

Polypharmacy and Deprescribing

Five or more medicines at once raise the risk of dangerous drug interactions, side effects, and falls—especially in older adults.

THE STORY IN ONE SENTENCE

Five or more medicines at once raise the risk of dangerous drug interactions, side effects, and falls—especially in older adults.

“Too many pills pile up when each new symptom gets a new drug instead of asking if an old drug caused it. Review the full list every visit and stop what's no longer needed.”

Normal anatomy — the body's job

Normally, each medicine you take has a clear job—one lowers blood pressure, one steadies blood sugar, one thins the blood to prevent clots—and your liver breaks them down while your kidneys flush out the waste, keeping levels safe and steady.

BODY'S JOB

Your liver is the body's main processing plant: it takes each pill, breaks it into smaller pieces, and sends the active part into your blood to do its job. Your kidneys are the filter: they catch the leftover pieces and flush them out in your urine. When you take just a few medicines, the liver and kidneys handle the load easily, drug levels stay in the safe zone, and each pill does exactly what it's supposed to without interfering with the others.

1. You swallow a pill; it dissolves in your stomach and small intestine.
2. The medicine enters your bloodstream and travels to the liver (the body's chemical factory).
3. Liver enzymes (special proteins that break things down) chop the drug into pieces and decide how much active medicine to release.
4. The active medicine circulates through your blood, reaches its target (heart, brain, blood vessels, sugar pathways), and does its job.
5. The kidneys filter your blood, catch the leftover drug pieces, and send them out in your urine.
6. This cycle keeps the medicine at a safe, steady level in your body—not too high (toxic) and not too low (useless).

What breaks

The problem starts when medicines pile up without anyone reviewing the whole list. Each new symptom gets a new pill instead of asking whether an old pill caused it. Doctors from different offices don't always talk to each other, so nobody sees the full picture. Over time, the liver and kidneys get overwhelmed, drug levels climb too high, and medicines start crashing into each other—blocking, boosting, or canceling each other's effects.

CLINICAL TERM

Polypharmacy with inadequate medication reconciliation and prescribing cascade.

How the body compensates

The body tries to keep working despite the medication overload—the liver works overtime, the kidneys filter harder, and the brain tries to stay alert—but these efforts eventually fail, and side effects (falls, confusion, bleeding) appear suddenly even though the drug list has been growing slowly for months.

1. At first, the liver and kidneys handle the extra drugs by working harder, so blood levels stay in range and the patient feels fine.
2. As more medicines are added, the body's reserve shrinks: the liver enzymes max out, kidney filtration slows (especially in older adults), and drug levels start to creep up.
3. The patient may feel a little 'off'—dizzy when standing, forgetful, tired—but these symptoms are vague and easy to blame on 'getting older,' so another pill is added instead of reviewing the list.
4. The brain tries to stay alert despite sedating drugs (sleeping pills, anxiety medicine, pain pills), but the effort causes confusion, slow thinking, and poor balance.
5. Eventually the system tips: a small stress (dehydration, a new antibiotic, a missed meal) pushes drug levels into the toxic zone, and the patient falls, becomes delirious, bleeds, or has dangerously low blood sugar.
6. By the time the crash happens, the body's ability to bounce back is worn out—complications (hip fracture, nursing-home placement, permanent confusion) follow quickly.

Domino effect

1. Chronic diseases accumulate (diabetes, high blood pressure, heart failure, arthritis, depression, insomnia), and each condition is treated by a different doctor who adds a medicine without reviewing the full list. — Fragmented care and lack of medication reconciliation mean nobody is watching the total pill count or asking 'Does this patient still need all of these?' The list grows to five, ten, or fifteen medicines.

