

Acute Urinary Retention

Acute urinary retention means urine is trapped in the bladder and must be drained urgently to prevent kidney injury.

THE ONE-LINE TRUTH

The bladder is full and cannot empty, causing pain above the pubic bone and risking kidney damage from back-pressure.

The chain — how it unfolds

1. Something blocks urine outflow or stops the bladder muscle from squeezing. — why: This is the upstream break. Mechanical blockage (enlarged prostate, stricture, stone, clot, fecal impaction, pelvic mass), neurogenic failure (spinal cord injury, MS, diabetic neuropathy, cauda equina), or drug effect (anticholinergics blocking acetylcholine, opioids, alpha-agonists tightening the internal sphincter) prevents the bladder from emptying. Once this step fails, everything downstream follows in sequence.
2. Urine volume in the bladder rises above 300 to 500 mL and keeps climbing. — why: The kidneys keep making urine at 0.5 to 1 mL per kilogram of body weight per hour, so about 30 to 60 mL per hour in an average adult. Because none can leave the bladder, volume accumulates. Within a few hours, the bladder can hold 800 to 1200 mL or more, and intravesical pressure (pressure inside the bladder) climbs.
3. The bladder wall stretches, causing suprapubic pain (pain above the pubic bone) and an urgent need to urinate. — why: Stretch receptors in the detrusor muscle fire and send alarm signals through pelvic nerves to the sacral spinal cord (the lower back) and up to the brain. This produces the sensation of fullness, pressure, and sharp or aching pain in the lower belly, just above the pubic bone. The urge to go is intense, but nothing comes out when the patient tries.
4. The bladder becomes palpable as a firm, smooth, dull mass rising out of the pelvis. — why: When bladder volume exceeds 500 to 600 mL, the distended bladder pushes up into the lower abdomen above the pubic bone. On physical exam, you can feel it as a smooth, midline swelling below the umbilicus (belly button). Percussion over the bladder produces a dull thud instead of the normal hollow sound, because the bladder is full of liquid.

5. Pressure backs up through the ureters into the kidneys, causing hydronephrosis (swelling of the renal pelvis and calyces). — why: High intravesical pressure transmits backward (retrograde) through the ureterovesical junctions (the one-way valves where the ureters enter the bladder). Normally these valves prevent backflow, but high pressure overcomes them. The ureters dilate and the renal collecting system (pelvis and calyces) swells with trapped urine. You can see this on ultrasound or CT as fluid-filled, ballooned-out spaces in the kidneys.
6. Blood flow to the kidneys drops, and the glomerular filtration rate (GFR) falls, risking acute kidney injury (AKI). — why: High pressure in the renal pelvis compresses the kidney tissue (parenchyma) and the blood vessels inside it. This reduces blood flow (perfusion) (blood flow) and oxygen delivery to the nephrons (the tiny filtering units). Starved of oxygen, the nephrons stop filtering waste, and creatinine (a waste product normally removed by the kidneys) rises in the blood. If the obstruction lasts more than 24 to 48 hours, the kidney injury can become irreversible.
7. Draining the bladder with a catheter or relieving the blockage surgically drops intravesical pressure to near zero and reverses the entire chain. — why: Once urine drains out, the bladder wall relaxes, pressure stops backing up into the ureters and kidneys, hydronephrosis resolves, and renal blood flow returns to normal. The nephrons start filtering again, and creatinine falls. Pain stops immediately once the bladder empties. Fixing the root cause (the blockage or bladder muscle failure) reverses every downstream effect—this is why catheter placement is the first and most urgent treatment.
8. After relief, watch for post-obstructive diuresis and electrolyte shifts. — why: The kidneys dump large volumes of dilute urine to clear the backed-up fluid and waste. This can cause low blood volume, low potassium, low sodium, and too much acid in the blood (acidosis). Close monitoring and IV fluid replacement for 12 to 24 hours prevent these complications and support kidney recovery.

Spot it — what you see, and why

- Suprapubic pain or pressure: The overfilled bladder stretches way beyond its normal size (like blowing up a balloon too much). Pressure sensors built into the bladder wall fire pain signals that travel through nerves to your brain, and you feel a deep ache or sharp pain low in your belly, right above the pubic bone.
- Inability to void despite strong urge: Your bladder is packed far past its normal limit (usually about 2 cups of urine). Stretch sensors scream 'empty me now!' but a blockage or weak bladder muscle stops any urine from getting out, so you feel desperate to go but nothing comes.

- **Palpable suprapubic mass:** When the bladder holds more than 2 to 3 cups of urine, it swells so big it rises above the pelvic bones. You (or a doctor) can feel it as a firm, smooth lump low in the middle of your belly, and tapping on it sounds dull instead of hollow.
- **Overflow incontinence (paradoxical dribbling):** The bladder is so stretched and full that pressure inside climbs higher than the valves and sphincters can hold. Tiny amounts of urine leak out around the blockage like water spilling over the rim of an overfilled glass. It looks like you're peeing yourself, but really your bladder is stuck full.
- **Lower abdominal distension:** The huge, tight bladder pushes the front wall of your belly outward. You can see a bulge or swelling low and center in your belly, especially if you are thin.
- **Restlessness or agitation:** A bladder stretched to the max causes serious discomfort and kicks your body's alarm system (the sympathetic nervous system, which runs fight-or-flight) into high gear. You can't sit still, can't get comfortable lying down, and feel trapped by the pain.

