

Acute Urinary Retention

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

THE STORY IN ONE SENTENCE

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

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

Normal anatomy — the body's job

The bladder is a hollow, muscular balloon that sits in your pelvis. It stores urine that drips down continuously from the kidneys through two tubes called ureters. As the bladder fills, its wall (the detrusor muscle) stretches. When you are ready to urinate, the detrusor muscle squeezes while two ring-shaped valves (the internal sphincter at the bladder neck and the external sphincter in the urethra) relax, letting urine flow out through the urethra. Keep this picture in mind, because every finding in acute urinary retention makes sense only as a failure of this normal emptying process.

BODY'S JOB

Your kidneys make urine all day and night to clean waste from your blood. That urine flows down the ureters into the bladder, which holds it safely until you find a bathroom. The detrusor muscle and the sphincter valves work together like a two-part gate: the bladder squeezes to push urine out, and the sphincters open to let it pass. If either part fails, the bladder fills but cannot empty, and pressure builds.

1. Kidneys make urine continuously (about 0.5 to 1 milliliter per kilogram of your weight per hour).
2. Urine drips down the ureters (one from each kidney) into the bladder.
3. The bladder wall stretches as it fills, like a water balloon inflating.
4. Stretch receptors in the bladder wall send a signal up nerves to your spinal cord and brain, making you feel the urge to urinate.

5. When you decide to urinate, your brain sends a signal down through the spinal cord to the bladder.
6. The detrusor muscle contracts (squeezes) and the internal and external sphincters relax (open).
7. Urine flows out through the urethra until the bladder is empty.

What breaks

In acute urinary retention, one of two things breaks: either something physically blocks the urethra so urine cannot get out (like a clogged pipe), or the bladder muscle and nerves stop working so the bladder cannot squeeze (like a pump losing power). Either way, urine piles up inside the bladder and cannot escape.

CLINICAL TERM

Acute urinary retention is the sudden inability to voluntarily pass urine despite a full bladder. It is classified into obstructive and non-obstructive causes. Obstructive causes physically block urine outflow; non-obstructive (neurogenic and pharmacologic) causes impair bladder contraction or sphincter relaxation. Both lead to the same clinical picture: a distended bladder, suprapubic pain, inability to void, and risk of hydronephrosis (kidney swelling) and acute kidney injury from back-pressure.

How the body compensates

When urine first starts backing up, your bladder stretches and your body works hard to keep everything stable. Vital signs stay normal, and you may not feel sick right away. This is the dangerous middle phase, because normal blood pressure and normal creatinine (a blood test for kidney function) can falsely reassure the team while the kidneys are quietly swelling and pressure is building. Your job is to recognize the tipping point before irreversible kidney injury occurs.

1. {'step': 'The bladder wall stretches to hold more urine without raising pressure too much at first.', 'why': 'The detrusor muscle has compliance (stretchiness), so the bladder can expand from 400 mL to over 1000 mL without a huge jump in pressure. This buys time, but it also delays the alarm—patients often wait hours before seeking help because the pain builds slowly.'}
2. {'step': 'Pressure inside the bladder (intravesical pressure) starts to climb as the bladder fills beyond its normal capacity.', 'why': 'Once the bladder stretches past about 600 mL, the wall becomes stiffer and pressure rises. This pressure backs up through the ureters into the kidneys, causing hydronephrosis (swelling of the kidney collecting system).'} }

