

ORAL GLUCOSE TOLERANCE TEST (OGTT) – PROTOCOL IN PREGNANCY

Indications for the test

This is performed at 24-28 weeks gestation, but can be performed as indications arise.

- Glycosuria of 2 + on one occasion or 1+ on two or more occasions
- First degree relative with diabetes (mother, father, siblings).
- Previous unexplained neonatal death and stillbirth.
- Increased BMI $>30 \text{ kg/m}^2$.
- Polyhydramnios diagnosed by ultrasound scan (USS) where the amniotic fluid index (AFI) ≥ 25 cms on 2 or more occasions
- Polycystic Ovary Syndrome.
- Treatment with olanzapine (Zyprexa)
- Baby with ultrasound scan (USS) abdominal circumference (AC) = ≥ 95 th Centile with polyhydramnios
- Macrosomia confirmed by > 95 th centile on customised growth chart
- Family origin with high prevalence of diabetes, Asian, Caribbean and Middle Eastern
- Previous gestational diabetes (GTT at 16 weeks, if normal repeat at 28 weeks)
- Women with a gastric bypass or a gastric band may experience glucose dumping syndrome and/or have difficulty in drinking 200 mL of fluid in 5 minutes. These women should be referred to the Diabetes Specialist Midwives who will organise capillary blood glucose monitoring commencing at 26 weeks.
- Do not use fasting plasma glucose, random blood glucose, HbA1c, or urinalysis for glucose to assess risk of developing gestational diabetes
- Before subjecting a patient to an oral glucose tolerance test (OGTT), ensure that there has been an appropriate diagnostic work-up (see NICE guideline NG3 February 2015).

During the OGTT, blood samples are collected before (fasting) and after (2 hours) administration of an oral glucose load for measurement of plasma glucose. Polycal liquid (previously called Fortical) is used as the glucose load. Adherence to the following instructions will ensure the test is conducted in accordance with the recommendations of the World Health Organisation. If you

require any further information or clarification please contact the duty biochemist on telephone number 01233 616287.

Contraindications

Oral glucose tolerance test must not be performed if the fasting capillary (finger prick) or venous blood glucose concentration is greater than 10 mmol/L. If >10 mmol/L take fasting venous sample but do not proceed – refer to obstetric / diabetic joint antenatal team.

Requirements

- Two timed blood (2 mL) samples collected into fluoride oxalate (grey top) tubes (see below for patient preparation)
- It is essential that the blood samples are processed by the laboratory: results obtained using blood glucose meters are of no value in establishing or refuting the diagnosis of diabetes mellitus.
- Polycal liquid containing 61.4 g maltodextrin per 100 mL.
- Measuring cylinder. These can be obtained from pathology on request.

Patient preparation

A patient Information leaflet (Oral glucose tolerance test) is available within the patient and visitor area of Trustnet (<http://www.ekhuft.nhs.uk/patients-and-visitors/>). It is also located on QPulse (BIO-EX-413)

The patient must have fasted for at least 8, and no more than 14 hours (water is permitted). The patient must have been following their normal carbohydrate diet for three days preceding the test and must not smoke on the morning of the test or during the test. Patients must sit quietly during the test and not leave the department.

Procedure

- Confirm the patient's details and that she has fasted and has not smoked on the morning of the test (or during the test). If the patient has eaten or smoked on the morning of the test, the test must be abandoned and a repeat appointment arranged.
- Explain the nature of the procedure to the patient. Two blood samples will be collected, 2 hours apart, before and after the Polycal drink. The patient must sit quietly during the procedure and not leave the department.
- Using a glucose meter, determine the patient's fasting blood glucose concentration with a capillary blood sample obtained by finger prick.
- The result must be less than, or equal to 10 mmol/L. If >10 mmol/L take fasting venous sample but do not proceed – refer to obstetric / diabetic joint antenatal team. Instead, take a venous sample of blood for a fasting glucose concentration and send it to the laboratory to confirm the result obtained on the glucose meter.
- Providing the glucose meter result is less than, or equal to 10 mmol/L, proceed with the test. Blood (2 mL) must be collected into a fluoride oxalate tube (grey top). Record full patient details on the collection bottle including the test time (i.e. time zero/fasting). Record

the glucose meter result on the laboratory request form.

- The Polycal must then be administered. **DO NOT GIVE THE WHOLE BOTTLE OF POLYCAL.** Measure 113 mL of Polycal into a measuring cylinder and dilute with water to a total volume of 200 mL. This must be drunk over the course of 5 minutes, followed immediately by a further 100 mL of water (113 mL is equivalent to a 75 g anhydrous glucose load).
- Note the time the Polycal was given on the request form.
- After **exactly** 2 hours, collect a further blood (2 mL) sample and record full patient details on the collection bottle including the actual time and time post glucose load (i.e. time 2 hours).
- The test is complete. The patient may eat and drink normally again and is free to leave. Send the blood samples to the laboratory for analysis as soon as possible.

Interpretation

	Glucose concentration (mmol/L)
Gestational diabetes	
Fasting <i>or</i>	≥ 5.6
2 h post glucose load	≥ 7.8
<i>or both</i>	

Laboratory results will be issued with an interpretative comment, based on the above criteria (taken from Diabetes in pregnancy: management of diabetes and its complications from preconception to the postnatal period. NICE guideline (NG3) published 25 February 2015).

If the fasting sample is ≥ 5.6 mmol/L or the 2 hour ≥ 7.8 mmol/L, the patient must be referred to the obstetric/diabetic joint antenatal team.

If you require any further advice with respect to the interpretation of the test results, please contact the duty biochemist on 01233 616287.

References

1. World Health Organisation. Definition, diagnosis and classification of diabetes mellitus and its complications: report of a WHO consultation. Geneva, World Health Organisation, 2006.
2. Colley CM, Larner JR. The use of Fortical in glucose tolerance tests. Ann Clin Biochem 1990; 27:496-98.
3. Smith J and Natrass M. Diabetes and laboratory medicine. ACB venture publications 2004.
4. Diabetes in Pregnancy – Directorate of Women's Health, East Kent Hospitals University NHS Foundation Trust
5. Diabetes in pregnancy: management of diabetes and its complications from preconception to the postnatal period. NICE guideline (NG3) published 25 February 2015.

The content of this document was agreed with Anne Heseltine, Supervisor of Midwives. It is in agreement with Diabetes in Pregnancy – Directorate of Women's Health, East Kent Hospitals University NHS Foundation Trust. Copies of correspondence are held on the pathology shared drive.