Red flags — act now

- Sudden inability to urinate after starting a new medicine that dries you out (anticholinergic), a painkiller (opioid), or a cold medicine (decongestant)—these drugs can tip a borderline blockage into complete retention.
- Severe low-belly pain with a firm lump you can feel and no urine at all for more than 6 to 8 hours—risk of kidney damage climbs fast.
- Blood tests show rising creatinine or falling urine output, meaning backed-up urine is starting to hurt the kidneys (acute kidney injury from obstruction).
- New leg weakness, numbness in the groin or buttocks (saddle area), or loss of bowel control—these are red flags for cauda equina syndrome (pinched nerve roots at the bottom of the spine), which needs emergency MRI and surgery.
- In a person with spinal cord injury: sudden high blood pressure, slow heart rate, pounding headache, and flushing or sweating above the injury level—this is autonomic dysreflexia from bladder stretch and is a medical emergency (can cause stroke or seizure if not relieved immediately).

Treat it — in this order

1. Insert a urethral (Foley) catheter to drain the bladder. Drain the first 1000 mL, then clamp the catheter for 15–30 minutes, then release another 1000 mL, repeating until the bladder is empty. → Draining the trapped urine immediately relieves pain, drops the dangerous pressure inside the bladder, and stops backpressure from reaching the kidneys and causing permanent damage. Slow, staged drainage—not all at once—prevents three complications: (1) post-obstructive diuresis, where the kidneys suddenly make huge amounts of urine and the patient can become dehydrated; (2) blood in the urine (hematuria) ex vacuo, where blood vessels in the overstretched bladder wall bleed when pressure drops too fast; and (3) low blood pressure (hypotension), where blood pressure drops from sudden fluid shifts inside the body.
2. Start an alpha-blocker medication—tamsulosin 0.4 mg once daily or alfuzosin 10 mg once daily—if benign prostatic hyperplasia (BPH) is the cause → Alpha-blockers relax the smooth muscle wrapped around the prostate and the bladder neck (the muscular ring where the bladder meets the urethra). This makes the exit passage wider and drops resistance to urine flow, so the bladder can push urine out more easily. Within 48 hours to a few weeks, the chance of successful catheter removal—and staying catheter-free—rises significantly. These drugs do not shrink the prostate. They just relax the muscle squeezing the tube.
3. Stop medications that impair bladder emptying: anticholinergics (oxybutynin, diphenhydramine, tricyclic antidepressants), opioids (morphine, oxycodone, hydrocodone), and sympathomimetics (pseudoephedrine, phenylephrine found in cold medicines) → Anticholinergics block the nerve signal—acetylcholine, the chemical messenger that tells muscles to contract—that tells the bladder muscle to squeeze. Stopping them lets the bladder contract again. Opioids slow the brain's control of voiding. Stopping them restores normal bladder reflexes. Sympathomimetics tighten the bladder neck and urethra—like clenching a fist around a garden hose. Stopping them lets the exit relax. Bladder function can improve within hours to a few days after these drugs leave the system.
4. Refer to urology for cystoscopy (inserting a thin camera through the urethra into the bladder) to diagnose stricture or tumor; perform surgery—transurethral resection of the prostate (TURP), laser prostatectomy—for severe BPH; use lithotripsy (shock waves to break up stones) or ureteroscopy (a thin scope to grab the stone) for stones; manually remove stool or give strong laxatives (polyethylene glycol, bisacodyl) for severe constipation → These interventions remove or bypass the physical obstruction blocking urine flow. TURP and laser surgery core out the overgrown prostate tissue squeezing the urethra. Stricture dilation or urethroplasty (surgical repair) widens a scarred, narrowed urethra. Stone removal clears the blockage. Relieving severe constipation removes external compression on the bladder outlet. After the blockage is gone, the bladder can drain on its own without a catheter.

5. Place a suprapubic catheter (a tube inserted through the lower belly skin directly into the bladder) if urethral catheterization fails or is impossible → Provides an alternate drainage route when the urethra is completely blocked or impassable—due to severe stricture (scar narrowing), false passage (a traumatic track created by failed catheter attempts), urethral injury, or a very large prostate blocking access. Relieves retention and prevents kidney damage from backpressure. The catheter stays in place for days to weeks while the underlying problem is evaluated and treated.

Your top priorities at the bedside

1. Perform a bladder scan or palpate the lower abdomen to confirm a distended bladder before calling the provider for a catheter order. — why: A bladder scan showing more than 400 to 600 mL confirms retention and justifies urgent catheterization; examining by touch (palpation) of a firm, tender suprapubic mass provides immediate clinical evidence while waiting for equipment or orders.
2. Insert a urethral Foley catheter using strict sterile technique, and drain the first 1000 mL, then clamp the catheter for 15 to 30 minutes before draining the next 1000 mL. — why: Rapid decompression (sudden emptying) of a chronically distended bladder can cause blood in the urine (hematuria) ex vacuo (bleeding from sudden pressure drop in bladder blood vessels) and, rarely, low blood pressure (hypotension) (low blood pressure) from reflex vasodilation (blood vessels relaxing); staged drainage prevents these complications.
3. Measure and document the total volume of urine drained, its color, clarity, and any blood or sediment. — why: Volume over 800 to 1000 mL confirms significant retention; blood-tinged urine may indicate bladder-wall trauma from overdistension or catheter insertion; cloudy or foul-smelling urine suggests urinary tract infection that can seed the bloodstream once the catheter is placed.