

Delirium and Metabolic Encephalopathy

Delirium is a sudden confused state that flickers on and off. Hunt down every fixable cause—medicines (especially sleeping pills, strong pain pills, or allergy drugs), infection anywhere in the body, dehydration, unbalanced salts, or low oxygen—because fixing the cause usually brings the person back.

THE ONE-LINE TRUTH

The brain suddenly stops thinking clearly and the confusion comes and goes within hours, almost always because something fixable—medicine, infection, dehydration, or broken chemistry—is attacking the brain right now.

The chain — how it unfolds

1. Something suddenly hits the brain's fuel or chemistry—bad medicine, infection, dehydration, unbalanced salts, low oxygen, or no sleep. — why: The brain depends on a steady, second-by-second flow of oxygen, sugar, balanced salts, and the right chemical signals to work. When any of these suddenly break, brain cells cannot do their job, and confusion starts fast—within hours or days, not slowly over months like dementia.
2. The brain starts to misfire and cannot keep attention steady. — why: Attention is the brain's gatekeeper—it lets you focus on what matters and ignore what doesn't. The reticular activating system (a network deep in the brainstem that keeps you awake and alert) and the prefrontal cortex (the front of the brain that pumps the brakes on distractions and organizes thinking) both depend on steady fuel and balanced neurotransmitters. When the brain's fuel or chemistry is off, this gatekeeper breaks down first, so the person cannot focus on a conversation, follow instructions, or even track where they are.
3. The person's awareness of time, place, and people starts to slip and change hour by hour. — why: Normally, your brain uses steady signals from the hippocampus (the memory center that keeps track of recent events) and the parietal cortex (the part that maps where you are in space) to keep you oriented—knowing it's morning, you're in a hospital, and this person is your daughter. When the brain misfires, these signals flicker on and off, so the person may know where they are one hour and be completely lost the next.

4. Thinking gets tangled—the person may see things that aren't there, say strange things, or believe things that don't make sense. — why: When the brain cannot organize information properly, thoughts get scrambled together. The occipital cortex (the back of the brain that processes what you see) and the temporal cortex (the side that processes what you hear) may misinterpret normal sights and sounds. The person may see a curtain and think it's a person, hear the IV pump beeping and think someone is shouting, or believe they are at home when they are really in the hospital.
5. The person may become very restless and agitated, or very sleepy and hard to wake up—or swing between both. — why: Delirium does not look the same in everyone. Some people's brains misfire into a hyperactive, revved-up state—driven by too much dopamine (a messenger that speeds up thinking and movement) or too little GABA (the brain's main calming signal)—so they become restless, pull at tubes, and try to get out of bed. Others slip into a hypoactive, shut-down state—driven by too little acetylcholine (the messenger that keeps you focused and awake) or too much sedating medicine—so they become very sleepy, barely talk, and are hard to rouse. Many people swing between both states within the same day.
6. Danger zones hit: the person may choke on food, fall, pull out important tubes or lines, or the team may miss the real fixable cause. — why: A confused person cannot protect their own airway well, so food or saliva can go into the lungs and cause pneumonia. They may try to get out of bed without help and fall. They may pull out IV lines, breathing tubes, or bladder catheters. And if the team assumes this is 'just confusion' instead of hunting for the cause—like a brewing infection or a bad medicine—the real problem keeps getting worse.
7. If the cause is found and fixed fast—stop the bad medicine, treat the infection, give fluids, balance the salts, restore sleep and daylight—the brain usually heals and the person comes back. — why: Delirium is usually reversible because the brain is not permanently damaged yet—it is just misfiring. Once you remove the thing that is hurting the brain and give it the fuel and rest it needs, the confusion lifts, though full recovery can take days to weeks, especially in older adults.
8. If the cause is missed or the delirium lasts too long, some people are left with lasting memory loss, slower thinking, or a higher risk of dementia later. — why: The longer the brain stays in a misfiring state, the more damage can build up. Delirium is a major stressor for brain cells, and some people—especially older adults—do not fully bounce back, leaving them with permanent cognitive changes or a faster slide into dementia down the road.

Spot it — what you see, and why

- Sudden confusion that comes and goes during the day: The brain's normal signaling is disrupted by toxins, inflammation, low oxygen, or shifts in blood chemistry, so the person cannot think clearly and their awareness fades in and out (fluctuates) over hours.

- Trouble paying attention or staying focused: The reticular activating system (the brain's wake-up and focus network) and the prefrontal cortex (the front part of the brain that holds attention) cannot sort important information from noise when they are inflamed or starved of fuel, so the person gets easily distracted or cannot follow a conversation.
- Disorganized, jumbled thinking or speech: The networks that connect thoughts together are firing incorrectly because neurotransmitters (chemical messengers in the brain, especially acetylcholine) are out of balance, so ideas come out mixed up or make no sense.
- Either very restless and agitated (hyperactive) or very sleepy and slow to respond (hypoactive): The brain's arousal centers swing too high or too low depending on which chemical pathways are disturbed—too much dopamine (a messenger that drives movement and alertness) or norepinephrine (a stress signal) causes agitation, while too little acetylcholine (a messenger that keeps thinking sharp) or too many sedating toxins cause sleepiness.
- Seeing or hearing things that are not there (hallucinations): The brain's sensory-processing areas in the occipital lobe (vision center) and temporal lobe (hearing center) misfire and create false signals when they are inflamed or toxic, so the person sees shapes, shadows, or hears voices that do not exist.
- Not knowing where they are, what time it is, or who people are (disorientation): The hippocampus (the brain's memory recorder) and temporal lobes (regions that anchor context and recognition) are especially sensitive to low oxygen, low glucose, and inflammation, so the person loses their mental map of place and time.

