

I. Purpose:

Glucose Tolerance (GTT): Glucose tolerance testing is performed as an aid in the diagnosis of diabetes mellitus.

Glucose Challenge: Glucose challenge testing is used as a screening test.

2-Hour Post Prandial: Glucose test can be used to screen patients for diabetes including gestational diabetes.

II. Materials:

1. Glucose tolerance drinks - 10 oz. Bottles (Challenge and GTT)
 - a. 50 gram dose
 - b. 75 gram dose
 - c. 100 gram dose
2. Blood collection supplies
3. Clock or timer

III. Patient Preparation for Glucose Tolerance Testing:

1. It is recommended that the patient eat a normal, balanced meal at least 3 days prior to the test.
2. Fast 12 hours prior to the beginning of the test.
3. Patient is encouraged to drink water.
4. Patient should NOT drink unsweetened tea, coffee, or any other beverage during fasting or during the procedure.
5. Patient should NOT smoke, chew tobacco, or chew gum (including sugarless gum) during the fasting time or during the procedure. (Note: If patient is chewing gum prior or during the procedure, note this on the requisition form since gum may interfere in the test results.)

Test Dose (Load) for Challenges and GTT:

The chart below indicates the correct glucose (load) dose for all tests and patient types.

Patient	Glucose Tolerance Test (Standard test is 2 hours. A 3,4,5 or 6 hour tolerance test can be done if requested.)	1 Hour Challenge	2 Hour Challenge
Adult (non - pregnant)	75 grams dose drink	N/A	75 grams
Adult (pregnant)	100 grams dose drink	50 grams	100 grams
Child (up to 94 pounds)	1.75 grams glucose per KG of body weight. If the child is greater than 94 pounds, use 75 gram dose.	N/A	N/A

The Glucose Tolerance beverage should be chilled prior to ingestion

IV. Procedure for Glucose Tolerance Testing:

1. Verify that the patient has been fasting for 12 hours prior to the test.
2. Collect fasting blood specimen (for Glucose Tolerance ONLY)
3. Administer test dose. The patient should drink the test dose within 5 minutes.
4. Timing for blood collections should begin at the COMPLETION of ingestion of glucose tolerance beverage.
5. Times for Specimen Collection: (NOTE: Even though there may be multiple collections, the patient is only to be charged for one venipuncture.)

Non-Pregnant Adults and Children:

Standard 2-hour glucose tolerance test

- a. Fasting
- b. ½ hour after ingestion
- c. 1 hour after ingestion
- d. 2 hours after ingestion

3, 4, 5, and 6-hour specimens will be collected if the physician has requested a longer glucose tolerance. A urine sample may also be collected with each blood draw at the request of the physician.

Pregnant Women:**Standard 2-hour glucose tolerance test**

- a. Fasting
- b. 1 hour after ingestion
- c. 2 hours after ingestion

3, 4, 5, and 6-hour specimens will be collected if the physician has requested a longer glucose tolerance. A urine sample may also be collected with each blood draw at the request of the physician.

1 Hour Glucose Challenge

Collect one specimen at 1 hour after ingestion

2 Hour Glucose Challenge

Collect one specimen 2 hours after ingestion

Procedure for 2 Hour Post Prandial Glucose Testing (Pregnant and Non-Pregnant)

1. Glucose levels in serum specimens drawn 2 hours after a meal are rarely elevated in normal patients. In contrast, diabetic patients usually have increased values 2 hours after a meal.
2. Patient should be placed on a high-carbohydrate diet 2-3 days before the test.
3. The day of the test, the patient should eat a breakfast of orange juice, cereal with sugar, toast and milk to provide an approximate equivalent of 100g glucose.
4. A blood specimen is collected 2 hours after the patient finishes eating breakfast.
5. Order appropriate test
6. Label with appropriate label taking care when matching to appropriate time of collection.
7. Send specimens to lab for testing. For Glucose Tolerances, send all of the patient's specimens to the lab at the same time.

V. Procedural Notes:

1. Fasting specimen must be collected prior to ingestion of glucose tolerance beverage.
2. Water intake is encouraged throughout the procedure.

3. Discontinue collection of specimens if patient vomits.
4. Patient should be ambulatory.
5. Medications known to affect the GTT (oral contraceptives, salicylates, nicotinic acid, diuretics, caffeine, and hypoglycemic agents) should be discontinued if possible.
6. The test should be performed in the morning between 7:00am and 12:00 noon.

VI. References:

Phlebotomy Handbook, Blood Collection Essentials, Garza & Becan-McBride 7th edition, 2005