Scenario #2

Trapped Between Sleep and Seizure – The GABAergic Mystery

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Background Knowledge

- **GABA is the main inhibitory neurotransmitter in the CNS.**
- **GABA-A receptors are ionotropic: when activated by agonists, they allow chloride influx → neuronal hyperpolarization → sedation, anxiolysis, anticonvulsant effects.**
- **GABA-B receptors are metabotropic: activation also reduces excitability via K^+ efflux and Ca^{2+} channel inhibition.**
- **Agonists / potentiators (e.g., benzodiazepines, barbiturates, alcohol) enhance inhibition, leading to CNS depression.**
- **Antagonists / blockers (e.g., bicuculline, flumazenil at the benzodiazepine site) reduce inhibition, which may trigger anxiety, agitation, or seizures.**

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Clinical Scenario

A patient arrives at the ER with altered consciousness.
You suspect involvement of the GABAergic system.
Based on the clinical signs, decide whether the patient has taken a GABA agonist or an antagonist:

Case 1: Very drowsy, slow breathing, no smell of alcohol.

👉 Interpretation: GABA agonist (likely benzodiazepine or barbiturate overdose → CNS depression).

Case 2: Agitated, seizing, wearing an epileptic patient wristband.

👉 Interpretation: GABA antagonist (block of inhibition → seizures; possible medication error or withdrawal from GABAergic drugs).