Vol 04, Issue 04, 14 July 2026
The Bulletin from the Clinical Pharmacist

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Tetracosactide

Drug class: Synthetic ACTH analogue; Diagnostic endocrine agent

Mechanism of action: It is a synthetic ACTH analogue that binds to melanocortin-2 receptors on the adrenal cortex, activates adenylate cyclase and cAMP signaling, and stimulates steroidogenesis, causing cortisol secretion from the zona fasciculata and adrenal androgen production from the zona reticularis.

Indication

- Suspected primary or secondary adrenal insufficiency.
- Used when adrenal function needs stimulated cortisol assessment.

Standard dose

- Adults: 250 micrograms IV bolus; IM only if IV access is not possible.
- Neonates: 15 micrograms/kg.
- <6 months: 62.5 micrograms
- 6 months–2 years: 125 micrograms
- 2–18 years: 250 micrograms

Administration:

- Test is usually done in the morning, ideally around 08:00–10:00 or 09:00 depending on protocol.
- Baseline cortisol sample is taken first, then tetracosactide is given, then repeat cortisol at 30 minutes; some protocols also collect a 60-minute sample.
- IV dose may be given undiluted or diluted with 2–5 mL sodium chloride 0.9%, followed by flush
- The test should be done where resuscitation facilities are available.

Preparation before test

- Recent glucocorticoid use must be checked, because it can suppress or distort results.
- Some protocols advise stopping hydrocortisone or prednisolone before the test, with timing depending on the steroid used.
- Label samples clearly with exact collection times.

Dose adjustment

- No dose adjustment is documented for renal or hepatic impairment.
- In children and neonates, dose is adjusted by weight, age and local endocrine protocol.

Adverse effects

- Hypersensitivity reactions, including anaphylaxis.
- Skin reactions, flushing, dyspnoea, pruritus, urticaria, dizziness, nausea, vomiting.

Special populations

Neonates and infants: use age/weight-based doses and avoid benzyl alcohol-containing products.

Children: follow paediatric endocrine protocol.

Pregnancy and breastfeeding: avoid unless clearly needed; specialist advice is recommended. There are concerns that it may increase the risk of miscarriage or fetal malformations.

Critical illness, oral contraceptives, liver disease, nephrotic syndrome, post-op state: cortisol interpretation may be misleading.

Long-term therapeutic use: monitor growth, blood pressure, glucose, electrolytes, mood, and eye complications.

Contraindications

Hypersensitivity to tetracosactide or ACTH, Asthma or other allergic conditions, especially if there is history of ACTH reaction, Acute psychosis, Infectious disease unless treated with antibiotics when applicable, Peptic ulcer, Refractory heart failure, Cushing’s syndrome, Primary adrenocortical insufficiency, Adrenogenital syndrome