3. {'step': 'The kidneys try to keep filtering blood and making urine, but high back-pressure slows filtration.', 'why': 'High pressure in the renal pelvis (the kidney's urine-collecting funnel) compresses the kidney tissue and blood vessels. This reduces blood flow (perfusion) to the nephrons (tiny filtering units), so the glomerular filtration rate (GFR, the measure of how well kidneys filter) drops and creatinine starts to rise in the blood.'}
4. {'step': 'Blood pressure, heart rate, and respiratory rate usually stay normal during compensation.', 'why': 'The kidneys are being damaged, but the body is not in shock yet. This is why you cannot rely on vital signs alone—normal vitals do not rule out serious kidney injury if the obstruction has been present for hours or days.'}
5. {'step': 'Once the blockage is relieved by catheter or surgery, post-obstructive diuresis may occur.', 'why': 'The kidneys suddenly dump large volumes of dilute urine (sometimes several liters in hours) to clear the backed-up fluid and waste. This can cause low blood volume (hypovolemia), low potassium (hypokalemia), low sodium (hyponatremia), and metabolic acidosis (acid building up in the blood) (blood becomes too acidic). Patients need close monitoring and IV fluids to replace losses.'}
6. {'step': 'Watch for gross blood in the urine (hematuria) (visible blood in the urine) after the catheter is placed.', 'why': 'Rapid decompression of the bladder can tear small blood vessels in the overstretched bladder wall. The bleeding is usually mild and stops on its own, but it can alarm the patient and team.'}
7. {'step': 'Trend urine output, creatinine, and electrolytes (sodium, potassium, bicarbonate) every 4 to 6 hours, not just once.', 'why': 'A single normal lab does not mean the kidneys are safe. The crash point happens over hours. Serial measurements show whether kidney function is recovering or worsening and guide fluid and electrolyte replacement.'}

Domino effect

1. Something blocks urine outflow or stops the bladder muscle from squeezing. — 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. — 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. — 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. — 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). — 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). — 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. — 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. — 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.

Symptoms · what the patient feels, 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.
- **Nausea or sweating:** In some people—especially those with spinal cord injuries above the mid-chest—severe bladder stretch triggers a runaway alarm response called autonomic dysreflexia. The sympathetic nervous system (the body's panic nerves) fires too hard, causing sudden sweating, nausea, and sometimes dangerously high blood pressure. Even without spinal injury, intense pain can trip the vagus nerve (a major nerve connecting the brain to the gut) and make you sweat and feel sick to your stomach.
- **Little or no recorded urine output for hours:** Your kidneys keep making urine, but it's all trapped inside your bladder and the tubes above it (ureters). The intake-and-output chart shows zero or almost zero urine, but the problem isn't that your kidneys stopped working—it's that the exit is blocked.
- **Flank pain (if backup is severe):** When urine can't drain out of the bladder, it backs up through the ureters all the way to the kidneys. The kidney's collecting area (renal pelvis) swells and stretches the tight capsule (covering) of the kidney, which has pain nerves. You feel it as an ache in your side or back.

- Acute confusion (especially in elderly): Older adults and people with memory problems can suddenly become confused (delirium) when hit with severe pain, waste buildup from kidney trouble (uremia), and the body's stress response. The brain struggles to handle all those signals at once.

Focused exam

- Firm, tender bulge in the lower belly just above the pubic bone: When the bladder fills beyond its limit—like blowing up a balloon past its safe size—it stretches and pushes forward. You can feel this swollen bladder through the belly wall. Finding this bulge tells you the bladder is trapped full and cannot empty. Urine has nowhere to go.
- Patient feels a desperate urge to urinate but nothing comes out when they try: The brain senses the full bladder and sends the 'go now' signal, but urine does not flow. This is the signature of acute urinary retention. Either something is blocking the exit tube (the urethra, the channel that carries urine from bladder to outside) or the bladder muscle cannot squeeze because the nerves controlling it are damaged.
- Dull sound when you tap over the lower belly (percussion): When you gently tap over a body part, air makes a hollow sound and liquid makes a flat, dull sound. A bladder full of trapped urine sounds dull, not hollow. This tells you there is a large pocket of fluid—urine—sitting where it should not be.
- After trying to urinate, ultrasound or bladder scan shows more than 500 mL of urine still trapped inside: A healthy bladder holds less than 50–100 mL after you empty it. Finding 500 mL or more (half a liter—picture a large water bottle) proves the bladder cannot drain itself. Volumes over 1000 mL (1 liter) signal severe retention and risk kidney damage from backpressure.
- Small leaks of urine that the patient cannot control (overflow incontinence): When the bladder stretches past its limit, the pressure inside climbs so high that urine spills over the top of the blockage—like water overflowing a dam. These leaks happen without the patient's control and do not mean the bladder is emptying. It is just overflowing from extreme fullness.
- Rectal exam reveals an enlarged prostate, hard lump of stool, or mass pressing on the bladder outlet: By sliding a gloved finger into the rectum, the examiner can feel the prostate (a walnut-sized gland that wraps around the urethra in men), check for severe constipation, and detect masses pressing on the urethra. An enlarged prostate—common in men over 50—squeezes the urethra like a clamp. Hard stool or a tumor can block the exit from outside. Finding these tells you what is causing the blockage.

