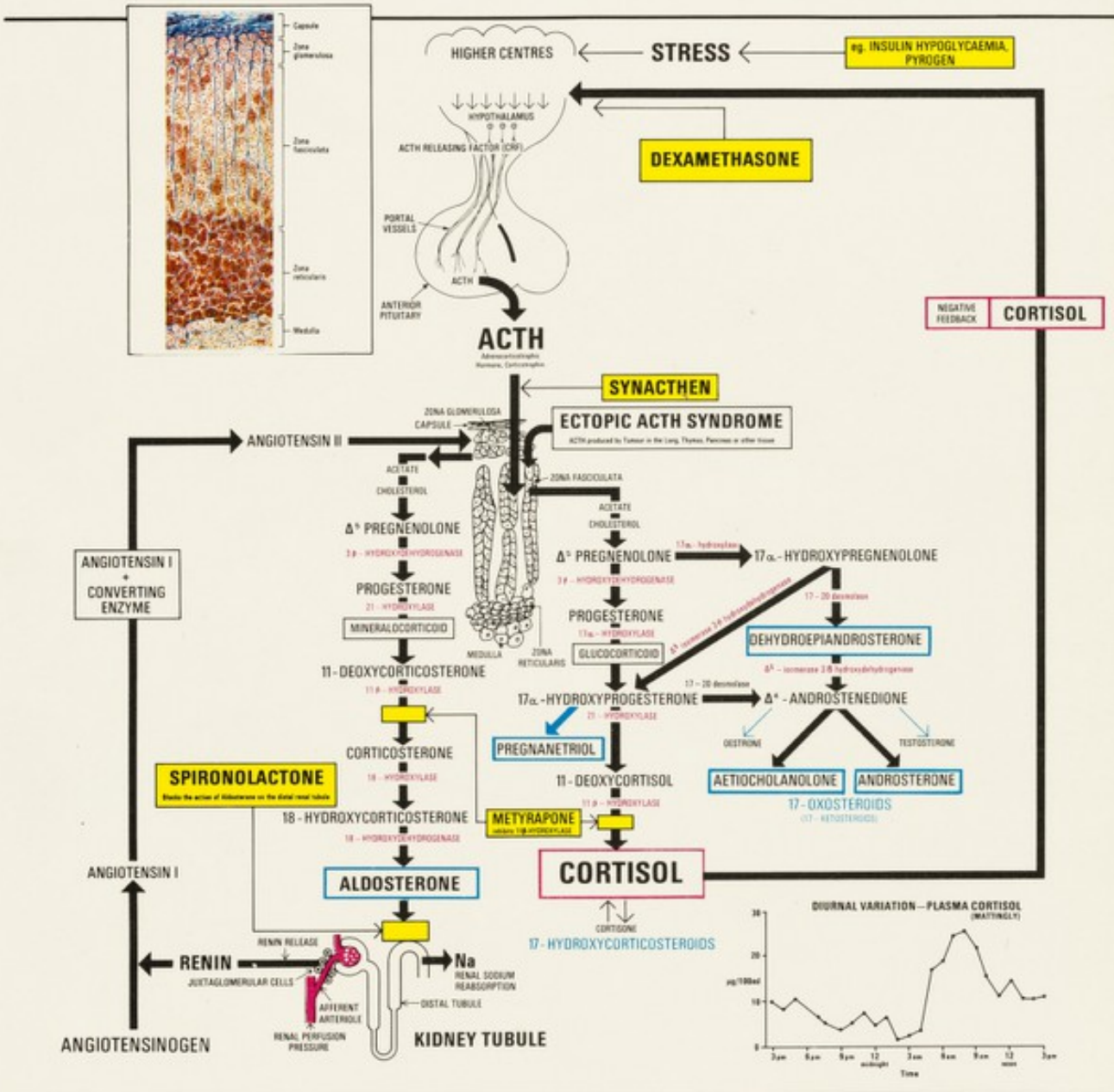
Hormones of the adrenal cortex / Searle Diagnostic Hormone Assay Laboratory.

SEARLE DIAGNOSTIC HORMONE ASSAY LABORATORY · LANE END ROAD · HIGH WYCOMBE · BUCKS

Hormones of the adrenal cortex



PATHOLOGICAL CONDITIONS

Adrenocortical Hypofunction

Addison's Disease (Primary Adrenocortical Insufficiency)
This condition may be due to the destruction of the adrenal cortex by disease (e.g., tuberculosis) or to destructive atrophy which, in most cases, is thought to occur as a result of the production of auto-antibodies to adrenal tissue. There will be a deficiency of both mineralocorticoids and glucocorticoids as both the Zona glomerulosa and Zona fasciculata are destroyed as is the remainder of the cortex.
In the early stages of Addison's Disease the resting steroid levels may be within the normal range. Synacthen stimulation tests may be used to test the functional reserve of the adrenals.

Secondary Adrenocortical Insufficiency
Any condition in which there is reduced secretion of ACTH (e.g., Panhypopituitarism) will give rise to adrenocortical insufficiency. Corticosteroid output will be reduced but there will be no significant change in aldosterone secretion as this hormone is controlled primarily by the renin–angiotensin system.

Adrenocortical Hyperfunction

Cushing's Syndrome (Syndrome of Excess Cortisol)
Some of the original cases described by Dr. Harvey Cushing had pituitary basophilic adenomas and adrenal hyperplasia. This type of clinical situation in which there is hyper-secretion of ACTH and adrenal hyperplasia is known as Cushing's disease to distinguish it from the other syndromes of cortisol excess.
Cushing's Syndrome may be sub-divided into ACTH dependent and ACTH independent conditions. In the former, cortisol excess is due to pituitary or ectopic ACTH stimulating the adrenal cortex. The ACTH independent conditions are the result of adrenal cortical hyperplasia or tumours of the adrenal cortex. An excessive secretion of aldosterone has only rarely been reported in Cushing's Syndrome.

Adrenogenital Syndrome (Adrenal virilism)
Changes in sex characteristics occur due to the excessive secretion of androgen (or oestrogen) by the adrenal cortex. They may be caused by adrenal tumours or specific enzyme defects.

Conn's Syndrome (Primary Aldosteronism)
Usually due to aldosterone-secreting tumours of the adrenal cortex. A smaller number of cases are due to adrenocortical hyperplasia.

FUNCTION TESTS | PLASMA STEROIDS | URINARY STEROIDS

NORMAL ADULT VALUES

The normal range for these Hormones has been established in our laboratories from a population of healthy volunteers

Plasma Steroids

Cortisol	**Aldosterone**
Morning 5–25 μg/100 ml	Night time resting 2–20 ng/100 ml
Midnight less than 9 μg/100 ml	Day time ambulatory 10–30 ng/100 ml
See graph of Diurnal Variation	Levels may increase in pregnancy

Urinary Steroids

	Male (mg/24 hrs)	Female (mg/24 hrs)
17-Hydroxycorticosteroids	5–23	4–17
	Range depends on age	
11-Oxy-17-Hydroxycorticosteroids	The 11-Oxy fraction is normally 70–80% of the total 17-Hydroxycorticosteroid value	
17-Oxosteroids	5–25	4–20
Fractionated Oxosteroids	Range depends on age	
Androsterone	0.5–3.1	0.5–2.0
Aetiocholanolone	0.5–3.6	0.5–1.1
Dehydroepiandrosterone	0.1–2.0	0.2–0.5
Pregnanetriol	1.0–2.0	0.5–2.5
		Cyclic fluctuation
Aldosterone	5–20 μg/24 hrs. Levels may increase in pregnancy	