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# Managing acute and chronic urinary retention in men

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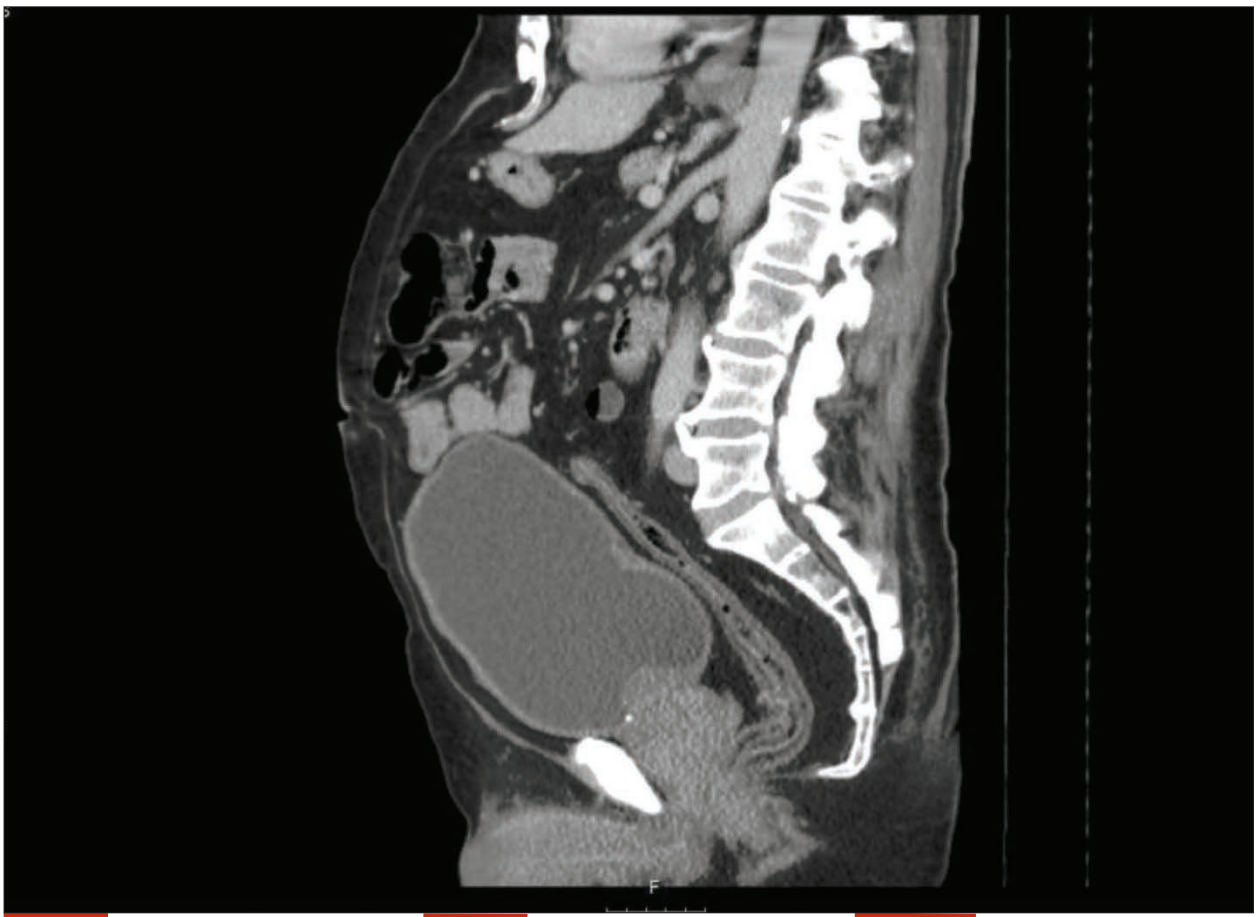


**FIGURE 1**
Sagittal view of large benign prostate with chronic retention

## How do men with urinary retention present?

**URINARY RETENTION IS THE MOST COMMON UROLOGICAL EMERGENCY[1] AND MORE THAN 95% OF** cases occur in men. It is most simply divided into acute urinary retention (AUR) and chronic urinary retention (CUR), see figure 1, above.