Diagnostics · every test answers a question

- Bladder ultrasound or handheld bladder scanner → How much urine is still trapped in the bladder after the patient tries to empty it?
- Serum creatinine and blood urea nitrogen (BUN) → Is the backed-up urine damaging the kidneys?
- Urinalysis with microscopy and urine culture → Is there infection in the trapped urine? Are there red blood cells suggesting stones, tumor, or injury?
- Renal (kidney) ultrasound or CT scan of the abdomen and pelvis without contrast → Are the kidneys swelling from backed-up urine (hydronephrosis)? Can we see stones, masses, or other blockages?
- Digital rectal exam (DRE) → Is the prostate enlarged or hard? Is there severe constipation or a pelvic mass squeezing the bladder outlet?
- Prostate-specific antigen (PSA) blood test if the prostate is enlarged on exam → Is the enlarged prostate due to cancer or benign overgrowth?
- Post-void residual measurement by catheterization (inserting a thin tube into the bladder immediately after the patient voids) → Exactly how much urine remains after the patient tries their hardest to empty the bladder?
- Electrolytes (sodium, potassium, bicarbonate) and arterial or venous blood gas if the patient is confused, weak, or has an abnormal heart rhythm → Has the kidney damage from retention caused dangerous electrolyte imbalances or acid buildup in the blood?

Treatment logic

- 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.

- 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.
- 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.
- 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.
- 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.

- Teach clean intermittent catheterization (CIC) 4–6 times daily for patients with chronic neurogenic bladder due to spinal cord injury, multiple sclerosis, or diabetic neuropathy → The patient—or caregiver—inserts a thin, disposable catheter through the urethra into the bladder several times a day to drain urine on a schedule. This keeps the bladder empty without leaving a catheter in place all the time, which lowers infection risk and prevents chronic high pressure from damaging the kidneys. CIC allows patients with permanent nerve damage to maintain bladder drainage, stay dry, preserve kidney function, and maintain quality of life.
- Add a 5-alpha-reductase inhibitor—finasteride 5 mg daily or dutasteride 0.5 mg daily—if BPH is severe and alpha-blockers alone are insufficient → These drugs block the hormone dihydrotestosterone (DHT, a stronger form of testosterone) that makes the prostate grow. Over 6–12 months, the prostate shrinks by roughly 20–30 percent. This widens the urethra and improves urine flow. Combining a 5-alpha-reductase inhibitor with an alpha-blocker reduces the long-term risk of acute urinary retention and the need for prostate surgery.

Medications

Foley catheter with slow drainage protocol · Mechanical decompression device (not a drug)

When the bladder suddenly cannot empty, it stretches like an overfilled water balloon. The walls get damaged and tiny blood vessels inside become weak and leaky. If you drain all the urine at once, those fragile vessels pop open and bleed (you see blood in the urine). At the same time, the sudden pressure drop makes blood vessels all over the body suddenly widen, and blood pressure can crash dangerously low. Draining slowly—taking out 1 liter, then pausing—lets the bladder walls shrink back gently, gives the blood vessels time to heal and tighten up, and keeps blood pressure stable. Think of it like slowly letting air out of a stretched balloon instead of popping it.

