

# Screening, Diagnosis and Management of Gestational Diabetes Mellitus during Pregnancy in Grampian

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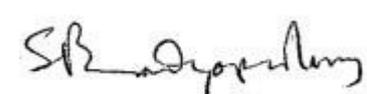
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24/02/2020	Jan 2018	Screening in later pregnancy 28 weeks section updated to provide clarity around the key cohort of women this screening applied to.	Section 1, Page 1 and Section 2.4, Page 6.
15/4/2025		Change to diagnostic parameters for Gestational diabetes	Section 2, Page 8

\* Changes marked should detail the section(s) of the document that have been amended i.e. page number and section heading.

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## **1. Introduction and Summary**

A diagnosis of Gestational Diabetes Mellitus (GDM) identifies a group of women who are usually asymptomatic, but whose pregnancies are at higher risk of adverse outcomes. A variety of international recommendations have been proposed for the screening, diagnosis and management of diabetes first recognised during pregnancy. This Grampian document provides a framework to implement the Scottish Intercollegiate Guidelines Network (SIGN) recommendations on GDM as published in the document "Management of Diabetes" SIGN 116 (2010) with some modifications to recognise more recent publications e.g. the NICE Diabetes in Pregnancy Guideline

2015. Clinical systems need to be in place across the region to recognise undiagnosed diabetes in early pregnancy and to ensure appropriate screening for the detection of the development of GDM during later pregnancy.

Thus, all pregnant women should be assessed at booking for any of the recognised clinical risk factors for GDM. Women with documented risk factors should be offered an HbA1C measurement at booking to detect undiagnosed Type 2 diabetes which needs prompt action. At 28 weeks, women will be reassessed again for their risk of developing gestational diabetes. For those with the risk factors detailed on page 6 this will be an OGTT. All other women (i.e. those who do not have diabetes and have no clinical risk factors) should have a random plasma glucose measured at the 28-week screening test to further assess their risk of GDM and the need for any further investigation.

Post Natal Follow up has been adapted from the 'Diabetes in pregnancy: Management of diabetes and its complications from pre-conception to the postnatal period' NICE Guidance NG 3 2015.

### **1.2 Definitions**

Gestational Diabetes Mellitus: carbohydrate intolerance of variable severity with onset or first recognition during pregnancy.

Diabetes Mellitus: metabolic disorder of multiple aetiology characterised by chronic hyperglycaemia with disturbances of carbohydrate, protein and fat metabolism resulting from defects in insulin secretion, insulin action, or both.

HBA1C: glycated haemoglobin which reflects average plasma glucose over the previous 2 -3 months in a single measure which can be done at any time of day. This is a useful test to diagnose diabetes since it does not require fasting, however, it cannot be used for diagnosis after 12 weeks and in the post-natal period due to changes in red cell turnover.

Oral Glucose Tolerance Test (OGTT): used to diagnose impaired glucose tolerance and diabetes in pregnancy, with measurement of a fasting and 2hr blood sample following a standardised oral 75g anhydrous glucose load.

### **1.3 Patient Groups to Which This Document Applies**

All pregnant women except those listed below

### **1.4 Patient Groups to Which This Document Does Not Apply**

This document does not apply to women who are pregnant and have established Type 1 or 2 diabetes mellitus or women who have symptoms consistent with a diagnosis of diabetes mellitus

### **1.5 Evidence Base**

Risk factors, screening, diagnostic and management criteria (except for 28 week screening) are those recommended by SIGN Guideline 116. The tool recommended for additional screening at 28 weeks is the random glucose rather than the fasting glucose. This was chosen on a pragmatic basis to facilitate more comprehensive screening of our geographically diverse population.

## **2. Screening**

### **2.1 Screening and diagnosis of diabetes in early pregnancy**

**First booking visit – to detect unrecognised, asymptomatic Type 2 Diabetes Mellitus.**

Midwife assessment for all women should record the presence or absence of risk factors for diabetes mellitus. This will identify women who are at highest risk of undiagnosed Type 2 diabetes mellitus and future risk of gestational diabetes mellitus. Consult Appendix 1 for each woman and document in the Badger electronic record. The date taken and results of the HBA1C will be recorded along with the other booking bloods.

