Lantus) in the **evening starting the following day**
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| **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/dayIf **not in puberty,** total insulin dose per day = **0.7 units/kg/day =** ............... Units/day**For both prepubertal and pubertal children give:****One third of this dose** as **BASAL** Insulin Degludec (Treisba) = ............... Units/day(give 1st dose soon after admission, then subsequent doses in the evening)**Remaining two-thirds** as **BOLUS** Insulin. E.g. Insulin Aspart (NovoRapid), Insulin Lispro (Humalog) or Insulin Glulisine (Apidra) = ............... Units/dayThe total daily bolus dose is initially divided into three roughly equal amounts before breakfast, lunch and tea. Half units can be used.Pre-breakfast bolus dose =.........................UnitsPre-lunch bolus dose =...............................UnitsPre-tea bolus dose = ..................................Units |
| Insulin prescribed: Name:Signature:Date: | Insulin calculation checked by:Name:Signature:Date:  |

Example: A 14 year old pubertal female child with a weight of 50 kg diagnosed at 12.00 and wishes to eat:

* Total insulin dose per day (1.0units/kg/day) = 50 units/day
	+ **One third given as Insulin DEGLUDEG (Tresiba 100units per 1ml) = 17 units/day (round up or down to nearest unit if necessary and give immediately)**
* The remaining two thirds (33 units/day) given as bolus insulin (e.g. Humalog) in three divided doses (round up or down to the nearest half unit if necessary)
	+ - * Pre breakfast 11 units
			* Pre lunch 11 units
			* Pre tea 11 units
	+ **Therefore, following admission give 11 units Humalog with lunch**

11 units of Humalog should be given with subsequent meals and further doses of 10 units DEGLUDEG (Tresiba) in the **evening starting the day** following admission

**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, particularly in rapid insulin doses. Others may need dose increases initially to achieve blood glucose targets.

**Structured Education**

Individual unit and health board teams will agree how to use the all Wales structured education (SEREN) resources for newly diagnosed patients. Educators should receive appropriate training and the quality of education should be assured.

**Carbohydrate counting**

Individual unit and health board teams will agree their local plan for implementing the 2015 NICE guidance to, “offer level 3 carbohydrate counting from diagnosis,” using the SEREN resources. This education may start on the ward from the day of diagnosis, or be introduced very soon afterwards. The target is to support children and families to be confident and competent at counting carbohydrates and adjusting insulin doses within 6 weeks of diagnosis. **Correction Doses**

Additional rapid acting insulin (Novorapid or Humalog) should be given with the mealtime dose to correct hyperglycaemia. The CYP’s Insulin Sensitivity Factor (ISF) should be calculated to determine the falling in blood glucose to be expected for each extra unit of novorapid or Humalog given. The ISF is 100

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Total Daily Dose of Insulin

E.g. Child on 20u insulin daily ISF = 100/20 = 5. Therefore 1 unit of rapid acting insulin will lower blood glucose by 5mmol/L. An additional correction dose should be calculated to achieve a target pre-meal blood glucose level of 5mmol/L.

E.g. In the child above (ISF=5) a pre-meal blood glucose of 15mmol/L would require an extra 2u of rapid acting insulin **in addition** to the usual mealtime dose.

If pre-meal blood glucose is < 4mmol/L the hypo should first be treated (see relevant hypo sheet) and the blood glucose retested after 10 – 15 minutes to ensure that it has increased to >4 mmol/l before the CYP eats their food. The meal time dose of Novorapid should then be reduced by the equivalent of 10g carbohydrate. E.g. If the total amount of carbohydrate in the meal is 50g, the insulin dose should be calculated for a 40g meal.

Basal insulin (Insulin Glargine (Lantus®) or Insulin Detemir (Levemir®) or DEGLUDEG (tresiba) should be adjusted to achieve a fasting (pre-breakfast) blood glucose level 5-7mmol/L. Adjustments to the basal insulin dose should not be made more frequently than once per week.

**Insulin doses for carbohydrate containing snacks**

Bolus insulin (e.g. Insulin Aspart (NovoRapid), Insulin Lispro (Humalog) or Insulin Glulisine (Apidra)) should be injected for carbohydrate containing snacks from diagnosis. Until carbohydrate counting has been established, suggested starting insulin doses for snacks containing 10g of carbohydrate or more are:

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| --- | --- |
| **Age** | **Bolus insulin dose for snack >10g CHO** |
| <5 years | 0 units |
| 5-11 years | 0.5 units |
| ≥ 11 years | 1 unit |

This should be prescribed and recorded on the prn section of the insulin prescription chart.

**Prescribing / Completing Take home Medications**

Please note on the e discharge there is a section;

Paediatrics newly diagnosed type 1 diabetes 5 years and under

Paediatric newly diagnosed type 1 diabetes 5-11

Paediatrics newly diagnosed type 1 diabetes 11 years and over

Please click on the appropriate link which will take you to a drop down menu to click the appropriate insulin and equipment necessary to take home

**Hypoglycaemia**

The hypoglycaemia guideline on management of low blood glucose (less than 4 mmol/l) is available in the Paediatric best practice guidelines on the ABUHB intranet under the diabetes and endocrinology section.

**Psychological support**

All CYP with newly diagnosed T1DM will be referred to the diabetes team psychologists.

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| **Continuation Sheet- to be used by any team member** |
| **Date/Time** |  |  |
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**Discharge**

All boxes should be completed and signed prior to discharge.

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|  | Yes | No | N/A | Signature |
| Seen by medical team |  |  |  |  |
| Seen by PDSN |  |  |  |  |
| Seen by paediatric dietitian |  |  |  |  |
| Seen by clinical psychologist |  |  |  |  |
| 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) |  |  |  |  |

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| Time and date discharged home: |
| Any other comments:NameSignature Date |

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

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| **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 |
|  |  |  |
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1st Edition

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This care pack for the management of newly diagnosed type 1 diabetes in children has been produced by the Children and Young People’s Wales Diabetes Network (& Brecon group). It has been 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:

Dr Justin Warner Dr Chris Bidder

Consultant Paediatric Endocrinologist Consultant Paediatrician

Department of Child Health *OR* Department of Child Health

University Hospital of Wales Morriston Hospital

Heath Park Cwmrhydyceirw

Cardiff Swansea

CF14 4XW SA6 6NL

Justin.warner@wales.nhs.uk chris.bidder@wales.nhs.uk

Any non-clinical comments or suggestions may be addressed to:

Mr Jon Matthias

Network Coordinator

Children and Young People’s Wales Diabetes Network (& Brecon group)

University Hospital of Wales

Cardiff

CF14 4XW

jon.matthias@wales.nhs.uk