Use of Continuous Subcutaneous Insulin Infusion (CSII) Pumps in Hospitalised Patients-Policy & Procedure

Content

Purpose:

a) To ensure safe and accurate administration of insulin for patients using their own external continuous insulin infusion pump during hospitalisation.

b) To provide adequate and safe monitoring of inpatients with diabetes who are capable of self-management and require administration of insulin via continuous subcutaneous insulin infusion (CSII) pump.

If the patient is to remain on Insulin pump therapy while an inpatient **you will need to print a copy of this document for the patient's notes and complete the patient agreement, and pump settings. The pump log should be completed daily. Documents are found in appendix 1, 2 & 3.**

If INSULIN PUMP THERAPY IS TO BE DISCONTINUED IT MUST BE REPLACED BY AN ALTERNATIVE METHOD OF INSULIN DELIVERY BEFORE THE PUMP IS REMOVED or DIABETIC KETOACIDOSIS (DKA) WILL DEVELOP (see Appendix 5 for further guidance).

Definitions

Insulin pump: An insulin pump approved for delivering continuous subcutaneous insulin to either and adult or child.

Basal rate: The amount of insulin required to maintain a normal metabolic state when not eating. It is administered by continuous delivery.

Bolus dose: The amount of insulin infused by a patient for meals or episodes of hyperglycaemia. The patient programmes the required dose. The patient has previously been educated in how to adjust this on the basis of carbohydrate consumed, blood glucose reading and anticipated exercise.

Policy

This policy refers to any adult patient admitted to hospital using an external insulin pump to manage his/her diabetes.

1. Indications for inpatient use of CSII include all of the following:

1. Alert & orientated
2. Knowledgeable and competent to self-manage the insulin pump
3. Have adequate insulin pump supplies, including infusion sets, reservoirs and batteries

2. If the criteria in point 1 are met and contraindications listed below are excluded.:

A. Contact the Diabetes Specialist Nurse & inform the diabetes team.

B. The patient needs to sign to agree to self-management of CSII (appendix 1) and to complete the insulin pump log (appendix 2).

C. The doctor needs to document the following on the patient's medication chart and self-administration document (appendix 3).

1. Document the use of CSII
2. Prescribe the type of insulin e.g. Novorapid, Fiasp, Humalog, Apidra,
3. Basal rates (to be confirmed with the patient)
4. Bolus doses and corrections (to be confirmed with the patient)
5. Frequency of blood glucose monitoring at least QDS
6. Note that bolus doses can be given by insulin pen, syringe or pump

3. Contraindications for inpatient use of CSII include any of the following

1. Altered level of consciousness or incapacitated due to illness
2. Suicide risk
3. Critically ill (sepsis, trauma) needing high level care
4. Persistent hyperglycaemia/hypoglycaemia
5. Diabetic ketoacidosis
6. One or more unexplained glucose values >16.0 mmol/l and ketones
7. Two or more unexplained values >16.0 mmol/l despite correction doses
8. Refusal/unwillingness to participate in self-care
9. Caregiver support needed to manage CSII

Having considered the indications and contra-indications, the assessment of suitability to continue with CSII should be made by the most responsible physician or nurse.

4. Management of the pump

a) The nurse will obtain and record blood glucose levels at the recommended frequency using the hospital meter. The patient may take additional readings using their own meter or monitor glucose using a flash (Libre) or Continuous glucose monitor (CGM). The results are recorded in the hospital pump chart kept at the patient's bedside.

b) The patient will manage glycaemic control using the pump and communicate the pump setting changes to nursing staff

c) The patient will use his/her own non-medication supplies for CSII. Insulin is ordered from Pharmacy for refill of the insulin pump.

d) Patients are responsible for changing the infusion set and to fill a new reservoir at least every 3 days

e) The nurses will assess the catheter insertion site and document integrity

f) Note the infusion site may need to be changed more frequently if:
   1. There are signs of infection: erythema, swelling, pain, heat
   2. There is bleeding
   3. A no delivery alarm

5. Discontinuing CSII

If at any time a contraindication to CSII occurs or the pump is not functioning properly the medical team should be notified immediately to obtain a prescription for an alternative insulin regime. Only after the alternative insulin has been administered can the CSII can be discontinued (see appendix 5).

6. Instructions for discontinuation of CSII

1. Stop the pump and remove the pump from the infusion set
2. Remove the infusion set
3. Secure the pump or give to the family for safe keeping
4. Document the reasons for discontinuation and location of pump

7. Special circumstances for suspending CSII

The CSII should be temporarily suspended and disconnected if the patient is undergoing any of the following procedures:

a. MRI imaging
b. CT imaging
c. Radiology procedures

The pump should not be taken into the room where the procedure is being performed. A patient can safely be disconnected from CSII for up to 1 hour but should check blood glucose before disconnecting and after re attaching the insulin pump. A correction dose maybe required when re connecting the pump.