1. Insert the catheter through the urethra (the tube that carries urine out) into the bladder.
2. Drain up to 1 liter of urine, then clamp the catheter tube to stop flow.
3. Wait 10 to 15 minutes for the bladder wall to gradually shrink and blood vessels to stabilize.
4. Repeat slow drainage cycles until the bladder is empty.
5. Leave the catheter in place for 24 to 48 hours to let the bladder rest and recover its normal stretch and squeeze function.
6. Start treatment for the underlying cause—enlarged prostate, blocked urethra, nerve damage, or constipation pressing on the bladder.

SAFETY WATCH

Never drain more than 1 liter at once in the first few hours. Rapid decompression causes bleeding and blood pressure drops. · Use sterile technique (clean, germ-free) during insertion to prevent urinary tract infection. · If the catheter will not pass through the urethra, STOP. Forcing it can tear the urethra wall. Call urology for a suprapubic catheter (inserted through the lower belly directly into the bladder). · Watch for blood in the urine after drainage. Light pink is common and usually clears. Bright red or clots mean the vessels were drained too fast. · Watch blood pressure closely in the first hour after drainage, especially in elderly patients or those with heart disease.

Tamsulosin · Alpha-1A adrenergic receptor blocker (alpha-blocker)

In men with an enlarged prostate, the prostate tissue and the muscle ring at the bladder neck squeeze the urethra like a tight fist around a garden hose. This squeezing happens because a chemical messenger called norepinephrine (released by stress nerves) locks onto alpha-1A receptors on the muscle cells, telling them to stay tight. Tamsulosin blocks those alpha-1A receptors so norepinephrine cannot land. Without that signal, the muscle relaxes, the urethra opens wider, and urine flows more easily. Think of it as unlocking a clenched fist around the hose—the water (urine) can now pass through.

1. Tamsulosin enters the bloodstream after you swallow the capsule (usually 0.4 mg once daily, 30 minutes after the same meal each day).
2. The drug travels to the prostate, bladder neck, and upper urethra.
3. It binds to alpha-1A receptors on smooth muscle cells in these areas.
4. Norepinephrine (the tightening signal) is blocked from attaching to the receptors.
5. The smooth muscle relaxes, the urethra widens, and urine can flow out more easily.
6. Peak effect happens in 4 to 8 hours. Full benefit builds over 2 to 4 weeks.

SAFETY WATCH

Dizziness and lightheadedness are common in the first few days, especially when standing up quickly, because the drug can mildly relax blood vessels and drop blood pressure. Stand up slowly and sit back down if you feel faint. · Take the capsule 30 minutes after the same meal every day. Food slows absorption and reduces dizziness spikes. · Tell your eye surgeon before cataract or glaucoma surgery. Tamsulosin can cause intraoperative floppy iris syndrome during the operation, making surgery harder. · Do NOT use tamsulosin with strong CYP3A4 or CYP2D6 inhibitors (ketoconazole, clarithromycin, paroxetine) without dose adjustment. Drug levels can spike and cause dangerous blood pressure drops. · Retrograde ejaculation (semen goes backward into the bladder instead of out) happens in 10 to 20% of men. This is harmless but can reduce fertility. The semen comes out later when you urinate (urine looks cloudy). This reverses if you stop the drug.

Finasteride or Dutasteride · 5-alpha reductase inhibitor

Testosterone (the male hormone) is converted inside prostate cells into a more powerful form called dihydrotestosterone (DHT) by an enzyme called 5-alpha reductase. DHT tells prostate cells to grow and multiply, which is why the prostate enlarges over the years. Finasteride blocks type 2 of the enzyme. Dutasteride blocks both type 1 and type 2. With less DHT being made, the prostate shrinks by 20 to 30% over 6 to 12 months. A smaller prostate squeezes the urethra less, so urine flows better. Think of it like deflating a balloon pressing on a straw—the straw (urethra) opens up as the balloon (prostate) shrinks.

