Gestational Diabetes - Antenatal Scree

Assessing pregnant women for Gestational Diabetes

1. Indications

1.1 Background

Gestational diabetes occurs as a result of an underlying problem of insulin resistance and impaired beta cell fur pregnancy (Claus 1998). It is associated with increased risk of Type 2 diabetes mellitus in later life.

1.2 Aim/purpose

- To Identify women with gestational diabetes
- To reduce the potential risk to mother and baby.
- Reduce the chances of baby growing large for gestational age, increasing the likelihood of birth trauma, i section

1.3 Patient/client group

All pregnant women with risk factors for developing gestational diabetes.

1.4 Exceptions/ contraindications

1.5 Options

See se href="/ClinicalManagement/Diabetes/Pages/Type1andType2DiabetesinPregnancy.aspx" target="_blank' and pre conception care.

2. Clinical Management

2.2 Method/procedure

Screening and diagnosis

Patients in the following at risk groups should be offered an OGTT to screen for gestational diabetes at 26-28 w

- Maternal obesity (BMI >= 30kg/m^2 at booking)
- Large previous infant (4.5Kgs or more)
- Previous GDM**
- First degree relative (sibling/mother/father) with diabetes
- Family origin with a high prevalence of diabetes (South Asian, Black Caribbean and Middle Eastern)
- Women with a diagnosis of PCOS with a BMI < 30kg/m^2 can be considered for an OGTT although this is

  **Women with previous GDM are at very high risk of GDM in subsequent pregnancies. Ideally an HbA1c phase of pregnancy to ensure diabetes has not developed since the previous pregnancy. They should be OGTT as soon as pregnancy is confirmed and if the initial OGTT is negative this should be repeated at 2

Glycosuria should not normally be tested for. However, if detected this should be managed as follows;-

- Women with glycosuria >= 1+ on more than 1 occasion or >= 2+ on 1 occasion should be referred for an within 1 week.
- If this occurs **beyond 34 weeks** the patient should **not be referred directly for an OGTT** but discussed 425176).

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An **OGTT** should **also be carried out if**:-

- Macrosomia is diagnosed in the current pregnancy (Abdominal circumference on US >95th Centile)***
- There is polyhydramnios of any cause***

***If these are diagnosed after 34 weeks then do not organise an OGTT – refer to diabetes team who will teach monitor pre breakfast and one hour after meals for 1 week. The results will then be reviewed and a managemer

Where possible, women in at risk groups should be identified at their booking visit and the first OGTT booked in 26-28 weeks (extension 2218 at Salisbury District Hospital). If an OGTT is abnormal the patient should be refer combined antenatal clinic.

If a patient is referred for an OGTT at other times in pregnancy, this should be carried out within one week in the should be seen at the next combined antenatal clinic.

- Patients identified **at booking** as being in an at risk group can have an OGTT booked at 26-28 weeks (cc early pregnancy assessments.
- If a woman is identified as being at risk **during pregnancy** (macrosomia, polyhydramnios, positive urine should be made **within 1 week** on DAU for an OGTT.
- Results of OGTT will be relayed from DAU to the referring clinician and an appointment will be made for t ante-natal clinic if the test is positive.

In order to make an informed decision about screening and testing for gestational diabetes, women should be ir

- in most women, gestational diabetes will respond to changes in diet and exercise
- some women (between 10% and 20%) will need oral hypoglycaemic agents or insulin therapy if diet and controlling gestational diabetes
- if gestational diabetes is not detected and controlled there is a small risk of birth complications such as sh
- a diagnosis of gestational diabetes may lead to increased monitoring and interventions during both pregn

A record of this discussion and her decision accordingly needs to be made in the woman's notes and written inf

Full Protocol for OGTT

Preparation

Subjects should eat their normal diet for 72 hours before the test and should then fast for at least 8 hours prior t been completed. They may drink small volumes of water but MAY NOT SMOKE throughout the test. The patien a.m. and should be told that the test takes 2 and a half hours. They can bring something to read or "do" quietly. **instruction sheet**.

Requirements

Adults: 75g anhydrous glucose (as lemon-flavoured Polycal from Pharmacy). The drink should be chilled to imp preferable to pure glucose solutions as it is less likely to make patients nauseous and the test invalidated by vo gives 75g glucose in 113ml.

Procedure

When the patient arrives (9.00 a.m.), please check that she has fasted completely for at least 8 hours from the r quietly throughout the test and **should not smoke**.

