

# Assessing referrals to urology outreach in cases of acute urinary retention

Arthur Curmi, Jonathan Debattista, Gerald Busuttil, Kelvin Holmes, Keith Pace, John Sciberras

## INTRODUCTION

Acute Urinary Retention (AUR) is the sudden and often painful inability to pass urine characterised by a palpable or percussible bladder. It constitutes 45% of all lower urinary tract consultations and is encountered in different medical specialties. A local guideline was set up to delineate the management of acute urinary retention (AUR) in July 2018. It describes the clinical features, investigations and treatment required according to the severity of the episode. The aim of this audit is to assess the demographics of patients making use of the Urology Outreach Unit (cases of AUR), and trends in investigations done, treatment chosen and outcomes on such patients.

## METHOD

All patients older than 16 years of age who presented with AUR between March 2018 and September 2018 were included. Data was obtained from Urology TWOC forms and corroborated with the hospital online system.

## RESULTS

89 (37.6%) of the referrals were done from Accident and Emergency Department (A&E), and 86 (36.3%) were referred from Urology firms. Urinalysis and Microscopy was sent in 45.1% of cases. Renal profile (serum) was taken in 70.5% of cases. The most commonly used catheter type used was silicone (89.6%). Catheter size of 16F was used in 83.8% of the cases. The average days spent with the catheter in situ was 11.7 days. The average attempts at TWOC was 1.1 times (max of 3). 83.5% of patients were then advised to continue their medical therapy with appropriate follow up following a successful TWOC. The rest were scheduled for a repeat TWOC (13.1%), fitted with a long-term catheter (1.69%), advised regarding self-intermittent catheterisation (1.27%), or referred for TURP (0.42%).

## CONCLUSION

This audit shows variable compliance to clinical guidelines. An active role of the clinician in the management and treatment of AUR might improve treatment and reduce the risk of further episodes of AUR.

**Arthur Curmi, MD\***

Department of Urology  
Mater Dei Hospital  
Msida, Malta  
arthurcurmi@gmail.com

**Jonathan Debattista, MD**

Department of Urology  
Mater Dei Hospital  
Msida, Malta

**Gerald Busuttil MD, MRCSEd, FRCS (Urol), FEBU**

Department of Urology  
Mater Dei Hospital  
Msida, Malta

**Kelvin Holmes**

Department of Urology  
Mater Dei Hospital  
Msida, Malta

**Kirk Attard**

Department of Urology  
Mater Dei Hospital  
Msida, Malta

**Keith Pace MD, MRCSEd**

Department of Urology  
Mater Dei Hospital  
Msida, Malta

**John Sciberras MD, MRCSEd, FRCSEd (Urol), RECSM, FEBU**

Department of Urology  
Mater Dei Hospital  
Msida, Malta

\*Corresponding author

---

## BACKGROUND

---

A local guideline was set up to delineate the management of acute urinary retention (AUR) in July 2018. It describes the clinical features, investigations and treatment required according to the severity of the episode. For patients that are not admitted to hospital, or those that will be admitted, but will be discharged before an in-hospital trial without catheter (TWOC), a referral to Urology Outreach is to be organized. Key steps in the management of AUR are to be documented on the referral sheet to Urology Outreach, to ensure proper continuity of care. The aim of this audit is to assess the demographics of patients making use of the Urology Outreach Unit (cases of AUR), and trends in investigations done, treatment chosen and outcomes on such patients.

---

## METHODOLOGY

---

Data was primarily obtained from Urology Outreach records. This was corroborated with data on hospital online systems. The audit period was from March 2018 to September 2018.

Inclusion criteria were include adults older the 16 years of age and at least 1 episode of AUR.

---

## RESULTS

---

**Demographics:** 237 entries were included in the audit, fitting the inclusion criteria above. 218 (92%) were male. Minimum age was 38 years, maximum of 93 years (average of 71 years).

**Referral Source:** The referrals were sent from various medical facilities. 89 (37.6%) were done from Accident and Emergency Department (A&E), and 86 (36.3%) were referred from Urology firms (Figure 1).