AUR is defined as a painful, palpable or percussable bladder, when the patient is unable to pass any urine voluntarily.[2] In CUR there is a non-painful bladder, which remains palpable or percussable after passing urine, with a post-void residual (PVR) volume of >300 ml, and these patients may become incontinent.[2] Some patients may present with acute on chronic urinary retention when no urine can be voluntarily passed but the condition is relatively painless and the residual volume on catheterisation is > 1.5 litres.

## How should men be assessed and examined?

### PATHOGENESIS AND AETIOLOGY

Urinary retention does not always signify benign prostatic hyperplasia (BPH). Three factors predominate in the pathophysiological mechanisms of AUR: bladder outflow obstruction, neurological impairment, and an inefficient detrusor muscle.[3]

Patients with AUR present to primary care or the accident and emergency department with inability to pass urine, associated with suprapubic pain or discomfort.[4] Patients with CUR usually present without pain but often with discomfort and a feeling of fullness or recurrent urinary tract infections (UTIs). In high pressure CUR, patients may present with nocturnal enuresis/overflow incontinence rather than inability to void urine, and occasionally with renal failure/fluid overload. The recent onset of bedwetting in an adult male is almost pathognomonic of CUR.[5]

CUR is generally classified as low pressure or high pressure CUR.[6] High pressure refers to an increased detrusor pressure at the start of the filling phase and leads to hydronephrosis and renal failure. Low pressure CUR leads to progressive distention of the bladder

## What are the management approaches?

and eventual bladder atonia. The two groups tend to have different symptoms, the low pressure group complaining of hesitancy, slow stream, and a feeling of incomplete emptying, while the high pressure group may be silent or also complain of urgency. An association between upper urinary tract dilatation and high pressure CUR is seen.

## ASSESSMENT AND EXAMINATION

Assessment of patients with urinary retention should begin with a concise history (the patient may be in discomfort) and physical examination focusing on factors that can help identify an aetiology. A urine sample (voided or via catheter) should be obtained for urinalysis and culture in all patients. The need for other investigations will depend on the patient's presentation, see table 2, p19.

### History

Physicians should ask about prior lower urinary tract symptoms (LUTS), previous episodes of urinary retention, prostate disease either benign or malignant, specific symptoms such as dysuria, haematuria, fever and pelvic trauma. Patients should be asked whether they have a history of UTIs/sexually transmitted infections or urethral stricture.

Neurological symptoms should be looked for if there is a high index of suspicion of a neurological cause or obvious trauma to the spine.

A detailed pharmacological history must be obtained as it may point to the cause. Use of anticholinergic and sympathomimetic drugs may lead to urinary retention.[7]

Risk factors for urinary retention are listed in table 1, below.[4]

### Physical examination

The physical examination should include the following:

***Lower abdominal palpation***

The urinary bladder may be palpable, either on abdominal or rectal examination. Deep suprapubic palpation will provoke discomfort.

***Rectal examination***

Digital rectal examination (DRE) to evaluate prostate size, possible malignancy, rectal masses, faecal impaction, perineal sensation, and rectal sphincter tone. A normal prostate examination does not preclude BPH as a cause of obstruction as small prostates can also cause retention.

***Neurological evaluation***

The neurological examination should include assessment of strength, sensation, reflexes, and muscle tone in cases where there is a high index of suspicion of a neurological cause.

**Table 1**

**Risk factors for urinary retention[4]**

- Older age: >70 years
- Severe lower urinary tract symptoms: International prostate symptoms score (IPSS) >19
- Large prostate volume: >30 ml
- Poor flow rate: < 12 ml/s

## DIAGNOSIS

Most patients with suspected AUR can be diagnosed by a history of inability to void and palpating the bladder or via a portable bladder ultrasound in the practice or emergency room. However, in patients whose history strongly suggests a diagnosis of AUR and examination is difficult or equivocal, it is reasonable to proceed with catheterisation, which is both diagnostic and therapeutic, and not wait to obtain a bladder ultrasound first.

In CUR, incomplete bladder emptying is measured by the volume of urine left in the bladder after voiding, the PVR. There is no agreement on the threshold value to define a significant PVR. Different societies have produced guidelines with different thresholds ranging from 300 ml to 1,000 ml. (We would use a threshold of > 300 ml as CUR.) Generally, >150 ml is pathological and should be investigated. The AURO guidelines on BPH[8] define as pathological a PVR of 'more than one third of total bladder capacity', but with evidence level IV. The European Association of Urology, American Urology Association and NICE guidelines on LUTS do not define threshold values for pathological PVR.

