

Rheumatoid Arthritis

Rheumatoid arthritis happens when your body mistakes the slippery lining inside joints for an enemy and attacks it—special medicines can stop this attack and protect your joints.

THE ONE-LINE TRUTH

Your immune system is attacking the soft lining inside your joints.

The chain — how it unfolds

1. Autoantibodies (rheumatoid factor and anti-CCP) appear in your blood and bind to proteins in the synovium. — why: A genetic trigger (often HLA-DR4) plus an environmental spark (smoking, infection, or gut bacteria) causes B cells to make antibodies that mistake your own joint lining for an enemy.
2. White blood cells flood into matching joints on both sides of your body—wrists, knuckles, finger joints—and the synovium swells. — why: Autoantibodies tag the synovium, so T cells, macrophages, and other immune cells migrate in through the bloodstream and release inflammatory chemicals (TNF- α , IL-1, IL-6) that cause redness, warmth, and swelling.
3. You wake up with stiff, swollen fingers that take over an hour to loosen up (morning stiffness), and the joints feel warm and tender. — why: Overnight, inflammatory fluid and gel-like debris pool in the joint (gel phenomenon), and muscles tighten to protect the area—movement pumps the fluid out and loosens things up slowly.
4. You feel tired, weak, and may run a low-grade fever even when your joints do not hurt much. — why: Cytokines circulating in your bloodstream signal your brain to release fever chemicals (prostaglandins) and trigger your liver to shift energy toward fighting inflammation, leaving you exhausted and sometimes anemic.
5. Over weeks to months, the thick synovium (pannus) releases enzymes that eat away cartilage and carve pits (erosions) into the bone underneath. — why: Matrix metalloproteinases and other proteases from the pannus digest collagen and calcium, eroding the bone surface—X-rays show these erosions as tiny holes at the joint edges.
6. Your fingers start to curve sideways (ulnar deviation), bend into swan-neck or boutonniere shapes, or your wrist bones collapse. — why: Bone erosions, stretched ligaments, and damaged tendons can no longer hold the joint in line, so the bones slip and deform under the pull of muscles and gravity.

7. The inflammation spreads beyond joints: your lungs scar (interstitial lung disease), blood vessels inflame (vasculitis), firm bumps appear under your skin (rheumatoid nodules), or the top neck bones slip (atlanto-axial instability). — why: The same autoantibodies and cytokines in your blood attack tissue in your lungs, blood vessel walls, skin, and the ligaments holding your skull to your spine—these extra-articular (outside the joint) problems can be more dangerous than the joint damage itself.
8. If untreated, you face serious complications: spinal cord compression from neck instability, lung failure from scarring, heart attack from inflamed arteries, or overwhelming infection from immune-suppressing drugs. — why: Chronic systemic inflammation damages organs, and the medicines used to calm the immune attack (methotrexate, biologics, steroids) lower your defenses against infection—early aggressive treatment prevents these life-threatening dominoes.

Spot it — what you see, and why

- Small joints in the hands and feet are swollen, warm, and tender on both sides of the body: The immune system mistakenly attacks the synovium (the thin tissue lining the inside of the joint). This causes inflammation (swelling, heat, and pain) — like the joint is under attack from the inside. The body's own white blood cells flood in and release chemicals that make the area hot, puffy, and sore.
- Morning stiffness that lasts over an hour: Overnight, fluid and inflammatory chemicals pool in the joints because you are not moving. It takes time for movement to pump the swelling out and loosen the stiff tissue — like trying to bend a cardboard tube that got damp and rigid.
- You feel very tired all the time: The immune system is running on overdrive, making cytokines (chemical alarm signals) like TNF-alpha and interleukin-6. These signals drain energy and make the whole body feel worn out — like fighting off a flu that never ends.
- The DIP joints (the fingertip knuckles) are NOT swollen or sore: Rheumatoid arthritis prefers the lining of joints that move a lot, especially the PIP (middle knuckles) and MCP (base knuckles). For reasons not fully understood, the tiny DIP joints at the fingertips are usually spared — this pattern helps tell rheumatoid arthritis apart from osteoarthritis.
- Rheumatoid nodules (firm lumps under the skin, often near elbows): Immune cells form clumps of inflamed tissue under the skin, usually over pressure points like the elbow or the back of the hand. These nodules are made of collagen and immune cells piled together — like hard little knots of scar tissue.
- Low-grade fever: Cytokines (inflammatory messenger chemicals) tell the hypothalamus (the brain's thermostat) to turn up body heat, just like during an infection — because the body thinks it is under attack.

