1 Background information

Quick info:

Scope:
- presentation, investigation, diagnosis, and management (excluding surgical) of acute urinary retention (AUR), in adult men, in primary and specialist care settings

Out of scope:
- management of the underlying cause(s) of AUR
- management of chronic urinary retention (CUR)

Definition:
- urinary retention is the inability to voluntarily urinate
- AUR is the sudden and often painful inability to void, despite having a full bladder

Incidence and prevalence:
- in the US, incidence of AUR was 4.5-6.8/1,000 men/year in men age 40-83 years [1]
- in the US, 10% of men age 70-80 years experienced AUR over a five year period, risk increased to one in three over 10 years [2]

Risk factors:
- male gender (more than 10 times more common in men than in women)
- increasing age (rare in younger men, men age 70-80 years are at five times more risk than men age 40-50 years)
- known CUR
- degree of urinary obstruction/benign prostatic enlargement (BPE)
- urinary tract infection (UTI)
- lower urinary tract symptoms (LUTS)
- prostate size
- constipation
- medication, including:
  - anticholinergic medication, eg tricyclic antidepressants
  - opiate analgesics
  - antihistamines, especially diphenhydramine and chlorpheniramine
  - cold remedies
- recent anaesthesia
- recent abdominal or pelvic surgery
- potent diuretic exposure – alcohol is a particular problem, as it:
  - can produce diuresis
  - impair sensation, so the bladder becomes overdistended
  - is a sympathomimetic, so can cause stimulation of the bladder outlet and precipitate retention
- post-void residual (PVR) urine:
  - abnormal values are considered by clinicians to be a risk factor
  - can help determine whether additional testing is warranted
  - potential urinary problem can be characterised as a:
    - storage disorder; or
    - voiding disorder; or
    - combination of both

References:
2 Information resources for patients and carers

Quick info:
Patients and carers in England and Wales can access this pathway through NHS Choices at http://healthguides.mapofmedicine.com/choices/map/acute_urinary_retention1.html.

The following resources have been produced by organisations certified by The Information Standard:

• ‘Enlarged prostate (benign prostatic hyperplasia)’ (URL) from BUPA at http://www.bupa.co.uk/
• ‘Urinary retention and incontinence’ (URL) from Datapharm at http://www.datapharm.org.uk/

Information for carers and people with disabilities is available at:
• ‘Caring for someone’ (URL) from Directgov at http://www.direct.gov.uk
• ‘Disabled people’ (URL) from Directgov at http://www.direct.gov.uk

Explanations of clinical laboratory tests used in diagnosis and treatment are available at ‘Understanding Your Tests’ (URL) from Lab Tests Online-UK at http://www.labtestsonline.org.uk.

The Map of Medicine is committed to providing high quality health and social care information for patients and carers. For details on how these resources are identified, please ‘Map of Medicine Patient and Carer Information’.

NB: This information appears on each page of this pathway.

3 Updates to this pathway

Quick info:

Date of publication: 29-Oct-2010
Interim update: Updated with information on effective discharge in line with the Health Information Unit of the Royal College of Physicians. This was informed by the following references:


Date of publication: 30-Jul-2010
Interim update: A link to a ‘care bundle’ (based upon the NHS High Impact Interventions) has been included to reduce the risk of healthcare associated infections at relevant points along the patient journey.

Date of publication: 29-Apr-2010
Three floating nodes now appear at the top of each pathway page. These provide:

• easy access to scope and background information on each page of the pathway whilst reducing repetition between nodes
• easy access to patient resources/leaflets
• information on pathway updates

This pathway was updated in line with the following guidelines:


Further information was provided by the following references: [1,2,4-10]. For further information, please see the pathway's Provenance certificate.