## **2.2 Risk factors for gestational diabetes**

- BMI more than 30 kg/m<sup>2</sup>
- Previous macrosomic baby weighing  $\geq 4.5$  kg (or  $>90^{\text{th}}$  centile for gestation if customised centile chart available)
- Previous gestational diabetes
- Previous impaired glucose intolerance
- Previous unexplained intrauterine death
- Family history of diabetes (first degree relative with diabetes)
- Family origin with a high prevalence of diabetes
  - South Asian (specifically women whose country of family origin is India, Pakistan or Bangladesh)
  - Black Caribbean
  - Middle Eastern (specifically women whose country of family origin is Saudi Arabia, United Arab Emirates, Iraq, Jordan, Syria, Oman, Qatar, Kuwait, Lebanon or Egypt).

**At the second part of the booking appointment if one or more risk factors are positive:**

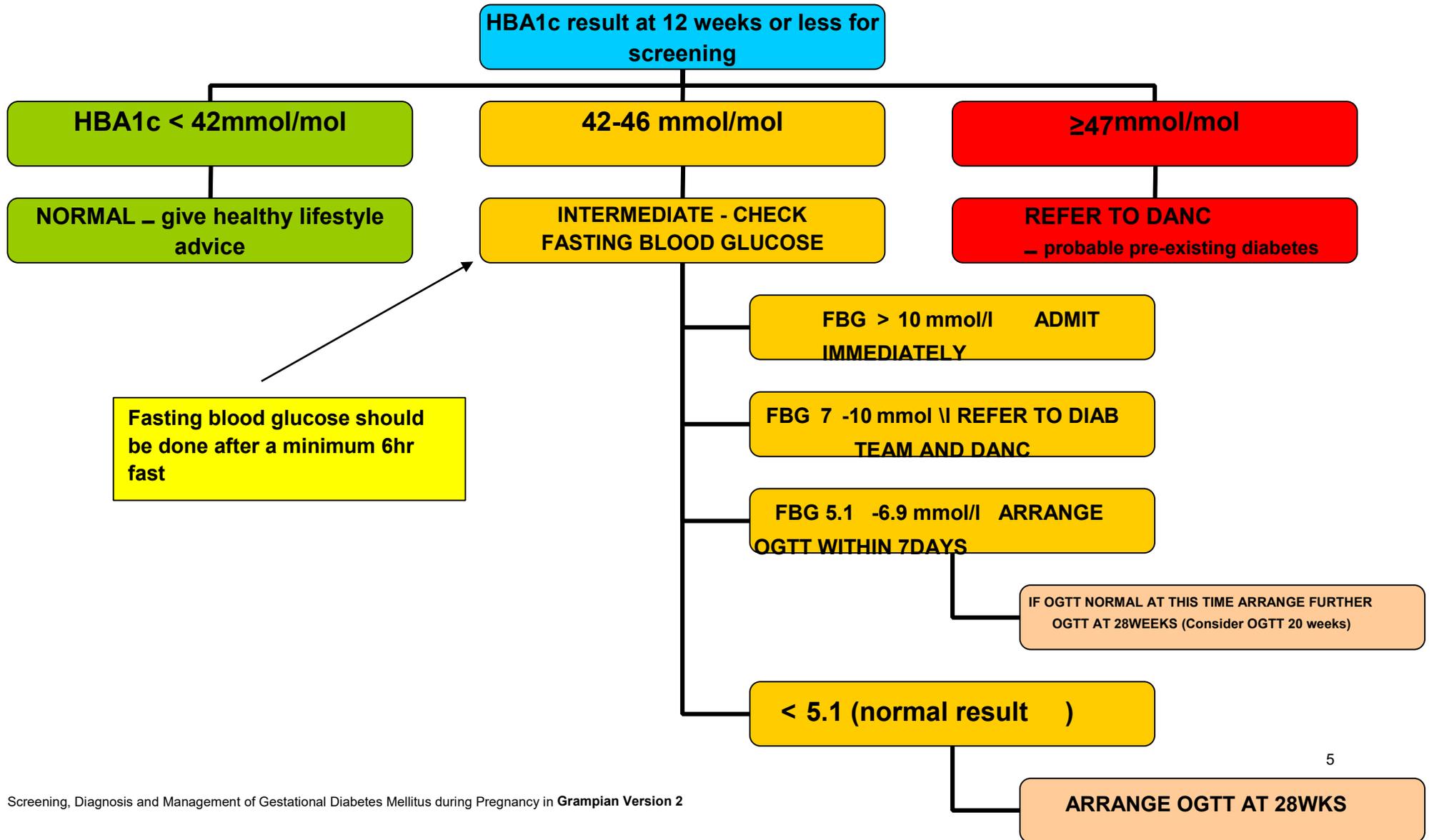
- Check HBA1C along with other booking bloods and give healthy lifestyle advice.
- If booking bloods are taken after 12 weeks an OGTT should be organised for 16 weeks gestation and a HBA1C should not be taken.