Examples of presentations in general practice or emergency departments are shown in table 3, opposite.

## MANAGEMENT

Once AUR is suspected (see figure 2, p20), decompression should be carried out immediately, which can be done using urethral or suprapubic catheterisation.

### Urethral catheterisation

An initial attempt at urethral catheterisation is indicated in all patients with suspected urinary retention, but it is contraindicated in cases where the patient has had a recent urological procedure such as urethral reconstruction.

Care must also be taken post radical prostatectomy and TURP/bladder outflow surgery. Usually an indwelling catheter is used (14-18 gauge French catheter) but occasionally clean intermittent self-catheterisation (ISC) may be indicated or preferred by the patient.[9]

ISC should be offered before an indwelling catheter for men with CUR who are still voiding unless they have impaired renal function or hydronephrosis secondary to CUR.

If possible, the use of chronic urethral indwelling catheters should be avoided. Complications include UTI, sepsis, trauma, stones, urethral strictures or erosions, prostatitis, and potential development of squamous cell carcinoma of the bladder.[10,11] In a one year prospective study of nursing home patients, catheter use was independently associated with increased mortality.[12]

### Suprapubic catheterisation

Suprapubic catheterisation (SP) is used when urethral catheterisation is contraindicated (pelvic trauma/recurrent urethral stricture) or when it fails, but its drawback is that it needs a urologist, radiologist or other suitably trained person to do the procedure. This should be performed under ultrasound guidance to minimise risks of bowel perforation. It should not be performed in undiagnosed clot retention in case there is an underlying bladder tumour.

In cases where SP catheterisation is needed and no trained person is available, a suprapubic needle aspiration of the bladder can be performed.

SP catheters are associated with fewer complications than urethral catheters in terms of discomfort, prostatic bleeding, urethral stricture and sphincter dysfunction post catheterisation.[13,14]

### Complications of bladder decompression

Haematuria, hypotension, and post-obstructive diuresis are potential complications of rapid decompression after CUR.[6] However, there is no evidence that gradual bladder decompression will decrease these complications. Rapid and complete emptying of the bladder is therefore recommended with additional intravenous sodium chloride infusion, lying and standing blood pressures, and weight recorded daily if there is

**Table 2**

**Investigations for urinary retention in men**

| Test type | Baseline diagnostic tests | Rationale |
|---|---|---|
| Laboratory | Urinalysis | Evaluate for infection, haematuria, proteinuria, glucosuria |
| | Serum creatinine, urea nitrogen | Evaluate for renal failure from lower urinary tract obstruction |
| | Serum glucose | Evaluate for undiagnosed or uncontrolled diabetes mellitus in neurogenic bladder |
| | PSA | Elevated in prostate cancer; may be elevated in BPH with retention: consider delaying if normal DRE |
| | **Diagnostic tests** | **Rationale** |
| Imaging studies | Renal and bladder ultrasonography | Measure prostate size, PVR; evaluate for bladder and urethral stones, hydronephrosis, and upper urinary tract disease |
| | Pelvic ultrasonography; CT abdomen and pelvis/MRI pelvis | Evaluate for suspected prostate cancer, pelvic, abdominal, or retroperitoneal mass or malignancy causing extrinsic bladder neck compression |
| | MRI or CT brain | Evaluate for intracranial lesion, including tumour, stroke, multiple sclerosis (MRI preferred in multiple sclerosis) |
| | MRI spine | Evaluate for lumbosacral disc herniation, cauda equina syndrome, spinal tumours, spinal cord compression, multiple sclerosis |
| | **Second line diagnostic tests** | **Rationale** |
| Other | Cystoscopy, retrograde cystourethrography | Evaluate for suspected bladder tumour and bladder or urethral stones or strictures |
| | Urodynamic studies (e.g. uroflowmetry, cystometry, electromyography, urethral pressure profile, video urodynamics, pressure flow studies of micturition) | Evaluate bladder function (detrusor muscle and sphincter) in patients with neurogenic bladder to help guide management. Also prior to bladder outflow surgery in those with high residual volumes e.g. > 3 litres |

