# Diabetes and steroid prophylaxis against Respiratory Distress Syndrome (RDS) (GL825)

**Approval**

| Approval Group | Job Title, Chair of Committee | Date |
|---|---|---|
| Maternity & Children's Services Clinical Governance Committee | Mr Mark Selinger, Consultant Obstetrician | 6th June 2014 |

**Change History**

| Version | Date | Author, job title | Reason |
|---|---|---|---|
| 1.0 | May 2008 | Pat Street (consultant obstetrician) & Deirdre Graham (Diabetes Specialist midwife) | Trust requirement |
| 2.0 | Sept 2010 | D Graham (Diabetes Specialist Midwife) | Addition of Maternity Blood Glucose monitoring chart |
| 2.1 | May 2011 | D Graham (Diabetes Specialist Midwife) | Changes made |
| 2.2 | Sept 2011 | A de la Horra (Audit midwife) | Auditable standards added |
| 2.3 | May 2012 | D Graham (Diabetes Specialist Midwife) | Changes to include Trustwide use of new sliding scale for insulin |
| 3.0 | March 2014 | D Graham (Diabetes Specialist Midwife) | Review due |

| Author | D Graham | Date | May 2014 |
|---|---|---|---|
| Job Title | Diabetes Specialist Midwife | Review date | June 2016 |
| Policy Lead | Group Director Urgent Care | Version | 3.0 ratified 6th June 2014 Mat CG mtg |
| Location | Maternity CG Shared drive/ Obstetrics & Midwifery/ Medical conditions & complications/ GL825 | | |

***Overview:*** *Antenatal maternal administration of steroids prior to premature delivery reduces the incidence of respiratory distress syndrome, necrotising enterocolitis and intra-cranial haemorrhage in neonates resulting in reduced perinatal mortality and morbidity rates*

*Diabetic ketoacidosis is a risk for diabetic women receiving antenatal steroids and hospitalisation is required those women on insulin and may be necessary for those Metformin or diet controlled*

All women >/= 24 weeks of pregnancy, who are thought likely to deliver before 36 completed weeks of pregnancy, should receive steroid prophylaxis unless specifically contraindicated

**Throughout this document the term Variable Rate Insulin Infusion (VRIII) will be used in place of the term 'insulin sliding scale'**

### Contra-indications to prophylactic steroids

- the presence of frank maternal sepsis
- any specific medical contra-indication to steroids
- other obstetric contra-indications

### Prophylaxis will take the form of

Dexamethasone, 12 mg orally, two doses 12 hours apart *or*
Dexamethasone, 12 mg IM injection 12 hours apart

Steroid administration should be started even if the time to delivery is anticipated to be less than 12 hours.

### Cautionary notes

- Caution should be taken when administering antenatal steroids to mothers with diabetes and consultant permission should be sought
- All types of diabetic women on insulin should have their steroids given in hospital as inpatients
- All types of diabetic women controlled by Metformin or diet only may have their steroids given as outpatients as per non-diabetic women
- All diabetic women, whether treated by insulin, Metformin or diet, should expect a rise in their blood glucose following administration of steroids. The rise may be apparent immediately or take some hours, depending on the individual response and on the method of administration. Rarely, no or minimal effect is seen on the blood glucoses
- Diet/Metformin controlled diabetics, who are allowed to have their steroids as outpatients,

should be asked to check their blood glucose levels 4 hourly.

- If the level is ≥ 10.0 mmol/L and <13.0 mmol/L on one occasion they should measure again after 1 hour.
- They must telephone the Delivery Suite if they have 2 consecutive readings ≥10.0 mmol/L and <13.0 mmol/L or a single reading of ≥13.0 mmol/L.
- The Delivery Suite should arrange immediate admission for assessment regarding the need for a VRIII
- On admission, please ensure that the patient has her own blood glucose meter and insulin pens with her. If not send a relative to get them.
- ß sympathomimetics are not to be administered except on consultant prescription.
- Steroid maximum effect is achieved after 1 - 7 days; delivery should not be delayed to reach this "window" if maternal or fetal condition indicates that urgent delivery is required.

**Admission**

All women admitted for steroids, as per above guidance, should be admitted to Iffley ward and maintain their normal diet, and medication for diabetes

The woman should be asked to measure her blood glucoses 4 hourly

Urine ketone testing should be carried out morning and evening. If the result is greater than one +, the testing should be increased to 4 hourly and the obstetric registrar should be alerted if the ketones increase to ++.

