

Guide to antenatal diabetes care and antenatal diabetes clinics in Lothian for specialist registrars

This is an introduction to and summary of recommendations for antenatal diabetes care, with particular emphasis on the way things are done at the antenatal diabetes clinic at the Royal Infirmary. It's not a comprehensive review of the subject – detailed guidance is available from www.sign.ac.uk and www.nice.org. Their recommendations differ, at least partly because the current SIGN guidelines date from 2001, whereas the current NICE guidelines are from 2008.

Management of women in labour or as inpatients is not dealt with here. There are guidelines on the Metabolic Unit Handbook intranet site. Issues that are currently dealt with primarily by the obstetricians, including delivery planning and growth monitoring, are also not covered here.

Yellow highlighting is applied to aspects that are particularly important, or commonly ignored.

Written September 2008
For review: after publication of next SIGN guidelines
(expected 2009)

Pre-pregnancy counselling

Contraception

- It is important to avoid unplanned pregnancies, particularly for women with poor glycaemic control.
- Contraceptive advice is generally as for non-diabetic women, but oestrogen-progestogen combined pills should be avoided in women with diabetes complications or vascular risk factors. Progestogen-only pills may be suitable, though have a higher failure rate.

Pre-pregnancy glycaemic targets

- SIGN recommend targeting blood glucose between 4-7 mmol/L.
- NICE recommend HbA_{1c} below 6.1% if this can be safely achieved.
- NICE recommend that women with HbA_{1c} above 10% avoid pregnancy.

Such targets are rarely realistic in type 1 diabetes (and sometimes not in type 2 diabetes). More pragmatic targets are:

- An HbA_{1c} below 7% is satisfactory, unless lower results could be relatively easily obtained with more intensive therapy.
- An HbA_{1c} above 7% is not a permanent contraindication to attempted pregnancy, if lower levels cannot be achieved despite appropriate education and support. Cases should be discussed individually.
- Women with HbA_{1c} above 10% should avoid pregnancy.

Medication

- Oral diabetic agents other than metformin should be stopped pre-pregnancy, and insulin commenced if needed.
- Stop ACE inhibitors and ARBs pre-pregnancy (and replace with alternative antihypertensives if needed). There is a significant increase in risk of congenital malformations, and careful counselling is needed for women who have inadvertently taken these agents while pregnant.
- Stop statins.
- These are the most common drug changes in diabetes, but remember to consider all other drugs the woman is taking.

Folic acid

- Folic acid 5mg daily should be prescribed for all women pre-pregnancy and up to 12 weeks gestation.

Retinal and renal complications

- Retinal and renal assessments should be up to date before pregnancy is recommended.
- Retinopathy alone is not a risk factor for pregnancy outcomes, but retinopathy can worsen during pregnancy. Women with moderate retinopathy should be referred early to the ophthalmology clinic.
- Nephropathy (including microalbuminuria) is a significant risk factor for pregnancy and maternal outcomes. Blood pressure control is critical. Involvement of the renal team is recommended when there is significant nephropathy (NICE suggest creatinine >120 µmol/L or eGFR <45 ml/min/1.73m²).

General points during pregnancy

Glycaemic targets during pregnancy

- SIGN recommend blood glucose levels between 4-7 mmol/L (time unspecified).
- NICE recommend fasting blood glucose levels between 3.5-5.9 mmol/L, and 1-hour post-prandial levels <7.8 mmol/L during pregnancy.
- NICE do not recommend using HbA_{1c} during pregnancy, as physiological changes mean that lower levels of HbA_{1c} are obtained for equivalent blood glucose profiles.

In practice, strict post-prandial targets may cause unacceptable pre-prandial hypoglycaemia, especially in type 1 diabetes. Current RIE targets are:

- Fasting blood glucose < 5.5 mmol/L.
- Pre-lunch and pre-evening meal blood glucose <6.0 mmol/L.
- Pre-bed blood glucose <6.0 mmol/L if taken outwith the post-prandial period.

Note that many other centres *do* focus on post-prandial blood glucose. Local guidelines may change after publication of the next SIGN guidelines (expected 2009).

Hypoglycaemia during pregnancy

- Most women accept more frequent hypoglycaemia, recognising the benefits of tight control.
- Mild (self-treated) hypoglycaemia is not thought to be harmful to the fetus.
- It is reasonable to reduce insulin doses if there is severe hypoglycaemia, obvious risk of severe hypoglycaemia, or unacceptable frequency of mild hypoglycaemia.

Types of insulin used during pregnancy

- All conventional (non-analogue) insulins may be used.
- Insulin aspart (Novorapid) is licensed for use in pregnancy; NICE also recommend that insulin lispro (Humalog) may be used.
- NICE do not recommend routine use of other analogues (glulisine (Apidra), glargine (Lantus), detemir (Levemir)) without further safety data. NPH is recommended when a long-acting insulin is required.

In Lothian, the consensus is that both insulin glargine and insulin detemir are likely to provide more benefit than risk, and these are the usual long-acting insulins used.