All laboratory glucose samples must be taken in a grey topped tube.

A venous blood sample must be taken for glucose and sent to the lab – make sure the time of the test is record

As soon after 9.00a.m. as possible (record time) give the oral glucose load (75g anhydrous glucose) as **113ml l** measured using the special measuring beaker and diluted up to the 200ml. mark with **cold** water. The glucose s approximately 5 minutes. Try to ensure that all of it is drunk, and make a note if any is left or subsequently vomi abandoned). Give the patient a further 50ml. water in the beaker.

Take a venous blood glucose sample **120 minutes** post glucose load and obtain a urine sample. Label these 12

At the end of the test, please advise the patient to eat or drink something before going home.

Take the request card and bloods to Laboratory Medicine Reception.

Interpretation of results

	Fasting glucose	**120 min**
Normal	<5.6mmol/l	< 7.8mmol/l
Gestational Diabetes	>=5.6mmol/l	>=7.8mmol/

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Any results which show gestational diabetes should be referred to diabetic team and seen in next joint diabetes an HbA1c should be checked to exclude pre-existing diabetes.

Other tests should not be used to assess for gestational diabetes (fasting or random glucose of HbA1c)

If patients do have a blood glucose checked at other times they should be referred for an OGTT if:-

Fasting glucose (>2 hours after food) is ≥ 5.6 mmol/l

Non-fasting (random) glucose is ≥7.8mmol/l

Women should be referred directly to the combined diabetes antenatal clinic if their blood glucose has be

Any glucose is **≥11.1mmol/l**

or Fasting glucose **≥7mmol/l an OGTT is not necessary**

Following Diagnosis

Patients with a positive GTT will be seen to be shown how to monitor their blood glucose (BG) levels and given

They will be offered an appointment in the combined antenatal clinic within 1 week to see members of the multi (consultant diabetologist, diabetes nurse specialist, dietician, diabetes midwife, obstetrician)

The Diabetes specialist nurses will maintain regular contact with women and identify those whose BG levels are i.e. fasting > 5.3mmol/l, 2 hours after meals > 7.8mmol/l.

Hypoglycaemic therapy (usually metformin first with insulin if needed – see NICE guidance) will be considered f if diet and exercise fail to maintain blood glucose targets. These women will be closely monitored throughout an telephone in between appointments.

Those women whose BG are well controlled with diet alone will be reviewed in the Joint diabetic antenatal clinic growth. USS to assess fetal growth and liquor volume is usually repeated every 4 weeks.

Particular information that will be given to the women during their care over the last trimester is as follows:-

- the role of diet, body weight and exercise for now and the future health of the woman and her family.
- the increased risk of having a baby who is large for gestational age, which increases the likelihood of birtl caesarean section
- the importance of maternal glycaemic control during labour and birth and early feeding of the baby in ord hypoglycaemia
- the possibility of transient morbidity in the baby during the neonatal period, which may require admission
- the risk of the baby developing obesity and/or diabetes in later life
- How and when the follow up blood tests take place. At 6/52 and at 1 year then annually after that.

At 36 weeks:-

- Ultra sound scan performed.
- Information and advice on the timing, mode and management of delivery (this is usually offered between glycaemic control, estimated size of fetus and any complications of either the diabetes or the pregnancy)
- Analgesia and anaesthesia discussed. Anaesthetic review considered if necessary.
- Management of baby after birth discussed
- Importance of breastfeeding discussed.
- Consider antenatal hand expression of colostrum to be brought in on admission and stored frozen until b
- Consider contraception and follow up
- For those women treated with insulin give a full explanation about when to stop treatment.

At 38 weeks

- Offer induction of labour or caesarean section if indicated. If the women chooses to await spontaneous la movements on a daily basis and to report any decrease or change.

At 39 weeks

- Advise Induction of labour or caesarean section if indicated. If declined encourage mother to monitor feta well being

At 40 weeks

- Strongly advise induction of labour or caesarean section if indicated. If declined offer tests of fetal well be monitor fetal movements on daily basis.

At 41 weeks

- Strongly advise induction of labour or caesarean section if indicated. If declined offer tests of fetal well be monitor fetal movements on daily basis. Reinforce risks of stillbirth related to both diabetes and post matu

Intrapartum Care for women with gestational diabetes not on treatment.

