Aneurin Bevan University Health Board

Diabetes in Pregnancy: Care Pathway for Management of Diabetes in Pregnancy

N.B. Staff should be discouraged from printing this document. This is to avoid the risk of out of date printed versions of the document. The Intranet should be referred to for the current version of the document.

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Contents:

Introduction

This document is designed to support safe and effective practice for caring for women with type 1, type 2 and gestational diabetes during pregnancy

Policy Statement

This guideline is based on the NICE guideline NG3 published 25/2/2015. (Diabetes in pregnancy: management of diabetes and complications from preconception to the postnatal period).

Aims

To provide support for clinical decision making

Scope

- This guideline will relate to all maternity staff working within Aneurin Bevan Health board giving care to pregnant women with Type 1, Type 2 and gestational diabetes

Roles and Responsibilities

- Following wide discussion with all staff groups affected by this guideline it will be ratified at the Maternity services Clinical Effectiveness forum
- The guideline will be placed on the health board intranet
- Information relating to the guideline will be disseminated via the usual service cascade
- The guideline will be highlighted to the antenatal clinic staff in the first instance
- Monitoring of this guideline will be via the local risk management meetings and clinical incident reporting

Training

Training for junior medical staff will be undertaken locally, training spreadsheets are maintained within the directorate

Audit

Audit is done via the quality Improvement plans within the directorate.

Antenatal Diabetes Care teams

Royal Gwent Hospital

Lead obstetrician	Ms Amy Shacaluga
Lead physician	locum consultant
Diabetes specialist nurse	Mrs Louise Tyler
Dietitian	Ms Tone Gundersen
Lead Midwife	Ms Dee Scott & Mrs Margo Jones

The clinics are conducted on Monday afternoons and Tuesday mornings in the antenatal clinic area.

Nevill Hall Hospital

Lead obstetrician	Mrs Anurag Pinto
Lead physician	Dr Leo Pinto
Diabetes specialist nurse	Mrs Lynn Woolway
Dietician	Ms Siriol Wilson
Lead midwife	Anne Kershaw/Suzanne Thomas

The clinic is conducted on Tuesday mornings in the Llanfoist Suite.

Ysbyty Ystrad Fawr

Lead obstetrician	Mrs Anurag Pinto
Lead physician	Dr Mohammed Adlan
Diabetes specialist nurse	Mrs Janice Moses
Dietician	
Lead midwife	Mrs Lisa Hammett

Preconception care:

Women with type 1 and type 2 Diabetes who are planning pregnancy should consult their health care professional in order to optimise their diabetes control and to make sure their medications are reviewed to ensure safety for pregnancy and start folic acid 5mg OD. GPs may wish to refer these women to the specialist diabetes teams for preconception counselling particularly if the glycaemic control is not optimised for pregnancy.

Antenatal Care:

Early referral: Women with type 1 and type 2 diabetes who become pregnant are referred by their GP (e- referral to endocrinologist) as early as possible once the pregnancy confirmed. Often patients contact DSN when PT is +ve and are appointed in the medical antenatal clinic. CMW are encouraged to fax through the MANC referral forms (see appendix) for women directly after first contact to minimise delay in first review. (RGH 01633238979/ NHH 01873732396).

Gestational Diabetes (GDM): Risk assessment, testing and diagnosis

Assess risk of gestational diabetes at the booking appointment using the following risk factors

- BMI >35 kg/m^2 (ABUHB)
- Previous macrosomic baby (>4.5 kg)
- Previous gestational diabetes
- Family history of diabetes in a first degree relative
- Minority ethnic family origin with a high prevalence of diabetes

Testing: Use the 2-hour 75g Oral Glucose Tolerance Test (OGTT) to test for GDM in women with above risk factors at 24-28 weeks. For women with history of GDM in previous pregnancy, offer OGTT as soon as possible after booking and a further OGTT at 24-28 weeks if the results of the first OGTT are normal.

Diagnosis of GDM: Diagnose GDM if the woman has either:

- A fasting plasma glucose level of 5.6mmol/l or above or
- A 2-hour plasma glucose level of 7.8mmol/l or above

Table 1 Timetable of antenatal appointments

Early pregnancy visit Booking appointment (joint diabetes and obstetric clinic) ideally by 10 weeks:	Discuss information, education and advice about how diabetes will affect the pregnancy, birth and early parenting (such as breastfeeding and initial care of the baby). If the woman has been attending for preconception care and advice, continue to provide information, education and advice in relation to achieving optimal blood glucose control (including dietary advice). If the woman has not attended for preconception care and advice, give information, education and advice for the first time, take a clinical history to establish the extent of diabetes-related complications (including neuropathy and vascular disease), and review medicines for diabetes and its complications. Offer retinal assessment for women with pre-existing diabetes unless the woman has been assessed in the last 3 months. Offer renal assessment for women with pre-existing diabetes if this has not been performed in the last 3 months. Arrange contact with the joint diabetes and antenatal clinic every 1–2 weeks throughout pregnancy for all women with diabetes. Measure HbA1c levels for women with pre-existing diabetes to determine the level of risk for the pregnancy. Offer a 75 g 2-hour OGTT as soon as possible for women with a history of gestational diabetes who book in the first trimester. Confirm viability of pregnancy and gestational age at 7–9 weeks.
16/40	Offer retinal assessment at 16–20 weeks to women with pre-existing diabetes if diabetic

