

Adrenocorticotrophic hormone (ACTH)	
Description	ACTH is a peptide hormone synthesised by the anterior pituitary that regulates cortisol synthesis.
Indication	Adrenal insufficiency, Cushing's syndrome, Nelson's syndrome, congenital adrenal hyperplasia.
Additional Info	<p>Secretion is pulsatile and shows diurnal variation (lowest at midnight, highest early in the morning).</p> <p>Decreased by cortisol (if on steroidal medication, this must be stated), tubes containing heparin.</p> <p>Increased by stress, hypoglycaemia, pregnancy, menstruation and medications (e.g. aminoglutethimide, amphetamine, levodopa, metoclopramide, metyrapone, progestins, vasopressin, and insulin).</p>
Concurrent Tests	Cortisol as part of the dexamethasone suppression test and in the evaluation of adrenal insufficiency.
Dietary Requirements	None.
Interpretation	<p><u>Adrenal insufficiency</u></p> <ul style="list-style-type: none"> • <i>Primary adrenal insufficiency</i> (Addison's disease): low cortisol, raised ACTH (due to lack of negative feedback by cortisol). • <i>Secondary adrenal insufficiency</i>: low cortisol, low ACTH (due to pituitary dysfunction or hypopituitarism). <p><u>Cushing's syndrome</u></p> <ul style="list-style-type: none"> • <i>ACTH-dependent disease</i>: raised ACTH, raised cortisol <p><u>Pituitary-dependent</u> (Cushing's disease): ACTH raised but usually < 50 pmol/L</p> <p><u>Ectopic ACTH-producing tumours</u>: ACTH > 50 pmol/L</p> <p>To distinguish between Cushing's disease and ectopic ACTH-producing tumours, a High Dose Dexamethasone Suppression Test (HDDST) may be helpful. In pituitary dependent Cushing's, cortisol is typically suppressed >50% whereas in ectopic ACTH-dependent Cushing's there is typically no suppression of cortisol.</p>

	<ul style="list-style-type: none"> • <i>Non ACTH-dependent disease: low ACTH, raised cortisol</i> <p>Causes include adrenal hyperplasia, adrenal adenoma, adrenal carcinoma and glucocorticoid administration/iatrogenic. ACTH and cortisol are not usually suppressed following dexamethasone suppression test.</p> <p><u>Nelson's syndrome</u> Hyperpigmentation due to raised ACTH.</p> <p><u>Congenital adrenal hyperplasia (CAH)</u> Low cortisol, raised ACTH, raised androgens (17-hydroxyprogesterone, androstenedione and testosterone).</p>
Sample requirements	Early morning (9 am) K-EDTA sample collected on ice and transported to laboratory immediately.
Frequency of testing	N/A