Guide for the management of inpatients who are using an insulin pump (continuous subcutaneous insulin infusion - CSII)

Draft document. Author: Dr Anna Dover. Last updated:11/02/14.

Purpose of guidance

This document is designed to provide guidance for the management of patients on insulin pump therapy should they require admission to hospital.

This document is not intended to provide comprehensive protocols for the management of these patients but should aid decision-making for continuation of pump therapy or safely switching to subcutaneous insulin injections or intravenous insulin when required.

General information on insulin pumps

- An insulin pump is a small battery driven electronic device which provides a continuous subcutaneous infusion of rapid acting insulin (usually Novorapid®, Humalog® or Apidra®).

- The pump is programmable and the settings can be changed if required by activating the on-screen menus (patients are trained on how to change the settings).

- Insulin is delivered via an infusion set from the pump and a short plastic cannula which is changed every 3 days.

- All patients require a continuous infusion of basal (or background) insulin and there may be several different basal rate settings over the course of the day. Insulin boluses will be required in addition to the basal insulin when the patient eats/drinks foods containing carbohydrate (the settings for the amount of insulin required for food will already be programmed into the pump).

- A correction dose of insulin can also be bolused through the pump when the blood glucose reading is high; the amount of insulin required (correction factor) is programmed into the pump.

- Patients on insulin pumps can safely fast for procedures or vary mealtimes as long as the infusion settings are adjusted by the patient according to the particular circumstance.

- Patients will need to bring supplies for the pump, including infusion sets, reservoirs, and batteries. Where practical, they should also bring their own meter, long and short acting insulin pens and pen needles (as back up), as well as their preferred hypoglycaemia treatment.

Adjustments to the pump settings must not be made by untrained hospital staff who should assume that the only person who can manage the pump during hospitalisation is the patient or their trained carer.

Important: diabetic ketoacidosis can occur within 2-4 hours if insulin delivery from the pump is interrupted since it is only rapid acting insulin being delivered.

Who can remain on their insulin pump during hospital stay?

Patients who are keen to stay on their pump and are medically able to do so should be supported in this choice where possible.

Absolute contraindications to continuing on an insulin pump include:

- DKA (disconnect pump and commence DKA ICP - including IV insulin)
- Impaired consciousness
- Critical illness requiring intensive care
- Major surgery involving general anaesthesia
- Patients refusing, unwilling or unable to participate in self care
- Major psychiatric disturbance (eg delirium)
- Lack of consumables (parents should have all consumables required for the duration of the admission)

Please contact the diabetes team as soon as the patient is admitted so that we can facilitate patients remaining on their pump when able, or being appropriately switched to either subcutaneous injections or intravenous insulin.

If a patient is remaining on their insulin pump, it is essential that this is clearly documented. The continuous rapid acting insulin should be prescribed on the Kardex, with “CSII” (continuous subcutaneous insulin infusion) in the notes section. Patients must be asked to document their own capillary blood glucose readings on the usual diabetes charts.

Pregnancy and labour

Pregnant patients who wish to stay on their pump during labour should be supported to do so when possible. They will be advised to bring consumables with them to hospital and are recommended to ready their pump with a new set and a full vial of insulin at the start of labour. Infusion sets should be changed every 48 hours in pregnant women. Capillary blood glucose levels must be tested hourly, aiming for a range between 4-7mM. If target levels are not achieved despite correction doses or adjustment of basal rates within two hours, then the patient should be switched to intravenous insulin according to the usual protocol. Patients who are hypoglycaemic, vomiting or who are unable to manage their pump themselves due to pain or opiate analgesia use will also need to be converted to IV insulin. Patients undergoing elective or emergency caesarean section should be converted to IV insulin. Whilst the patients’ views will be taken into account regarding choice of therapy, if there

are medical concerns then conversion to IV insulin is usually the appropriate option and this should be a medical decision.

Radiological procedures

X-ray procedures, CT and MRI scanners can interfere with pump operation. The insulin pump should be removed prior to the procedure and if the procedure (including transfer/waiting times) is expected to take longer than one hour, temporary subcutaneous or intravenous insulin will be required. Please seek advice from the diabetes team.

Converting from insulin pump to subcutaneous injections or IV insulin

If a patient requires to be switched from subcutaneous insulin pump to basal bolus insulin (for example due to technical pump failure), pleasing contact the diabetes team for advice. As a general principle, patients will be able to tell you the total daily dose of insulin, and what proportion has been delivered as basal insulin from their pump settings. This will aid in estimating how much Lantus and Novorapid to prescribe.

Useful contact details

Diabetes specialist nurses

RIE: Bleep 5852/5955, or extension 21470/1

WGH: Bleep 8687, or extension 31746

SJH: Bleep Bleep 3008 / 3632, or tel 01506 523856

Diabetes registrar on call

RIE: Bleep #6800
WGH: Bleep 8370

Out of hours

Diabetes registrar on call 0900-2000 hours weekdays, 0900-1700 weekends, page via switchboard

If your enquiry is out of these hours and urgent, contact the diabetes consultant on call via switchboard