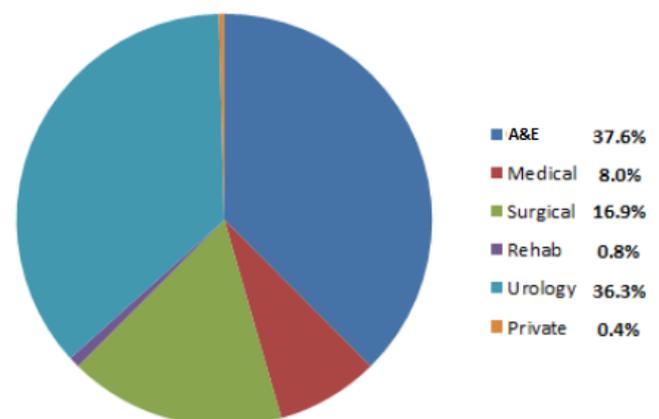
**Characteristics of the episode:** The cases were split evenly between painful AUR (118) and painless AUR (119). The residual volume was recorded on 71.3% of cases. Minimum residual volume was 135mL, and the maximum was 3000mL (average: 684.5mL). 16.9% of these patients were admitted; with length of stay varying from 1 day up to 23 days (average of 5 days).

**Investigations:** Urinalysis and Microscopy was sent in 45.1% of cases. Renal profile (serum) was taken in 70.5% of cases. Of note, the eGFR ranges were 8 up to 149 (average 74.1), with 50.2% of cases having an eGFR of more than 60.

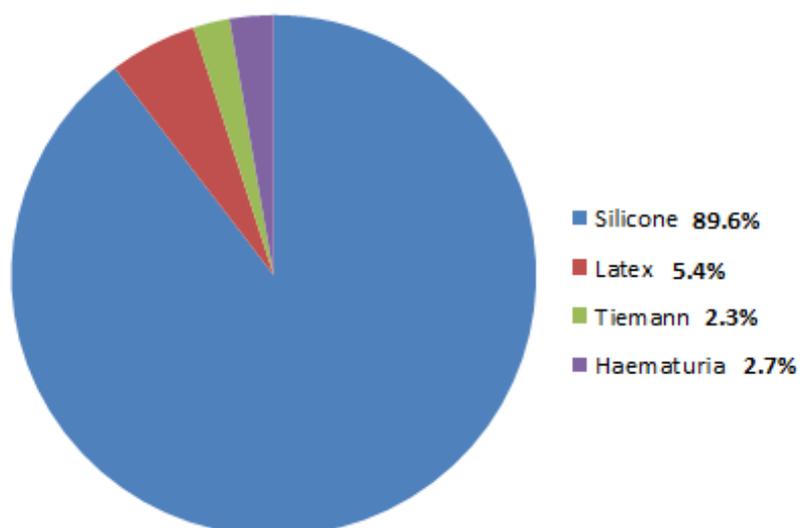
**Treatment:** 222 entries (93.7%) had documented the insertion of a catheter. The catheter-type used was silicone (89.6%) (Figure 2). Of the total 222 catheters, 83.8% were 16F in size. With regards to medical treatment, 27.4% were not on any treatment prior to the event, and were not started on any treatment either. 48.5% were started on treatment. Documented changes in treatment can be seen in Figure 3