8. Documenting required in the medical notes

1. Patient agreement
2. Diabetes insulin pump log:
   a) Make and model of pump
   b) Type of insulin
   c) Basal rate
   d) Bolus doses
   e) Any supplemental insulin
   f) Blood glucose readings
   g) Condition of infusion site
   h) Change of infusion site
   i) If removed, time of removal and time of re attachment

Appendix 1 Patient agreement. To be filed in notes

For your safety and optimal medical care during this hospital admission, we request you agree to the following recommendations. If you feel that you cannot agree to these recommendations, we would like to treat your diabetes with insulin injections and request that you discontinue the use of your insulin pump.

During my hospital stay, I will agree to:

1. Complete my diabetes insulin pump log, including blood glucose readings, meal bolus doses given, correction doses and pump set changes.
2. Report any signs and symptoms of low blood glucose (sugar).
3. Report any pump problems.

I also understand that my pump maybe discontinued and a different insulin delivery given for any of the following:

1. Doctor's recommendation
2. Changes in my judgement
3. Changes in my level of awareness or consciousness
4. Radiology examination including
   X-ray
   MRI
   CT scan
   Mammography
   PET scans
5. Procedures requiring general anaesthetic
6. Other reasons deemed necessary by medical staff

Patient signature……Date……

Family member signature…… Date……

HCP Witness Signature…… Date……

Appendix 2 Insulin Pump Log
Glucose and insulin monitoring chart to be updated daily

Time (hours)	**08h**	**09h**	**10h**	**11h**	**12h**	**13h**	**14h**	**15h**	**16h**	**17h**	**18h**	**19h**
Blood Glucose (mmol/l)												
Carbohydrate (g)												
Meal bolus												
Correction bolus												
Basal rate												
Site change												
Set change												
Pump suspended/removed												
Pump reconnected												
Infusion site												
Comments												
Time (hours)	**20h**	**21h**	**22h**	**23h**	**00**	**01h**	**02h**	**03h**	**04h**	**05h**	**06h**	**07h**
Blood glucose (mmol/l)												
Carbohydrate (g)												
Meal bolus												
Correction bolus												
Basal rate												
Site change												
Set change												
Pump suspended/removed												
Pump reconnected												
Infusion site												
Comments												
RN Signature (Review pump log)	**08.00h**			**12.00h**			**16.00h**			**22.00h**		

Contraindications for inpatient use of CSII include any of the following

- Altered level of consciousness
- Suicide risk
- Critically ill (sepsis, trauma) needing high care
- **Persistent hyperglycaemia/hypoglycaemia**
- **DKA**
- **One or more unexplained glucose values >16.0mmol/l and ketones**
- **Two or more unexplained values >16.0mmo/l despite correction doses**
- **An episode of moderate/severe hypoglycaemia needing assistance**
- Refusal/unwillingness to participate in self-care
- Caregiver support needed to manage CSII

Appendix 3 – Doctor's prescription. Please complete these details and append to the insulin chart

1. Type of Diet: Normal diet Enteral feeding

2. Frequency of bedside monitoring required (please circle):
   a. Pre meal and bed time
   b. Minimum of every 6 hrs
   c. Other

3. Record basal and bolus doses (please circle):
   a. Pre meal and bed time
   b. Every 6 hrs
   c. Other

4. Type of Insulin (Please circle) Novorapid, Fiasp, Humalog, Apidra

5. Provide the bedside insulin pump blood glucose record

6. Remember if stopping CSII then an alternative insulin must be administered first (see appendix 4 & 5).

7. Consult DSN & Diabetes team

8. Patients should manage CSII according to the following parameters **(confirm the following details with the patient)**

Basal insulin rates

Time	Insulin (units/hour)	Time	Insulin (units/hour)
00.00		12.00	
01.00		13.00	
02.00		14.00	
03.00		15.00	
04.00		16.00	
05.00		17.00	
06.00		18.00	
07.00		19.00	
08.00		20.00	
09.00		21.00	
10.00		22.00	
11.00		23.00	

Bolus & correction dose ratios

Time…….Insulin: Carbohydrate ratio …… unit per ……..g of carbohydrate
Time…….Insulin: Carbohydrate ratio …… unit per ……..g of carbohydrate
Time…….Insulin: Carbohydrate ratio …… unit per ……..g of carbohydrate

Correction bolus for high reading

1 unit of insulin lowers glucose by ..... mmol/l
Target glucose range ……mmol/l .....mmol/l

Physician signature…… Date…….....

Appendix 4-Inpatient management of CSII

Patients who self-manage their diabetes using insulin pump therapy should be allowed to continue to do so as inpatients. However, they must be able & clinically competent to do so. Patients need to be able to comply with the self-management criteria set out in the ABMU self-management and insulin pump policies.

