

One-Page Clinician Packet — Case Summary

Patient: Chad T. Mansfield • **Date:** {{fill-in}}

Supervising Teams: VA Endocrinology & MICU (72-h fast) • **Consult:** Dr. Kevin Niswender; Dr. Pruett

Executive Summary

During a supervised 72-hour fast, glucose remained elevated ($\approx 120\text{--}140$ mg/dL) with suppressed ketogenesis ($\beta\text{-HB} < 0.2$ mmol/L) until quetiapine was given near the end, after which ketosis began. Pattern suggests **hepatic-selective insulin resistance with sympathetic/HPA dominance** and **impaired mitochondrial substrate switching**. Historical response to **tirzepatide** normalized fasting glucose and improved function; metformin did not.

Key Objective Data

- **Most recent (11/12/2025):** Glucose 131 mg/dL; Insulin 10.5 $\mu\text{U/mL}$; C-peptide 2.0 ng/mL; $\beta\text{-HB} < 0.2$ mmol/L
- **Adrenal:** Cortisol (AM) 11 $\mu\text{g/dL}$; **DHEA-S 42 $\mu\text{g/dL}$ (low)**
- **Liver:** ALT 46 / AST 32 U/L (mild stress)
- **Lipids:** LDL 106, HDL 48, TG 112 mg/dL
- **Heme:** Platelets 143 K/ μL (borderline low)
- **Thyroid:** Euthyroid; rT3 mildly elevated (stress-adaptive)

Figures & Tables (repo)

- Timeline (72-h fast with quetiapine \rightarrow ketosis): figures/timeline_fast_case.png
- Three-lane timeline: figures/three_lane_timeline.png
- Latest labs CSV: data/labs_2025-11-12.csv
- Trends (to be populated from Nightscout/Apple Health/Pillow): data/plots/

Differential (ranked)

- 1) Hepatic-selective insulin resistance with HPA/sympathetic dominance
- 2) Mitochondrial substrate-switching defect (functional/acquired > primary)
- 3) Autonomic/MCAS interplay affecting catechol-/estrogen clearance
- 4) Adrenal partial insufficiency vs rigidity (less likely)
- 5) Insulinoma (unlikely)

Proposed Confirmatory Workup

- **Counter-regulation:** glucagon, FFA, lactate/pyruvate, total/free carnitine + acylcarnitines

- **Switching:** 6-h mini-fast β -HB trajectory; CGM overlays
- **Endocrine context:** AM cortisol + DHEA-S trend; ACTH; IGF-1 (\pm IGFBP-3)
- **Autonomic:** active stand test, HRV diary (5–6 AM symptom window)

Therapeutic Considerations

- **Reinitiate tirzepatide** (2.5 mg \rightarrow 5 mg; MD-directed): dual GLP-1/GIP improves hepatic insulin signaling, suppresses glucagon, aids metabolic flexibility.
- **TRT hygiene:** micro-dose EOD; stable AI; maintain hCG; reassess DHEA-S after E2 stable.
- **Non-pharm:** circadian anchors; graded Zone-2; protein-first refeeds; MCAS-aware diet.

Learning Points

- Fasting hyperglycemia with suppressed ketogenesis can be **central/ANS-amplified hepatic IR**.
- **Quetiapine-linked ketosis onset** is a useful physiologic probe of sympathetic gating.
- Dual incretin therapy may restore **metabolic flexibility** where metformin/lifestyle fail.

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