---

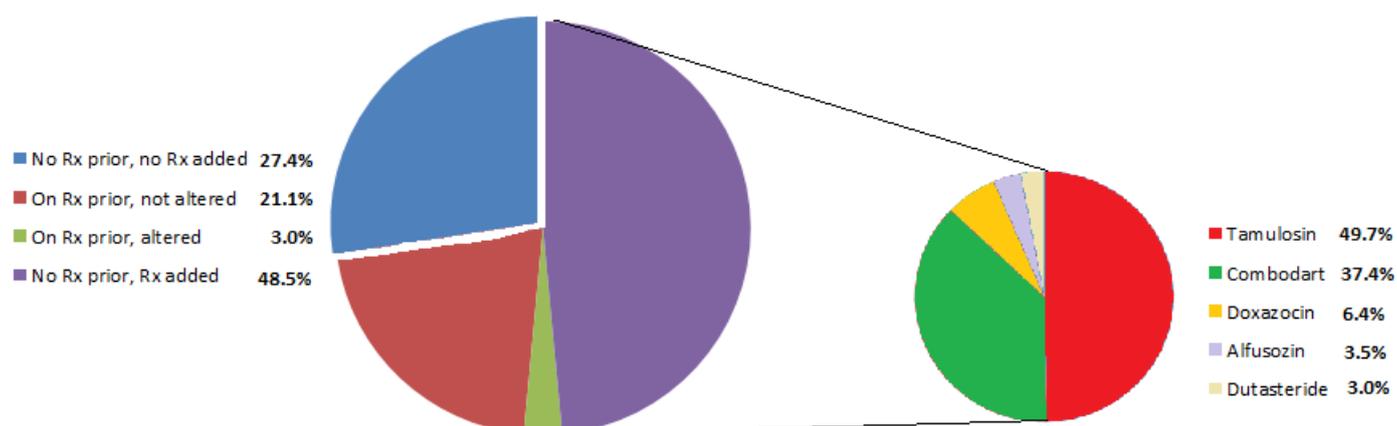
**Figure 1** Referrals



**Figure 2** Type of catheter Used



**Figure 3** Treatment changes and type of treatment started



TWOC: The average days spent with the catheter in situ was 11.7 days (maximum documented of 49 days, and a minimum of 2). The average attempts at TWOC was 1.1 times (max of 3). The procedure was successful 83.5% of the time. The post-voiding residual (PVR) volumes ranged from 0mL up to 1000mL, the average being 154.97mL. In those TWOCs that were successful, the maximum PVR value was 690mL (average 97.82mL), and in those TWOCs that were not successful, the minimum was 150mL, the maximum was

1000mL, and the average was 486.31mL. The catheter residual was also documented; the average amount was 544.53mL (maximum of 1200mL, minimum of 250mL).

Outcome: 83.5% of patients (corresponding to successful TWOC cases) were then advised to continue their medical therapy with appropriate follow up. The remaining cases were either scheduled for a repeat TWOC (13.1%), fitted with a long-term catheter (1.69%), advised regarding self-intermittent

catheterisation (1.27%), and referred for TURP (0.42%).

---

## DISCUSSION

---

Acute Urinary Retention (AUR) is the sudden and often painful inability to pass urine characterised by a palpable or percussible bladder. Chronic Urinary Retention (CUR), on the other hand, is painless retention associated with high residual volumes after voiding. AUR is the most common urological emergency typically occurring in men between 60 and 80 years of age.<sup>1</sup> It constitutes 45% of all lower urinary tract consultations and is encountered in different medical specialties.<sup>2</sup> As expected the majority of our referrals were made from the emergency department (37.6%), urology (36.3%) and other surgical firms (16.9%). According to research, 10% of men over 70s and nearly a third over 80s will develop AUR.<sup>3</sup>

Obstruction occurring at or distal to the neck of the bladder may cause retention of urine. Obstruction may occur within the lower urinary tract itself (bladder stones, urethral strictures, prostate enlargement) or due to external compression of the bladder neck from a gastrointestinal or uterine mass. The most common cause in males is benign prostatic hyperplasia (BPH) with risk factors including advancing age, African American origin, increased body habitus, diabetes, alcohol consumption and a sedentary lifestyle.<sup>1</sup> Flaccidity or detrusor muscle failure can also cause incomplete bladder emptying leading to chronic urinary retention.<sup>1</sup> Other causes of AUR can be infective, inflammatory, pharmacologic or neurologic in origin. Thorough history taking and physical examination will often identify the underlying etiology.

The diagnosis of AUR is aided by bladder ultrasonography. A volume equal or greater than 300mls in a patient who is unable to empty the bladder suggests retention.<sup>4</sup> Body habitus, previous surgery, scarring or tissue edema may give inaccurate bladder volumes.<sup>1</sup> Placement of a urethral catheter may, therefore, be required. It is considered to be the gold standard for measuring the post-voiding residual.<sup>5</sup> The amount of urine drained in the first 15 minutes after catheter insertion should be measured and recorded. In our case, the residual volume was recorded on 71.3% of the sheets. Urine should be tested for infection, and biochemistries evaluated to check for renal dysfunction and electrolyte imbalances.<sup>6</sup> Urinalysis was sent in 45.1% of cases, while serum renal profile was taken in 70.5% of cases.