Using their self-management skills patients should be able to achieve target glucose values of between **6-10 mmol/l** and generally maintain blood glucose values between **4-12 mmol/l overall**.

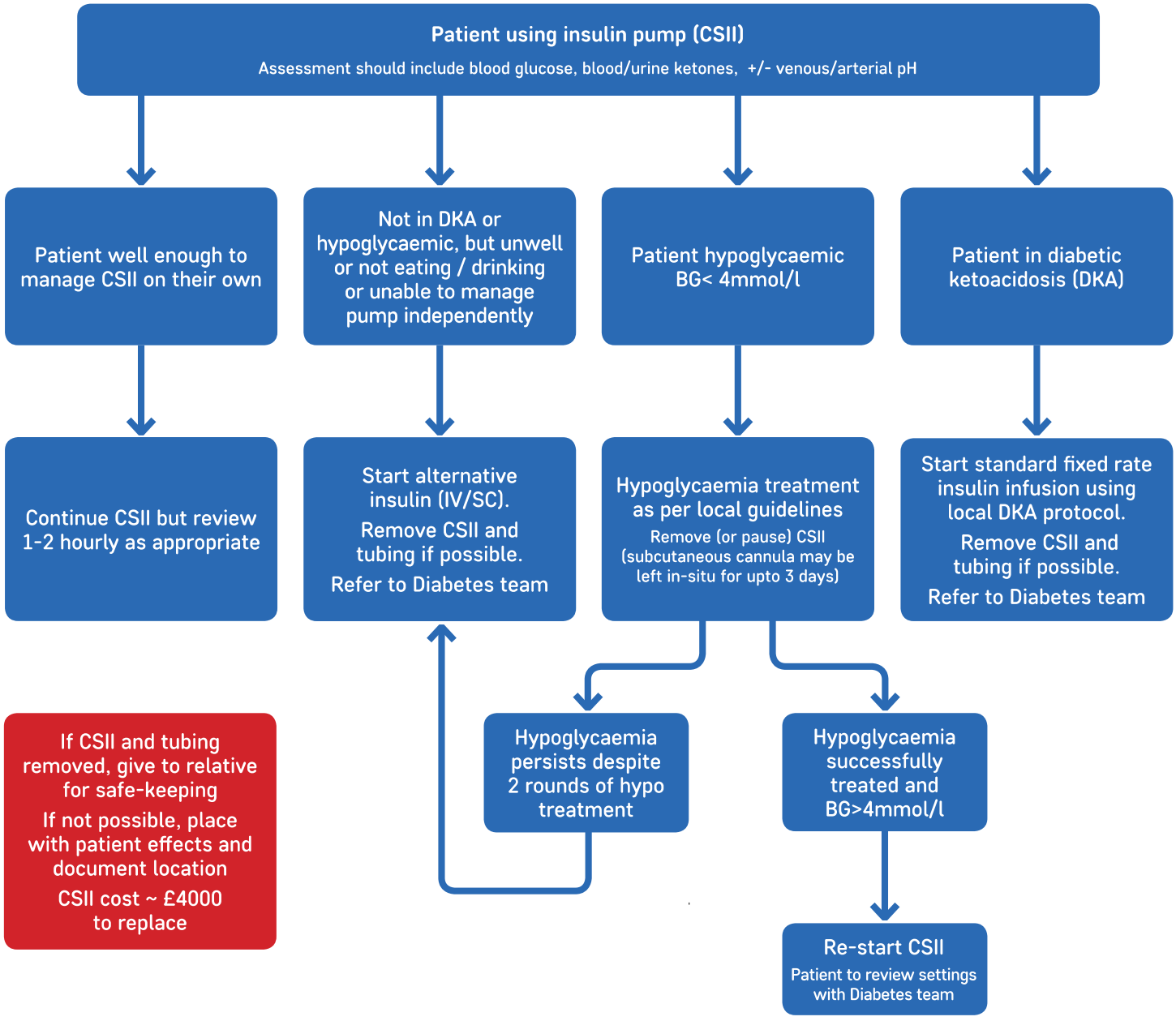

Figure 1. Flowchart for patient admitted using insulin pump

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However, should difficulties arise and targets are not achieved please follow the recommendations set out below.

Hyperglycaemia: Blood glucose >12.0 mmol/l will occur on occasion. In these circumstances, patients are able to use correction doses to re-establish normoglycaemia. An example of a sick day algorithm that patients follow is included below (figure 2). Usually, target blood glucose is restored within 1-2 hours. Should hyperglycaemia persist despite more than two correction doses being administered or if ketonaemia (>1.5 mmol/l) occurs. Then patients should be converted to intravenous insulin & fluid therapy according to the VRII policy or DKA policy as appropriate. Only once intravenous insulin is commenced can the pump be stopped and then removed. The specialist diabetes team should be informed and asked to review at the earliest opportunity to advise on further management.

