

ACTH (COSYNTROPHIN) ONE-HOUR STIMULATION TEST

Administration of ACTH to normal subjects results in a rapid rise in serum cortisol. Patients with adrenal destruction (Addison's D.) show no change in serum cortisol after ACTH administration. Patients with adrenal atrophy or exogenous corticosteroid treatment or dysfunction of the pituitary or hypothalamus may show only a slight rise in cortisol.

In this test, Cortrosyn, a short-acting form of ACTH is administered by injection. A 250 ug dose is standard. A baseline cortisol level is obtained followed by an additional cortisol drawn at either 60 and optionally at 30 minutes based on physician's orders. Literature protocols specify both 30- and 60-min cortisols although standard practice here is frequently to order only one post-ACTH cortisol at 60-min. Both testing protocols are available with 2 or 3 cortisol blood draws. If physician does not specify, then order the version one with only two blood draws.

PROCEDURE

Order "ACTH STIMULATION TEST, 60-MIN CORTISOL". This will request **two** blood draws for a baseline cortisol and a single Cortisol at 60 minutes, OR:

Order ACTH STIMULATION TEST, 30- & 60-MIN CORTISOL. This will request **three** blood draws for a baseline cortisol and post-ACTH cortisols at 30- and 60-minutes. Physician must specify which version to use.

Lab will draw a basal blood specimen (10 mL red) for cortisol in the 8-10 a.m. time frame. (Fasting is not required). Minimum volume: 0.5 mL serum.

In the next half-hour, administer 250 ug Cosyntrophin intravenously or intramuscularly. Record time of administration. This is zero time.

Obtain blood for serum cortisol at 60 minute (and additionally at 30 min depending on the order) after injection.

INTERPRETATION

A normal response is a peak serum cortisol of ≥ 20 ug/dL at 30 or 60 minute. The peak value is more important than the incremental change. The incremental change may not be seen in patients who are tested at times of stress.

NOTES:

An alternative Low Dose (1 ug) ACTH Stimulation Test is also employed by some members of the Endocrinology Dept. This requires saline dilution of a 250 ug dose as a 1 ug dosage form is not yet commercially available. Some argue that this dosing level is more physiologic and provides a better indication of adrenal reserve. For this protocol, a 30-min specimen is typically obtained following injection. A normal response is any cortisol ≥ 18 ug/dL.

SOURCE:

Orth, DN and Kovacs, WJ, "The Adrenal Cortex" in Wilson, JD, et. al., Williams Textbook of Endocrinology, 9th ed., 1998, Saunders, Philadelphia, p. 618.