- **Check capillary blood glucose at labour onset or pre elective caesarian section and if within rang required until after birth.**
- **If initial BM > 7mmol/l repeat at 1 hour. If remains > 7mmol/l then commence sliding scale (see bel**

Intrapartum Care - for Gestational diabetic women who have required insulin therapy o

Management of induction of labour

Patients should continue all treatment for their diabetes the day before induction. On the day they should contin established labour. At that point they should not take any more of their own insulin and/or metformin

Prostaglandin induction as per the induction of labour guideline. In addition these women should:

- Commence induction first thing in the morning.
- Continue to eat and drink as normal with normal insulin regime until in established labour.
- Record pre and post-prandial blood sugars.

Once in established labour the bm should be monitored hourly. If at any time this is above 7mmol/l, commence potassium over 12 hours, and sliding scale insulin infusion (see below). If at any time the BM is < 4mmol/l the p according to the hypoglycaemia protocol which can be found in the orange 'Hypo Box' or on the back of the 2 w

Infusions must be attached to venflon with a TWO-WAY NON-RETURNABLE CONNECTOR ONLY.

(PLEASE USE THE 3 DAY DIABETES TREATMENT & BLOOD GLUCOSE MONITORING CHART FOR IV INS

50 units of Human Actrapid insulin made up to 50mls with Sodium Chloride 0.9% - given by infusion pu

Blood glucose	**Rate of insulin infusion**
0 – 4mmol/litre **	0ml/hr see hypo protocol
4.1 – 7mmol/litre	1.0ml/hr
7.1 – 11mmol/litre	2.0ml/hr
11.1 – 17mmol/litre	4.0ml/hr
17.1 – 27mmol/litre	6.0ml/hr
> 27mmol/litre	6.0ml/hr

**If BM <4mmol/l manage the low blood sugar as per hypo protocol [which can be found in the orange 'Hypo Bo diabetes chart].

ARM and syntocinon induction as per usual management **PLUS**:

- Commence induction first thing in the morning.
- Continue to eat and drink as normal with continued tretament for GDM with insulin and/or metformin until
- Once in established labour monitor BMs hourly. Restrict oral intake to clear fluids only
- If at any time the BM > 7mmol/l commence IVI dextrose and sliding scale insulin (see above).
- If at any time the BM is < 4mmol/l the patient should be managed according to the hypoglycaemia protoc orange 'Hypo Box' or on the back of the 2 week diabetes chart.
- Infusions must be attached to venflon with a TWO-WAY NON-RETURNABLE CONNECTOR ONLY.
- Record hourly blood sugar measurements – woman may wish to self-monitor.
- Continuous electronic fetal monitoring via cardiotocograph machine (CTG).

Spontaneous labour

- Inform obstetric registrar on admission.
- Patient to stop their own treatment (insulin and/or metformin) for GDM
- Continuous CTG.
- BMs should be monitored hourly