Hypoglycaemia: Patients treated with CSII will on occasion develop mild hypoglycaemia (blood glucose <4.0 mmol/l). The patient should be competent to self-manage this by using a modest amount (10-20g of CHO) of carbohydrate (which should always be accessible to them). Hypoglycaemia, will normally correct within 10-15 mins. Some patients may also wish to subsequently use a temporary reduction in basal rate or suspend the CSII infusion for up to 30 minutes while the hypoglycaemia corrects.

However, should **severe hypoglycaemia** occur and the pump user is unable to self-manage this or the patient has a reduction in consciousness the pump should be stopped **temporarily** either by switching the pump off or disconnecting the infusion set. Hypoglycaemia should be treated in line with the SBUHB hypoglycaemia policy according to severity. Once BG is greater than 4.0 mmol/l the patient should be established on an IV dextrose and insulin infusion according to the VRIII policy pending review by the diabetes team which should be arranged at the earliest opportunity. Once established on IV insulin the insulin pump can then be removed.

Stopping the insulin pump.

The pump together with tubing can be removed leaving the subcutaneous cannula in place. **It is important not to cut the tubing or disconnect the pump from the tubing as remaining insulin in the tube may infuse quickly causing hypoglycaemia.** Place the pump in a suitable container and don't attempt to turn off. Document where the pump is stored or to whom it is given. The insulin from the pump is very short acting so alternative insulin must be started immediately to avoid the risk of ketoacidosis. If able to do so the patient should keep a record of their basal dose and bolus doses as data may be lost if the pump is disconnected for a significant length of time.