Hypothyroidism during pregnancy

Hypothyroidism is commonly encountered in the antenatal diabetes clinic.

- Adjust preconception T4 dose to achieve TSH in lower half of normal range, and preferably FT4 in the upper half. In subclinical disease, start T4 to achieve the same targets.
- During pregnancy, expect T4 requirements to rise by 30-50%, beginning after 4-10 weeks, and peaking at 20 weeks.
- A pragmatic approach is simply to increase T4 dose by 50mcg when pregnancy is suspected or confirmed, unless this is more than 50% of their previous dose.

Care of women with type 1 diabetes at the antenatal clinic

Coming to clinic

- Should attend as soon as pregnancy is confirmed.

Initial visit

- Review and record PMH and drug history, including pre-pregnancy insulin doses.
- Record whether the pregnancy was planned, and if not, ensure that all issues under “Pre-pregnancy counselling” are dealt with.

Review frequency

- Every 2 weeks up to 30 weeks gestation, and thereafter weekly, with additional visits at the Day Assessment Unit.

Blood glucose control

- Blood glucose targets as described earlier (same for all diabetes).
- Insulin options as described on p.3 – expect most to be on basal-bolus regimens.

Retinopathy screening

- If already attending eye clinic, ensure ophthalmologist is informed of pregnancy.
- Otherwise retinopathy screening each trimester: check at each visit when last done.
- If screening is due, telephone to check if a screener is in DOPD, and send the patient round - they will usually fit a patient in the same day, or arrange soon appt.
- Record screening episodes in the notes.

Yellow form (post-delivery treatment recommendation)

- Complete as the due date approaches.
- Expect most women’s insulin requirement to be similar to their pre-pregnancy level.

Post-partum follow-up

- Women should return to the normal diabetes clinic.
- Joan Grant will normally arrange, but there is no harm in doing it yourself!

Breastfeeding

- Advise that there is an increased risk of hypoglycaemia during breastfeeding.
- Medications stopped during pregnancy (e.g. statins and ACE inhibitors) should not be restarted during breastfeeding unless there is a compelling indication. There is little evidence that they do pass into breastmilk in significant concentrations.

Care of women with type 2 diabetes at the antenatal clinic

Coming to clinic

- Should attend as soon as pregnancy is confirmed.

Initial visit

- Review and record PMH and drug history, including pre-pregnancy insulin doses.
- Record whether the pregnancy was planned, and if not, ensure that all issues under “Pre-pregnancy counselling” are dealt with.

Review frequency

- Every 2 weeks up to 30 weeks gestation, and thereafter weekly, with additional visits at the Day Assessment Unit.

Blood glucose control

- Blood glucose targets as described earlier (same for all diabetes).
- Metformin will usually be continued if already taken pre-pregnancy, though at present we are not routinely starting metformin during pregnancy in type 2 diabetes.
- Other oral diabetes medications should be discontinued.
- Insulin should be used if treatment needs to be intensified. Insulin options are as described on p.3.

Retinopathy screening

- If already attending eye clinic, ensure ophthalmologist is informed of pregnancy.
- Otherwise retinopathy screening each trimester: check at each visit when last done.
- If screening is due, telephone to check if a screener is in DOPD, and send the patient round - they will usually fit a patient in the same day, or arrange soon appt.
- Record screening episodes in the notes.

Yellow form (post-delivery treatment recommendation)

- Complete as the due date approaches.
- Expect most women’s insulin requirement to be similar to their pre-pregnancy level.

Post-partum follow-up

- Women should return to the normal diabetes clinic.
- Joan Grant will normally arrange, but there is no harm in doing it yourself!

Breastfeeding

- Advise that there is an increased risk of hypoglycaemia during breastfeeding.
- Metformin and glibenclamide may be continued while breastfeeding.
- Medications stopped during pregnancy (e.g. statins and ACE inhibitors) should not be restarted during breastfeeding.

Screening for gestational diabetes in women with no previous diagnosis of GDM

Note that this screening is performed by community midwives – we are only usually contacted after the blood glucose has been found to be elevated.

Risk factors for GDM

- BMI $>30 \text{ kg/m}^2$.
- Previous macrosomic baby weighing $\geq 4.5 \text{ kg}$.
- Previous gestational diabetes.
- Family history of diabetes (first-degree relative).
- Ethnic origin with high prevalence of diabetes: South Asian (specifically India, Pakistan, Bangladesh), black Caribbean, Middle Eastern (specifically Saudi Arabia, UAE, Iraq, Jordan, Syria, Oman, Qatar, Kuwait, Lebanon, Egypt).

NICE recommend:

- Women with previous GDM should have early self-monitoring, or 75g OGTT at 16-18 weeks and a further OGTT at 28 weeks if results are normal.
- Women with any of the other risk factors should be offered OGTT at 24-28 weeks.
- OGTT criteria (plasma venous blood glucose): $\geq 7.0 \text{ mmol/L}$ (fasting) or $\geq 7.8 \text{ mmol/L}$ (2-hour) are diagnostic.