2. A side effect from one drug (dizziness, heartburn, constipation, insomnia) is mistaken for a new disease, so another drug is prescribed to treat it—this is called a prescribing cascade. — Instead of stopping or lowering the first drug, the team adds a second one. For example: blood-pressure medicine causes dizziness → dizziness is blamed on 'a spinning sensation (vertigo)' → a sedating anti-a spinning sensation pill is added → that pill causes confusion → confusion is blamed on 'dementia' → a memory drug is added. The cascade keeps going.
3. The liver (which breaks down drugs using enzymes like CYP3A4 and CYP2D6) and kidneys (which filter waste) become overloaded, especially in older adults whose organs work more slowly. — Too many drugs flood the system at once. The liver can't break them down fast enough, and the kidneys can't clear the leftovers, so drug levels climb above the safe range even at normal doses—causing toxicity (confusion, falls, low blood sugar, bleeding).
4. Drug-drug interactions kick in: one medicine blocks the breakdown of another (levels spike and cause toxicity), or one speeds up the breakdown of another (levels drop and the drug stops working). — For example, an antibiotic or antifungal can block the enzyme that breaks down a blood thinner, so bleeding risk jumps; or a seizure medicine can speed up breakdown of birth control, so it fails. With ten drugs, dozens of possible interactions exist, and most go unnoticed until a serious side effect appears.
5. The patient becomes confused by the complicated schedule (ten pills, three times a day, some with food, some without), forgets doses, takes double doses by accident, or skips medicines to save money. — Non-adherence and medication errors create wild swings: blood sugar crashes (too much diabetes medicine), blood pressure spikes (missed dose), or sedation deepens (double dose of sleeping pill). Each swing can trigger a fall, seizure, stroke, or trip to the emergency room.
6. Side effects pile up and feed off each other: sedation from sleeping pills and pain pills slows thinking and weakens muscles, blood-pressure pills cause dizziness when standing, and diuretics ('water pills') cause dehydration and electrolyte imbalance. — The brain gets fogged by sedatives and anticholinergic drugs (which block acetylcholine, a brain messenger needed for memory and attention). Muscles weaken from low potassium or magnesium (flushed out by diuretics). Balance fails because inner-ear and brain signals are dampened. All of this raises fall risk.
7. A fall happens—often with a hip fracture, head bleed, or serious bruising—and the patient is hospitalized. In the hospital, delirium (sudden severe confusion) sets in, triggered by the drug overload, pain, infection, and strange environment. — The fall is the visible crisis, but the root cause is polypharmacy. Hospitalization adds more stress: new drugs (antibiotics, pain medicine, sedatives) are piled on, worsening confusion and making it even harder to sort out which pills are helping and which are harming.

8. Without deprescribing (carefully stopping unneeded or harmful drugs), the cycle repeats: more symptoms, more pills, more side effects, more falls, more hospitalizations, loss of independence, and higher risk of death. — Breaking the cycle requires a methodical medication review at every visit—asking 'Is this drug still needed? Is the benefit greater than the risk? Can we stop it slowly and safely?' Deprescribing, done with the patient's input and close monitoring, reduces pill burden, clears confusion, prevents falls, and improves quality of life.

Symptoms · what the patient feels, and why

- Taking five or more medicines at the same time (prescription, over-the-counter, or supplements): Each medicine adds to the load on the liver and kidneys (the body's filtering stations), raises the chance that medicines will bump into each other and change how they work, and makes it harder for the person to remember what to take and when.
- Confusion, dizziness, or falls that started after a new medicine was added: Many medicines (especially sedatives, blood pressure pills, and pain medicines) slow brain signals or drop blood pressure too low, making the person woozy or unsteady on their feet.
- Trouble keeping track of doses, missing doses, or taking the wrong pill: When someone has many bottles and a complicated schedule, it is easy to lose track, skip a dose, or double up by mistake—especially if memory or vision is slipping.
- New or worsening symptoms that look like a disease but are actually a side effect (for example, shaking, slow movement, or trouble peeing): Some medicines block dopamine (a brain messenger that controls smooth movement) or anticholinergic receptors (switches that control the bladder and gut), causing symptoms that can be mistaken for Parkinson disease or an infection.
- Feeling tired, weak, or foggy-headed all the time: Sedating medicines (like antihistamines, benzodiazepines, or opioids) dampen signals in the brainstem and cerebral cortex (the parts that keep you alert and thinking clearly), leaving the person sluggish and cloudy.
- Stomach upset, nausea, or bleeding in the gut: Medicines like NSAIDs (ibuprofen, naproxen) block prostaglandins (chemicals that protect the stomach lining), so acid can eat through and cause sores or bleeding.
- Kidneys or liver not working as well (seen on blood tests): The kidneys and liver break down and clear medicines; when too many pile up, these organs can become overloaded and slow down, letting waste and medicine levels rise in the blood.
- Going to the hospital or emergency room because of a medicine problem: Drug interactions, wrong doses, or side effects (like severe low blood sugar from diabetes medicine, dangerous bleeding from blood thinners, or a bad fall from sedatives) can quickly become life-threatening.