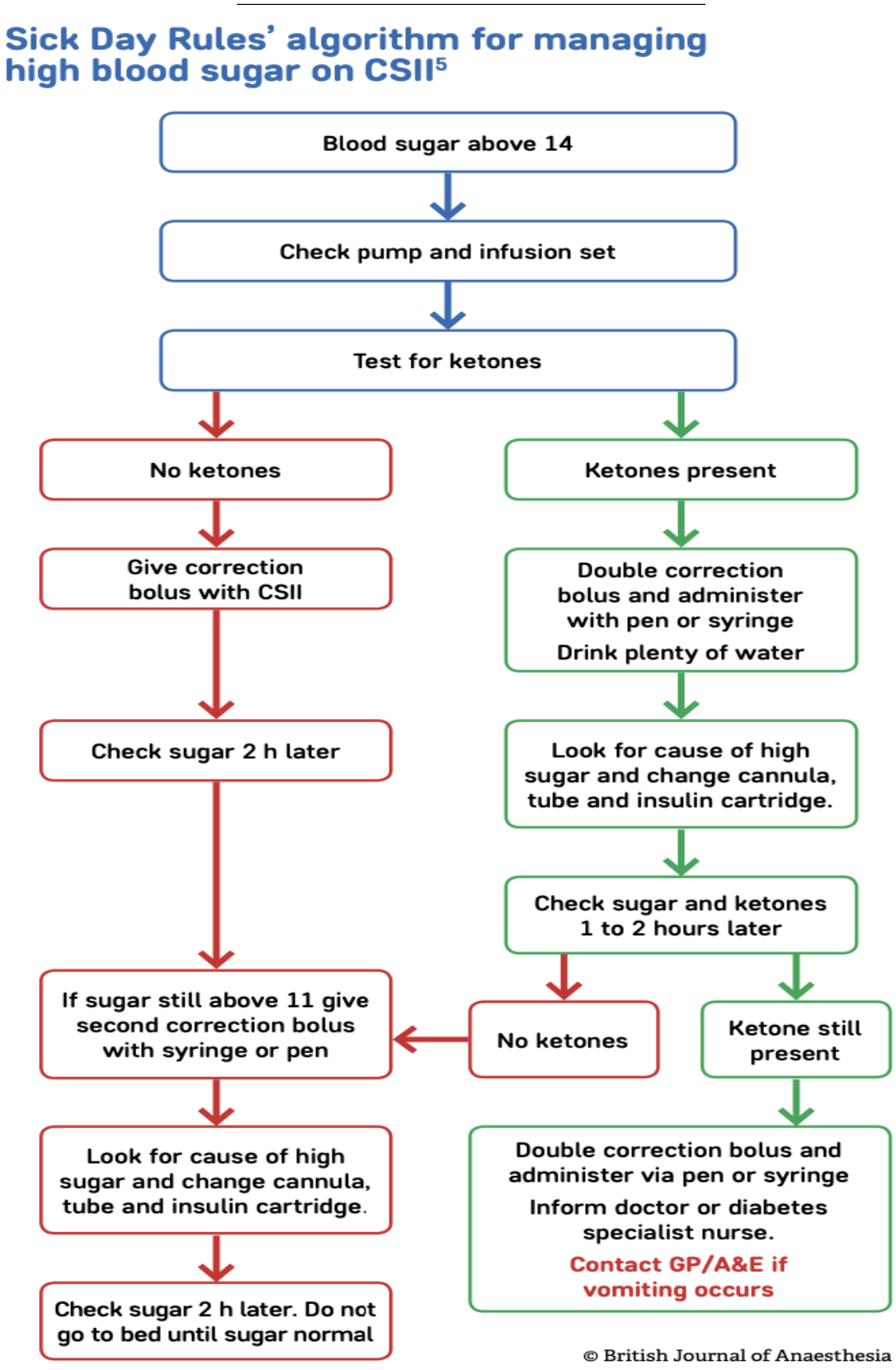

Figure 2. Example of sick day rules for management of hyperglycaemia

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Appendix 5 Converting from an insulin pump to intravenous or subcutaneous insulin

In the event of a patient needing to discontinue insulin pump therapy, they must be converted to an alternative insulin regime before removing the pump. The suitable alternative will depend on the clinical scenario.

For patients with DKA use the local DKA protocol and commence a fixed rate insulin infusion.

For patients who are fasted or with unstable blood glucose but not DKA use the variable rate insulin infusion (VRIII) protocol.

For patients unable to manage the insulin pump but do not have unstable blood glucose and not nil by mouth then a basal bolus regime is often preferred to a variable rate insulin infusion. **Alternative routes of insulin delivery must commence before the pump is discontinued or there is a high risk of DKA.**

If converting to a subcutaneous regime, the amount of insulin required depends on the total daily dose (TDD). This information can be found on the utilities menu of the pump.

How to calculate the dose of insulin required by injection?

Option 1.

Find the current total daily dose of **basal** insulin. Give this dose as a single dose of Lantus. Basal insulin should be administered prior to removing the pump.

For bolus doses use the current insulin: carbohydrate ratios and insulin sensitivity for rapid acting insulin (eg Novorapid, Humalog, Apidra, or Fiasp).

Option 2.

Use the total daily dose of insulin (TDD). Split the TDD into 50% basal and 50% bolus. Basal insulin can be given as a once daily dose of Lantus.

For bolus doses continue to use the current insulin: carbohydrate ratio and insulin sensitivity for rapid acting insulin.

Option 3.

In the event of complete pump failure and no access to previous insulin doses. Estimate the TDD by:

TDD=Weight (kg) x 0.8

Divide this into 50% basal and 50% bolus. Give the basal as one daily dose of Lantus.
If you do not know the current insulin: carbohydrate ratios, the remaining 50% bolus insulin can be divided by three and given at each meal.

Example using option 3: Estimation of insulin requirements for a 70 kg patient if no information on prior insulin doses is available.

70 kg patient

Total daily dose = 70 x 0.8 = 56 units

Basal dose 56 units/2 = 28 units of basal insulin per 24h

Meal time bolus 28/3= 9 units of bolus insulin with each meal

Appendix 6 Re-starting insulin pump therapy

Re-starting an insulin pump: The person with diabetes is ideally best placed to restart insulin pump therapy as they have been trained in this and are experienced.

If only suspended for a short time and cannula still in position the patient can perform a fixed prime to refill the dead space in the tubing and then re-start insulin pump.

If blood glucose is > 10.0 mmol/l then a bolus correction according to a personalised correction ratio should also be performed at the time the pump is re connected.

If transferring from intravenous insulin: ask the patient to insert a new cannula and re start the pump after performing a fixed prime. Wait 60 minutes before the intravenous insulin is stopped.

If transferring from sub cutaneous insulin the patient inserts a new cannula, performs a fixed prime and re starts CSII. The pump settings may need re programming. Patients may need a temporary basal rate (e.g. drop to 70% temporary basal rate for 24hours if there is still background (basal) insulin in the system. Increased frequency of glucose monitoring is recommended during this period. No further subcutaneous insulin should be needed once insulin pump re starts. Re check blood glucose 1-2hours after re starting the insulin pump.

If the insulin pump has been suspended in hospital and is to recommence. It is important to re-start the basal pump therapy infusion at a time which coincides with a meal time bolus is due. The IV insulin infusion can be stopped 1 hour later

Appendix 7 Management for DKA and the unconscious incapacitated patient

In the following situations it is best for the patient to discontinue insulin pump therapy and be managed using an alternative regime.

