GESTATIONAL DIABETES
(DIET/INSULIN/METFORMIN)
CARE OF WOMEN DURING INDUCTION,
LABOUR AND CAESAREAN SECTION

DEFINITION
A disorder characterised by hyperglycaemia first recognised during pregnancy due to increased insulin resistance and relative insulin deficiency usually disappearing after delivery.

ANTENATAL CARE – BETAMETHASONE ADMINISTRATION

REFER TO: Insulin Infusion following Betamethasone Injections for Women with Diabetes in Pregnancy (C260117, Ref.6466)

INTRAPARTUM CARE

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

FOR CAESAREAN SECTION (ELECTIVE)

- Usual evening insulin and/or metformin the day prior to elective caesarean section.
- Withhold morning insulin and/or metformin on day of elective caesarean section.
- Establish intravenous access and avoid any dextrose containing intravenous fluids except for Plasma-Lyte 148 + 5% glucose.
- Monitor capillary blood glucose levels hourly.
- If capillary blood glucose:
  - < 4 mmol/L commence intravenous Plasma-Lyte 148 + 5% glucose infusion with hourly blood glucose monitoring (see Appendix A)
  - > 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

- Continue usual diet and insulin and/or metformin until labour is established.
**ONCE LABOUR IS ESTABLISHED**

- Discontinue subcutaneous insulin and/or metformin.
- Women with GDM can eat as usual.
- For women with diet controlled GDM or on metformin: IV access is not required unless needed for interventions.
- For women on insulin: establish intravenous access. Take bloods for group and hold and CBC.
- Avoid glucose containing intravenous fluids except for management of hypoglycaemia in an insulin treated woman.
- Women on diet alone or diet and metformin have no risk of hypoglycaemia and only very rarely require active management of hyperglycaemia in labour.
- Monitor capillary blood glucose levels two hourly.
- Hypoglycaemia in an insulin treated woman (≤ 3.5 mmol/L) can be managed initially with 2 sachets of Hypo-Fit (36 g carbohydrate), this is expected to raise the maternal blood glucose level by 2-3 mmol/L over 10 minutes, the response is dependent on maternal weight. Administer a further 1 sachet of Hypo-fit after 10-15 minutes if required. If no response after 30 minutes run one litre of Plasma-Lyte 148 + 5% glucose at a rate of 125 mL per hour via an infusion pump until the capillary glucose reading is above 5 mmol/L and then stop the infusion, rechecking glucose at hourly intervals.
- If capillary blood glucose > 7 mmol/L commence intravenous Insulin/Plasma-Lyte 148 + 5% glucose infusion with hourly blood glucose monitoring (see Appendix A).
- For women on insulin close fetal heart monitoring in labour is recommended.
- For women with diet controlled GDM or on metformin fetal heart monitoring should be individualised in discussion with the woman, LMC and medical team.

**FOLLOWING BIRTH**

- If an intravenous management protocol has been used stop the infusions immediately following birth.
- Antenatal treatment should not be recommenced (insulin and/or metformin).
- If the woman has had her routine insulin injection shortly before birth she should eat as soon as possible after birth.
- If the woman has had recent insulin and cannot eat for any reason: continue to monitor capillary blood glucose levels hourly.
  - Treat hypoglycaemia (< 4 mmol/L) with 2 sachets of Hypo-Fit (36 g carbohydrate), this is expected to raise the maternal blood glucose level by 2-3 mmol/L over 10 minutes, the response is dependent on maternal weight. Repeat treatment with 1 sachet of Hypo-Fit (18 g of carbohydrate) after 10 minutes if required.
  - If no response consider an intravenous Plasma-Lyte 148 + 5% glucose infusion commenced at a rate of 125 mL per hour (caution regarding fluid overload and electrolyte disturbances) and consult a physician.
- For women treated antenatally with metformin and/or insulin, monitor blood glucose levels before breakfast and one hour after all meals for 24 hours. If hyperglycaemia persists (fasting > 7 mmol/L and/or postprandial > 11.1 mmol/L), please advise physician before discharge as the woman may have Type 1 or Type 2 diabetes.
All women with gestational diabetes should have postpartum follow-up for persisting impaired glucose tolerance or diabetes. It is recommended that women have serial HbA1c measurements beginning at three months postpartum and then annually thereafter, to be arranged via their general practitioner.

REFERENCES

APPENDIX A

INSULIN/PLASMA-LYTE 148 + 5% GLUCOSE INFUSION SLIDING SCALE

- Two intravenous lines are to be sited. One for insulin/Plasma-Lyte 148 + 5% glucose infusion 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 insulin/Plasma-Lyte 148 + 5% glucose infusion 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 – main line
  - Run one litre of Plasma-Lyte 148 + 5% glucose at a rate of 75 mL per hour via an infusion pump. DO NOT ALTER.
- Insulin via Y-site on main line
  - Add 100 units Actrapid insulin using insulin syringe to 100 mL 0.9% sodium chloride and run via an infusion pump.
  - Run 10 mLs through the tubing before attaching 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 one hourly until the woman is ready to eat.
- Document blood glucose level on the Adult Diabetes Testing and Treatment form C180009 (Ref.2219).
- Document accurately fluid input in the Fluid Balance 24-Hour Sheet QF00372.
### Capillary Blood Glucose Level

<table>
<thead>
<tr>
<th>mmol/L</th>
<th>Infusion rate in mLs per hour (= units of Actrapid insulin per hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 3.5</td>
<td>No insulin</td>
</tr>
<tr>
<td></td>
<td>Increase the rate of Plasma-Lyte 148 + 5% glucose to 125mL/hour</td>
</tr>
<tr>
<td></td>
<td>Check BSL every 15 minutes</td>
</tr>
<tr>
<td></td>
<td>Call physician for advice</td>
</tr>
<tr>
<td>3.5 – 5.0</td>
<td>0.5</td>
</tr>
<tr>
<td>5.1 – 7.0</td>
<td>1</td>
</tr>
<tr>
<td>7.1 – 9.0</td>
<td>2</td>
</tr>
<tr>
<td>9.1 – 11.0</td>
<td>3</td>
</tr>
<tr>
<td>11.1 – 13.0</td>
<td>4</td>
</tr>
<tr>
<td>13.1 – 15.0</td>
<td>5</td>
</tr>
<tr>
<td>&gt; 15.0</td>
<td>6</td>
</tr>
</tbody>
</table>

- Stop the Plasma-Lyte 148 + 5% glucose
- Call physician for advice