1. Finasteride (5 mg daily) or dutasteride (0.5 mg daily) is swallowed and absorbed into the bloodstream.
2. The drug enters prostate cells and binds tightly to the 5-alpha reductase enzyme.
3. The enzyme is blocked and cannot convert testosterone into DHT.
4. DHT levels inside the prostate drop by 70 to 90%.
5. Without DHT signaling, prostate cells stop growing and some die off (programmed cell death called apoptosis).
6. The prostate shrinks slowly over 6 to 12 months, and urine flow improves.

SAFETY WATCH

Sexual side effects: 3 to 5% of men experience decreased libido (interest in sex), erectile dysfunction (trouble getting or keeping an erection), or reduced semen volume. These often improve after a few months but can persist in some men even after stopping the drug. · PSA (prostate-specific antigen, a blood test used to screen for prostate cancer) drops by about 50% after 6 months on the drug. Your doctor must double the PSA result to interpret it correctly and not miss prostate cancer. · Pregnant women or women planning pregnancy must NOT handle crushed or broken tablets. The drug can cause severe birth defects in male fetuses by blocking DHT, which is essential for normal development of male genitals. · Breast tissue enlargement (gynecomastia) and breast tenderness occur in less than 1% of men. · Finasteride and dutasteride take 6 to 12 months to work, so do not stop early thinking they are not helping. Symptoms improve gradually.

Clean intermittent catheterization (self-catheterization) · Mechanical bladder management technique (not a drug)

When the detrusor muscle (the bladder's main squeezing muscle) is too weak to push urine out—from nerve damage in spinal cord injury, multiple sclerosis, diabetes, or after pelvic surgery—or when the prostate or bladder neck stays too tight despite medications, urine builds up and the bladder overstretches. Clean intermittent catheterization means you insert a thin, flexible tube (catheter) through your urethra into your bladder 4 to 6 times a day to drain the urine completely, then remove the tube. This keeps the bladder from overfilling, prevents kidney damage from backpressure, and reduces the risk of infection that comes with a catheter left in place all the time. Think of it like manually emptying a sink with a broken drain—you use a cup to scoop out the water regularly so it does not overflow.

1. Wash hands thoroughly with soap and water.
2. Lubricate the catheter tip with water-soluble lubricant gel.
3. Insert the catheter gently through the urethra until urine starts flowing (about 6 to 8 inches in men, 2 to 3 inches in women).
4. Let the bladder drain completely into a toilet or container.
5. Remove the catheter slowly and wash it with soap and water, then let it air dry.
6. Repeat 4 to 6 times per day, or as prescribed, to keep bladder volume under 400 to 500 mL.

SAFETY WATCH

Always wash hands before and after to reduce infection risk. · Use a new or properly cleaned catheter each time. Reusing a dirty catheter brings bacteria into the bladder. · Never force the catheter if you feel resistance. Stop and seek help—forcing can tear the urethra. · Watch for signs of urinary tract infection: burning, cloudy or foul-smelling urine, fever, or blood in the urine. Report these to your doctor immediately. · Drink enough water to produce pale yellow urine, but do not overdrink. Keeping bladder volume under 400 to 500 mL per catheterization reduces overstretching and infection risk. · Men with enlarged prostates may find catheterization difficult or painful. A coudé catheter (curved tip) or urology referral may be needed.

Suprapubic catheter placement · Surgical bladder drainage procedure (not a drug)

When a urethral catheter cannot be placed because the urethra is blocked by scar tissue (stricture), torn during a failed catheter attempt (false passage), or squeezed shut by a very large prostate, urology places a suprapubic catheter. This is a thin tube inserted through a small incision in the lower belly directly into the bladder, above the pubic bone. Ultrasound or a filled bladder guides the placement. The catheter stays in place with a small balloon inside the bladder and drains urine continuously into a bag. It bypasses the urethra completely, so it works even when the urethra is impassable. Think of it like drilling a new drain hole in a clogged sink—the water (urine) exits through a new path that is not blocked.