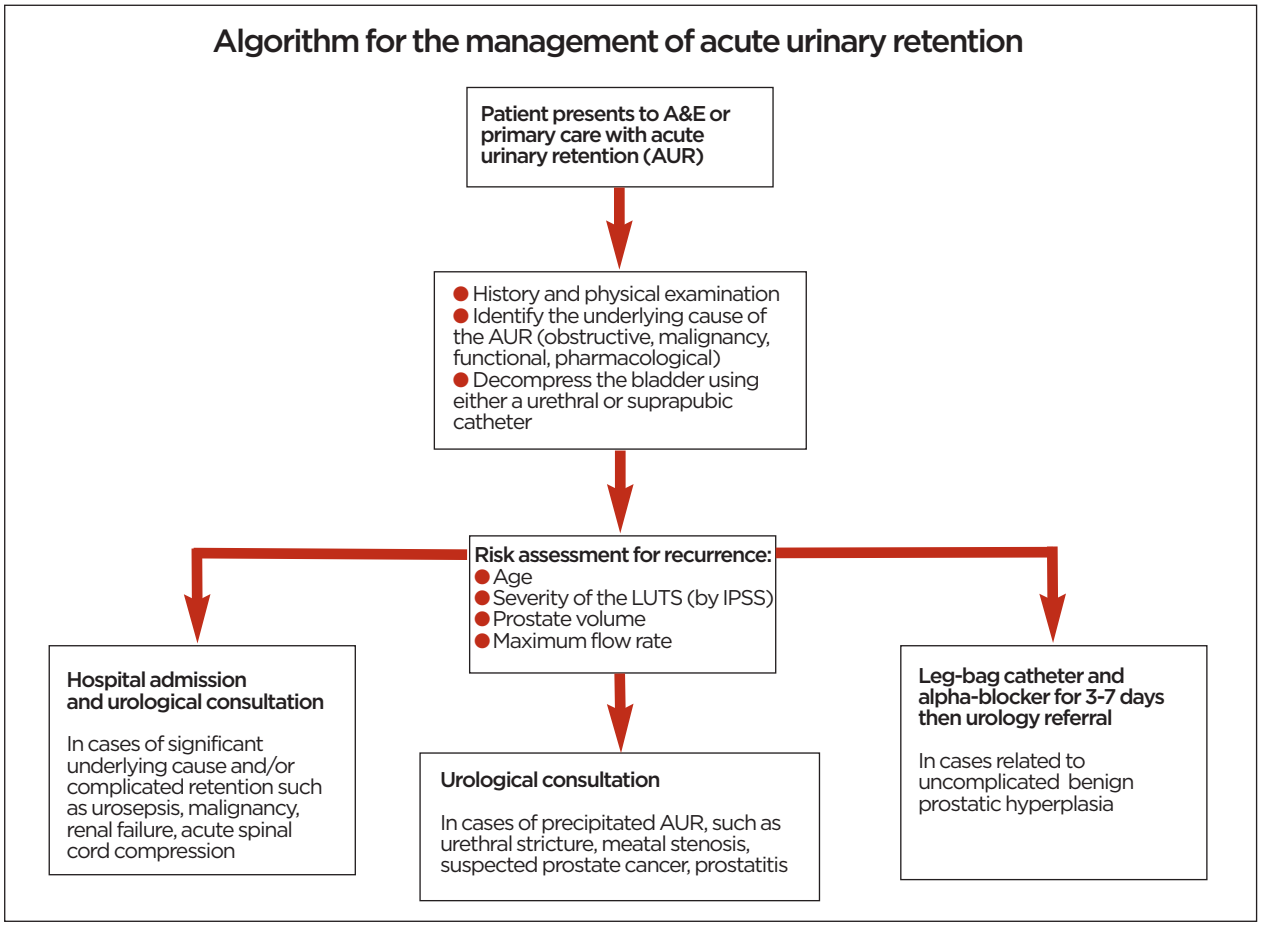
**Table 3**

**Common presentations of urinary retention in men in primary care and emergency departments**

| History | Physical examination | Possible aetiology |
|---|---|---|
| Previous history of urinary retention or near retention/worsening urinary symptoms | Enlarged, firm, non-tender, non-nodular prostate on DRE; prostate examination may be normal | BPH |
| Fever; dysuria; back, perineal, rectal pain | Tender, warm, boggy prostate; possible penile discharge | Acute prostatitis |
| Weight loss; constitutional signs and symptoms, back pain, anaemia | Enlarged nodular prostate; prostate examination may be normal | Advanced prostate cancer |
| Pain; swelling of foreskin or penis | Oedema of penis with non-retractable foreskin; externally applied penile device | Phimosis, paraphimosis, or oedema caused by externally placed constricting device |

»

**FIGURE 2**
Algorithm for the management of acute urinary retention in men




significant diuresis and the man cannot keep up with sufficient oral fluids.[5,15]

### Catheter removal post retention

The decision on whether to remove the catheter for a trial of voiding, i.e. trial without catheter (TWOC), depends on the aetiology of the urinary retention. Optimally a TWOC should be performed 5-7 days after AUR ideally after the patient has been taking an alpha-blocker for this period. If there are reversible factors then catheter removal is a sensible option.