Focused exam

- Count every medicine in the home — prescription, over-the-counter, supplements, eye drops, creams, everything the patient actually uses: Polypharmacy means taking 5 or more medicines at the same time. You cannot spot the problem if you do not count all of them. The real list lives at home in the medicine cabinet, not on the doctor's computer screen.
- Ask: 'Which of these do you actually take every day? Which ones do you skip? Why do you skip them?': Many people cannot afford all their medicines, get confused by complicated schedules, or stop taking medicines that make them feel bad. Knowing which ones they skip tells you where the real-life problems are.
- Ask about falls, dizziness, confusion, or trouble remembering things in the last 3 months: Too many medicines can fog the brain and mess up balance. Falls break hips. Confusion makes people forget doses or take the wrong pill. These problems are clues that polypharmacy is hurting the patient.
- Check blood pressure sitting down, then check it again after the patient stands up for 1–3 minutes (orthostatic vitals): Many medicines together — especially blood pressure pills, water pills, and some heart medicines — can drop blood pressure when a person stands up. A drop of ≥ 20 mmHg systolic or ≥ 10 mmHg diastolic means orthostatic low blood pressure (hypotension), which causes falls and dizziness.
- Ask about upset stomach, constipation, dry mouth, blurry vision, or trouble sleeping: These are common side effects when too many medicines pile up, especially anticholinergic drugs (medicines that block acetylcholine, a messenger that controls gut movement, saliva, and clear thinking). Doctors sometimes add even more pills to treat these side effects instead of stopping the medicine that caused them.
- Count how many different doctors and pharmacies the patient uses: Polypharmacy grows when doctors do not talk to each other. One doctor adds a pill, another doctor does not know and adds another, and no one removes the old ones. Using many pharmacies makes it even harder to catch duplicates and dangerous combinations.

Diagnostics · every test answers a question

- Serum creatinine and estimated glomerular filtration rate (eGFR) → Are the kidneys strong enough to clear all these medicines out of the body?
- Liver function tests (ALT, AST, bilirubin, albumin) → Is the liver healthy enough to break down all these medicines?
- Medication reconciliation review (compare patient's actual pill bottles, pharmacy records, and electronic medical record) → What is the patient really taking, and are there duplicates, interactions, or medicines that work against each other?

- Beers Criteria or STOPP/START screening tool applied to the patient's medicine list → Which of these medicines are high-risk or inappropriate for this patient's age, kidney function, and other conditions?
- Serum drug levels for narrow therapeutic index medicines (digoxin, phenytoin, lithium, theophylline, vancomycin) → Are these medicines at a safe level, or have they built up to toxic levels because of polypharmacy or weak kidneys?
- Complete blood count (CBC) → Are any of these medicines hurting the bone marrow or causing bleeding?
- Anticholinergic burden score (calculated from the patient's medicine list) → How many medicines are blocking acetylcholine and adding up to confusion, falls, and constipation?

