

Acute Back Pain

Acute back pain usually heals by itself from a mechanical strain—your job is to spot the rare danger signs that need urgent help.

THE ONE-LINE TRUTH

Most sudden back pain comes from a pulled muscle, stretched ligament, or a disc that has shifted in the lower back, and it gets better on its own within 4 to 6 weeks without scans or surgery.

The chain — how it unfolds

1. Muscle strain or disc herniation damages tissue in the lower back. — why: Lifting, twisting, or sudden heavy load breaks the strength limit of muscle fibers or the outer disc ring (annulus fibrosus), tearing tiny fibers and starting an inflammatory response—damaged cells spill out chemicals like prostaglandins and bradykinin that wake up local pain nerves (nociceptors).
2. Nociceptors (pain-sensing nerves) fire and send signals up the spinal cord to the brain, making sharp or aching pain. — why: Damaged tissue dumps inflammatory chemicals (cytokines, substance P, and histamine) that make nearby nociceptors super-sensitive, so even normal movement now triggers pain—this is called peripheral sensitization, and it is why the back hurts more in the first few days.
3. Back muscles lock into a hard knot (sustained spasm) to freeze the injured part. — why: The nervous system automatically tightens muscles around the injury (protective muscle guarding) to stop more movement and limit extra tissue damage—this splinting helps short-term but causes stiffness and achy muscle fatigue pain because the muscle cannot relax.
4. Pain gets worse with movement (bending, lifting, sitting too long) and better with rest. — why: Movement loads the hurt disc or muscle, squeezing or stretching already-swollen tissue and firing more nociceptors—rest takes weight off the spine and lowers mechanical stress on the injury, so fewer pain signals travel to the brain.

5. In disc herniation with nerve root squeeze (radiculopathy), pain shoots down the leg in a specific stripe pattern (sciatica). — why: The pushed-out disc gel presses on the nerve root leaving the spine (like the L5 or S1 nerve root), cutting blood flow to the nerve (ischemia, not enough blood reaching the nerve to feed it) and poking it directly—the brain reads this as pain, numbness, or tingling in the skin stripe (dermatome) fed by that nerve, and if the squeeze is bad, the muscle fed by that nerve gets weak.
6. Over days to weeks, inflammation cools down and torn tissue knits back together with scar collagen. — why: White blood cells clean up damaged cells, new blood vessels grow into the injury (angiogenesis), and fibroblasts lay down collagen fibers like a patch—this repair is why most mechanical back pain gets better on its own in 4 to 6 weeks without surgery.
7. Red-flag causes (infection, cancer, broken bone, cauda equina) show body-wide or nerve-damage signs because the break is not just mechanical. — why: Fever, weight loss, and night pain mean infection or cancer is eating away bone and dumping inflammatory chemicals into the bloodstream—saddle numbness and bladder or bowel loss mean a huge central disc herniation or tumor is crushing the cauda equina (nerve bundle below L1-L2), blocking motor and automatic control signals to the pelvis and legs.
8. The body's compensation (muscle spasm, leaning away from pain, rest) buys time for tissue healing but does not fix the upstream break. — why: Muscle spasm and rest cut down on more injury and let inflammatory junk clear out and collagen repair fibers knit back together—but if the upstream break is infection, tumor, or cauda equina syndrome, compensation cannot stop it from getting worse, and urgent help (antibiotics, surgery, radiation) is needed to prevent permanent nerve damage or death.

Spot it — what you see, and why

- Pain in the lower back (the area between your ribs and your buttocks): When a muscle tears or a disc (the rubbery cushion between backbone bones) gets hurt, the damaged tissue spills tiny alarm chemicals—prostaglandins and bradykinin—that wake up pain nerves right at the injury, so you feel pain exactly where the damage is.
- Pain worse with movement (bending, lifting, twisting) and better with rest: Every time you move, you put weight and stretch on the hurt tissue—like pulling on a fresh cut—which fires more pain signals. Lying still takes the load off the injury, so pain quiets down.
- Back muscle spasm and stiffness: Your nervous system automatically tightens muscles around the injury like a splint to hold everything still and protect the hurt part. That constant squeeze makes your back feel locked up and sore.
- Cannot bend as far as usual (limited range of motion): Tight muscles and pain block normal movement. Your body avoids positions that stretch or squeeze the injury, so you cannot bend forward or twist like before.