Red flags — act now

- Sudden drop in consciousness—person barely wakes or does not respond at all
- New seizure or repetitive jerking movements
- Fever with stiff neck or severe headache (signs of meningitis or encephalitis)
- Very high or very low blood sugar (under 54 mg/dL or over 400 mg/dL)
- New weakness on one side of the body, slurred speech, or drooping face (possible stroke)

Treat it — in this order

1. Identify and fix the root cause: give antibiotics (after drawing blood and urine cultures) for infection; infuse IV fluids with sodium or potassium to correct electrolyte imbalances; bring blood sugar into the 70–180 mg/dL range with insulin (if high) or glucose tablets or IV dextrose (if low); give supplemental oxygen by nasal cannula or mask to keep saturation above 92%; stop or reduce the offending medicine. → Delirium is the brain's distress signal that the body's chemistry is broken. When you kill the bacteria with antibiotics, replace the missing sodium, normalize the blood sugar, or flood the blood with oxygen, you restore the fuel and clean signals the brain needs to work. Confusion lifts over one to three days because you removed the poison or restored the missing ingredient — you fixed the upstream problem, not just the symptom.
2. Reorient the person constantly and gently: introduce yourself every time you enter the room; tell them where they are, what day it is, and why they are in the hospital; keep a large clock and calendar on the wall in clear view; let family members stay at the bedside as much as possible; open the curtains during the day so they see sunlight; turn off the lights and close curtains at night; reduce loud alarms, beeping monitors, and overhead pages. → A confused brain is lost and terrified. Giving it anchors — a familiar face, daylight and darkness to mark time, your calm voice repeating simple facts — helps it stay tethered to reality instead of spiraling into hallucinations and panic. Environmental reorientation speeds recovery and prevents worsening agitation. Studies show it cuts delirium duration by one to two days.
3. Keep the person hydrated (encourage sips of water every hour or give IV normal saline if they cannot drink), fed (offer small bites of food even if they only eat a little), moving (help them sit up in a chair and walk in the hallway three times a day if safe), and able to sense the world (give them their eyeglasses, hearing aids, and dentures if they use them). → Dehydration shrinks brain volume and thickens blood. Hunger deprives the brain of glucose. Lying flat and still all day causes blood clots, muscle wasting, and deeper confusion. Not being able to see or hear isolates the brain and makes it invent false signals (hallucinations). Restoring these basics — water, food, movement, and sensory input — gives the brain the best environment to recover while you fix the upstream cause.

4. Stop or reduce anticholinergic medicines (diphenhydramine, hydroxyzine, oxybutynin, tolterodine, first-generation antihistamines), benzodiazepines (lorazepam, diazepam, alprazolam — unless treating alcohol or sedative withdrawal), and opioids (or switch to the smallest dose that controls pain, and choose opioids with fewer active brain metabolites like oxycodone or hydromorphone instead of morphine or meperidine). → Anticholinergics block acetylcholine, the brain messenger that keeps you alert and able to pay attention — jamming this signal causes confusion within hours. Benzodiazepines and opioids slow all brain activity and cloud thinking. Stopping these drugs clears the chemical fog and lets the brain's normal wiring function again, often within 24 to 72 hours. The Beers Criteria (American Geriatrics Society) specifically warns against these drugs in older adults because they are leading delirium triggers.
5. Use a low dose of an antipsychotic — haloperidol 0.5 to 1 mg by mouth, IV, or IM, or olanzapine 2.5 to 5 mg by mouth, or quetiapine 12.5 to 25 mg by mouth — ONLY if the person is in immediate danger to themselves or others (hitting staff, climbing out of bed and risking a fall, pulling out IV lines, breathing tubes, or catheters) AND only after you have tried every non-drug calming strategy first (reorientation, family presence, reducing noise and light). → These antipsychotic medicines block dopamine receptors in the brain circuits (especially in the mesolimbic and mesocortical pathways) that are firing wildly during hyperactive delirium, causing agitation and hallucinations. Calming those signals makes the person safe enough that you can deliver the real treatment (antibiotics, fluids, oxygen) without them fighting you or hurting themselves. The medicine does NOT cure the delirium — it just controls dangerous behavior.

Your top priorities at the bedside

1. Check and stabilize airway, breathing, and circulation first: measure oxygen saturation with pulse oximeter and apply supplemental oxygen by nasal cannula at 2 to 6 liters per minute to keep saturation above 92% — why: Low oxygen in the blood (Hypoxemia) (low blood oxygen) directly damages brain cells and worsens confusion; the brain uses 20% of the body's oxygen even though it is only 2% of body weight, so even mild oxygen drops cause delirium.
2. Obtain fingerstick blood glucose immediately and treat abnormal values: give 15 grams of fast-acting carbohydrate (glucose tablets, juice, or honey) or 1 amp of 50% dextrose IV if glucose is under 70 mg/dL; notify provider for insulin orders if glucose is over 250 mg/dL — why: The brain depends entirely on glucose for energy and cannot store it; low blood sugar (hypoglycemia) under 54 mg/dL causes seizures and brain damage within minutes, while high blood sugar (hyperglycemia) over 400 mg/dL causes osmotic shifts (water moving out of brain cells) that lead to confusion and coma.

3. Assess for life-threatening causes: check temperature for fever, perform stroke scale (facial droop, arm drift, speech), look for signs of meningitis (neck stiffness, severe headache, light sensitivity), and ask about seizure activity — why: Meningitis (infection of brain coverings), encephalitis (brain infection), stroke, and sepsis (body-wide infection with organ failure) can all look like simple confusion but kill quickly without emergency treatment; these require immediate antibiotics, antiviral drugs, or clot-busting therapy.