- If unconscious, confused or incapacitated e.g. if illness prevents self-management
- If undergoing major procedures e.g. General anaesthetic lasting over 2h
- Diabetic ketoacidosis

The unconscious patient

If patient is unable to self-manage their CSII: detach the pump and tubing. Place in a safe place and document. Alternatively, give to the family to take home. Immediately, start

alternative insulin e.g. variable rate infusion or sub cutaneous insulin. Except if hypoglycaemic. If hypoglycaemic ensure this is treated adequately according to policy and then. Start alternative insulin. CSII can resume when the patient is recovered.

Diabetic ketoacidosis (DKA)

The altered tissue perfusion in DKA affects insulin absorption, making CSII unreliable. CSII should be temporarily discontinued in patients presenting with DKA. Remove cannula, detach pump. Follow standard DKA protocol. CSII can restart when DKA is treated and patient recovered. All patients should have specialist review pre discharge.

Appendix 8 CSII and radiology investigations

Current manufacturers' guidelines state that CSII must be suspended and removed along with any metal cannulae prior to MRI, CT scan, X-Ray or any other type of exposure to radiation. It is likely this based on lack of evidence rather than harm.

The patient should reconnect following any radiological procedure. CSII can be removed/suspended for up to an hour at any time without the need for alternative insulin. A correction dose may be needed on re connecting the pump.

Appendix 9 Insulin pump therapy & Surgery

The use of continuous subcutaneous insulin infusion (CSII) should be agreed between the anaesthetist & diabetes team in advance of surgery. CSII **constantly** delivers insulin at an individualised variable rate. This is supplemented by mealtime boluses administered by the patient via the CSII.

CSII should **never** be stopped unless replaced by an alternative insulin infusion (usually intravenous), or ketoacidosis will occur.

For patients undergoing prolonged procedures (> 2 hours or prolonged starvation likely more than 1 meal missed). The CSII should be replaced with a VRII as per PART 2 of the surgical guidance. Once the VRII has commenced the CSII can be removed.

If the surgical procedure is short (<2 hours and the patient expected to drink within 2-3 hours), CSII can potentially continue during surgery, provided the blood glucose is regularly checked. Patients who snack regularly may need to reduce their basal infusion rate by 10-20%.

The day before surgery continue the usual insulin infusion rates & the evening meal can be taken with usual bolus dose. Once the patient is nil by mouth, continue with the usual basal rate of insulin overnight (as normal).
The CSII should be positioned away from the operative field & diathermy.

Patient should ensure the blood glucose is in the target range 6-10.0 mmol/l pre-procedure. If not within the target range then one round of bolus correction via the pump can be allowed before conversion to a variable rate insulin infusion.

On day of surgery continue insulin at the usual basal rate with hourly blood glucose monitoring. A range of 4-12 mmol/l is acceptable. If outside this range consider transferring to a VRII (as described in PART 2) or discuss with diabetes team.

During surgery, check blood glucose hourly. Target blood glucose values are as above.

If during surgery blood glucose falls <4.0 mmol/L correct hypoglycaemia as per section relating to "**Target for glucose control & management**". Recheck blood glucose after 15 minutes to ensure resolution. Once hypoglycaemia is corrected, **commence a VRII & stop the CSII**.

If blood glucose >12.0 mmol/L **convert to a VRII & stop the CSII**.

Post procedure

Meal time bolus doses should recommence when eating & drinking.

Patients should consider using a correction dose if blood glucose is > 10.0 mmol/l. Consider starting a variable rate insulin infusion if blood glucose is > 12.0 mmol/l.
If the CSII has been discontinued & replaced with a VRII, then the CSII should re-start when eating & drinking normally. The VRII should continue for 30-60 minutes after the first mealtime bolus dose.
Please liaise closely with the diabetes team regarding any patient who is using insulin pump therapy and undergoing surgery