- Tender spot when you press on back muscles or the bumps along the spine: Pressing on swollen or strained tissue squeezes already-awake pain nerves, bringing sharp pain right at the injury. That is how a tender spot shows where the problem is.
- Normal leg strength, feeling, and reflexes (in simple mechanical back pain): A simple muscle pull or small disc bulge does not press on the nerve roots that run to your legs, so all the wires carrying motion, feeling, and reflex signals stay open—the neurologic exam is normal.

Red flags — act now

- Age over 50 with new back pain (higher chance of a broken backbone from weak bones—osteoporosis—or cancer spread to the spine)
- History of cancer (risk the cancer has traveled to the backbone)
- Fever, chills, or losing weight without trying (points to infection or cancer)
- Recent injury or hard fall (risk of a broken vertebra—one of the bones in the spine)
- IV drug use or weak immune system (risk of an abscess—a pus pocket—in the spine or bone infection)

Treat it — in this order

1. NSAIDs (nonsteroidal anti-inflammatory drugs like ibuprofen 400 to 600 milligrams every 6 to 8 hours or naproxen 500 milligrams twice daily) or acetaminophen (650 to 1000 milligrams every 6 hours) → NSAIDs block an enzyme called COX (cyclooxygenase) that makes prostaglandins—chemicals that cause inflammation (swelling and immune response) and send pain signals up the spinal cord. Reducing inflammation around the injured disc or strained ligament lets you move. Movement itself is medicine because staying still weakens muscles and worsens pain long-term per American College of Physicians guidelines. Think of it like a sprained ankle—if you never walk on it, it gets stiff and weak.
2. Short-term muscle relaxant (cyclobenzaprine 5 to 10 milligrams at bedtime or methocarbamol 500 to 750 milligrams three times daily) for severe muscle spasm only, used 5 to 7 days maximum → Quiets the protective muscle spasm—involuntary muscle contraction—that clamps down around the injured area like a vise. Muscle relaxants work in the central nervous system (brain and spinal cord) to reduce signals that cause muscles to contract. This improves movement and blood flow to speed healing. The spasm is your body trying to protect you, but it ends up limiting motion too much.

3. Physical therapy and graded return to normal activity (staying as active as tolerated from day one, avoiding bed rest beyond 48 hours) → Rebuilds the core muscles—deep abdominal and back muscles that stabilize the spine like guy-wires on a tent pole—and retrains movement patterns so the disc or ligament stops getting loaded incorrectly. Early mobilization—moving as tolerated within the first 48 hours—improves outcomes per Cochrane systematic review. Think of it like fixing the foundation of a house—if the support muscles are weak, the spine keeps getting injured.
4. Avoid opioids (hydrocodone, oxycodone, morphine) in acute back pain without red flags → Opioids bind to receptors in the brain and spinal cord and block pain signals, but they also slow breathing (respiratory depression), cause constipation, impair balance and thinking, and cause dependence and addiction. American College of Physicians and CDC Opioid Prescribing Guidelines recommend against opioids for acute low back pain because risks outweigh benefits. Opioids do not speed healing and worsen long-term outcomes.
5. Imaging (MRI or CT) only if red flags are present or symptoms persist beyond 6 weeks without improvement → Finds surgical or life-threatening causes like cauda equina syndrome, epidural abscess, fracture, or metastatic cancer (cancer that has spread to the spine) so you do not miss something that needs urgent intervention. These are the things that can cause permanent nerve damage or paralysis if not treated immediately.

Your top priorities at the bedside

1. Screen for red-flag symptoms (bowel or bladder loss of control, leg weakness, fever, history of cancer, or recent trauma) and escalate immediately to the provider if any are present. — why: Red flags indicate possible cauda equina syndrome, spinal infection, fracture, or cancer spread to the spine—all require urgent imaging and specialist evaluation to prevent permanent nerve damage or death.
2. Assess baseline neurologic function by checking leg strength (ask the patient to push their foot down and pull it up against your hand), sensation to light touch on both legs, and knee and ankle reflexes. — why: A normal neurologic exam confirms simple mechanical back pain and rules out nerve root or spinal cord compression; documenting baseline function lets you catch any worsening that would need urgent care.
3. Administer NSAIDs (like ibuprofen or naproxen) or acetaminophen as ordered, preferably scheduled rather than as-needed during the first few days. — why: These medicines reduce inflammation (swelling in the tissues) and block pain signals; taking them on a schedule keeps blood levels steady and controls pain better than waiting until pain is severe.