If the blood glucose becomes equal to or greater than 10.0 mmol/L, she should be asked to measure her blood glucose hourly and be transferred to the Delivery Suite for a VRIII.

Diet and Metformin controlled diabetic women, admitted due to high home blood glucose monitoring levels, should be admitted directly to DAU/Delivery Suite

**Delivery Suite**

- The VRIII should be given as per the instructions below
- Normal subcutaneous insulin doses should continue and the VRIII used as a "top-up"
- The woman should maintain a normal diet unless there is any contra-indication to eating
- The VRIII should be maintained until the blood glucoses have returned consistently to levels between 4.0 - <8.0 mmol/L for a period of at least four hours
- Women on Metformin should continue with their normal doses.
- A developing diabetic ketoacidosis (DKA) should be considered if urine ketones are rising. The obstetric registrar should review the woman with a view to further investigation for DKA, which would include assessment of the blood ketone level using the Delivery Suite ketone meter and a venous blood gas. The blood ketone level should

be <0.6 mmol/L.

- If the blood ketone level is above 0.6 the Hyperemesis and DKA guideline should be used. In addition, the management of DKA can be found the intranet: Policies and Protocols; Endocrinology and Diabetes; Diabetic Emergencies and Safe Administration of Insulin and Management of Intravenous Insulin Sliding Scale for Adult Inpatients – CG242.

**VRIII for use with antenatal steroids**

- If blood glucose > 14 mmol/l - 1 L 0.9%sodium chloride + 20 mmol/L KCl running at 100 ml/hr
- If blood glucose < 14 mmol/l - 1 L 5% dextrose + 20 mmol/L KCl running at 100 ml/hr

**PLUS**, through same cannula

- Intravenous insulin, 50 units Soluble Insulin in 49.5 ml 0.9% sodium chloride.

This is now available on Delivery Suite in pre-filled syringes.

Check the expiry date carefully as the shelf life is short.

In case of non-availability of a pre-filled syringe, 50 units of Actrapid or Humilin S (Soluble Insulin) may be drawn up and mixed in a 50 ml syringe with 49.5 ml of 0.9% sodium chloride drawn up from a 50 ml infusion bag

Insulin should be administered according to the blood glucose result as per the table below

| Blood glucose (mmol/L) | Metered IV insulin (units per hour) |
|---|---|
| 4.0 or below | Stop insulin, measure blood glucose in 30 mins. |
| 4.1 – 7.0 | 1.5 |
| 7.1 – 9.0 | 2.5 |
| 9.1 – 11.0 | 4 |
| >11.0 | 6 |

All admitted diabetic women should be commenced on a Maternity Blood Glucose Monitoring chart (see link below) and be given a small sharps container for their bedside.

**A ‘Think Glucose’ referral form should be sent to the diabetes specialist midwife on fax 7314. A blood glucose must be done within 1 hour of admission**

Antenatal steroids_Dec12.pdf

Maternity information leaflet - Antenatal Steroids

| Author | D Graham | Date | 25/03/2014 |
|---|---|---|---|
| Job Title | Diabetes Specialist Midwife | Review date | June 2016 |
| Policy Lead | Group Director Urgent Care | Version | 3.0 ratified 6th June 2014 Mat CG mtg |
| Location | Maternity CG Shared drive/ Obstetrics & Midwifery/ Medical conditions & complications/ GL825 | | |

## References


1. Clement et al (2004)Management of Diabetes & Hyperglycaemia in Hospitals Diabetes Care 27 (2) 553-591
2. *Joint British Diabetes Societies Inpatient Care Group (2013) Second Edition The Management of Diabetic Ketoacidosis in Adults*


## Auditable standards:

1. All diabetic women admitted to maternity will have a blood glucose done within one hour of admission
2. All diabetic women admitted to maternity will have a "think glucose" referral completed and sent to the diabetes specialist midwife
3. All diabetic women admitted to maternity will be commenced on a Maternity Blood Glucose Monitoring chart and be given a small sharps container for their bedside table

*Author: Deirdre Graham (specialist midwife) Written: May 2008*
*Reviewed: Sept 2010, Sept 2011 – Auditable standards added, May 2012 – insulin sliding scale added, March 2014*
*Review due: June 2016*

| Author | D Graham | Date | 25/03/2014 |
|---|---|---|---|
| Job Title | Diabetes Specialist Midwife | Review date | June 2016 |
| Policy Lead | Group Director Urgent Care | Version | 3.0 ratified 6th June 2014 Mat CG mtg |
| Location | Maternity CG Shared drive/ Obstetrics & Midwifery/ Medical conditions & complications/ GL825 | | |