If none of the above risk factors are positive do not check HBA1C

N.B. if BMI >30 kg/m<sup>2</sup> prescribe folic acid 5mg.

This screening test is to establish the likelihood of undiagnosed Type 2 Diabetes. If clinical symptoms or suspicion of Type 1 diabetes a random blood glucose should be checked and an HbA1c is not appropriate.

### **2.3 Flow chart of HbA1c at 12 weeks or less in high risk pregnancy screening**



## **2.4 Screening in later pregnancy 28 weeks**

The 28 week screening test for women will continue to be a random blood glucose test with the exception of those with the risk factors listed below. Women who should have an OGTT at 28 weeks are

1. Women who have a HbA1c between 42-46mmol whose OGTT was normal at this time (see flow chart page 9)
2. Women with a previous IUD
3. Women with a BMI  $\geq$  40
4. Women with a previous baby over 4.5kg or 90<sup>th</sup> centile on customised growth chart
5. Women with previous gestational diabetes or with previous impaired glucose tolerance
6. Any other condition felt to be appropriate by individual clinician

### **Random Non Fasting Blood Glucose Results from Screening test**

<b>Blood Glucose</b>	<b>Action</b>
$\leq$ 6.9 mmol/l	Normal
7 - 11.0 mmol/l	Arrange OGTT
11.1 - 17mmol/l	Commence home blood glucose monitoring and discuss with diabetes team to arrange review. Check blood ketone.
$\geq$ 17.1 mmol/l	Discuss with on call consultant and admit to ward for discussion with diabetes team. Check blood ketone.

#### **Note**

- If primary symptoms of diabetes (excessive thirst, polyuria, blurred vision, recurrent thrush) develop at any time during pregnancy, check a random blood glucose urgently and refer for specialist diabetes care if result is  $\geq$  11.1. (Appendix 3)
- These figures do not apply to fasting glucose samples. They will be lower. (See chart result for OGTT fasting sample as could be diagnostic).

- Be aware that glycosuria of 2+ or above on 1 occasion or of 1+ or above on 2 or more occasions detected by reagent strip testing during routine antenatal care may indicate undiagnosed gestational diabetes. If this is observed, consider further testing to exclude gestational diabetes.

## **Diagnosis**

Interpretation of 75g OGTT – the diagnosis is made when one or more of the following results are recorded (SIGN 171, 2024)

<b>Fasting (mmol/l)</b>	<b>2 hour level (mmol/l)</b>	<b>Action</b>
≥ 5.3	≥ 9.0	Refer to Diabetes Antenatal Clinic. Commence blood glucose Monitoring.
≥ 7	≥ 11.1	Urgent discussion with Diabetes Antenatal team. (via Rotawatch) Commence blood glucose monitoring.
≥ 10	≥ 17	Urgent discussion with Diabetes Antenatal team (via Rotawatch) and consider admission to AMH/Dr Grays. Commence blood glucose monitoring.

- When diagnosis of Gestational Diabetes made to ensure primary healthcare team are aware and the patient is registered on SCI Diabetes. Correspondence sent from Diabetes Midwifery team to Primary care provider. Ensure post-natal follow up arrangements made (Appendix 6).

## **2.5 Screening for diabetes in women with babies with estimated fetal weight**

**(EFW) above 90<sup>th</sup> centile and/or polyhydramnios (DP 10cms or more)**

If associated with symptoms of diabetes mellitus then follow guideline above.

If the woman is otherwise well and less than 36 weeks gestation refer for oral glucose tolerance test within a week. Do not repeat if OGTT done at 28 weeks and normal, unless significant change in signs/symptoms such as rapidly increasing polyhydramnios/excessive acceleration in growth.

If woman otherwise well but pregnancy is 36 weeks and beyond refer to next ANC for consideration of risk of diabetes. This will include review of signs/symptoms and clinical findings.

Check if HbA1c done at booking – if so ensure normal and reassure re no pre-existing diabetes.

Check 28 week random blood sugar screening – if normal reassuring

Check for presence of glycosuria throughout pregnancy – if minimal reassuring

If OGTT done at 28 weeks normal – reassuring

If these factors are all reassuring the benefit of doing an OGTT beyond 36 weeks for the index pregnancy is minimal and intervention unlikely to be any sooner than otherwise based on clinical findings of large baby/polyhydramnios

(Future pregnancies will be risk assessed at the time of booking and previous birthweights above 90<sup>th</sup> centile/>4.5kg will be screened for gestational diabetes.)