Practice-based knowledge has been contributed to this pathway by:

• Dr Hashim Hashim, Southmead Hospital (clinical facilitator)
• Dr Mark Emberton, University College London Hospitals (UCLH)
• Prof Michael Kirby, University of Hertfordshire
• Dr Mark Speakman, Taunton and Somerset Hospital
• Ms Amanda Wells, Devon PCT
• Selected members of Map of Medicine (MoM) Clinical Editorial team and Fellows board

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Acute urinary retention (AUR) in adult males

Quick info:
Acute urinary retention (AUR) is:
• a common urological emergency
• complex and may present in various ways due to a myriad of pathologic processes - If respond promptly then may prevent chronic urinary retention

Most patients will present with:
• inability to pass urine
• rapid onset
• acute lower abdominal pain and swelling due to bladder distension – painless AUR is rare and often associated with central nervous system (CNS) pathology
• palpable mass arising from the pelvis and dull to percussion
• (possible) bleeding/clot retention

Complications include:
• infection
• renal failure

This information was drawn from the following references:

History
Quick info:
Identify other causes of voiding dysfunction or co-morbidities that may complicate treatment.

Focus on:
• urinary tract
• previous surgical procedures
• general health issues
• medical conditions and symptoms leading to bladder dysfunction or excessive urine production (polyuria)
• family history of prostate disease, eg:
  • benign prostatic enlargement (BPE)
  • cancer
• fitness for possible surgical procedures
• medication history

Assess clinical symptoms:
• inability to pass urine
• desire to void
• lower abdominal pain of acute onset
• sensation of incomplete/impaired bladder emptying:
  • common and underdiagnosed condition
  • often silent until end-stage presentation of overflow incontinence

Ask patient about:
Acute urinary retention (AUR) in adult males

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6 Examination

Quick info:
Physical examination should include:

- abdominal examination of the bladder:
  - may be visible and is tender
  - percussion:
    - should be dull
    - may be percussible if it contains 150mL or more of urine
  - palpation:
    - should be palpable
    - may be palpable with more than 200mL
    - may be difficult in the obese (but not surprising to find the bladder can be detected in many obese patients)
  - digital rectal examination (DRE) after catheterisation, to note:
    - size and texture of the prostate
    - prostate nodules

This information was drawn from the following references:
Acute urinary retention (AUR) in adult males

Surgery > Urology > Acute urinary retention (AUR) in adult males

• anal tone
• faecal impaction
• presence or absence of constipation
• focused neurological examination

This information was drawn from the following references:

7 Consider differential diagnoses

Quick info:
Differential diagnoses include:
• chronic urinary retention (CUR) – usually painless, although acute-on-chronic retention may be painful and should be managed as acute urinary retention (AUR)
• AUR is usually not more than 1L, whereas CUR is substantially more
• acute renal failure

The following are potentially more serious conditions that can be referred into hospital as AUR:
• diverticulitis or a diverticular abscess
• perforated or ischaemic bowel
• abdominal aortic aneurysm

This information was drawn from the following reference:

9 Urgent catheterisation

Quick info:
Initial treatment involves [1,2]:
• urgent catheterisation:
  • pass a catheter to relieve obstruction and drain the bladder
  • prompt and complete decompression
• aseptic technique should be used throughout, to minimise the risk of infection:
  • for high impact interventions to reduce healthcare-associated infections – see ‘Urinary catheter care bundle’

Carried out via one of the following (depending on local circumstances) [2]:
• in A&E department
• in surgical or urology wards

After catheterisation and depending on local circumstances, patients may be [2,7]:
• hospitalised e.g: 1. Clot retention
  2. complicated renal colic
  3. urinary retention with abnormal frank haematuria
  4. significant co-morbidity
  5. patient unable to care for himself
  6. No telephone in home environment
  7. residual urine of over 2 litre
  8. acute pain on catheterisation
• sent home and reviewed in the outpatient clinic: URGENT
e.g. suspected malignancy, mild haematuria. A faxed referral to Urology department (6697) and a copy of the referral is sent in the internal post
ROUTINEe.g abnormal U&E, uncomplicated UTI
The patient is discharged home (if able to manage catheter). A faxed referral and copy of the casualty card to urology department (6697) and advisable to send a copy of these via internal post a back up.

Refer the patient to the Community Continence team by fax (referral form) for next day visit.

For formal discharge planning at the point of admission use your local discharge form based on the HIU Discharge Summary developed by the Health Informatics Unit of the Royal College of Physicians (RCP), London; UK [12,13].

NB: Refer to local community or specialist nurse for ongoing education and training for patients, including how to empty the bag [4].

