

## OVERNIGHT DEXAMETHASONE SUPPRESSION TEST

### INTRODUCTION

This test uses a low dose of dexamethasone (1mg) and should be used as the first line screening test for all subjects suspected of having Cushing's syndrome. In normal subjects, dexamethasone suppresses ACTH and therefore cortisol secretion. In Cushing's syndrome there is no suppression. ACTH levels are used to differentiate ACTH-dependant and non-ACTH dependant Cushing's if there is no suppression.

### CONTRAINDICATIONS AND SIDE EFFECTS

Patients on enzyme inducing drugs e.g. anticonvulsants and rifampicin, may rapidly metabolise dexamethasone and give a false positive result i.e. no suppression. Women on oestrogen therapy may fail to suppress adequately due to increased cortisol binding globulin. In these instances discontinue all oral oestrogen therapy for 6 weeks before repeating test. Suppression of cortisol by dexamethasone is blunted in pregnancy, thus, dexamethasone testing has an increased potential for false-positive results in pregnancy.

### PATIENT PREPARATION

This is an outpatient test, blood tests should be pre-booked with Pathology First.

### PROTOCOL

1. The patient takes (see box below) dexamethasone orally at 23:00 hrs.

**Dexamethasone Dosage:**

Adults:	1mg dexamethasone tablet.
Children:	15 ug/kg body weight dexamethasone.

2. The following morning at 9.00 hrs a blood sample is taken for cortisol (yellow-top SST) and ACTH (pink-top EDTA). Samples must be transported to Biochemistry immediately.  
ACTH will be referred for analysis on the basis of the cortisol response

### INTERPRETATION

**Normal response:** The 9.00 am cortisol should suppress to < 50 nmol/L.

**SENSITIVITY AND SPECIFICITY OF TEST**

Plasma cortisol normally falls after 09:00 h and false positive tests may occur if sampling is delayed.

Suppression in patients with Cushing's syndrome is rare with this test (2%) and is probably due to slow metabolism of dexamethasone. Normal subjects rarely (2%) fail to suppress. False positives may occur with depression (30-50%) and morbid obesity due to development of a reversible glucocorticoid resistance, and in patients with severe systemic illness (10-20%). Patients with simple obesity do not have an increased rate of false positive results. If there is strong clinical or biochemical evidence for Cushing's syndrome, a formal low dose (0.5mg x 6 hourly) dexamethasone test should be performed over 2 days.

Dexamethasone is primarily metabolised by the cytochrome P450 system, by hepatic CYP3A4, an enzyme complex responsible for the metabolism of many xenobiotics. Considerable increases in cytochrome P450 enzymes can be seen in regular smokers and people who drink alcohol regularly. Several drugs such as phenobarbital, primidone, ethosuximide, carbamazepine, and rifampicin induce the activity of CYP3A4, and can lead to false positive dexamethasone suppression tests.