

Insulin Tolerance Test (ITT)

Indications:

- This test is less frequently performed now but it is regarded as being the gold standard for the assessment of ACTH / Cortisol and Growth Hormone (GH) reserve in patients with pituitary/hypothalamic disease.
- It is also sometimes used in the diagnosis of Cushing's Syndrome.
- The test may be combined with the GnRH or TRH tests although this is also rarely indicated.

Contraindications:

Ischaemic Heart Disease, Epilepsy or unexplained blackouts, severe long-standing; Hypoadrenalism and Glycogen Storage Disease.

Precautions:

ECG must be normal. Serum cortisol (09:00) must be > 100nmol/l.

T4 must be normal - if abnormal or in doubt perform a Glucagon Test.

Prior to test:

- Give Lab. require prior warning (one weeks notice preferred)
- Obtain accurate weight of patient.
- Check patient has had recent ECG.
- Give or send patient information letter at time of booking.
- Arrange test for around 08:30am.
- Ensure that the registrar on call is given prior warning of test date and time. Registrar should complete the prescription chart with the calculated Insulin dose. Registrar should remain in unit throughout test.
- **Insulin dose = 0.15u/kg body weight. Actrapid Insulin used.**
- Trolley prepared with : Dextrose 50% - 50ml syringe ; Hydrocortisone 100mg & syringes.
- One Touch Glucose Meter. Minute minder required to time sample collection

Procedure:

- One nurse dedicated to test.
- **Patient fasting.**
- Patient supine throughout test.
- Observation sheet to be completed (see example attached) Observations to include BP, pulse, sweating, cognitive function..
- IV cannula sited (green preferred)
- Blood samples are collected at time 0 , IV bolus dose of insulin given and cannula flushed with 5mls 0.9% Normal Saline. **Time noted.**

Sampling:

- Tubes and minimum volumes: Glucose = yellow(2ml), Cortisol = brown(2ml),
- Growth Hormone = orange Li hep(2ml).
- At each time point discard 0.5ml. blood , collected in 2ml syringe, prior to sample collection.

- Following sample collections, at each time point, flush IV cannula with 5ml. Normal Saline .

Glucose	0	+15	+30	+45	+60	+90	+120
Cortisol	0	+15	+30		+60	+90	+120
GH	0	+15	+30		+60	+90	+120

Telephone Lab. prior to sending first sample. Glucose samples are sent at each collection time and results phoned. **Test stopped at any time point if Glucose level from the lab is < 2.2mmol/L or if patient's conscious level falls.**

If the test is stopped because of symptomatic hypoglycaemia samples for measurement of cortisol, GH and glucose should be taken prior to the administration of glucose and/or hydrocortisone.

GH and cortisol samples may be batched and sent on completion of test with a WGH form.

Interpretation:

The peak growth hormone level that should be achieved is >20mmol/L.

The peak cortisol level is >520mmol/L

On completion of test:

If observations are satisfactory patients are offered fluids and a high calorific meal prior to discharge.