SIGN recommend:

- Screening for glycosuria at every antenatal visit.
- Random blood glucose if 2+ glycosuria is detected
- Random blood glucose at 28 weeks in all women.
- If RBG is $>5.5 \text{ mmol/L}$ more than 2 hours after food, or $>7 \text{ mmol/L}$ less than 2 hours after food, proceed to formal OGTT.
- OGTT criteria: plasma venous blood glucose $\geq 5.5 \text{ mmol/L}$ (fasting) or $\geq 9.0 \text{ mmol/L}$ (2-hour) are diagnostic.

At present, we are following the SIGN recommendations. But note that SIGN guidelines may be revised in 2009.

Care of women with *first presentation* of gestational diabetes at the antenatal clinic

Coming to clinic

- Should attend as soon as the diagnosis of GDM is confirmed.

Initial visit

- Review and record their medical, drug and family history.
- Consider type 2 diabetes instead of GDM if unusually early presentation or symptoms.
- Dietetic review.
- Diabetes nurse specialist review, to start self-monitoring of blood glucose.

Review frequency

- If on treatment, as for other diabetes – i.e. every 2 weeks up to 30 weeks gestation, and thereafter weekly, with additional visits at the Day Assessment Unit.
- If no treatment and not likely to need it soon, longer intervals are OK. Medication is rarely required much before 30 weeks gestation. Women should self-refer in the interim if their home monitoring results are above target.

Blood glucose control

- Blood glucose targets as described earlier (same for all diabetes).
- Many women will require no therapy other than dietary advice.
- Metformin is now used as first-line treatment in women with gestational diabetes.
- Insulin is used if treatment needs to be intensified. Insulin options are as described on p.3.

Retinopathy screening

- Not required unless there is a strong suspicion of pre-existing type 2 diabetes.

Yellow form (post-delivery treatment recommendation)

- Should be completed as the due date approaches.
- Usually no therapy post-partum, though revised if there is hyperglycaemia.

Post-partum follow-up

- OGTT at 3 months in DOPD. Joan Grant normally arranges this.
- Usual non-pregnancy criteria for OGTT. If positive, treat as standard type 2 diabetes.

Follow-up following negative post-partum OGTT

- Women should be advised that they are likely to develop GDM in future pregnancies.
- Women should be advised that they are at increased risk of future type 2 diabetes.
- At present, we are recommending periodic (e.g. every 1-3 years, depending on context) fasting blood glucose measurements in primary care. We do not arrange further OGTTs at the Royal Infirmary after the 3-month postnatal OGTT.

Care of women with *previous* gestational diabetes at the antenatal clinic

An explanation

Previously, if a woman with previous GDM fell pregnant again, we would just start her monitoring immediately. We didn't do OGTTs, as (i) GDM is almost certain to develop in subsequent pregnancies, (ii) GDM might develop earlier than 28 weeks, or any other scheduled time for OGTT, and (iii) treatment decisions are based on blood glucose monitoring.

However, this could also cause problems: (i) it's annoying for women to have to come to clinic with a diary full of normal results that need no treatment; (ii) sometimes it was not clear from BMs if they had developed GDM, as there are no diagnostic criteria.

So the current approach: (i) start monitoring early; (ii) allow review of blood glucose monitoring at longer intervals, depending on results; (iii) perform OGTT at 16 and 28 weeks if monitoring not already diagnostic.

Coming to clinic

- Should attend as soon as pregnancy is confirmed, even if they do not seem to have developed GDM yet.

Initial visit

- Review and record their medical, drug and family history.
- Consider type 2 diabetes instead of GDM if unusually early presentation or symptoms.
- Dietetic review.
- Diabetes nurse specialist review, to start self-monitoring of blood glucose.

Review frequency

- **Mandatory review at 16 and 28 weeks.** If blood glucose monitoring has not already clearly confirmed a diagnosis of GDM, then arrange OGTT.
- If on treatment, as for other diabetes – i.e. every 2 weeks up to 30 weeks gestation, and thereafter weekly, with additional visits at the Day Assessment Unit.
- If no treatment and not likely to need it soon, longer intervals are OK. Medication is rarely required much before 30 weeks gestation. Women should self-refer in the interim if their home monitoring results are above target.

Blood glucose control

- Blood glucose targets as described earlier (same for all diabetes).
- Many women will require no therapy other than dietary advice.
- **Metformin is used first-line in gestational diabetes.**
- Insulin is used if treatment needs to be intensified. Insulin options are as described on p.3.

Retinopathy screening

- Not required unless there is a strong suspicion of pre-existing type 2 diabetes.

Yellow form (post-delivery treatment recommendation)

- **Should be completed as the due date approaches.**
- Usually no therapy post-partum, though revised if there is hyperglycaemia.

Post-partum follow-up

- OGTT at 3 months in DOPD. Joan Grant normally arranges this.
- Usual non-pregnancy criteria for OGTT. If positive, treat as standard type 2 diabetes.

Follow-up following negative post-partum OGTT

- Women should be advised that they are likely to develop GDM in future pregnancies.
- Women should be advised that they are at increased risk of future type 2 diabetes.
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