Management of AUR should involve immediate and complete decompression of the urinary bladder through catheterisation in order to relieve patient discomfort.<sup>7</sup> The most commonly used catheter type was silicone (89.6%) followed by latex (5.4%). Silicone has a longer half-life so tends to be preferred for long-term use. First line urethral catheter should be 16 to 18 French in size. 83.8% of our cases had a 16 French catheter inserted. Smaller catheter sizes of 10 to 12 French may be used in cases involving a stricture. If urethral catheterisation fails, the urologist must be involved for consideration of catheterisation under vision, or suprapubic catheterisation. In circumstances where a urologist is not readily available, suprapubic aspiration via a needle under ultrasound guidance may be attempted. Contraindications to urethral catheterisation include recent urologic surgery such as urethral reconstruction and radical

prostatectomy. These group of patients should undergo suprapubic catheterisation.<sup>8</sup>

After the initial management patients are either admitted or discharged home and seen as outpatients. Patients with normal renal function and no significant comorbidities can be safely discharged home following catheterisation with a date for a later TWOC.<sup>9</sup> In our audit, 188 patients had an eGFR below 60 but only 40 patients (16.9%) were admitted to hospital. This might be due to pre-existing renal disease, and not new-onset renal dysfunction.

Although there is no general consensus when TWOC should be performed, in our audit removal of catheter was performed on day 11 on average. In the UK the majority of patients have their catheter removed on day 2 while in France TWOC is usually performed on day 3.<sup>10</sup> Some reports show that a prolonged duration of catheterization increased the chances of a successful TWOC.<sup>11</sup> Catheterisation for more than 3 days was actually associated with higher successful TWOC rates. However, prolonged catheterisation is associated with higher risk of complications including haematuria, urosepsis and urine leak so efforts should be made to reduce the duration of a urethral catheter.<sup>12</sup> This not only reduces comorbidities but also cuts down on healthcare costs. Reports state that there is a greater chance of successful TWOC if the patient is under 65 years of age, detrusor pressure is more than 35cm water, volume of urine drained is less than 1 litre at catheterisation and precipitating event is identified.<sup>13</sup> A TWOC is considered successful if the patient voids more than 100mls within 6 hours after removal of urinary catheter and the post-voiding residual volume is less than 200mls.<sup>14</sup> If removal of catheter is successful, patient needs follow up of lower urinary tract symptoms and treatment review.

Once the catheter is removed some patients will fail to pass urine normally and require re-catheterisation. These individuals may be managed by use of an indwelling catheter, self-intermittent catheterisation or considered for prostate surgery. Hence, measures to increase the rate of successful TWOCs are vital. The limited available research evidence implies that alpha blockers increase the rate of successful TWOCs. Data was statistically significant for tamsulosin, alfuzosin and silodosin.<sup>13</sup> They work by decreasing the smooth muscle tone of the prostate and increasing urinary flow with improvement of urinary symptoms. Tamsulosin which is given as 400mcg daily was the alpha blocker of choice (49.7%) while alfuzosin which is given as 10mg daily was used in 3.5% of the cases. Silodosin 8mg daily was not used at all. A combination of Tamsulosin and Finasteride (a 5- $\alpha$ -reductase inhibitor) was the second most preferred choice with 37.4% of cases. A combination therapy is usually preferred in men with very large prostates to maximize the prevention of further episodes of AUR.<sup>15</sup>

The number of TWOCs depend on patient characteristics, such as fitness to undergo surgery (like TURP) and also patient preference. In our audit 3 patients were referred for a third TWOC while another 2 patients were referred for a 4th TWOC. Surgical intervention is considered to be a last resort in the treatment of AUR. In males with BPH who fail a second TWOC, transurethral resection of the prostate (TURP) reduces AUR by 85 to 90 percent.<sup>16</sup> Surgery should be carried out until at least 30 days following the episode of AUR, to minimize the risk of surgical complications.<sup>17</sup> Out of 237 patients, only one (0.42%) was referred for TURP. This number could be an underrepresentation of the actual number of TURP referrals, since the decision

for TURP is often made at a later stage at outpatients after a series of failed TWOCs.