References:

10 Urethral catheterisation

Quick info:

Urethral catheterisation:
- generally employ this method first (attempt suprapubic route if this fails or is contraindicated) [7]
- in routine practice, most urologists prefer a urethral catheter [7]
- do not use if there is traumatic injury to the lower urinary tract (eg urethral tear), in which case without specialist involvement [8]:
  - suggest the gentle passage of a catheter
  - give serious consideration to imaging the lower urinary tract before passage of the catheter
- associated with increased incidence of urinary leakage [2]

Catheterisation considerations [9]:
- maintain aseptic technique throughout
- keep catheter on free drainage [4]
- catheters are made from either standard latex or silicone:
  - many patients are allergic to latex and this can result in irritation or a severe reaction
  - catheters can be coated with a lubricating hydrogel to reduce irritation
  - limited evidence to suggest that catheters coated with a silver alloy, or a combination of minocycline and rifampicin, reduce the risk of urinary tract infection (UTI) if the catheter is to be indwelling for a short period (eg hours or days) after drainage
- no evidence to support the practice of gradual emptying of the bladder over quick, complete emptying
- clinically significant complications are rare, eg:
  - bleeding from the urinary tract
  - hypotension
  - massive diuresis
- limited evidence to suggest that intermittent catheterisation is associated with a lower risk of bacteriuria compared to continuous (indwelling) catheterisation, in people with repeated episodes of acute urinary retention (AUR)
- considerable difference of opinion regarding how long to leave a catheter in situ after AUR:
  - some recommend simple drainage and removal of the catheter
  - others suggest that 24-48 hours of drainage allows the bladder to regain its tone
  - after removal (trial without catheter [TWOC]), the catheter may need to be reinserted if AUR recurs
  - give alpha blockers before TWOC [4]
- limited evidence to suggest that early removal of the catheter may be associated with shorter lengths of hospitalisation
11 Consider suprapubic catheterisation

Quick info:

Suprapubic catheterisation:
- generally attempt this method if the urethral route fails or is contraindicated [1,7]
- more complex and invasive procedure [2]
- higher rate of serious complications, eg [2]:
  - bowel perforation
  - peritonitis
- however, practice-based knowledge advises that the new ‘seldinger’ technique of insertion is much safer [4]
- bladder must be distended and reliably localised by palpation [4]
- some studies have suggested this method may be [2]:
  - suitable as a first-line approach
  - superior for short-term management
- there is evidence that this method is more beneficial and preferred, in terms of:
  - risk of infection – silver alloy-impregnated urethral catheters have been shown to reduce urinary tract infections (UTIs) [1,2]
  - need for recatheterisation [1]
  - less stricture formation [2]
  - increased comfort [1,2]
  - ability to maintain active sexual function – important to some patients [2]
  - catheter can be clamped rather than removed, to assess whether normal (urethral) urinary flow has been restored after initial drainage [2]

Contraindications for suprapubic catheter insertion [9]:
- empty or unidentifiable bladder, eg nonpalpable bladder in adults
- known bladder tumour
- lower abdominal wounds or scarring
- overlying cellulitis

NB: Refer to local community or specialist nurse for ongoing education and training for patients, including how to empty the bag [4].

References:

12 Consider prophylactic antibiotics

Quick info:

Prophylactic antibiotics to prevent urinary tract infection (UTI) in selected cases [8]:
- approximately 80% of UTIs acquired in the hospital are associated with urinary catheters
Acute urinary retention (AUR) in adult males

- limited evidence that giving prophylactic antibiotics (rather than antibiotics based on clinical indications) reduces the rate of symptomatic UTI, eg in patients with a urethral catheter for 24 hours
- routine antibiotic prophylaxis may lead to the evolution of resistant organisms:
  - within the bladder of individual patients
  - in the ward generally
- antibiotic prophylaxis is only likely to be indicated for high-risk patients, eg:
  - with risk of endocarditis
  - with suspicion of UTI
  - whose catheter is to remain in situ for some hours
- optimal regimen for antibiotic prophylaxis is uncertain – in trials, trimethoprim, ciprofloxacin, and gentamicin (dependent on eGFR) have been used as:
  - single doses; or
  - short multiple dose courses; or
  - regularly for the entire duration of catheterisation

Reference:

13 Investigations

Quick info:
Investigations:
- collect urine sample for investigations [9]
- record urine volume drained (in the first 10-15 minutes following catheterisation) to [2]:
  - quantify the degree of retention, ie distinguish between acute retention, and acute-on-chronic retention
  - guide further management decisions
- carry out diagnostic testing to determine the cause(s):
  - lab [1,2]:
    - urinalysis – to screen for hematuria and urinary tract infection (UTI), by dipstick testing or microscopic examination of the sediment
    - urea and electrolytes – to assess renal function. If this is abnormal then the patient is at risk of a post obstructive diuresis which can compromise the intravascular compartment. The catheterization should occur in the A&E department
    - blood glucose Please note NO PSA is performed
  - imaging studies [1]:
    - renal and bladder ultrasonography (performed by senior clinicians in A&E) – for patients with high volume retention and abnormal renal function
    - pelvic ultrasonography, CT scan of the abdomen and pelvis if space occupying lesion is considered
  - other [1]:
    - consider cystoscopy if urethral (eg stricture)/prostate disease is likely [4]
    - urodynamic studies
  - optional diagnostic test to measure post-void residual (PVR) urine [9]:
    - large PVR volumes (eg 350mL) may:
      - indicate bladder dysfunction
      - predict a less favourable response to treatment
    - proceed with management while awaiting results of the investigations [9]

References:
14 Management issues

Quick info:
Management of renal function [2]:
• monitor fluid balance
• monitor urine output and observe for postobstructive diuresis:
  • although only really likely after chronic urinary retention (CUR) [4]
  • may require intravenous (IV) fluid supplementation if oral intake is inadequate
Management of bladder spasms [9]:
• patients with a Foley catheter may experience bladder spasms as a reaction to the balloon
  • painful (Incontinence nurse to discuss a flip-flo valve as this keeps the bladder tone and no bag to manage)
  • result in the leakage of urine from around the catheter
• consider oxybutynin to relieve bladder spasms if severe:
  • stop such medication at least 12 hours prior to catheter removal

Lifestyle issues related to obesity and the metabolic syndrome should be considered, as an episode of AUR is an opportunity to diagnose [4]:
• asymptomatic dysglycaemia
• hypertension
• hyperlipidaemia

Sexual dysfunction [10]:
• men with moderate-to-severe lower urinary tract symptoms (LUTS) are at increased risk for sexual dysfunction, including:
  • moderate-to-severe erectile dysfunction (ED) – a common co-morbidity [4]
  • ejaculatory dysfunction (EjD)
  • hypoactive desire (HD)

References:

15 Treat reversible causes

Quick info:
Carry out the following:
• for all patients – commence alpha blocker trial [4]

When U&E are normal, A&E will discharge the patient with Afuzosin 10mg or Tamsulosin 400 micrograms once a day to prepare for trial without catheterisation

Cautions: beta blockers, other antihypertensives
Contraindications: other alpha blockers (e.g doxazosin, indoramin, tamsulosin, terazosin)
Postural hypotension
Severe hepatic impairment
Severe renal impairment

• if infection suspected – give appropriate antibiotics as per local policy [9]
• if faecally loaded – give trial of aperients [9] - Prescribe Movicol (generic substitution acceptable) 3 sachets twice a day increasing daily by one sachet to a maximum of 8 sachets per day. Advice on bran in diet

References:

16 Consider trial without catheter

Quick info:
Consider trial without catheter (TWOC) for most patients [2,7]:
• involves catheter removal after up to 5 days
• allows patient to successfully void in 23-40% of cases
• enables patient to return home without the potential morbidities associated with an in situ catheter
• permits surgery (if needed) to be delayed to an elective setting
• American Urological Association (AUA) guidelines recommend at least one attempted TWOC before considering surgery

Where there are absolute indications for surgery, patients should not have TWOC, but should either [4]:
• stay with a long-term catheter; or
• have a prostatectomy