Red flags — act now

- Severe joint pain that suddenly gets much worse — may mean infection in the joint (septic arthritis) on top of rheumatoid arthritis
- New shortness of breath, persistent dry cough, or chest pain — may mean lung involvement (pleuritis or interstitial lung disease)
- Fever above 101°F (38.3°C) — may mean infection, especially if on immune-suppressing medicines
- Sudden vision changes or severe eye pain — may mean scleritis (inflammation of the white of the eye), which can damage vision
- Visible joint deformity or inability to use the hand or foot — means the disease is advancing and needs urgent treatment adjustment

Treat it — in this order

1. Methotrexate (a DMARD, disease-modifying antirheumatic drug) with folic acid 1 mg daily → Methotrexate blocks dihydrofolate reductase (an enzyme cells need to copy DNA), which slows down the immune cells attacking the joints. This calms the synovium (joint lining), stops erosions from forming, and preserves joint structure. Folic acid prevents mouth sores and nausea without blocking methotrexate's benefit.
2. Biologic DMARDs: TNF inhibitors (adalimumab, etanercept, infliximab, certolizumab, golimumab), IL-6 inhibitors (tocilizumab, sarilumab), T-cell costimulation blocker (abatacept), or B-cell depletion (rituximab) → Biologics block specific cytokines (alarm chemicals) or immune cells that drive the attack on joints. TNF inhibitors block tumor tissue death (necrosis) factor-alpha (the main inflammation messenger), IL-6 inhibitors block interleukin-6 (another key alarm signal), abatacept stops T cells from turning on, and rituximab wipes out B cells (the cells that make antibodies). These stop inflammation faster and harder than methotrexate alone.
3. JAK inhibitors (tofacitinib, baricitinib, upadacitinib) → JAK inhibitors block Janus kinases (enzymes inside immune cells that relay inflammation signals). This turns down the cell's ability to respond to cytokines, reducing swelling and stiffness quickly.
4. Short-course oral corticosteroids (prednisone 5–10 mg daily for 2–4 weeks, then taper) during flares or as a bridge while waiting for DMARDs to work → Corticosteroids flood the body with cortisol-like signals that shut down the immune system's attack machinery fast. This quickly reduces swelling, pain, and stiffness, giving relief while slower DMARDs ramp up.

5. NSAIDs (ibuprofen 400–800 mg three times daily, naproxen 500 mg twice daily) for symptom control → NSAIDs block cyclooxygenase (COX) enzymes, stopping the body from making prostaglandins (chemicals that cause pain and swelling). This reduces joint pain and stiffness so you can move and sleep.

Your top priorities at the bedside

1. Check both hands and feet for symmetrical joint swelling, warmth, and tenderness, and document which specific joints are affected — why: Symmetrical small-joint inflammation is the hallmark of rheumatoid arthritis and tracking the pattern helps measure if treatment is working or disease is spreading to new joints
2. Assess cervical spine stability by asking the patient to gently tuck chin to chest and report any electric-shock feelings down the spine or new arm weakness — why: Chronic inflammation weakens the ligaments holding the atlas (first neck bone) in place, allowing it to slide forward and compress the spinal cord, causing quadriplegia (paralysis of all four limbs)
3. Review the medication list to confirm the patient takes folic acid (1 mg daily) on the days they do not take methotrexate — why: Methotrexate blocks folic acid (a B vitamin) which causes mouth sores, liver damage, and low blood counts, and folic acid supplementation prevents these side effects without reducing the drug's effectiveness