1. The patient is positioned lying flat, and the lower belly is cleaned with antiseptic.
2. Local anesthetic (numbing medicine like lidocaine) is injected into the skin and deeper tissues above the pubic bone.
3. A needle is inserted through the abdominal wall into the bladder, guided by ultrasound or the feel of a full bladder.
4. A guidewire is threaded through the needle, the needle is removed, and a dilator widens the tract.
5. The suprapubic catheter is inserted over the guidewire into the bladder.
6. A small balloon at the catheter tip is inflated inside the bladder to hold it in place.
7. The catheter is secured to the skin with sutures or an adhesive device and connected to a drainage bag.

SAFETY WATCH

Bleeding at the insertion site or blood in the urine is common in the first 24 to 48 hours and usually stops on its own. Heavy bleeding or clots need immediate attention. · Infection at the skin site (redness, swelling, pus, warmth) or bladder infection (fever, cloudy urine, strong odor) requires antibiotics. Keep the site clean and dry. · Never pull the catheter out forcefully. The balloon must be deflated first by a healthcare provider. Pulling an inflated balloon can tear the bladder wall. · Catheter blockage (no urine draining) can mean the tube is kinked, clogged with sediment, or dislodged. Flush gently with sterile saline if trained, or call urology immediately. · Bowel injury is rare but possible if the bladder is empty during placement or the needle is inserted too deeply. Severe abdominal pain, vomiting, or fever after placement needs emergency evaluation. · Change the catheter every 4 to 6 weeks or as directed to prevent blockage and infection buildup.

Red flags

- 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).

Nursing priorities

1. Perform a bladder scan or palpate the lower abdomen to confirm a distended bladder before calling the provider for a catheter order. — 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. — 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. — 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.
4. Monitor vital signs every 15 minutes during drainage and for 1 hour afterward, watching for low blood pressure (hypotension), a fast heart rate (tachycardia), or signs of shock. — Sudden bladder decompression can trigger vasovagal response (fainting reflex from vagus nerve stimulation) or hypovolemic response if the patient was dehydrated; early detection allows immediate fluid resuscitation.
5. Review the medication list with the provider and hold or discontinue anticholinergics, opioids, decongestants, and antihistamines that contributed to retention. — Continuing bladder-paralyzing drugs will prevent recovery of normal voiding even after catheter removal; stopping these medications breaks the cycle and improves trial-of-void success rates.
6. Check serum creatinine and blood urea nitrogen (BUN, waste products filtered by kidneys) if retention has lasted more than 12 hours or the patient has back pain or nausea. — Prolonged high bladder pressure transmits backward through the ureters (tubes from kidneys to bladder) into the kidneys, causing post-renal acute kidney injury (kidney damage from obstruction); elevated creatinine or BUN signals the need for nephrology consultation and longer catheter dwell time.
7. Secure the catheter to the inner thigh with a StatLock or tape to prevent urethral traction and trauma, and hang the drainage bag below bladder level. — Tension on the catheter can tear the urethra or bladder neck, causing stricture (scar narrowing) or false passage (new hole in the urethra); gravity drainage below the bladder prevents backflow of urine and bacterial colonization.
8. Teach the patient and family that the catheter will remain in place for 1 to 3 days to rest the bladder, and explain the plan for a voiding trial after the bladder recovers. — A fatigued, overstretched detrusor muscle (bladder wall muscle) needs time to regain tone and contractility; premature catheter removal often results in immediate re-retention and the need for re-catheterization, increasing infection risk and patient distress.

Sources

- AUA/SUFU Guideline on Non-Neurogenic Chronic Urinary Retention and Overflow Incontinence 2019
- EAU Guidelines on Acute Urinary Retention 2023
- UpToDate Clinical Guidelines
- KDIGO Clinical Practice Guideline for Acute Kidney Injury 2012

Last reviewed: 2026-07-07