

# Falls and Syncope

A fall or faint in an older adult is never normal aging—it is a red flag that demands a cause.

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## THE ONE-LINE TRUTH

When older people fall or pass out, something upstream is broken—find it and fix it before the next fall breaks a bone or the next faint stops the heart for good.

## The chain — how it unfolds

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1. Upstream break: cardiac, vascular, neurologic, or multifactorial failure — why: One or more of the three systems—heart, blood-pressure control, brain/balance—fails. The heart might beat too slow, too fast, or pump poorly through a bad valve. Blood pressure might crash on standing because autonomic nerves are worn out, the patient is dehydrated, or medicines pushed BP too low. The brain might misfire (seizure), lose blood flow (TIA/stroke), or receive false balance signals (vertigo). Muscles might be too weak and vision too poor to recover from a stumble. Often it is a combination: an older adult on a beta-blocker and a diuretic, with diabetic neuropathy and cataracts, cannot compensate when any one stressor is added.
2. Cerebral poor blood flow (hypoperfusion) or vestibular/cerebellar dysfunction — why: In cardiac or orthostatic fainting (syncope), cerebral blood flow drops below the critical threshold (~50 mL/100 g/min). Neurons in the cerebral cortex and reticular activating system (the brainstem network that keeps you awake) stop firing. Consciousness is lost within 6–8 seconds. In vestibular causes, the cerebellum gets conflicting signals about head position and cannot compute stable balance; you lurch or fall without losing consciousness. In seizure, cortical neurons fire chaotically and consciousness is lost by a different mechanism (electrical storm rather than low blood flow).
3. Loss of postural tone and protective reflexes — why: When the brain loses power, signals stop flowing down the corticospinal tracts (the nerve highways from motor cortex through brainstem and spinal cord to muscles). Muscles go slack. You cannot hold yourself upright. Protective reflexes—reaching out an arm to catch yourself, turning your head to avoid hitting face-first—are delayed or absent. You crumple or fall stiffly, depending on whether you had any warning (prodrome) to brace.

4. The fall and injury — why: Gravity accelerates you downward at  $9.8 \text{ m/s}^2$ . Older adults have slower reflexes, weaker muscles, and more brittle bones (osteoporosis). A fall from standing height can fracture the hip (femoral neck or intertrochanteric), wrist (Colles'), or vertebrae. If the head strikes a hard surface, the brain can bleed (subdural a pooled collection of blood (hematoma), especially if the patient is on anticoagulants like warfarin or a DOAC). A hip fracture often ends independent living; a subdural can be fatal.
5. Rapid recovery (true fainting (syncope)) or prolonged confusion (seizure/stroke) — why: In true fainting (syncope) (cardiac or orthostatic), once the patient is horizontal, gravity helps blood flow back to the brain. Cerebral blood flow (perfusion) is restored, neurons resume firing, and consciousness returns within 10–30 seconds. There is no in the groggy phase after a seizure (postictal) confusion—the patient wakes oriented, though often frightened and bruised. In contrast, after a seizure the brain is metabolically exhausted (neurons have burned through ATP and glucose); confusion, fatigue, and amnesia last minutes to hours (postictal state). After a stroke, the deficit persists because neurons are dead, not just stunned.
6. Recurrence and progressive debility if the cause is not found — why: If you treat the fall but miss the cause, the cause will strike again. A patient with undiagnosed aortic narrowing (stenosis) will faint again during exertion—and may die suddenly. A patient with orthostatic low blood pressure (hypotension) from polypharmacy will fall again unless you stop the culprit drug. Recurrent falls breed fear of falling, so the patient restricts activity, muscles weaken further (sarcopenia accelerates), and the cycle deepens. Each fall raises fracture risk and shortens life expectancy.
7. Sudden cardiac death (if ventricular arrhythmia is the cause) — why: Ventricular a fast heart rate (tachycardia) or ventricular fibrillation causes fainting (syncope) by stopping effective cardiac output. If the rhythm does not self-terminate, the heart quivers uselessly, no blood reaches the brain or body, and the patient arrests. Without immediate CPR and defibrillation, death occurs within minutes. This is why any fainting in an older adult—especially without early-warning phase (prodrome), during exertion, or with a family history of sudden death—demands urgent cardiac work-up (ECG, telemetry, echo, sometimes EP study) and risk stratification for an implantable defibrillator.
8. Loss of independence and institutionalization — why: A hip fracture often requires surgery, weeks of rehab, and leaves lasting pain and weakness. Many patients never return to baseline walking. Recurrent falls and the fear of falling lead families and clinicians to restrict mobility, add assistive devices, or move the patient to a facility. Each restriction accelerates deconditioning. The goal of falls/fainting (syncope) work-up is to break this cycle by identifying and fixing the reversible causes—stopping the dangerous med, replacing the faulty heart valve, rehydrating, treating the arrhythmia—so the patient can stay safe, mobile, and independent.