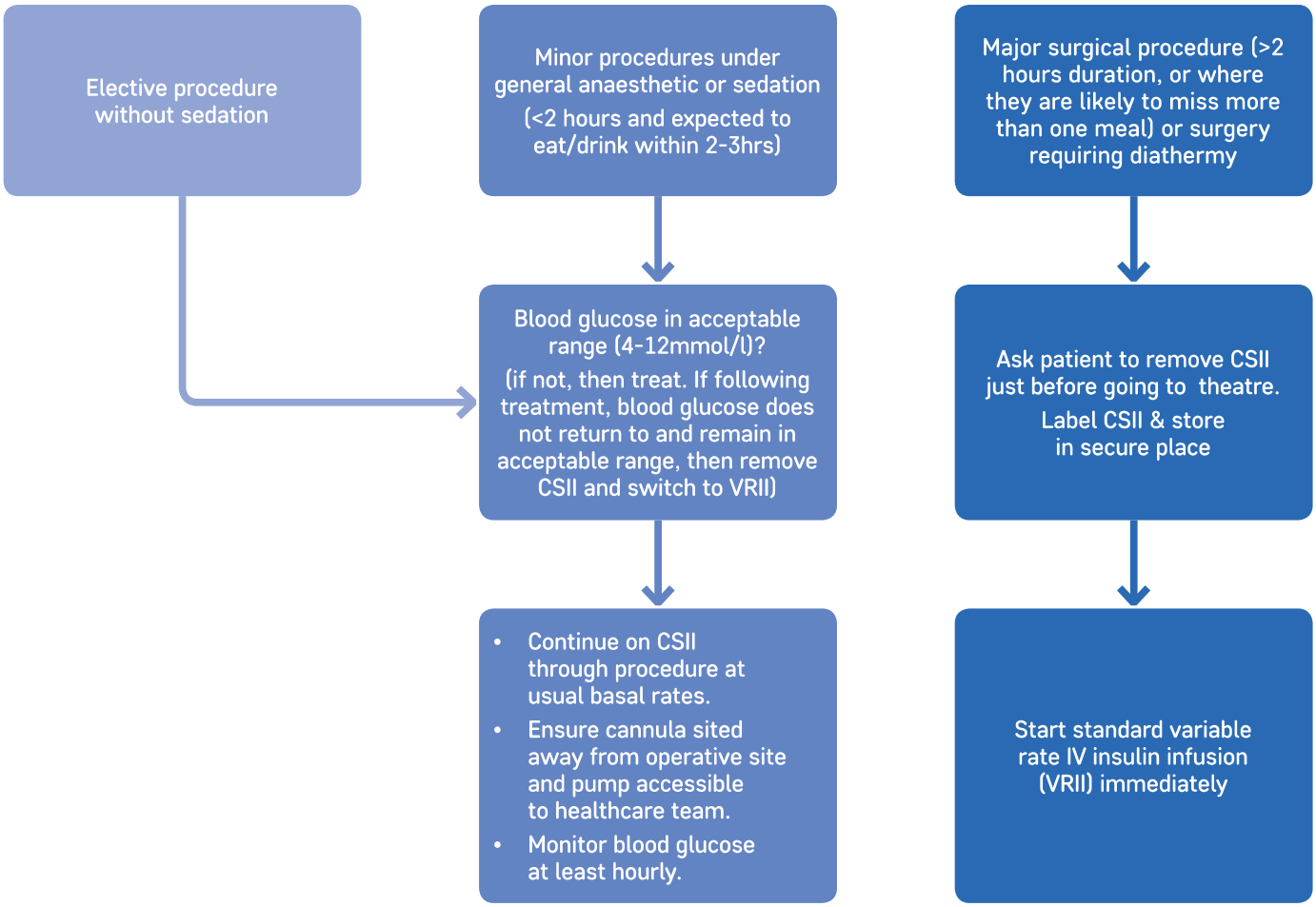

Figure 3. Flow chart of a patient using insulin pump undergoing surgery

Appendix 10 Insulin pump management for pregnant women

The goal of insulin therapy in diabetes a management during pregnancy is to maintain glucose as close to normal as possible to obtain the best outcome for the pregnancy and reduce the risk to mother and baby. The aim of glycaemic control for delivery is to safely maintain near normal glucose levels and to safely manage the transition to post-delivery when insulin requirements fall and there is increased risk of hypoglycaemia.

Ante-natal care

Obstetric care will follow established protocols for patients with diabetes. The diabetes team are responsible for insulin pump management including glycaemic control and educational needs.

Inpatient use of insulin pump therapy

Insulin pump may continue provided the patient or partner are able to self-manage the insulin pump and perform the required glucose monitoring.

Inpatient steroid use

Please inform the Diabetes specialist team as soon as possible about the plan to use steroid therapy. Insulin pump can continue the diabetes team will inform the patient about changes required to the basal rate.

Use of steroids in women with diabetes is associated with worsening glycaemic control and usually requires an increase in medication. Target blood glucose for patients on CSII is 4.0-7.8 mmol/l

Glucose should be monitored by the patient or partner every 1-2 hours. This may be done using a real time continuous glucose monitor (RT CGM) e.g. the Dexcom or Guardian Connect systems. In addition blood glucose should also be measured using the hospital PCX meter at least pre-meal and pre bed as a minimum.

A temporary increase in the basal rate is likely and below is an outline of the typical changes in basal rates and bolus doses
that are often required.

After administration of Betamethasone adjust the pump rates as follows

- 6-24 hours increase the basal rate to 125%
- Day 2-3-increase basal rate to 140% and increase the usual bolus rate by 40%
- Day 4-increase basal rate to 120% (of usual rate) and increase the usual bolus rate by 20%
- Day 5-increase basal rate to 110% and increase the bolus rate by 10%
- Day 6-7-the insulin infusion rate should return to normal

If adequate control in not achieved the patient can use a correction dose to achieve target values of 4.0-7.8 mmol/l. However, if this fails to achieve targets within 1-2 hours then convert to an intravenous insulin infusion as per hospital guidelines for women with diabetes treated with steroids.