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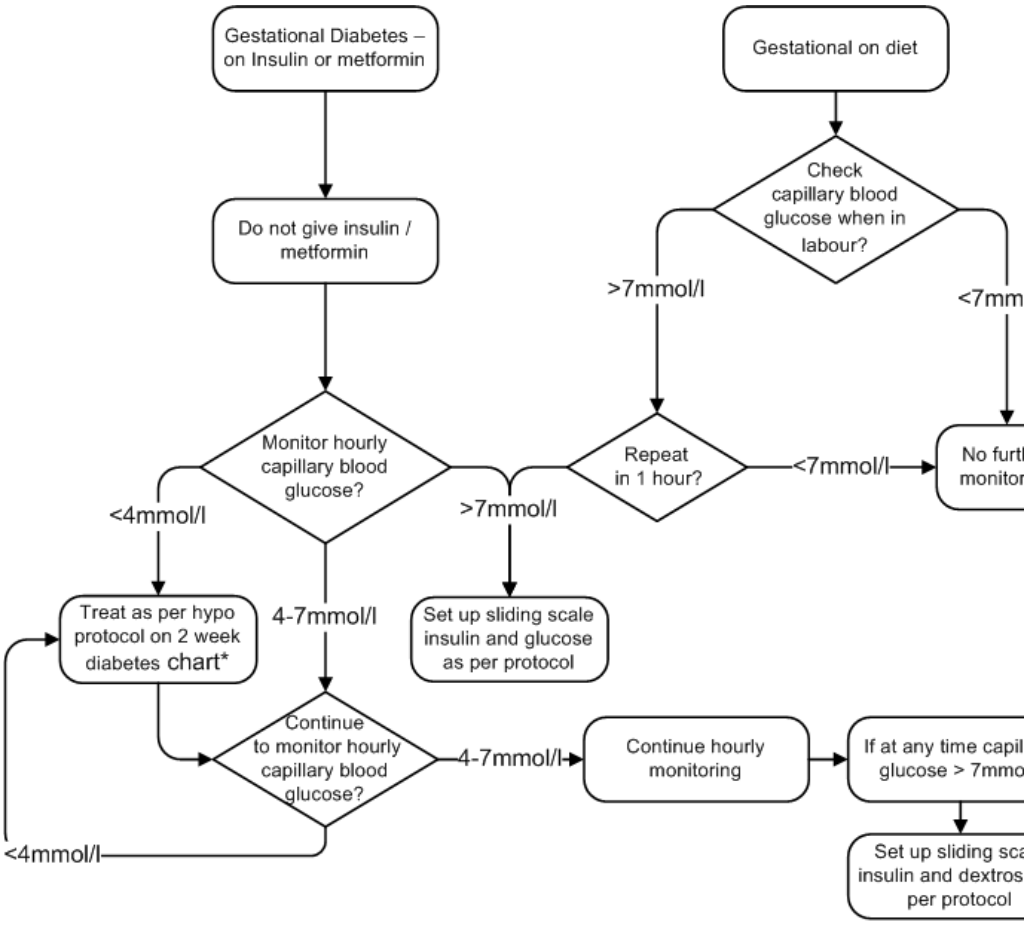
Caesarean section

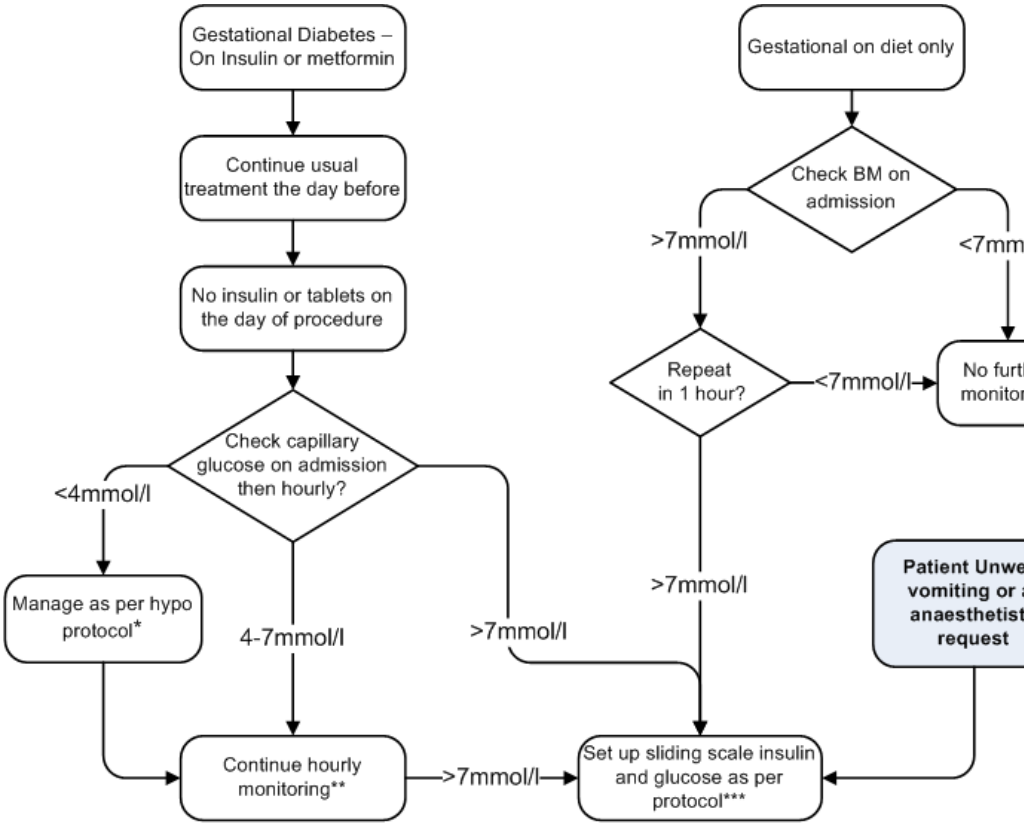
- Nil by mouth from midnight
- Continue treatment for GDM the day before the procedure
- No treatment on the morning of the procedure
- Capillary blood glucose to be check on admission and hourly until eating and drinking normally following
- Epi-spinal is the preferred method of anaesthesia as with non-diabetic women.
- If at any time the BM > 7mmol/l commence IVI dextrose and sliding scale insulin (see above).
- If at any time the BM is < 4mmol/l the patient should be managed according to the hypoglycaemia protoc orange 'Hypo Box' or on the back of the 2 week diabetes chart.
- Infusions must be attached to venflon with a TWO-WAY NON-RETURNABLE CONNECTOR ONLY

