

## hCG STIMULATION TEST - PAEDIATRIC

### INTRODUCTION

The HCG stimulation test is used to determine whether functioning testicular Leydig cells are present (i.e. capable of producing testosterone in response to LH). Indications for use are in differential diagnosis of male hypogonadism, ambiguous genitalia, micropenis or delayed puberty. Identification of testosterone biosynthesis enzyme defects is also possible with this test.

This test may be combined with an LHRH test on day one (see pro-forma).

### CONTRAINDICATIONS AND SIDE EFFECTS

Do not perform in children less than two weeks old.

### PATIENT PREPARATION

None; the child does not need to fast.

### PRECAUTIONS AND PATIENT CARE DURING TEST

No particular precautions. If LHRH test undertaken, this **must** be completed before HCG is given (see pro-forma), since HCG interferes with LH and FSH secretion.

### PROTOCOL

Please use separate pro-forma to record samples taken and timing.

If LHRH test is being undertaken then a cannula may be used (steps 1 and 2)

1. If necessary, apply Ametop cream to a suitable cannulation site and wait for at least 45 minutes before cannulation.
2. Cannulate the child and wait 30 minutes before taking baseline (time 0) samples (see pro-forma).
3. Take baseline (time 0) blood samples for Androstenedione, Di-hydrotestosterone, Testosterone, DHEA-S, LH and FSH according to pro-forma.
4. If required, complete the LHRH test according to pro-forma
5. Give HCG IM, according to dosage chart below – this is **Day 1** sample.

#### HCG (Pregnyl) Dosage (I.M.)

Infants under 6 months	500 units
Children over 6 months and under 5 years	1,000 units
Children over 5 years and under 10 years	1,500 units
Children over 10 years	2,000 units

6. **Day 2:** Give HCG IM, according to dosage chart.
7. **Day 3:** Give HCG IM, according to dosage chart.
8. **Day 4:** At 24 hours after last injection of HCG take blood for Androstenedione, Testosterone Di-hydrotestosterone and DHEA-S according to pro-forma.

### **INTERPRETATION**

A normal response is a rise in testosterone to adult levels of approximately 8 to 10 nmol/L. If testicular function is poor this response is blunted. An absent response with elevated LH/FSH levels (and an exaggerated response of LH and FSH to LHRH) indicates primary gonadal failure.

An absent testosterone response with elevation of DHEA-S and Androstenedione suggests a block in testosterone biosynthesis.

A rise in testosterone with no rise in Di-hydrotestosterone suggests 5 $\alpha$ -reductase deficiency.

### **CONTACTS**

Basildon Hospital Biochemists: ext. 3029 / 3095 / 3539

Southend Hospital Biochemist: ext. 8795

### **REFERENCES**

1. Maidstone District General Hospital Protocol
2. Royal London Hospital Protocol
3. Ogilvy-Stuart A and Midgley P. Practical Neonatal Endocrinology, Cambridge Clinical Guides 2006