

ORAL GLUCOSE TOLERANCE TEST

INTRODUCTION

A fasting or random blood glucose sample is recommended as the initial investigation in suspected diabetes mellitus. The GTT should be used to confirm a diagnosis of diabetes mellitus if initial investigations prove equivocal. Following a standard dose of glucose, plasma glucose is measured at 2 hours (urines are not required). The results may be influenced by a number of factors and it is important that patient preparation instructions are carefully followed.

CONTRAINDICATIONS AND SIDE EFFECTS

The test should not be performed on seriously ill patients and those showing metabolic response to trauma and surgery. Reactive hypoglycaemia is a possibility and patients should be carefully supervised throughout the test.

PATIENT PREPARATION

Various drugs can influence glucose tolerance and should be stopped for a period (ideally about 5 times the half-life of the drug) before glucose tolerance testing. Drugs which decrease glucose tolerance include corticosteroids, oral contraceptives, thiazides and sympathomimetic agents. Recent infection may also impair glucose tolerance. The presence of factors that influence interpretation of the results must be recorded (e.g. medications, inactivity, infection, etc.).

This test should be performed in the morning after at least three days of unrestricted diet (greater than 150 g of carbohydrate daily) and usual physical activity. Recent evidence suggests that a reasonable (30–50g) carbohydrate containing meal should be consumed on the evening before the test. The test should be preceded by an overnight fast of **10–16 hours**, during which water may be drunk. Smoking is not permitted during the test.

PROTOCOL

1. **Take fasting blood sample for glucose (minimum 1ml into fluoride tube – grey top).**
2. **Give the appropriate glucose load orally (see box below) over a period of 5 minutes. Care should be taken to avoid vomiting. Timing of the test is from the beginning of the drink.**

Glucose Load – given as Polycal solution

Adults: 113mL (140g) of Polycal = 75g glucose

Children: Polycal by weight (g) = child's weight (kg) x 3.27
(maximum dose is 113mL (140g) of Polycal)

Measure Polycal into paper measuring cup and make up to 200mL with water, mix well and give to patient. Once drunk (over 5 min), refill the measuring cup to the 113 mL line and give to the patient to drink

3. **Take a further blood sample for glucose (minimum 1ml into fluoride tube – grey top) at 120 minutes after glucose ingestion.**

Label the samples with patient details and actual time taken. When test is complete, send request form and samples to the Clinical Biochemistry Department as soon as possible. Results will be available the same day.

INTERPRETATION

<i>Applies to venous plasma only</i>	Fasting value	2hr after glucose load
Diabetes mellitus:	≥ 7.0 mmol/l	≥ 11.1 mmol/l
Impaired glucose tolerance:	< 7.0 mmol/l	7.8 – 11.1 mmol/l