Adult Growth Hormone Deficiency

Who to test, diagnosis, treatment benefits, risks, and dosing/monitoring for adults with GH deficiency.

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Adult GHD Clinical Practice Guideline
Molitch et al. · JCEM 2011;96:1587-1609

GRADE — 1 · Strong For | 2 · Suggest For | 2- · Suggest Against | 3 · Strong Against

1 Definition & Who to Test

1	**Retest** childhood-onset GHD candidates for GH therapy after adult height is achieved — unless known mutations, embryopathic lesions with multiple hormone deficits, or irreversible structural lesions.
1	Evaluate for **acquired GHD** in adults with structural hypothalamic/pituitary disease, prior surgery or irradiation in these areas, head trauma, or other pituitary hormone deficiencies.
2	**Idiopathic adult GHD is rare** — require two stimulation tests (a single test has a significant false-positive rate); a low IGF-1 increases diagnostic confidence.

2 Diagnosis

1	**ITT or GHRH-arginine test** for diagnosis; GHRH-arginine may be misleading with recent (≤10y) hypothalamic radiation. **Glucagon stimulation** is an alternative when GHRH is unavailable or ITT is contraindicated.
1	In children with **structural/genetic** causes of multiple hormone deficiencies, a low IGF-1 ≥1 month off GH therapy is **sufficient** — no further provocative testing needed.
1	A **normal IGF-1 does not exclude GHD** — provocative testing is still mandatory. A low IGF-1 (without confounders like poorly controlled diabetes, liver disease, oral estrogen) is strong evidence for GHD. **≥3 pituitary axis deficiencies** strongly suggest GHD — provocative testing is optional.

3 Benefits of Treatment

1	GH therapy offers significant benefit in **body composition and exercise capacity**; **continue after adult height** is reached, through the transition period, for skeletal/muscle maturation.
2	Benefits also seen in **skeletal integrity**, cardiovascular surrogate markers (endothelial function, lipids, carotid IMT) — though insulin resistance tends to increase — and **quality of life** in most patients.
2	Although mortality is increased in hypopituitarism, GH therapy has **not been shown to improve mortality**.

4 Side Effects & Risks

1	**Contraindicated** with active malignancy. May require **antidiabetic medication adjustment** in patients with diabetes. Monitor **thyroid and adrenal function** during therapy.

5 Treatment Regimens

1	**Individualize dosing** (not weight-based) — start low and titrate to clinical response, side effects, and IGF-1; account for **gender, estrogen status, and age**.
2	Monitor every **1–2 months during titration**, then **semiannually** — clinical assessment, adverse effects, IGF-1, and other response parameters.

Remember — GHD diagnosis rests on provocative testing (ITT or GHRH-arginine), not IGF-1 alone — except when ≥3 pituitary axes are deficient or a structural/genetic cause is already established. Dose to response and IGF-1, not by weight.

Molitch ME, Clemmons DR, Malozowski S, et al. Evaluation and Treatment of Adult Growth Hormone Deficiency: An Endocrine Society Clinical Practice Guideline. *J Clin Endocrinol Metab.* 2011;96(6):1587-1609.