	retinopathy was present at their first antenatal clinic visit.
18-20/40	Offer an ultrasound scan for detecting fetal structural abnormalities.
22-24 weeks	Scan for the fetal heart (4 chambers, outflow tracts and 3 vessels)
28/40	Offer ultrasound monitoring of fetal growth and amniotic fluid volume. Offer retinal screening (pre-exisiting diabetes)
Women diagnosed with gestational diabetes as a result of routine antenatal testing at 24–28 weeks enter the care pathway	
32/40	Offer ultrasound monitoring of fetal growth and amniotic fluid volume. Offer nulliparous women all routine investigations normally scheduled for 31 weeks in routine antenatal care.
34/40	No additional or different care for women with diabetes
36/40	Offer ultrasound monitoring of fetal growth and amniotic fluid volume. Provide information and advice about: timing, mode and management of birth analgesia and anaesthesia changes to blood glucose-lowering therapy during and after birth care of the baby after birth initiation of breastfeeding and the effect of breastfeeding on blood glucose control facilitate breast milk harvesting if women are interested contraception and follow-up.
	Consider elective birth before 37 weeks for women with type 1 or 2 diabetes if there are metabolic or any other maternal or fetal complication.
37+0 to 38+6	Offer induction of labour, or caesarean section to women with type 1 or type 2 diabetes; if mothers opt for spontaneous

	labour facilitate if there are no complications.
38	Offer tests of fetal wellbeing
39	Offer tests of fetal wellbeing
40	Advise women with uncomplicated gestational diabetes to give birth no later than 40 + 6 weeks.
Consider elective birth before 40+6 weeks for women with GDM if there are maternal or fetal complications	

Intrapartum care: Management of Labour in Women with Diabetes (type I, II and GDM)

Induction of labour

The mode and timing of delivery will be decided by the joint Obstetric and Medical team
The standard IOL protocol will be followed (Propess/prostin, CTG monitoring etc)
During latent phase when woman is on a normal diet, continue routine insulin (usually basal bolus regime) and blood glucose monitoring an hour after every meal.

In established labour

Once labour is established, woman should be transferred to the labour ward (LW). If there is delay in transfer to LW, commence Variable rate iv Insulin Infusion (VRIII) on the ward.

The basal insulin (long acting insulin, usually given at bedtime, occasionally in the mornings-i.e. Glargine/Lantus; Detemir/Levemir; Insulatard; Humulin I) should be continued even if on VRIII.

Inform Obstetric and Anaesthetic registrar. Standard high risk monitoring-maternal observations, continuous CTG, maintenance of partogram.

Check BMs hourly and ensure maintained between 4-7 mmol/L

All women on Insulin or those not on insulin but have 2 consecutive hourly readings above 7mmol -commence sliding scale

Actrapid 50 IU in 50 ml normal saline (use the stickers) +
500 ml of 5% dextrose infusion and 0.45% saline with 1.5% KCl
(premixed bags) at 100mls/hr (this may need daily adjustments depending on electrolytes)

Units/hour=ml/hr	blood glucose in mmol
0.5	0-3.5
1	3.6-4.9
2	5-9.9
3	10-14.9
5	>15

BM < 4- treat hypoglycaemia (3 glucose tablets/ gel, and increase dextrose infusion and follow insulin dose as on the sticker)
BM >10- change infusion to normal saline
BM >15 -liaise with diabetes team (on call medical team OOH)

Keep consultant on call informed about progress, use of syntocinon for augmentation of labour and need for assisted delivery.

Anticipate shoulder dystocia at birth especially if assistance is required. Have a low threshold for trial in theatre for instrumental delivery.

Post delivery

1 Pre-existing diabetes requiring insulin: Continue VRIII in women with pre-existing diabetes until they are back on regular meals. Check BMs hourly whilst on VRIII.

Ensure long acting insulin is given at bed time (**pre pregnancy** dose as advised by the diabetes team or half the current dose).

Switching from VRIII to subcutaneous insulin - At next meal time, give the short acting insulin **(pre-pregnancy dose**- as advised by the diabetes team – if no information is available- half the current insulin dose) followed by a meal. Stop the VRIII (sliding scale) and dextrose 30 min after the bolus short acting insulin dose.

2 Type 2 DM who were on oral therapy prior to pregnancy or GDM: Women who had insulin only during pregnancy will not need any further insulin once the IV insulin infusion is stopped after completion of 3rd stage of labour. Occasionally this is not the case and this will be documented in the notes/ letter on CWS and the women will be informed.

After delivery, on the PN wards, women with pre-existing diabetes will continue to check fasting (on waking up in the morning) and pre and 1 hour post meal until discharged by the team on appropriate dose of insulin. Women with GDM need not test their blood sugars.