Staff responsibilities

While the patient remains on insulin pump the patient and partner are responsible for regularly monitoring glucose and giving corrections via CSII. The midwife is responsible for making sure that the patient/partner remain able and willing manage the insulin pump and that glucose levels are regularly checked and documented hourly. It is important that blood glucose is also measured at a minimum pre-meal and pre bed using the PCX system. If glucose is persistently above 8.0 mmol/l then the patient should convert to variable rate insulin infusion per protocol.

The intra-partum management of patients using insulin pump therapy

Women on insulin pump therapy may be converted to intravenous dextrose and insulin for delivery according to traditional management plans. Patients are converted to intravenous insulin on the basis of total daily dose requirements.

However, some patients may prefer to remain on insulin pump for delivery, provided that glucose is stable 4-7.0 mmol/l and patient and partner can manage their insulin pump and monitoring requirements. This decision should be made in advance of delivery and in consultation with the diabetes ante-natal team.

However, if problems arise start an intravenous dextrose/insulin infusion as per hospital guidelines prior to removing the pump. The insulin regime should be selected on the basis of total daily dose immediately pre-labour (data available on pump/patient notes).

Intra-partum

An intravenous cannula must be inserted.

The usual basal rate should continue and blood glucose **must** be measured **hourly using a hospital approved blood glucose meter** aiming for target glucose of 4-7.0 mmol/l.

Time from onset of labour to delivery can be lengthy. Blood glucose values fluctuate and will rise and/or fall outside the target range. Adjustments will need to be made on the pump to manage these fluctuations.

Hyperglycaemia

- If blood glucose is > 7.0 mmol/l a correction bolus should be administered, aiming for a blood glucose of 5.0 mmol/l.
- e.g. (1 unit of insulin will reduce blood glucose by 2.5 mmol/l unless otherwise documented e.g. if blood glucose is 10.0 mmol/l give 2 units.)
- After 1 hour if blood glucose is above 7.0 mmol/l repeat the correction bolus applying the same calculation.
- If after a further 30 mins blood glucose is above 7.0 mmol/l convert to IV dextrose/insulin as per protocol and remove the insulin pump. This should be recorded and stored safely.

Hypoglycaemia

If blood glucose is < 4.0 mmol/l treat hypoglycaemia as per hospital protocol initially, repeat glucose after 15 minutes to ensure resolution.

If glucose remains <4.0 mmol/l repeat the above until hypoglycaemia is corrected.

If the patient has unexplained hypoglycaemic episode reduce the basal rate by 25-50% using a temporary setting. This rate should continue for the remainder of labour and should not increase back to 100%.

If further hypoglycaemia occurs then convert to IV dextrose /insulin as per protocol

Post delivery

After delivery of the placenta

The patient/partner should reduce the basal rate by 50% of the pre-labour rate **or to the pre-pregnancy rate** if known often with an additional 10-20% reduction.

If breast feeding, the basal rate may need reducing by a further 10-20%.

Bolus doses can re-start once eating and drinking, use the pre-pregnancy ratios (or if doses unknown, 1 unit insulin per 15g of carbohydrate and insulin sensitivity factor of 1:4.0 mmol/l).

Caesarean Section (LSCS)

It is anticipated that the duration of time to undergo this procedure is short, i.e. < 2 hours. If diabetes is **stable** and Anaesthetist is agreeable the insulin pump can continue during the LSCS at the current basal rate, hourly blood glucose measurements should continue.

- If hypoglycaemia <4.0 mmol/l, correct with IV bolus of 20g glucose (80-100ml of 20% dextrose or 30-40ml of 50% dextrose), and repeat blood glucose after 15 mins to ensure resolution or repeat the above. Consider converting to intravenous dextrose/insulin infusion.
- If hyperglycaemia >10.0 mmol/l develops convert to an IV dextrose/insulin infusion.

Re-starting the insulin pump (CSII)

If the insulin pump has been discontinued and replaced with dextrose/Insulin infusion, then the insulin pump should re-start when eating and drinking normally. The dextrose/Insulin infusion should continue for **30-60** minutes after the first mealtime bolus dose.

Checklist

- Ensure the patient agreement is signed
- The patient has the pump log (appendix 2) and that they prospectively record and keep at the bedside
- Prescribe the insulin and delivery device on the drug chart
- Record the pump settings and frequency of blood glucose monitoring (appendix 3) and attach the form to

References

Adapted from CLINICAL GUIDELINE: Guidelines for managing continuous subcutaneous insulin infusion (CSII or 'insulin pump') therapy in hospitalised patients. Diabetes Technology Network UK:
https://abcd.care/sites/abcd.care/files/CSII_DTN_FINAL%20210218.pdf