Indications for surgery [11]:
• most frequent indication for surgical management is bothersome lower urinary tract symptoms (LUTS) refractory to medical management
• following complications of benign prostatic hyperplasia (BPH)/benign prostatic enlargement (BPE) are considered strong indications for surgery:
  • refractory urinary retention
  • recurrent urinary retention
  • recurrent haematuria refractory to medical treatment with 5-alpha reductase inhibitors
  • renal insufficiency
  • bladder stones
• increased post-void residual (PVR) volume may also be used as indication for surgery – but has great intra-individual variability and the upper limit requiring intervention has not been defined

Factors leading to a high probability of successful TWOC include [2,7]:
• patient younger than age 65 years
• high detrusor pressure (on urodynamics) of more than 35cmH2O
• drained PVR volume of less than 1L at catheterisation
• identified precipitating factor, eg:
  • postoperative acute urinary retention (AUR)
  • gross constipation
  • recently started anticholinergic or sympathomimetic drugs
  • prolonged catheterisation
• urinary tract infection (UTI) with no previous obstructive symptoms

Factors leading to a high probability of unsuccessful TWOC include [2]:
• patient older than age 75 years
• drained volume more than 1L
• previous LUTS
• voiding detrusor contraction (on urodynamics) of less than 35cmH2O

Treatment with alpha blockers eg alfuzosin and tamsulosin [1]:
• AUR due to benign prostatic obstruction (BPO) may be associated with an increase in alpha adrenergic activity [2,7]:

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• inhibition of these receptors by alpha blockers may [2]:
  • decrease bladder outlet resistance
  • facilitate normal micturition
• alpha adrenergic blockers given before catheter removal (treatment for 2-3 days starting at time of catheter insertion) improve chances of [1,2,4,7]:
  • TWOC success
  • return to normal voiding

NB: Refer to local community or specialist nurse for ongoing education and training for patients, including how to empty the bag [4].

References:

17 Trial without catheter failed

Quick info:
If trial without catheter (TWOC) failed [2]:
• consider catheter type [4] – suprapubic catheter may be in place but urethral catheter is likeliest, therefore patient needs to be re-catheterised
• continue alpha blocker
• teach catheter care and use of flip-flow valve/leg bag
• refer to in-patient urology for assessment and consideration of transurethral resection of the prostate (TURP)
• discharge with long-term catheter with or without TURP if indicated

If patient is able to perform intermittent self-catheterisation [4]:
• discuss this with patient
• patient should be taught by specialist nurses in bladder care

NB: Refer to local community or specialist nurse for ongoing education and training for patients, including how to empty the bag [4].

References:

18 Trial without catheter successful

Quick info:
If trial without catheter (TWOC) successful [2]:
• there is evidence to show:
  • 50% will experience acute urinary retention (AUR) over the next 1 year
  • 35% will require surgery within the following 6 months
• important to follow-up for patients with risk factors for recurrent AUR:
Acute urinary retention (AUR) in adult males

- post-void residual (PVR) urine of more than 500mL
- no precipitating factor for AUR
- maximum flow rate of less than 5mL/second
- arrange PVR and flow rate test as outpatient [4]
- most patients requiring surgery after a successful TWOC needed it for recurrent AUR

NB: Refer to local community or specialist nurse for ongoing education and training for patients, including how to empty the bag [4]. Refer to urologist for follow up [4].

To ensure the patient's discharge record has been adequately updated, to ensure proper documentation and appropriate continuity of care, use your local discharge form based on the HIU Discharge Summary developed by the Health Informatics Unit of the Royal College of Physicians (RCP), London, UK [12,13].

References:
Acute urinary retention (AUR) in adult males

Surgery > Urology > Acute urinary retention (AUR) in adult males

Key Dates

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Evidence summary for Acute urinary retention (AUR) in adult males

This pathway has been developed according to the Map of Medicine editorial methodology (http://mapofmedicine.com/whatisthemap/editorialmethodology). The content of this pathway is based on high-quality guidelines [3,11] and critically appraised meta-analyses and systematic reviews [1,2,7,8]. Practice-based knowledge has been added by contributors with front-line clinical experience [4,9], including any literature endorsed by the contributor group [5,6,10].

References

This is a list of all the references that have passed critical appraisal for use in the pathway Acute urinary retention (AUR) in adult males

<table>
<thead>
<tr>
<th>ID</th>
<th>Reference</th>
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<td>Contributors invited by Map of Medicine. 2010.</td>
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