Normal Hormone Levels: Thyroid, Pituitary

Typical reference ranges · they vary by laboratory: reason through the axis

TSH

TSH 0.4-4.0 µU/mL

rises in primary hypothyroidism, falls in hyperthyroidism

T4

Free T4 0.8-1.9 ng/dL

the most stable, ideal for screening

T3

Free T3 2.1-4.7 pg/mL

rises in hyperthyroidism

ACTH

ACTH 10-60 pg/mL

rises in primary adrenal insufficiency (Addison)

GH

GH: pulsatile · IGF-1 160-585 ng/mL

a single GH value is not useful: after an oral glucose load it should fall below 1 ng/mL · IGF-1 is the screen

PRL

Prolactin 3-24 ng/mL

rises in pregnancy and with drugs (antipsychotics, metoclopramide)

High TSH + low T4
Primary hypothyroidism

Low TSH + high T4
Primary hyperthyroidism

Low TSH + low T4
Suspect a central (pituitary) cause

Reference ranges vary by laboratory, and IGF-1 by age: each laboratory reports its own range