

# HYPOGLYCEMIC METABOLIC ENCEPHALOPATHY: HYPOGYLCEMIA CONFUSES ME

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## Introduction

Hypoglycemia in patients with Diabetes Mellitus is defined as a blood glucose level less than 70 mg/dL. Hypoglycemia can present with altered mental status: obtundation, stupor, coma, as well as palpitations, diaphoresis, and seizure. In patients with Diabetes Mellitus type II hypoglycemia is most often seen in patients who take insulin or sulfonylurea.

## Case Report

A 59 y/o female with a past medical history of Insulin-dependent Diabetes Mellitus type II presented to the ED in an unresponsive state and was incontinent of bowel and bladder. She was found to have a blood glucose of 27. She had an unknown duration of unresponsiveness and her last known well time was two days prior.

It was presumed the patient was in a hypoglycemic coma as she had no known history of seizure/drug use. The patient was initially given one dose of glucagon and two doses of naloxone en route to the ED. While in the ED the patient was intubated and received another dose of naloxone and IV dextrose. CT head, EEG, and blood culture were ordered. The patient was admitted to the ICU and an MRI/MRA brain was ordered. In the ICU the patient was placed on Vancomycin, Zosyn, and Keppra. No obvious source of infection was found.

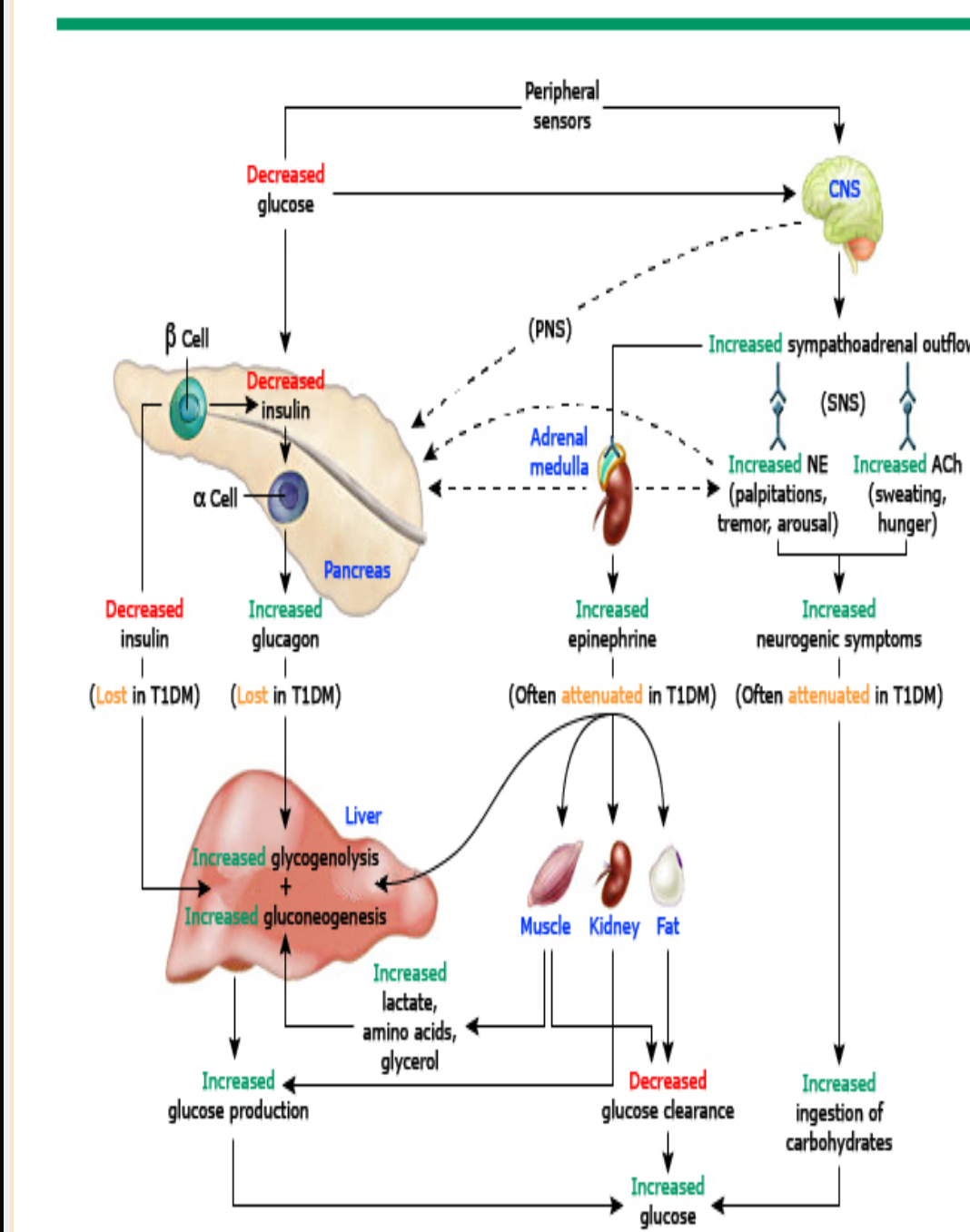
Neurology was consulted. CT head and MRI/MRA brain were unremarkable. The EEG showed focal patterns of seizure activity. The blood cultures grew gram positive cocci in one bottle which was likely contaminate. The patient had profound hypoglycemia of unknown duration which ultimately resulted in death.

