

# Information for Clinicians

## Clinical Biochemistry Department

## Oral Glucose Tolerance Test Procedure in Adults

### Overview

In most cases diabetes mellitus can be diagnosed using EITHER fasting glucose OR HbA1c. For further details of the diagnostic criteria please refer to [http://nww.ruh-bath.nhs.uk/For\\_Clinicians/clinical\\_guidelines/documents/pathology/PATH-006\\_Diabetes\\_Mellitus\\_Diagnosis.pdf](http://nww.ruh-bath.nhs.uk/For_Clinicians/clinical_guidelines/documents/pathology/PATH-006_Diabetes_Mellitus_Diagnosis.pdf)

An oral glucose tolerance test (OGTT) is recommended for use in the diagnosis of gestational diabetes. For further information regarding when to screen for gestational diabetes along with management, please refer to [https://webserver.ruh-bath.nhs.uk/staff\\_resources/governance/policies/documents/clinical\\_policies/blue\\_maternity/Blue\\_M\\_117.pdf](https://webserver.ruh-bath.nhs.uk/staff_resources/governance/policies/documents/clinical_policies/blue_maternity/Blue_M_117.pdf)

The OGTT assesses glucose handling; after being given a standard dose of glucose, the plasma glucose normally rises but returns to normal levels within 2 hours. If glucose handling is abnormal, plasma glucose will remain high.

### Patient Preparation

- The test should not be performed in patients who are under physical stress e.g. post-surgery, trauma, infection, within 6 weeks of a myocardial infarction or major surgery.
- The test should not be performed in patients who have had previous roux-en-y gastric bypass or sleeve gastrectomy.
- Note any drugs which may interfere with the test (glucocorticoids,  $\beta$ -blockers, thiazide and loop diuretics) and if possible, withdraw them for 3 three days before testing.
- Check that any women that have been put on metformin pre-pregnancy for PCOS have stopped this medication once pregnant, if not discuss with a Consultant Endocrinologist.
- Smoking and physical exercise should NOT be allowed in the morning prior to and during the test.
- The patient should be on an unrestricted carbohydrate diet (> 150g per day) for at least 3 days before the test.

Please contact the duty clinical biochemist or diabetes/antenatal team as appropriate to discuss if a patient does not meet the above criteria (contact details below).

## Procedure

1. Perform the test in the morning after an overnight fast of 8-14 hr (water is allowed).
2. The patient should rest for at least 30 min prior to testing.
3. If the patient is pregnant or showing any symptoms of hyperglycaemia perform a fasting blood glucose finger prick test prior to the OGTT.

### Finger prick glucose results in pregnancy:

- If the finger prick test is less than 7.0 mmol/L continue with OGTT.
- If the finger prick result is equal to or greater than 7.0 mmol/L send a venous fasting sample (2 mL fluoride oxalate/grey topped tube) to the laboratory and abandon the OGTT.
  - i. If the laboratory glucose result is equal to or greater than 5.6 mmol/L refer immediately to the diabetes antenatal clinic.
  - ii. If the laboratory glucose result is less than 5.6 mmol/L, rearrange the OGTT promptly.

### Finger prick glucose results in non-pregnant individuals:

- If the finger prick test is less than 10mmol/L continue with OGTT.
- If the finger prick result is equal to or greater than 10 mmol/L send a venous fasting sample (2 mL fluoride oxalate/grey topped tube) to the laboratory and abandon the OGTT.  
(See below for guidance on interpretation of results).

4. Collect the first 2 mL venous blood sample into a fluoride oxalate/grey topped tube. Note the time of collection on the bottle and the request form/electronic request. Label this bottle "1".
5. Give 75 g of glucose as 'Polycal-liquid' (Nutricia Clinical) (available from community and hospital pharmacies on prescription):
  - a. Measure 113 mL Polycal into a beaker and mix with water to a volume of 200 mL and thoroughly mix.
  - b. The patient should consume this over a 5 minute period. Followed by a further 100 mL of plain water.

*Note: This can cause abdominal discomfort if consumed too quickly.*

6. The patient should rest and not smoke or eat or drink for 2 hours (a small sip of water is allowed).

*Note: If the patient vomits during the test, stop the test. The test will be invalid. The fasting glucose sample "1" may still be sent to the laboratory.*

7. Collect a second 2 mL venous blood sample into a fluoride oxalate/grey topped tube 2 hours after the patient began to drink the glucose solution. Note the time of collection on the bottle and the request form/electronic request. Label this bottle "2".
8. The test is now complete and the patient may eat.
9. Send both blood samples together to the laboratory on the same day that the test has been performed.

### Interpretation of results

The results of the test will usually be available within 1 working day of receipt of the blood samples. Interpretation is appended to all OGTT reports.

**In pregnancy**, results are consistent with gestational diabetes if (NICE Guideline NG3 2015):

- Fasting (sample 1) glucose:  $\geq 5.6$  mmol/L **or**
- 2 hour (sample 2) glucose:  $\geq 7.8$  mmol/L

If results are consistent with gestational diabetes the patient should be referred by the next working day to the RUH joint antenatal/endocrine clinic by emailing [ruh.tr-ObsReferral@nhs.net](mailto:ruh.tr-ObsReferral@nhs.net)

**In non-pregnant individuals**, the following cut-offs are used to diagnose diabetes, impaired glucose tolerance or impaired fasting glycaemia (WHO 2006):

Interpretation	Fasting (sample 1) glucose (mmol/L)		2 hour (sample 2) glucose (mmol/L)
<b>Diabetes</b>	$\geq 7.0$	and/or*	$\geq 11.1$ mmol/L
<b>Impaired glucose tolerance</b>	$< 7.0$	and	7.8-11.0
<b>Impaired fasting glycaemia</b>	6.1-6.9	and	$< 7.8$ mmol/L
<b>Normal</b>	$< 6.1$	and	$< 7.8$ mmol/L

\*If the patient is asymptomatic for diabetes (absence of classical symptom e.g. thirst, polyuria, unexplained weight loss) and has only 1 glucose above the threshold for diabetes, diabetes must be confirmed by an additional (obtained on a different day) fasting or random glucose above the threshold.

Impaired glucose tolerance and impaired fasting glycaemia carry an increased risk of progression to diabetes, the patient should be added to their surgery's "at risk" register/referred into the NHS Diabetes Prevention Programme (NDPP) and reassessed in 12 months.

### Useful contacts

Consultant Endocrinologist and Duty Clinical Biochemist can be contacted via Cinapsis.

Direct numbers:

Duty Clinical Biochemist: 01225 82 4050

Diabetes Antenatal Clinic: 01225 82 4198 ([ruh-tr.diabetesanc@nhs.net](mailto:ruh-tr.diabetesanc@nhs.net))

### References

Diabetes in pregnancy: management from preconception to the postnatal period, NICE Guideline NG3 (2015).

Definition and diagnosis of diabetes and intermediate hyperglycaemia, WHO (2006).

## Amendment History

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Issue	Status	Date	Reason for Change	Authorised
2.0	Approved	09/12/21	Reduction in lab fasting glucose level from 7.0 mmol/L to 5.6 mmol/L to prompt referral to diabetes antenatal clinic without need to complete OGTT (in pregnant individuals).	B. Harris