If breastfeeding, the insulin dose may need to be reduced by further 25-30% and advice about hypo management should be re-iterated. Metformin and Glibenclamide are compatible with breastfeeding.

Care should be taken to prevent hypoglycaemia in the postnatal period especially when breast feeding. If BMs are erratic (frequent hypos/hyperglycaemia inform medical/diabetic team)

Neonate will be observed for signs of hypogylcaemia as per protocol (see appendix- prevention and management of neonatal hypoglycaemia)

Women with pre-existing diabetes should be referred back to their routine diabetes care arrangements. Women should be reminded of the importance of contraception and the need for preconception care when planning future pregnancies.

In women with GDM, offer a fasting plasma glucose test 6-13 weeks after the birth to exclude diabetes. For practical reasons this might take place at the 6-week postnatal check. Do not routinely offer a 75g 2-hour OGTT. Do not offer routine postnatal appointment for women with gestational diabetes. Inform GP of gestational diabetes in order to facilitate annual HbA1C checks.

Elective Caesarean section

If the gestation at planned CS is < 39 weeks, women require betamethasone or dexamethasone along supplemental VRIII (Kaushal regime) in the week prior to the CS date if they have not already had the steroids. (see section on preterm labour below)

Women whose diabetes requires insulin should be admitted the previous night. Ensure that the long acting/basal insulin,(i.e. Glargine/Lantus; Detemir/Levemir; Insulatard; Humulin I) is taken as usual.

Commence VRIII (Variable Rate intravenous Insulin Infusion) on the morning of the procedure (7am)

> Actrapid 50 IU in 50 ml normal saline (use the stickers) + 500 ml of 5% dextrose and 0.45%saline infusion with 20mmols of KCl (=10mls or 1.5g) at 100mls/hr

Hourly BMs to be checked from 7am (even during the surgery)

Continue VRIII and hourly BMs post operatively until normal eating commences when **pre-pregnancy insulin** should be started.

Switching from VRIII to subcutaneous insulin (bolus/short acting) involves giving the short acting insulin **(pre-pregnancy dose**- as advised by the diabetes team – if no information is available- half the current insulin dose) followed by a meal. The IV infusion is stopped after 30 minutes. Stop dextrose infusion at the same time as IV insulin

Nausea, vomiting and complications during or after surgery may necessitate delay in the switch over from IV to S/C short acting insulin and this should be individualised.

Basal/long acting insulin-**pre pregnancy** dose is continued on the day of the operation (along with VRIII, if patient has not commenced eating.) As long as patient is on VRIII, BMs should be checked hourly.

Emergency Caesarean section

Women are already on VRIII. Follow the instructions as above for switching from sliding scale to pre-pregnancy short acting insulin and frequency of BM monitoring. The long acting (basal) insulin is continued with dose reduction after delivery.

Preterm Labour

Consider steroids for fetal lung maturity if gestation <35 weeks with Betamethasone or Dexamathasone

Commence Supplemental IV Insulin (Kaushal Regime- paperwork on the ward) along with first dose of steroid.

Use the Supplemental IV Insulin Regime in addition to their usual subcutaneous insulin as long as the patient is eating normally. Dextrose infusion is not given in this regime.

Use the Performa to record dose of insulin and BMs for 12 hours after the last dose of dexamethasone or 24 hours after betamethasone.

Nifidipine/ atosiban regime for tocolysis
Follow the management of preterm labour protocol.

* See GHT DIR 1221 Management of Diabetic Ketoacidosis in Adults (DKA)-ISSUE 2.PDF
** See GHT/DIR/Guide to the management of Hypoglycaemia in Adult

Supplemental IV Insulin regime for pregnant women with diabetes who require steroids for fetal lung maturity

Patient sticker	Date
	EDD
	Steroid time:

INSULIN DOSE					Total dose

Regime for supplemental insulin regime for steroid cover
50 IU of Actrapid in 50 ml Normal Saline

Continue usual dose of insulin, there is no need for IV fluids if patient is eating and drinking normally. If not on Insulin, use regime A

TOTAL DAILY INSULIN DOSE →	*0-40 IU/day*	*41-80 IU/day*	*81-120 IU/day*	*>120 IU/day*
BM	***A***	***B***	***C***	***D***
<6.0 mmol/l	***0***	***0***	***0***	***0***
6.1-7.0 mmol/l	***0.5***	***1***	***2***	***3***
7.1-8.0 mmol/l	***1***	***2***	***3***	***5***
8.1-9.0 mmol/l	***1.5***	***3***	***4***	***7***
9.1-10.0 mmol/l	***2***	***4***	***6***	***10***
>10.1mmol/l	***3***	***6***	***8***	***13***

Please stop the supplemental IV Insulin 12 hours after Dexamathasone and 24 hours after Betamethasone

Supplemental IV Insulin regime for pregnant women with diabetes who require steroids for fetal lung maturity ABU

Time	blood glucose	Insulin rate	sign	Time	blood glucose	Insulin rate	sign