## Hypoglycemia Presentation

**Table 1 Symptoms of Hypoglycemia**

Neurogenic	Neuroglycopenic
Sweating	Behavioral changes
Warmth	Visual changes
Anxiety	Confusion/difficulty speaking
Tremor	Dizziness/lightheadedness
Nausea	Lethargy
Palpitations	Seizure
Tachycardia	Loss of consciousness
Hunger	Coma

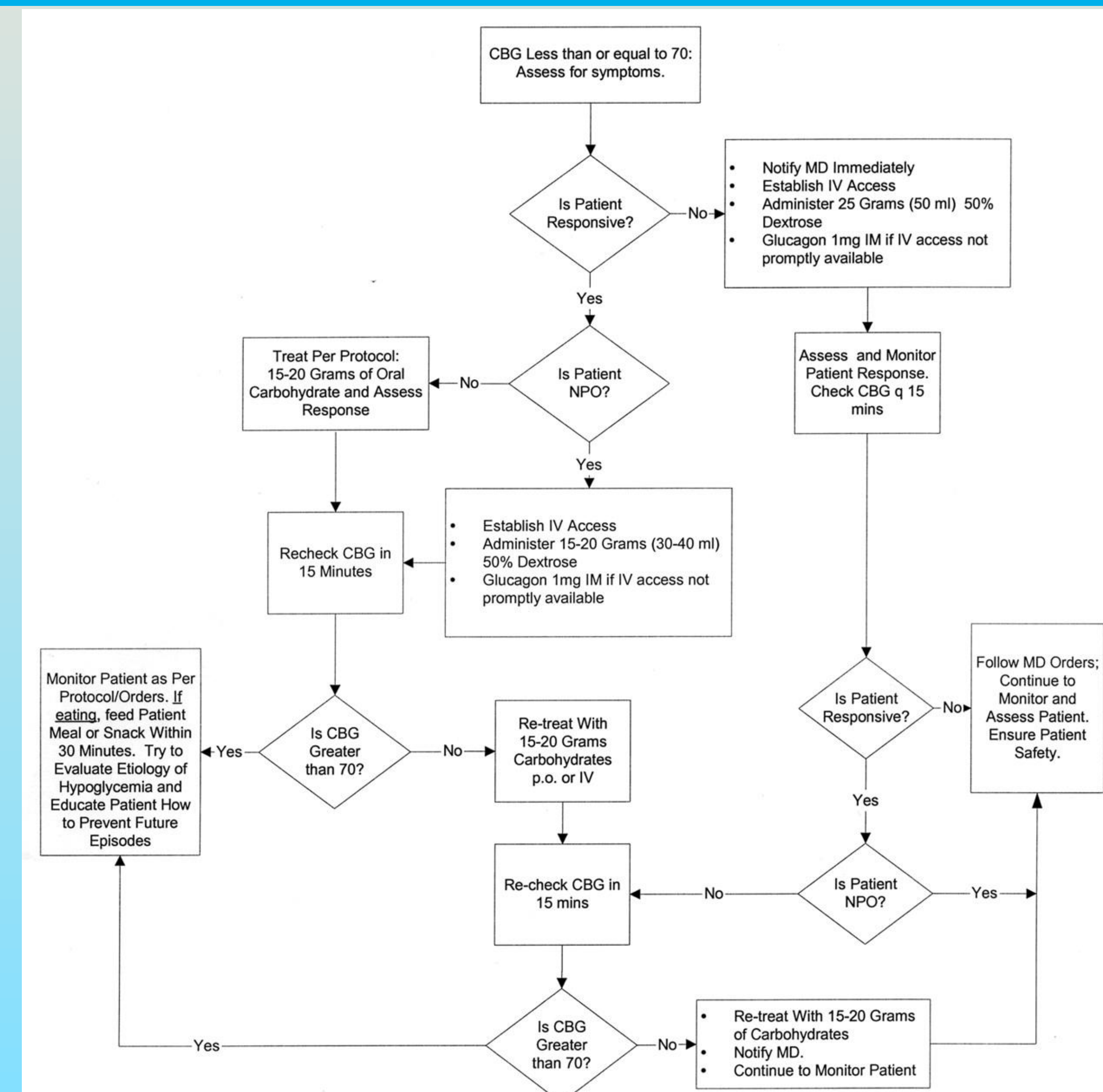
Physiological and behavioral defenses against hypoglycemia



Stages of Hypoglycemia

Clinical	EEG	Blood glucose (mM)
Normal	Normal	>3.5
Anxiety (adrenergic discharge)	↑ amplitude, ↓ frequency (θ, δ waves)	2-3.5
Stupor	δ waves	1-2
Coma, cushing response (↑BP)	Flat	<1.36

## Current Recommendations



## Discussion

- Hypoglycemia carries an overall mortality rate of 11% with possible recovery after sustained coma. However, morbidity and mortality is strongly correlated to underlying medical conditions and duration/severity of hypoglycemia.
- Diabetes Mellitus, alcoholism, and sepsis account for the majority of these predisposing factors.
- The severity of hypoglycemia is strongly correlated to level of altered mental status.
- Profound hypoglycemia may lead to seizure activity, as seen in this case.
- A thorough list of differential diagnoses should be considered when treating a patient with altered mental status.

## Conclusion

- In a case of profound hypoglycemia it is imperative to immediately start resuscitative efforts to increase blood glucose and correct metabolic derangements. Prognosis is strongly dependent on duration of hypoglycemia.

## References

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- Cryer PE. Mechanisms of sympathoadrenal failure and hypoglycemia in diabetes. J Clin Invest 2006; 116:1470. Copyright ©2006 American Society for Clinical Investigation. (picture obtained)
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