All women should be given healthy lifestyle advice.

**2.6 Women with symptoms of diabetes mellitus at any stage of pregnancy**

If a woman displays symptoms of diabetes mellitus (thirst, polyuria, blurred vision, recurrent thrush or UTIs) or there is concern of new presentation of Type 1 Diabetes at any stage in pregnancy:

**Urgently** arrange point of care blood glucose test and, if unwell, blood ketone test

## **PLUS**

Send random blood glucose to the lab.

- $\leq 7$  mmol/l = symptoms unlikely to be due to blood glucose levels
- 7.1 – 11mmol/l = refer for OGTT as soon as possible within 7 days
- $\geq 11.1$ mmol/l = refer to diabetic team via Diabetes Maternity Team/Consultant on call via Rotawatch for ARI or through switchboard at Dr Gray's Hospital. Review and follow up at Diabetes antenatal clinic (DANC) will be arranged.

**ANY** clinical concerns please discuss with the on call Diabetes Maternity Team

### **3. Clinical Guidance**

#### **3.1 Summary of Initial Management of Gestational Diabetes**

Following diagnosis women will be reviewed at the Combined Diabetes Antenatal Clinic. Depending on the clinical presentation, symptoms or growth scans some women may require urgent discussion with the Diabetes Antenatal Team (contact details via Rota watch or switchboard Dr Grays).

Routine management includes review with our Combined Team of Specialist Midwife/DSN and Dietitian in a group or individual setting. DANC runs every week in AMH/Dr Grays. HbA1c will be checked at review.

#### **Education**

Explain to women diagnosed with GDM:

- What is Gestational Diabetes? (Provide 'Your Guide to Gestational Diabetes' Diabetes UK published July 2016 also information on Diabetes UK website)
- About the implications (both short and long term) of the diagnosis for both her and their baby
- Treatment includes changes in diet and exercise, and could involve medicines
- **Diet** – encourage healthy eating and a balanced diet. Emphasise foods with a low glycaemic index should replace those with a high glycaemic index.
- **Exercise** - advise women to take regular exercise to improve blood glucose control (e.g. 30 minute walk after a meal)
  
- Lifestyle advice – avoid smoking, alcohol etc
  
- Good blood glucose control throughout her pregnancy will reduce the risk of fetal macrosomia, trauma during birth (for both her and her baby), induction of labour and / or caesarean section, neonatal hypoglycaemia and perinatal death. (NICE 2015)

#### **Practical Skills**

- **Home Blood Glucose testing** – women will be taught how to test their own blood glucose levels.
- Advise women to test their fasting and 2 hour post meal blood glucose level daily (see below for target levels). Monitoring should be recorded on the Food Diary and blood glucose recording charts. See appendix 7.
- Contact details if concerns with blood glucose results provided

- Review blood glucose results within 1 week
- Ensure blood glucose testing strips and lancets are on prescription

### 3.2 Ongoing management

- Pregnant women with GDM should be treated with glucose-lowering therapy, metformin +/- insulin if fasting and/or postprandial results are out with targets.
- Consideration of baby's growth on scan and amniotic fluid should be taken into account
- Women should be involved in choice of therapy along with benefits and side effects of treatments.

Self monitoring blood glucose targets	
≤35 weeks	>35 weeks
≤ 5.5 mmol/l preprandial or ≤7 mmol/l two hours postprandial	<i>f</i> ≤5.5 mmol/l preprandial or ≤ 8 mmol/l two hours postprandial
If values are > 10 mmol/l and unwell contact Westburn Ward (AMH) as may require review/admission If values are > 10 mmol/l Repeat within 1 hour Contact Westburn Ward if not settling	

(SIGN 2010)

- Women commenced on insulin therapy should adopt blood glucose targets as for women with Type 1 Diabetes.
- Insulin therapy requires education with diabetes specialist team e.g. insulin administration, hypo management and DVLA etc.
- See specific guidance for management during labour
- Ensure medication and equipment is on repeat prescription

### 3.3 Post Natal Management of Gestational Diabetes

#### Whilst an inpatient

- Women who have been diagnosed with gestational diabetes should discontinue blood glucose-lowering therapy immediately after birth.

- Test blood glucose (minimum 3 times pre-meal within 48 hours post-delivery) in women to exclude persisting hyperglycaemia before they are discharged and transferred to primary care.