Management Of Women In Established Labour With Diabetes



*After treating hypo check glucose at 15 minute Intervals and continue to treat as per protocol until glucoseabove 4.
If BM > 7mmol/l start sliding scale.

Management Of Patients With Diabetes (Elective Caesarean)



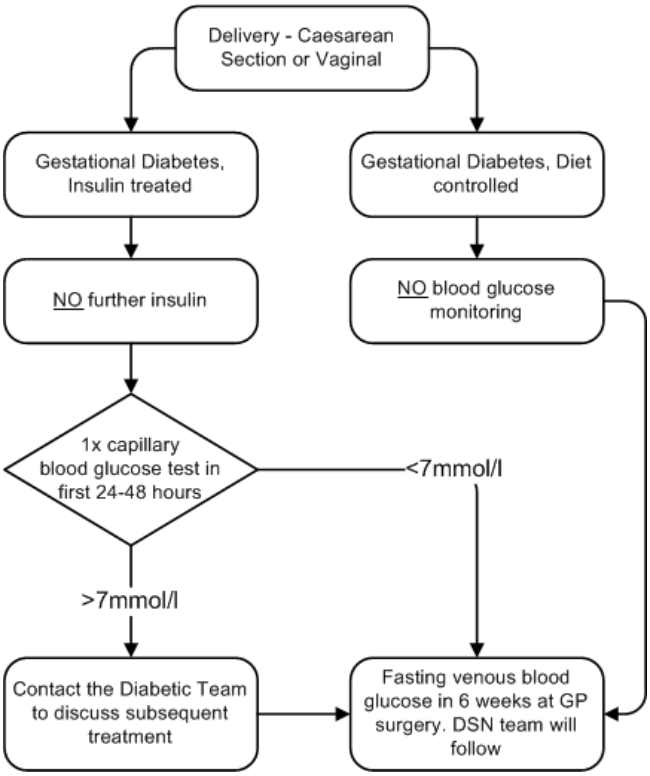
*After treating hypo check glucose at 15 minute intervals and continue to treat as per protocol until glucose above 4. If BM > 7mmol/l at any time start sliding scale.

**In patients with GDM stop monitoring as soon as caesarian complete.
***In patients with GDM stop sliding scale as soon as caesarean complete.

Post-natal care

NB. Once the placenta has been delivered there is a rapid decline in insulin requirements – be vigilant w measurement and the sliding scale insulin (DCAC 2000)

Management of Women With Gestational Diabetes Post-Delivery (Insulin/Metformin o



2.3 Potential complications / Risk Management

- Any women with positive result to be seen at next joint diabetes ANC

- Women occasionally feel nauseated following the glucose load during GTT
- Gestational Diabetes predicts risk for developing diabetes in later life. All GDMs to be followed up at 6 we 1 year later.
- Always use a two-way non-returnable connector when using the sliding scale insulin.

2.4 After care

All GDM to have fasting blood glucose at 6 weeks postnatal at GP surgery. Results will be reviewed by DSN an

3. Patient Information

Women will be seen regularly at the Pregnancy and Diabetes Clinic on a Monday morning and will be given the of their care, or concerns they might have.

Women with additional communication needs to have relevant information tailored to their needs.

4. Audit

4.1 Audit Indicators

All women with risk factors should have gestational diabetes screening

All newly diagnosed women with GDM should be seen within one week to commence BG monitoring

All women with gestational diabetess who have require insulin therapy should be managed with IVI and insulin a care.

All women with gestational diabetes should have a fasting glucose 6 weeks post-natally.

5. Evidence Base

5.1 Sources of information

1. Confidential Enquiry into Stillbirths and Deaths in Infancy, 1999. *6th Annual Report.* Maternal and Child H London.
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