TYPE 2 DIABETES MELLITIS (INSULIN AND/OR METFORMIN) CARE OF WOMEN IN BIRTHING SUITE

DEFINITION

Type 2 Diabetes is characterised by insulin resistance and relative impairment of insulin secretion leading to hyperglycaemia.

INTRA-PARTUM CARE

- Perform admission CTG as there is an increased risk of fetal hypoxia during labour.
- Inform the Birthing Suite Clinical Co-ordinator, Obstetric Team and Neonatal Registrar of the woman's diabetic status.

For caesarean section (elective)

Women should be placed first on list.

Establish intravenous access and avoid giving glucose containing intravenous fluids except for Plasma-Lyte 148 + 5% glucose (obtain from supply not pharmacy).

Monitor capillary blood glucose levels hourly.

- The normal evening insulin and/or metformin dose is given on the day prior to the elective caesarean section except for women on glargine (Lantus) or detemir (Levemir) where the dose should be halved the evening before birth.
- Withhold morning insulin and /or metformin on the day the woman is undergoing the elective caesarean section.
- Establish intravenous access and avoid any dextrose containing fluids.
- Monitor capillary blood glucose levels before surgery and then hourly.
- If capillary blood glucose < 4 mmol/L or > 7 mmol/L commence intravenous Insulin / Plasma-Lyte 148 + 5% glucose infusion with hourly blood glucose monitoring (see Appendix A).

For Induction of Labour (IOL) or spontaneous labour (see Appendix B)

For women on glargine (Lantus) or detemir (Levemir)

- The dose should be halved the evening before IOL or expected birth

Prior to labour establishing

- Continue usual insulin regime and/or metformin with meals until labour is established.

Once labour is established

- Discontinue subcutaneous insulin and/or metformin.
- The woman may eat – in this instance may require a small dose of subcutaneous insulin in consultation with the physician.
- Women may only drink water.
- Establish intravenous access. Take bloods for group and hold and CBC.
- Avoid dextrose containing intravenous fluids unless requiring infusions as below
- Monitor capillary blood glucose levels hourly.
- If capillary blood glucose:
    - < 4 mmol/L - can be managed initially with 1 sachet of Hypo-Fit (18g carbohydrate) repeated after 15 minutes if required. If no response after 30 minutes commence intravenous Plasma-Lyte 148 + 5% glucose infusion with hourly blood glucose monitoring (see Appendix A). Cease infusion when capillary blood glucose reading is above 5mmol/L and recheck capillary blood glucose at hourly intervals.
    - > 7 mmol/L commence intravenous Insulin / Plasma-Lyte 148 + 5% glucose infusion with hourly blood glucose monitoring (see Appendix A).
- Continuous electronic fetal monitoring (EFM).

Following birth

For women on an insulin infusion

- Insulin requirements fall rapidly
    - The insulin infusion rate is halved immediately following birth (postpartum rate).
    - The Plasma-Lyte 148 + 5% glucose infusion remains unchanged.
- If the patient has blood glucose levels > 7 mmol/L after two consecutive readings, then double rate, ie. return to sliding scale for insulin used prior to birth (see Appendices A and B).
- If < 3.5 mmol/L, stop the insulin infusion and check capillary blood glucose level every 15 minutes until > 4mmol/L and hourly thereafter until eating and remain off insulin infusion.
- NB: intravenous insulin solutions need to be replaced every 24 hours.

- Daily monitoring of electrolytes is required for infusions extending beyond 24 hours (risk of hyponatraemia and hypokalaemia).
- The insulin infusion is continued until the woman is ready to eat.
- The woman may be transferred to the postnatal ward after ceasing the insulin / Plasma-Lyte 148 + 5% glucose infusion.
- Contact the on-call physician if problems arise.

For women NOT on an insulin infusion

- Monitor blood glucose 2 hourly.
- Once ready to eat, continue diabetic diet and monitor blood glucose before and after all meals.

For ALL women with Type 2 Diabetes

- Once eating, monitor blood glucose before and one hour after meals.
- Women on diet alone **before** pregnancy may not require additional treatment.
- Women taking metformin **before** pregnancy can recommence this day 2 postpartum.
- Women taking insulin **before** pregnancy will need consultation with the physician as insulin requirements vary in the immediate postpartum period.

REFERENCES

McLaughlin C and McCance DR: Diabetic management in labor delivery and post-delivery. In A Practical Manual of Diabetes in Pregnancy Editors McCance DR, Maresh M and Sacks DA; Wiley-Blackwell 2010

National Institute for Health and Care Excellence (NICE) guideline (2011): CG63 Diabetes in pregnancy http://www.nice.org.uk/nicemedia/live/11946/41320/41320.pdf

APPENDIX A

Insulin / Plasma-Lyte 148 + 5% glucose Sliding Scale

- Two intravenous lines are to be sited. One for Insulin / Plasma-Lyte 148 + 5% glucose and one for oxytocin/anaesthetic/analgesic requirements.
- No glucose containing infusions, other than the fixed rate of Plasma-Lyte 148 + 5% glucose, should be administered.
- The intravenous line for the Plasma-Lyte 148 + 5% glucose /insulin should be kept patent with a small amount of saline while the infusions are prepared.