### Education

- Remind women the symptoms of hyperglycaemia; thirst, polyuria, lethargy, weight loss, blurred vision, recurrent thrush/UTIs
- Explain about the risks of gestational diabetes in future pregnancies, and offer them testing for diabetes when planning future pregnancies.
- Highlight again the risk of developing Type 2 diabetes in the future.

### For women whose blood glucose levels returned to normal after the birth:

- Offer lifestyle advice including weight management, diet and exercise. Consider referral or signposting to weight management group e.g. Healthy Helpings, or exercise groups.
- 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).
- If a fasting plasma glucose test has not been performed by 13 weeks, offer a fasting plasma glucose test, or an HbA1c test if a fasting plasma glucose test is not possible, after 13 weeks. (For practical reasons HbA1c could be performed at the time of childhood vaccinations at 16 weeks)
- Do not routinely offer a 75g 2-hour OGTT.

### For women having a fasting plasma glucose test as the postnatal test:

- Advise women with a fasting plasma glucose level below 6.0 mmol/litre that:
  - they have a low probability of having diabetes at present
  - they should continue to follow the lifestyle advice (including weight control, diet and exercise) given after the birth
  - Consider referral to weight management group
  - they will need an annual test to check that their blood glucose levels are normal ○ they have a moderate risk of developing type 2 diabetes, and offer them advice and guidance in preventing type 2 diabetes.
- Advise women with a fasting plasma glucose level between 6.0 and 6.9 mmol/litre that they are at high risk of developing type 2 diabetes, and offer them advice, guidance and interventions on preventing type 2 diabetes e.g weight management group, exercise class.
- Advise women with a fasting plasma glucose level of 7.0 mmol/litre or above that they are likely to have type 2 diabetes, and offer them a diagnostic test to confirm diabetes. See diagnostic criteria as per Grampian Diabetes Guidelines.

For women having an HbA1c test as the postnatal test:

- Advise women with an HbA1c level below 39 mmol/mol (5.7%) that:
  - they have a low probability of having diabetes at present ○ they should continue to follow the lifestyle advice (including weight control, diet and exercise, consider referral to weight management group) given after the birth
  - they will need an annual test to check that their blood glucose levels are normal ○ they have a moderate risk of developing type 2 diabetes, and offer them advice and guidance in preventing type 2 diabetes.
- Advise women with an HbA1c level between 39 and 47 mmol/mol (5.7% and 6.4%) that they are at high risk of developing type 2 diabetes, and offer them advice, guidance and interventions on preventing type 2 diabetes. Consider referral to weight management group.
- Advise women with an HbA1c level of 48 mmol/mol (6.5%) or above, with primary symptoms that they have type 2 diabetes and refer them for further care. As per Grampian Diabetes Guidelines if they are asymptomatic they may require a second test to confirm.

**Ongoing follow up for women with Gestational Diabetes**

- Offer an annual HbA1c test to women who were diagnosed with gestational diabetes who have a negative postnatal test for diabetes. (For practical reasons consider child's birthday although GP practice may have their own reminder system).
- Advise pre-conceptual counselling for women with previous history of GDM and establish HbA1c if not performed recently. Offer women who were diagnosed with gestational diabetes HbA1c in first trimester at booking. See appendix 1
- Ensure Gestational Diabetes is recorded on SCI Diabetes and GP register □ Consider referral to weight management service

**4. Appendix 1 Oral Glucose Tolerance Test (OGTT)**

Instructions for women:

- Attend designated day assessment unit between 08.30 and 09.00am
- Test takes 2.5 hours
- Do not eat or drink from midnight (this includes chewing gum or taking antacids such as Gaviscon). Sips of water are permitted.

On arrival:

- A small sample of blood will be taken
- A glucose drink will be given to consume within 10 minutes

- Once finished take a seat for 2 hours
- A second blood sample is taken
- Give toast and a drink after the test
- The result will be telephoned to the women the next day

### **Midwives and HCSW guidance on Oral Glucose Tolerance Test The Drink**

75g Glucose = 113ml Polycal – top up to 200mls with water (87mls to be added)

Can be made the night before and stored in a fridge (can keep for 24 hours)

Ask women to drink within 10 minutes – give water to drink during and after if required

### **The Blood Samples**

- Use small Grey Fluoride Oxalate Tubes
- Obtain blood sample before the glucose drink
- Two hours after drink consumed obtain second blood sample
- Send to biochemistry

## **5. References**

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