

Benign Prostatic Hyperplasia

Traffic jam at the exit—bladder's fine, the road out is narrow.

THE ONE-LINE TRUTH

The prostate gland slowly grows larger with age and squeezes the urethra (the tube that carries urine out), so the bladder must push harder to empty.

The chain — how it unfolds

1. Prostate tissue enlarges, especially the transition zone around the urethra. — why: Age-related hormonal changes—especially higher levels of dihydrotestosterone (DHT, a stronger form of testosterone)—drive benign (non-cancer) growth of prostate cells.
2. Urethral lumen (the open space inside the tube) narrows. — why: The enlarged gland compresses the urethra from all sides, like a tightening donut squeezing the hole in the middle.
3. Bladder outlet obstruction increases; bladder must generate higher pressure to void. — why: More resistance in the urethra means the detrusor muscle must work harder to push urine through the narrow spot.
4. Detrusor hypertrophy and overactivity develop. — why: Chronic workload causes the bladder muscle to thicken (like a gym muscle) and become irritable, firing involuntary squeezes even when you are not ready to go.
5. Lower urinary tract symptoms (LUTS) appear: weak stream, hesitancy (delay in starting), intermittency (stream stops and starts), urgency, frequency, waking at night to urinate (nocturia). — why: Obstructive symptoms (weak stream, hesitancy, intermittency) come from the narrow urethra; irritative symptoms (urgency, frequency, waking at night to urinate (nocturia)) come from the overactive, thickened bladder.
6. Incomplete emptying → rising post-void residual volume (urine left behind after voiding). — why: The detrusor cannot overcome outlet resistance completely, so urine is left behind in the bladder after each void.
7. Complications: recurrent UTIs, bladder stones, hydronephrosis, acute urinary retention (sudden complete blockage). — why: Stagnant urine sitting in the bladder grows bacteria (UTIs) and crystallizes into stones; chronic high pressure backs urine up into the kidneys (hydronephrosis); sudden complete blockage causes painful retention and may require emergency catheter placement.

Spot it — what you see, and why

- **Weak urinary stream:** The prostate wraps around the urethra (the tube that carries urine out of the body). When the prostate grows bigger, it squeezes the urethra like a hand squeezing a garden hose—the pipe gets narrower, so urine comes out slower even though the bladder pushes with normal force.
- **Hesitancy (trouble starting to pee):** The bladder is a muscle bag that squeezes to push urine out. Because the enlarged prostate has made the exit narrow, the bladder has to build up extra pressure—like winding up before a big throw—before it can force the first drops through the tight opening.
- **Intermittent stream (stop-and-go flow):** The detrusor (the bladder's squeezing muscle) gets tired while pushing against the tight squeeze. It pauses to rest, then squeezes again. This happens over and over because one long push isn't strong enough to empty through the narrow opening.
- **Feeling that the bladder isn't empty after peeing:** Even after the bladder squeezes as hard as it can, some urine is left behind (post-void residual) because the narrow exit makes it impossible to push everything out. That leftover urine sits at the bottom like water stuck in a kinked hose.
- **Urinary frequency (peeing more than 8 times a day):** Because the bladder never gets completely empty, it fills up again faster. The bladder starts to feel full when it is only half-filled with new urine plus the leftover from last time—so you have to go more often to stay comfortable.
- **Waking at night to urinate (Nocturia) (waking up 2 or more times at night to pee):** The detrusor (the bladder's muscle wall) becomes irritable and overactive from working so hard. At night it squeezes on its own without warning, and because leftover urine takes up space, even a small amount of new urine triggers the brain's 'I need to go' signal and wakes you up.

Red flags — act now

- **Acute urinary retention:** sudden inability to pee with severe pain low in the belly and a bladder you can feel as a hard bulge above the pubic bone—needs emergency catheter (thin tube) placed through the urethra to drain the bladder right away.
- **Repeated bladder infections (cystitis) or fever with pain when peeing—**leftover urine becomes a breeding ground for bacteria, and infection can climb to the kidneys (pyelonephritis) or spread into the blood (urosepsis), which is life-threatening.
- **Blood in the urine (hematuria) that keeps coming back or does not go away—**must check for bladder cancer, kidney stones, and prostate cancer with imaging and cystoscopy (camera inside the bladder).

- Rising creatinine on a blood test or swollen kidneys (hydronephrosis) on ultrasound or CT—means backup pressure from the blocked bladder is traveling up the ureters and damaging the kidneys (obstructive nephropathy), which can lead to kidney failure.
- Hard, lumpy, or uneven prostate felt during digital rectal exam, or PSA (prostate-specific antigen blood test) that jumps up fast or stays very high—raises strong concern for prostate cancer and requires MRI and biopsy.

Treat it — in this order

1. Watchful waiting with behavioral modifications: timed voiding every 2–3 hours during the day, limit fluids after 6 PM, reduce caffeine and alcohol, practice double voiding (urinate, wait 30 seconds, try again) → Reduces symptom bother and improves quality of life in men with mild symptoms (AUASI score < 8) without side effects or cost. Timed voiding prevents the bladder from overfilling, and fluid restriction reduces nighttime trips.
2. Alpha-1 adrenergic blockers: tamsulosin 0.4 mg daily, alfuzosin 10 mg daily, silodosin 8 mg twice daily, doxazosin (titrated to 4–8 mg daily), or terazosin (titrated to 5–10 mg daily) → Relaxes smooth muscle in the prostate and bladder neck within 48 hours to 2 weeks, opening the urethral channel and improving urine flow rate and symptom scores by 30–40%. Works regardless of prostate size (AUA/EAU BPH guidelines).
3. 5-alpha-reductase inhibitors (5-ARIs): finasteride 5 mg daily or dutasteride 0.5 mg daily → Blocks the enzyme that converts testosterone to dihydrotestosterone (DHT, the hormone that drives prostate cell growth), shrinking prostate volume by 20–30% over 6–12 months. Reduces risk of acute urinary retention by 50% and reduces risk of needing surgery by 50% over 4 years (MTOPS, CombAT trials). Most effective in men with prostate volume > 30–40 grams (roughly > 40 mL by ultrasound).
4. Combination therapy: alpha-blocker (e.g., tamsulosin) plus 5-alpha-reductase inhibitor (finasteride or dutasteride) → Provides immediate symptom relief from the alpha-blocker while the 5-ARI shrinks the prostate over the next 6–12 months. Combination therapy reduces long-term clinical progression (worsening symptoms, acute retention, need for surgery) more than either drug alone (CombAT, MTOPS trials). Recommended for men with moderate-to-severe symptoms and prostate volume > 40 grams.
5. Phosphodiesterase-5 (PDE5) inhibitor: tadalafil 5 mg once daily → Relaxes smooth muscle in the prostate, bladder, and urethra through increased cyclic GMP (a different mechanism from alpha-blockers), improving lower urinary tract symptom scores by 20–30%. Also treats erectile dysfunction if present. FDA-approved for both BPH and ED (2011).

Your top priorities at the bedside

1. Assess bladder fullness and pain BEFORE giving antihistamines or decongestants — why: These drugs can trigger sudden retention in a patient who already has a tight pipe.
2. Check post-void residual after any near-retention event — why: Confirms the bladder is emptying enough to go home safely.
3. Teach fluid and caffeine timing (fluid earlier, caffeine off after noon) — why: Makes nighttime urgency and sleep interruption more livable.