Treatment logic

- Medication reconciliation: collect ALL medicines (prescription, over-the-counter, supplements, herbal products) from the patient, family, and pharmacy records, then compare them to the medical chart → You find out what the patient is actually taking and catch duplicates (two medicines in the same class), dangerous interactions (warfarin plus aspirin plus ibuprofen), and medicines that work against each other. This stops the hidden pile-up before it causes more harm.
- Apply the Beers Criteria (AGS) or STOPP/START tool to flag high-risk medicines based on the patient's age, kidney function (eGFR), liver function, and other conditions → You identify which medicines are dangerous for THIS person right now — anticholinergics (block acetylcholine and fog the brain), benzodiazepines (slow breathing and cause falls), NSAIDs in kidney disease (damage kidneys further), long-acting sulfonylureas in older adults (cause dangerous low blood sugar). Mark these for stopping or switching.
- For each medicine, ask and write down: (1) Is this still needed for a current condition? (2) Is it working — are symptoms better? (3) Is it safe in this person's kidneys, liver, and age? (4) Does keeping it match what the patient wants for their life? → You replace automatic refill habits with careful thinking. Medicines that fail any of these four tests get stopped or swapped for safer ones. This cuts down the total number and removes the ones doing more harm than good.
- Slowly taper and stop high-risk deprescribable medicines (benzodiazepines, proton pump inhibitors, beta-blockers, SSRIs, opioids, anticholinergics) using published tapering schedules, not cold-turkey → Gradual tapering prevents dangerous rebound effects like seizures (from stopping benzodiazepines suddenly), rebound high blood pressure (from stopping beta-blockers suddenly), or rebound acid (from stopping PPIs suddenly). It gives the brain and body time to re-balance themselves.

- Simplify the schedule: switch to once-daily dosing when safe (example: long-acting metoprolol instead of short-acting three times a day), use a pill organizer or blister pack, print a one-page chart of what to take when → A simpler routine cuts forgetting, accidental double-doses, and confusion. Adherence goes up — people take the medicines they truly need — and falls and side effects go down.
- Involve a clinical pharmacist in the deprescribing plan, review the medicine list at every visit, and tie each remaining medicine to a specific written goal in the chart (example: 'atorvastatin — goal LDL < 70 for secondary prevention after heart attack') → A pharmacist catches drug interactions, dose mistakes, and duplicates that doctors miss. Regular review at every visit catches new problems early. Written goals keep the whole team clear on WHY each medicine stays, so no one adds extras without thinking.

Medications

Deprescribing is a process, not a single drug · Clinical approach to reduce medication burden

Deprescribing means carefully stopping medicines that may no longer help or that cause more harm than good. As people age or conditions change, some medicines that once made sense may now raise the risk of falls, confusion, kidney trouble, or drug interactions. The goal is to keep only the medicines that truly help you reach your health goals and drop the ones that don't. This is done step by step, with close monitoring, never all at once.

1. Step one: Make a complete list of ALL medicines, including over-the-counter pills, vitamins, and herbal supplements. Check the list at every visit.
2. Step two: For EACH medicine, ask four questions: (1) Is it still needed for a current condition? (2) Is it working — does it control symptoms or prevent complications? (3) Is it safe — are side effects manageable, and does it fit with kidney or liver function? (4) Does it match what the patient values most (for example, some people prefer fewer pills even if it means slightly higher blood pressure)?
3. Step three: Identify duplicates (two medicines doing the same job), high-risk medicines in older adults (Beers list includes many sedatives, first-generation antihistamines like diphenhydramine, and some blood-pressure pills that raise fall risk), and medicines started for side effects of other medicines (a 'prescribing cascade').
4. Step four: Choose which medicines to stop. Start with those that have no clear current indication, those causing side effects, and those with high risk and low benefit.

5. Step five: Taper slowly if the medicine requires it. Five drug classes need gradual dose reduction to avoid withdrawal or rebound: beta-blockers (such as metoprolol; sudden stop can trigger rebound high blood pressure or fast heart rate), benzodiazepines (such as lorazepam or diazepam; sudden stop can cause seizures or severe anxiety), proton-pump inhibitors or PPIs (such as omeprazole; sudden stop can cause rebound stomach acid), SSRIs (such as sertraline or escitalopram; sudden stop can cause dizziness, nausea, and shock-like sensations called discontinuation syndrome), and opioids (such as oxycodone; sudden stop can cause withdrawal with sweating, agitation, and pain). For all others, you can usually stop right away if the clinician agrees.
6. Step six: Simplify the schedule. Combine doses when possible, switch to once-daily formulations, use pill organizers, and align timing with daily routines (for example, morning coffee or bedtime tooth-brushing).
7. Step seven: Partner with a pharmacist. Pharmacists can spot interactions, suggest therapeutic substitutions, help design a taper plan, and teach patients and families how to use the new regimen.
8. Step eight: Write down the plan and the patient's goals, then review at every visit. Track symptoms, lab values, and quality of life to make sure stopping the medicine did not cause harm.