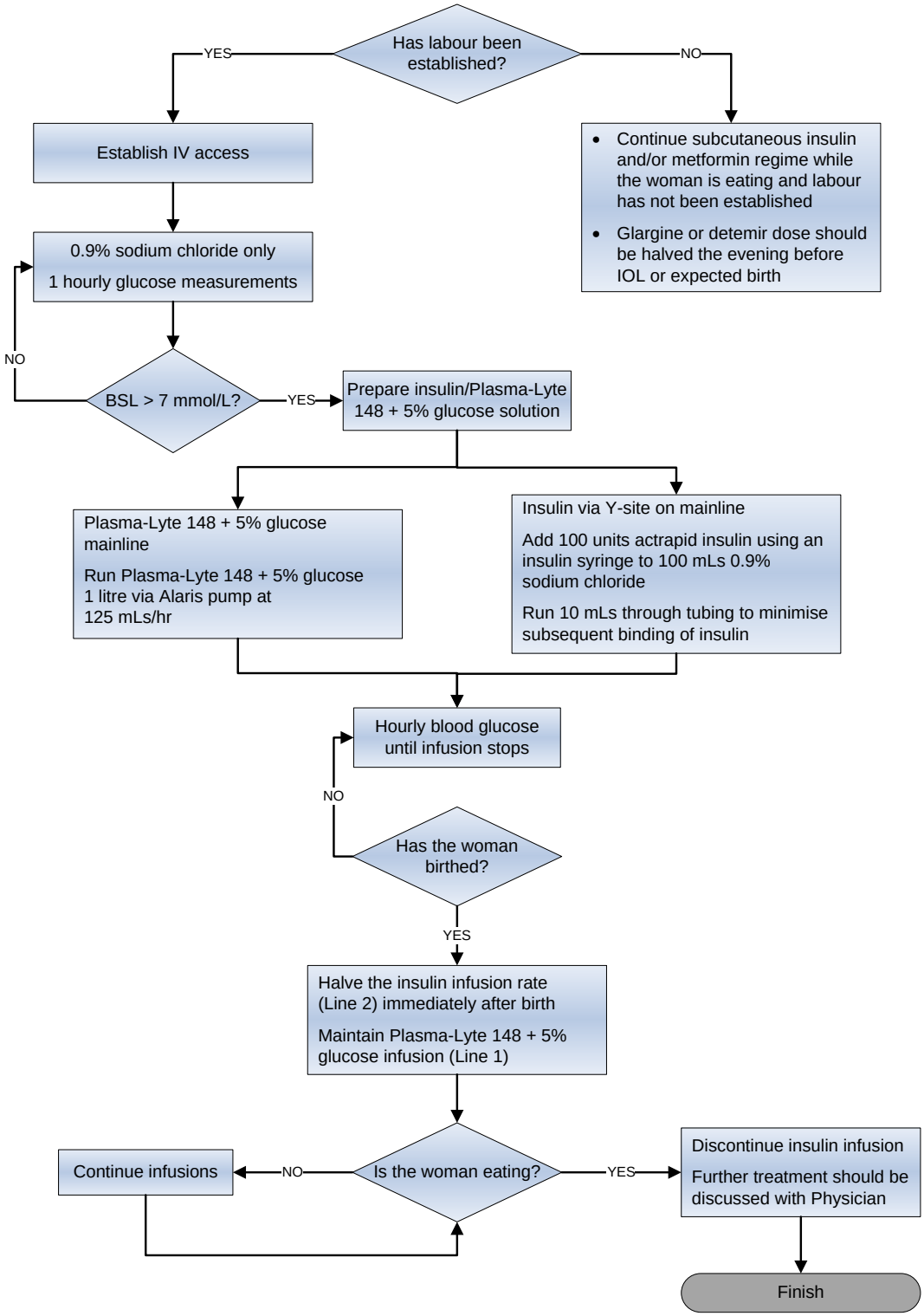
Prepare the prescribed Insulin / Plasma-Lyte 148 + 5% glucose infusion as follows:

- The Plasma-Lyte 148 + 5% glucose is mainlined to the woman with the insulin infusion attached to the mainline via Y-site.
- Plasma-Lyte 148 + 5% glucose – mainline
  - Run one litre of Plasma-Lyte 148 + 5% glucose at a rate of 125 mLs per hour via an infusion pump. DO NOT ALTER.
- Insulin via Y-site on main line
  - Add 100 units Actrapid insulin using an insulin syringe to 100 mLs Saline and run via an Alaris infusion pump.
  - Run 10 mLs through the tubing before attaching the tubing to the mainline via the Y-site. This will prime the tubing and minimise subsequent binding of insulin to the plastic of the giving set.
  - The insulin is drawn up as directed by the Fluid and Medication Management Manual Volume 12 and checked by two midwives (one of whom must be intravenous certificated).
  - Run according to the Blood Glucose/Sliding Scale of Insulin Prior to Birth.

- Blood glucose should be checked immediately prior to starting the infusions and then hourly until the surgeon has directed the woman is ready to eat.
- Document blood glucose level on the Diabetes Testing and Treatment Form C180009 and fluid input on the Fluid Balance 24-Hour Sheet QF00372.

Capillary Blood Glucose Level mmol/L	Infusion rate in mLs per hour (= units of Actrapid insulin per hour)
< 3.5	No insulin Increase the rate of Plasma-Lyte 148 + 5% glucose to 125 mLs/hour Check BSL every 15 minutes Call physician for advice
3.5 – 5.0	0.5
5.1 – 7.0	1
7.1 – 9.0	2
9.1 – 11.0	3
11.1 – 13.0	4
13.1 -15.0	5 Stop the Plasma-Lyte 148 + 5% glucose
> 15.0	6 Stop the Plasma-Lyte 148 + 5% glucose Call physician for advice

APPENDIX B: TYPE 2 DIABETES INDUCTION OF LABOUR/SPONTANEOUS LABOUR



Type 2 Diabetes Mellitis (Insulin and/or Metformin) Care of Women in Birthing Suite

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