TWOC is more likely to be successful in younger men with smaller prostates who have had a precipitated AUR e.g. related to constipation/alcohol/recent anaesthetic. It is very unlikely to be successful in men over the age of 80 with high residual volumes (> 1.5 litres) and larger prostates. NICE guidelines state that an alpha-blocker should be offered to the patient for management of AUR before removal of the catheter.

Catheters should never be removed without bladder outflow surgery in men with hydronephrosis and renal failure due to CUR; these men should be booked directly for bladder outflow surgery.

### Follow-up after initial decompression

Definitive management of urinary retention will depend upon the underlying aetiology and should involve referral to a urologist either urgently or electively. If there has been a clear precipitating factor that is reversed and no pre-existing urinary symptoms then management in primary care is appropriate. Otherwise investigation into the exact aetiology and potential medical or surgical management may be required.

The following are red flags for hospitalisation:[6,9]

- Evidence of urosepsis
- Evidence of malignancy
- Evidence of renal failure
- Acute spinal cord compression

**Competing interests:** None

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## key points

SELECTED BY

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**Urinary retention is the most common urological** emergency and more than 95% of cases occur in men. Acute urinary retention (AUR) is defined as the sudden inability to pass any urine voluntarily associated with a painful, palpable or percussable bladder. In chronic urinary retention (CUR) there is a non-painful bladder, which remains palpable or percussable after the man has passed urine, with a post-void residual volume > 300 ml. In acute on chronic urinary retention no urine can be voluntarily passed but the condition is relatively painless and the residual volume on catheterisation is > 1.5 litres.

**Urinary retention may result from bladder outflow** obstruction, neurological impairment, or impaired detrusor smooth muscle function. It may also be linked to medication (anticholinergic and sympathomimetic drugs) and a detailed pharmacological history is vital.

**Patients with AUR present with inability to pass urine,** associated with suprapubic pain or discomfort. CUR is usually painless. Men with low pressure CUR may complain of hesitancy, slow stream, and a feeling of incomplete emptying, while those with high pressure CUR may be asymptomatic or complain of urgency. Recent onset of bedwetting in a man is almost pathognomonic of high pressure CUR.

**Examination should include a digital rectal examination** to evaluate for prostate size and possible malignancy, rectal masses, faecal impaction, perineal sensation, and rectal sphincter tone. A normal prostate examination does not rule out BPH as a cause of obstruction as small prostates can also cause retention. If a neurological cause is suspected or there is obvious spinal trauma, examination should include assessment of muscle tone, power, reflexes and sensation.

**Once AUR is diagnosed, decompression should be** carried out immediately, either with urethral or suprapubic catheterisation. An initial attempt at urethral catheterisation should be made in most patients, but is contraindicated after recent urological procedures such as urethral reconstruction. Intermittent self-catheterisation should be offered before an indwelling catheter for men with CUR who are still voiding, unless they have impaired renal function or hydronephrosis secondary to CUR. Haematuria, hypotension, and post-obstructive diuresis are potential complications of rapid decompression after CUR. However, there is no evidence that gradual bladder decompression will reduce these complications.

**The decision whether to remove the catheter for a trial** of voiding (TWOC) will depend on the presence or absence of reversible factors. Optimally, a TWOC should be performed 5-7 days after AUR ideally after the patient has been taking an alpha-blocker for this period. A TWOC is more likely to be successful in younger men with smaller prostates who have had a precipitated AUR e.g. related to constipation, alcohol or a recent anaesthetic. It is very unlikely to be successful in older men (> 80), with high residual volumes (> 1.5 L) and larger prostates.

## Useful information

**The Urology Foundation**
www.theurologyfoundation.org/urologyhealth/prostate/bph

**Prostate Cancer UK**
www.prostatecanceruk.org/prostate-information/our-publications/publications/enlarged-prostate

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