## Spot it — what you see, and why

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- Sudden loss of consciousness (passing out completely): Not enough blood reaches the brain for a few seconds, so the brain shuts down briefly. This can happen if the heart pauses, blood pressure drops suddenly, or blood vessels open too wide and blood pools in the legs.
- Feeling dizzy or lightheaded right before falling: Blood pressure is starting to drop or the heart rhythm is changing, so the brain is getting less oxygen and sends a warning signal before you lose consciousness.
- No memory of the fall itself: The brain was not getting enough oxygen during the event, so it could not form a memory of what happened in those few seconds.
- Pale or sweaty skin just before or during the episode: The autonomic nervous system (the part that controls things you don't think about, like heart rate and sweating) is responding to low blood flow by trying to push blood to the core and brain, which makes the skin pale and triggers sweating.
- Quick recovery (back to normal within a minute or two): Once you lie flat or fall down, gravity stops working against you, so blood can reach the brain again easily. The brain wakes up fast once it has oxygen.
- Confusion or slow thinking for several minutes after waking up: The brain was starved of oxygen briefly, and it takes a few minutes for all the brain cells to fully recharge and start working smoothly again.

## Red flags — act now

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- Chest pain, shortness of breath, or a racing heart before or after the fall
- Confusion, slurred speech, weakness on one side, or vision loss that does not go away quickly
- Fall happened during exercise or while lying down (suggests a heart rhythm problem, not just low blood pressure)
- Family history of sudden death before age 50 (raises concern for inherited heart rhythm disorders)
- Very slow heart rate (under 40 beats per minute) or very fast rate (over 150) on exam or monitor

## Treat it — in this order

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1. Stop or reduce blood pressure medicines, diuretics (water pills), and sedatives → Removes medicines that drop blood pressure too low or make you dizzy and unsteady. Blood pressure can rise enough to keep the brain fed when you stand.

2. Increase salt and water intake — aim 2 to 3 liters of fluid daily and add salt to meals (if no heart failure) → Raises the total volume of blood in your body so there is more to pump to the brain when you stand. Helps prevent orthostatic low blood pressure (hypotension).
3. Compression stockings (waist-high, 30–40 mmHg) and abdominal binder → Squeezes blood out of leg veins and belly vessels back toward the heart and brain when you stand, preventing blood from pooling low and leaving your head empty.
4. Fludrocortisone (Florinef) 0.1–0.2 mg daily — a steroid that tells kidneys to hold salt and water → Expands blood volume so pressure stays up when you stand. Takes several days to work.
5. Midodrine (ProAmatine) 2.5–10 mg three times daily — squeezes blood vessels to raise pressure → Tightens arteries and veins within an hour, pushing blood pressure up so the brain gets fed when you stand.

## Your top priorities at the bedside

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1. Get orthostatic vital signs by measuring blood pressure and heart rate lying down, then immediately after standing, then again at 3 minutes standing — why: Orthostatic low blood pressure (hypotension) (blood pressure drop of 20 systolic or 10 diastolic when standing) causes most fainting (syncope) in elderly patients and finding it changes treatment to stopping certain medicines and starting compression stockings or midodrine
2. Check a 12-lead EKG to look at heart rhythm and measure PR interval, QRS width, and QT interval — why: The EKG (electrocardiogram or heart tracing) can show arrhythmias (irregular rhythms), heart blocks (electrical delays), and long QT syndrome (dangerous electrical problem) that cause sudden cardiac fainting (syncope) and need pacemakers or medicines
3. Do a complete fall risk assessment including vision check, footwear safety, gait steadiness, and muscle strength testing — why: Multifactorial fall risk (many causes together) including poor vision, unsafe shoes, loss of coordination (ataxia) (unsteady walking), and sarcopenia (muscle loss from aging) cause most falls in elderly and each factor needs specific intervention to prevent next fall