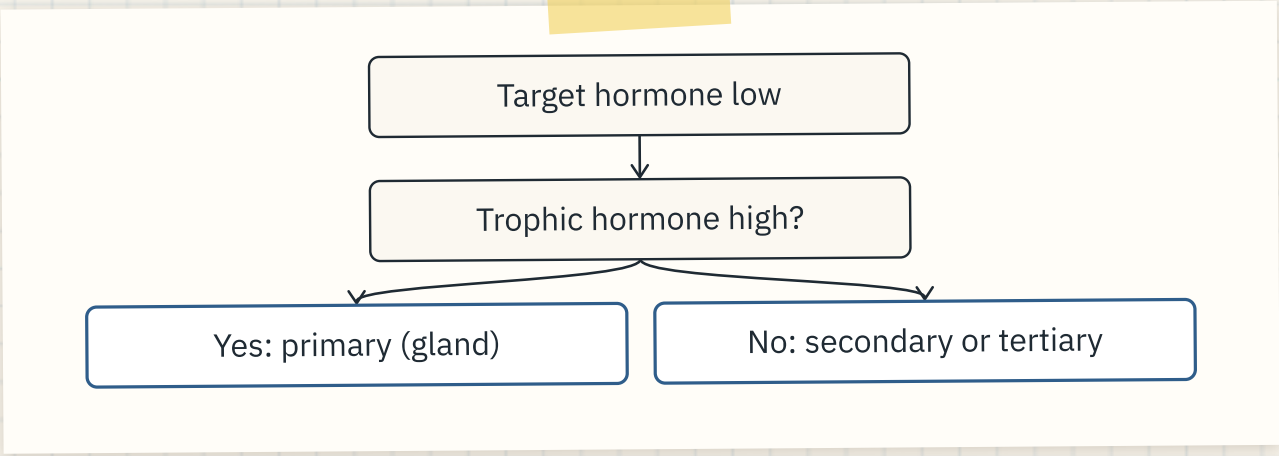
Hypothalamic-pituitary axes

Predict hormone levels by level of the fault



Step by step

1. Chain: releasing, trophic, target hormone
2. Pairs: TRH-TSH, CRH-ACTH, GnRH-LH/FSH
3. Final hormone feeds back to lower the levels above
4. Name the fault: gland, pituitary, hypothalamus
5. Ask: is the trophic hormone appropriate?

Fault	Target	Trophic
Primary (gland)	Low	High
Secondary (pituitary)	Low	Low or inappropriately normal
Tertiary (hypothalamus)	Low	Usually low or inappropriately normal
Thyroid excess	High	Low
TSH-secreting tumour	High	Not suppressed

Deficiency and excess patterns

Rule of thumb

Primary: opposite directions

Secondary and tertiary: same direction

Stalk cut: prolactin rises (dopamine lost)

Exam traps

- Low target hormone with a low trophic hormone points above the gland.
- Some sources use primary for the pituitary; this lesson uses gland, pituitary, hypothalamus.
- Prolactin rises, usually only mildly, when the stalk is cut.

Hypothalamic-pituitary axes and feedback: primary, secondary, tertiary

Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/endocrinology/hypothalamic-pituitary-axes-and-feedback

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