SAFETY WATCH

Never stop a medicine without talking to the prescribing clinician first, especially the five classes that need tapering (beta-blockers, benzodiazepines, PPIs, SSRIs, opioids). · Watch closely after stopping any medicine: some conditions may flare (for example, stopping a proton-pump inhibitor may bring back heartburn; stopping a blood-pressure medicine may raise pressure again). Have a monitoring plan. · Be alert for withdrawal symptoms if a taper is too fast, especially with benzodiazepines (anxiety, tremor, seizures) and opioids (sweating, agitation, muscle aches). · Avoid the reflex of prescribing a new medicine for every new symptom — ask first whether an existing medicine might be causing the symptom (for example, a diuretic causing dizziness from low blood pressure, or diphenhydramine causing confusion). · Engage family and caregivers in the plan, especially for patients with memory trouble, so everyone knows which medicines were stopped and why. · Document clearly in the medical record which medicines were stopped, the reason, and the monitoring plan, so future clinicians do not restart them without thinking.

Red flags

- New confusion, severe dizziness, or a fall—especially after starting or changing a medicine
- Black or bloody stools, vomiting blood, or severe belly pain (signs of stomach bleeding)

- Very slow heart rate, chest pain, trouble breathing, or fainting (possible toxic levels or dangerous interaction)
- Sudden shaking, stiff muscles, or trouble moving (may be medicine-induced parkinsonism or serotonin syndrome)
- Cannot pee, severe constipation, or blurry vision with a racing heart (anticholinergic overload)

Nursing priorities

1. Create a complete medication list by checking pill bottles, pharmacy records, and asking family members what the patient actually takes at home. — The home medicine routine often differs from the medical chart because patients stop drugs without telling anyone, take medicines prescribed by multiple doctors who do not communicate, or add over-the-counter products; accurate reconciliation prevents duplicate therapy and dangerous drug interactions.
2. Check kidney function with serum creatinine (a blood test measuring waste that kidneys remove) and calculate estimated glomerular filtration rate before every deprescribing decision. — Kidneys clear most medicines from the body; when kidney function drops, drugs accumulate to toxic levels even at normal doses, so doses must be lowered or the drug stopped entirely to prevent poisoning.
3. Screen every medicine against the Beers Criteria list to identify high-risk drugs that cause falls, confusion, or bleeding in older adults. — The Beers Criteria names specific medicines that are dangerous for people over 65 because aging changes how the body processes drugs; these medicines often cause more harm than benefit and should be stopped first.
4. Assess for anticholinergic burden by counting how many medicines block acetylcholine, then watch for dry mouth, constipation, blurry vision, confusion, or inability to urinate. — Anticholinergic effects add up across multiple drugs even when each individual drug seems safe; the combined burden damages memory, increases fall risk, and can cause acute urinary retention requiring catheterization.
5. Document orthostatic vital signs by measuring blood pressure and heart rate lying down, then again after standing for one minute and three minutes. — Orthostatic low blood pressure (hypotension) (a drop in blood pressure when standing) signals too many blood pressure medicines or dehydration from diuretics (water pills); this causes dizziness and falls, and means doses need reduction before the patient gets hurt.
6. Teach the patient to taper one medicine at a time when deprescribing, waiting at least two weeks before stopping the next drug, and report new symptoms immediately. — Stopping multiple drugs at once makes it impossible to know which medicine caused withdrawal symptoms or which drug was actually helping; gradual tapering prevents rebound effects like sudden high blood pressure or return of symptoms.

7. Schedule a follow-up visit within two to four weeks after any deprescribing change to reassess symptoms and check if the stopped medicine was truly unnecessary. — Some conditions worsen slowly after stopping a needed medicine, so close monitoring catches problems early before serious harm occurs; early follow-up also reinforces that deprescribing is a careful medical plan, not abandonment.

Sources

- American Geriatrics Society Beers Criteria 2023
- STOPP/START Criteria (Screening Tool of Older Persons' Prescriptions / Screening Tool to Alert to Right Treatment)
- CDC Medication Safety Program
- Institute for Healthcare Improvement (IHI) Age-Friendly Health Systems

Last reviewed: 2026-07-07