

## Dexamethasone Suppression Test - Low Dose Overnight - Full Clinical Guideline

Reference no.: CHISCG5

### 1. Introduction

Dexamethasone is a synthetic steroid with 25 times the glucocorticoid activity of cortisol. It does not interfere with cortisol measurement. Dexamethasone leads to suppression of adrenal cortisol secretion in normal individuals. In patients with Cushing's syndrome there is incomplete suppression.

This screening test for Cushing's syndrome is suitable for out-patients or in-patients, but is best done on an out-patient basis. Cushing's syndrome is relatively rare and false positive results can occur in a variety of situations (see INTERPRETATION). Abnormal results with this test should be followed by further investigation by an endocrinologist (see "Dexamethasone Suppression Tests for the Second Line Investigation of Cushing's Syndrome").

This test is performed as an overnight suppression test, using a single dexamethasone dose of 1 mg.

### 2. Guideline

#### INDICATIONS

As a first-line screening test to exclude Cushing's syndrome

#### CONTRAINDICATIONS

None

#### SIDE EFFECTS

None

#### PRECAUTIONS

This procedure may be contraindicated in patients with active peptic ulcer disease.

#### PREPARATION

##### Planning

Out-patients should be fully briefed on when to take the dexamethasone and to return the following morning for a blood test at 9am. Patients should be instructed not to take the dexamethasone on a Friday or Saturday night.

If the patient is collecting a 24hr urine sample for urinary free cortisol, this should be completed before taking the dexamethasone.

##### Equipment

2 x 500 microgram tablets dexamethasone

**PROCEDURE****Out-Patients**

Supply the patient with a 1 mg dose of dexamethasone (2 x 500 microgram tablets). Instruct the patient to take both tablets together, between 23:00 and midnight.

Give the patient a completed request form, for a post-Dexamethasone cortisol and instruct them to attend for a blood test the following morning between 08:30 and 09:30 at a suitably convenient laboratory location. A single sample for serum cortisol should be collected into a SST, yellow top vacutainer tube.

**In-Patients**

This test should only be performed on in-patients after discussion with a consultant endocrinologist. Give the patient 1 mg dexamethasone between 23:00 and midnight. Between 08:30 and 09:30 take a (blood) sample for cortisol into a SST, yellow top vacutainer tube.

Send blood sample with completed request form, for post-dexamethasone cortisol, to the Chemical Pathology Department.

**INTERPRETATION**

Normal suppression is indicated by a 09:00 serum cortisol concentration of less than 50 nmol/L.

Note that failure of cortisol suppression can also occur in:

1. Severe endogenous depression - these patients may have abnormal circadian rhythm.
2. Alcoholism (pseudo-Cushing's syndrome)
3. Severe stressful illness/infection - the test should not be performed in this situation.
4. Hepatic enzyme-inducing drugs - (phenytoin, phenobarbitone, rifampicin, etc). These may cause more rapid metabolism of dexamethasone, such that normal suppression of the pituitary-adrenal axis fails.
5. Pregnancy or Oestrogen therapy - induces high levels of cortisol binding globulin, such that the test is not interpretable.
6. Failure to take dexamethasone correctly - check with patient.
7. Glucocorticoid resistance syndrome - rare, familial disorder and patients are not Cushingoid.
8. Obesity
9. Renal failure

**TURNAROUND TIME**

Results will normally be available within 2 working days.

**NOTES**

1. Normal suppression makes a diagnosis of Cushing's Syndrome unlikely. The specificity of the test is 87%.
2. Failure of suppression does not confirm Cushing's Syndrome. Abnormal results with this test should be followed by further investigation under the supervision of an endocrinologist (eg. urine free cortisol, diurnal rhythm studies, low and high dose dexamethasone suppression test, ACTH measurements), see guidelines "Dexamethasone suppression tests for the second line investigation of Cushing's syndrome".
3. If there is still a high clinical index of suspicion, further tests may be necessary to exclude conditions such as cyclical Cushing's
4. Please give full drug history when asking for cortisol measurements.

### 3. References

1. LA Perry, AB Grossman (1997). The role of the laboratory in the diagnosis of Cushing's syndrome. *Ann Clin Biochem* **34**: 345-359
2. PJ Wood, JH Barth, DB Freedman, L Perry and B Sheridan (1997). Evidence for the low dose dexamethasone suppression test to screen for Cushing's syndrome recommendations for a protocol for biochemistry laboratories. *Ann Clin Biochem* **34**: 222-229
3. C Cronin et al (1990). The overnight dexamethasone test is a worthwhile screening procedure. *Clinical Endocrinology* **33**: 27-33
4. CK Connolly et al (1968). Single-dose Dexamethasone Suppression in Normal Subjects and Hospital Patients. *BMJ* **2**: 665-667

### 5. Documentation Controls

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