

Neuroleptic Malignant Syndrome

Neuroleptic Malignant Syndrome means antipsychotic drugs block brain chemical D2. This breaks how the body controls temperature and affects the brain base.

THE ONE-LINE TRUTH

High fever plus stiff muscles that feel like lead pipes plus confused brain plus wild body signs plus high muscle enzyme after antipsychotic drugs.

The chain — how it unfolds

1. Each strange feeling is the body trying to work while the brain part above it is stuck. — why: The antipsychotic drug blocks dopamine, which is the brain's main chemical for controlling temperature, muscle tone, and how the body responds to stress.
2. Body response — what you actually see at the bedside: Stiff muscles like lead pipes, not shaking in legs. — why: Without dopamine working right, the brain loses its grip on the muscle control center, so muscles lock up stiff like concrete and cannot relax.
3. Fever over 40°C. — why: Stiff muscles create heat by contracting over and over, and the broken stress circuit cannot turn off the fever signal, so body temperature climbs above 40°C.
4. Wild body signs. — why: The extreme stiffness and heat force muscle cells to break down fast, pouring their proteins (myoglobin) into the blood and making the liver enzyme CPK shoot up.
5. Cannot speak. — why: The person's brain cannot think clearly because the same dopamine circuit that controls mood and thinking is offline, and the body is in a crisis state.
6. It builds up over days, not hours. — why: All these changes—fever, stiffness, confusion, high enzymes, wild vital signs—build up over hours to days because the dopamine block is constant and the body keeps trying to defend itself.
7. None of this is random; each finding is the system trying to defend mood, cognition, or perception while the upstream circuit struggles. — why: None of this happens by accident: each finding is the body's failed attempt to keep mood, movement, and survival working while the upstream dopamine switch is stuck off.

Spot it — what you see, and why

- Very stiff muscles all over the body (lead-pipe rigidity): The antipsychotic drug blocks dopamine (a brain messenger that helps muscles move smoothly) in the basal ganglia (the brain's movement control center), so muscles lock up tight and won't relax.
- High fever (often 102–106 °F): Dopamine also helps the hypothalamus (the brain's thermostat) control body temperature; when dopamine is blocked, the thermostat breaks and the body overheats.
- Confusion or can't think clearly (altered mental status): The brain needs dopamine to keep the frontal cortex (the thinking and awareness center) working smoothly; blocking dopamine makes the brain foggy, confused, or even unresponsive.
- Fast heart rate and blood pressure swings (autonomic instability): Dopamine helps regulate the autonomic nervous system (the autopilot that controls heart, blood vessels, and sweating); blocking it throws these systems off balance.
- Very high creatine kinase (CK) in the blood: The locked-up muscles break down (rhabdomyolysis), spilling a muscle protein called creatine kinase into the bloodstream; CK often climbs above 1,000 units per liter.
- Sweating heavily: The broken thermostat in the hypothalamus triggers the sweat glands to work overtime, trying (but failing) to cool the body down.

Red flags — act now

- Fever above 104 °F — can cause seizures, brain damage, or death if not cooled quickly
- Very confused, sleepy, or unresponsive — means the brain is in danger
- Dark brown urine (from muscle breakdown) — can clog and destroy the kidneys
- Trouble breathing or chest pain — heart or lungs may be failing
- Blood pressure or heart rate all over the map — autonomic system is crashing

Treat it — in this order

1. Stop the antipsychotic drug immediately and remove all other medicines that block dopamine D2 receptors (such as metoclopramide or prochlorperazine) → Dopamine can start reaching its receptors again in the basal ganglia (movement control) and hypothalamus (temperature control). This halts the cascade that is causing muscle rigidity, high fever, and breakdown of muscle cells.
2. Cool the body aggressively with ice packs to the groin, armpits, and neck; cooling blankets; and cold intravenous fluids → Lowering the core temperature below 38.5°C (101.3°F) slows the rate at which muscle cells die and reduces the risk of brain damage from overheating. It buys time for the brain's thermostat to recover.

3. Give intravenous fluids rapidly (often 200–300 mL per hour of normal saline) to flush myoglobin out of the kidneys and prevent kidney failure → High-volume fluid dilutes the myoglobin flooding through the kidney filters and helps the kidneys push it out in the urine before it clogs the tiny tubes and causes acute kidney injury.
4. Give bromocriptine 2.5 mg by mouth or feeding tube every 8 hours, then increase up to 10–20 mg every 8 hours if needed → Bromocriptine acts like dopamine at the D2 receptors in the basal ganglia and hypothalamus, helping the brain reset temperature control and ease muscle rigidity. Fever and stiffness usually start to drop within hours to a few days.
5. Give dantrolene 1 mg per kilogram intravenously, then repeat every 6 hours up to a total of 10 mg per kilogram per day if muscle rigidity stays severe → Dantrolene blocks calcium release inside muscle cells, which forces the muscles to relax. This lowers the crushing stiffness, reduces heat generated by constant muscle contraction, and slows further muscle breakdown.

Your top priorities at the bedside

1. Stop the antipsychotic drug immediately and hold all dopamine-blocking medicines including metoclopramide, prochlorperazine, and promethazine — why: Antipsychotics block dopamine D2 receptors in the brain, which causes the hypothalamus (the body thermostat) to overheat and the basal ganglia (movement control center) to lock muscles; removing the trigger stops further damage
2. Start aggressive cooling with ice packs to the groin, armpits, and neck; use cooling blankets; and infuse cold intravenous normal saline to bring core temperature below 101 °F within 30 minutes — why: Fever above 104 °F denatures (cooks) brain proteins, triggers seizures, and causes permanent brain injury; every minute above 105 °F increases death risk by damaging the cerebellum and brainstem
3. Give rapid intravenous normal saline boluses at 200 to 300 mL per hour, aiming for urine output above 200 mL per hour — why: Myoglobin (released from broken-down muscles) clogs kidney tubules and causes acute tubular tissue death (necrosis) (kidney cell death); high urine flow washes myoglobin out before it crystallizes and destroys the kidneys