

HYBRID CLOSED LOOP (HCL) SYSTEM: INFORMATION LEAFLET



i This leaflet provides a recap on how to keep yourself safe whilst using a hybrid closed loop system, backup supplies, and emergency contact details for clinical or technical concerns.

Name:

Hospital Number:

Type of hybrid closed loop system:

Average Total daily dose (TDD)= units

10% TDD =

units

20% TDD =

units

AVOIDANCE OF DIABETIC KETOACIDOSIS (DKA)

- Diabetic Ketoacidosis (DKA) on HCL systems have been due to cannula failures, where glucose levels have been raised for a while but the user did not check for ketones or change their set, trusting that the system would sort it out.
- Please remember it is very unusual for someone on HCL to have a glucose level >15.0mmol/L for over 2 hours.
- If you continue to try and correct a high reading through the pump, it will only give you small correction doses because it has been trying to bring your sugars down and thinks there is more insulin on board but the cannula or infusion set are not working.
- See unexplained hyperglycaemia and sick days rules on [page 3](#) ➔.



IMPORTANCE OF CANNULA CHANGES AND TIMING

- With HCL systems, the importance is increased as any reduction in insulin absorption either due to poor sites or due to reduced infusion by keeping the cannula in longer may affect the total daily insulin dose and subsequent pump learning.
- Ensuring a full set change is completed every two to three days will minimise variability in absorption.
- Remember cannula/site for unexplained highs, only give the pump 1 chance to get it right, follow flow chart (overleaf) for levels not coming down after 2 hours.

TEMPORARY BASAL RATES:

When blood glucose levels are rising when you are unwell, consider:

- Boost for CamAPS FX
- Strengthening basal rates by 20% for Tandem Control IQ
- Lower Active Insulin Time (AIT) /blood glucose target (if not chosen already) for Medtronic Minimed™ 780G SmartGuard

When positive to ketones follow Sick Day rule flowchart on [page 3](#) ➔

HYPOGLYCAEMIA:

When glucose levels approach hypoglycaemia, hybrid closed-loop systems will often not have delivered any insulin for some time prior to this; therefore, less rapid-acting carbohydrate can be used to prevent hypoglycaemia (e.g. 4-5g of rapid acting carbohydrate if glucose 4.0-6.0mmol/l with a ↓ trend arrow) or treat mild hypoglycaemia (e.g. 8-10g of rapid acting carbohydrate if glucose <3.9mmol/l), this applies when little or no active insulin is on board.

i Digital version of this leaflet can be accessed here:



TRAVEL CHECKLIST:

- ✓ Details of holiday insurance if travelling abroad
- ✓ Letter on hospital-headed notepaper confirming diabetes, insulin pump and CGM use and the need to carry sharps.
- ✓ Emergency contact numbers (company, hospital).
- ✓ Extra insulin and supplies of other medication.
- ✓ Adequate supplies e.g. sensors +/- transmitters, cannulas.
- ✓ Long-acting insulin to use and doses in the event of insulin pump failure.
- ✓ Insulin pens/needles or syringes.
- ✓ Phone charger /portable charger (for smartphone enabled systems).
- ✓ Spare pump (if available).
- ✓ Blood glucose meter, test strips, lancets/lancing device.
- ✓ Batteries for pump/pump charger.
- ✓ Blood ketones test strips.
- ✓ Hypo management supplies – dextrose tablets weigh less and are smaller than most liquids. Also, they will not cause a problem in airport security.
- ✓ A method of safe sharps disposal.



DKA AVOIDANCE TOOLKIT:

Ensure you have in date supplies and equipment for avoiding and managing DKA effectively:

- Blood ketone meter.
- Blood ketone test strips (in date).
- Copy of pump sick day rules.
- Rapid- or ultra-rapid acting insulin in the form of a pen/syringe (In date).
- Long-acting insulin in the form of a pen/syringe (in date).
- Conversion doses for going back to injections.
- Emergency contact details (clinical and technical)
- If you have not had your pre-programmed (manual) basal rates reviewed in clinic recently please contact the team for urgent assistance.

ADVICE:

If in doubt, contact for advice:

Contact the diabetes nurses (Mon-Fri) on

or by email

Outside of working hours for medical emergencies that cannot wait until the next working day you can speak to the Diabetes Consultant via the hospital switchboard

TECHNICAL SUPPORT:

- ❗ Hybrid closed loop pump sick day guidance can be accessed here:



UNEXPLAINED HYPERGLYCAEMIA AND SICK DAY RULES