---

### RECOMMENDATIONS

---

Clinicians should perform an appropriate evaluation. A urine sample and a renal profile should be taken in all cases of AUR and pre and post voiding residual checked with a bladder scanner. Moreover the practitioner must make sure that the residual is recorded appropriately in the TWOC form provided after insertion of the urinary. Intermittent self-catheterisation is another option. Although this can be difficult to employ from the emergency setting it can be used in patients who fail a TWOC whilst they are waiting for surgery. Adequate patient education about catheter care and importance of anti-sepsis should be provided. Involving patients in the decision-making process can

also promote guideline use. Nurse should be aware about the contraindications of catheter insertion and must be able to recognize them. Clinicians need to be knowledgeable on how to perform suprapubic aspiration in cases where patient is in severe distress and urologist is not readily available. Coordination between the different members of the health care team is needed to improved patient outcomes.

---

### CONCLUSION

---

This audit shows variable compliance to clinical guidelines. Hence, improvement both in the implementation and adherence to such guidelines is important as it improves the standard of care. An active role of the clinician in the management and treatment of AUR might improve treatment and reduce the risk of further episodes of AUR.

---

### REFERENCES

---

1. Dougherty JM, Aeddula, NR. Male Urinary Retention. StatPearls Publishing. 2019
2. Roghmann F, Ghani K, Kowalczyk K, Bhojani N, Sammon JD, Gandaglia G, et al. Incidence and Treatment Patterns in Males Presenting with Lower Urinary Tract Symptoms to the Emergency Department in the United States, *J Urol*, 2013; 190: 1798-1804. doi: 10.1016/j.juro.2013.05.112.
3. Jacobsen SJ, Jacobsen DJ, Girman CJ, Roberts RO, Rhodes T, Guess HA, et al. Natural history of prostatism: risk factors for acute urinary retention. *J Urol*. 1997;158:481-487. doi: 10.1016/s0022-5347(01)64508-7.
4. Homan HD, Dmochowski R, Cochran JS, Karsh L, Sherman ND, Yalla S. Safety and efficacy of a patient-controlled bladder management system for treating urinary retention in men. *Neurourol. Urodyn*. 2016 Jun;35(5):630-5. doi: 10.1002/nau.22770.
5. Kim TH, Kim HS, Park JW, Lim OK, Park KD, Lee JK. Falsely Elevated Postvoid Residual Urine Volume in Uterine Myoma. *Ann Rehabil Med*. 2017 Apr;41(2):332-336. doi: 10.5535/arm.2017.41.2.332.
6. Elmissiry MM, Ali AG, Abulfotooh A, Moussa AA, Ali GA. Factors determining the amount of residual urine in men with bladder outlet obstruction: Could it be a predictor for bladder contractility? *Arab J Urol*. 2014 Sep;12(3):214-8. doi: 10.1016/j.aju.2014.03.003.
7. Serlin DC, Heidelbaugh JJ, Stoffel JT. Urinary Retention in Adults: Evaluation and Initial Management. *Am Fam Physician*. 2018 Oct 15;98(8):496-503.
8. Gas J, Liaigre-Ramos A, Caubet-Kamar N, Beauval JB, Lesourd M, Prudhomme T, Huyghe E, Soulié M, Charpentier S, Gamé X. Evaluation of the impact of a clinical pathway on the progression of acute urinary retention. *Neurourol. Urodyn*. 2019 Jan;38(1):387-392. doi: 10.1002/nau.23873.

9. Pickard R, Emberton M, Neal DE. The management of patients with acute urinary retention. *Br J Urol* 1998; 81: 712 – 20. doi: 10.1046/j.1464-410x.1998.00632.x.
10. Desgrandchamps F, De La Taille A, Doublet JD. The management of acute urinary retention in France: a cross-sectional survey in 2618 men with benign prostatic hyperplasia. *BJU International*, 97, 727-733. doi: 10.1111/j.1464-410X.2006.06109.x.
11. Djavan B, Shariat S, Omar M, Roehrborn CG, Marberger M. Does prolonged catheter drainage improve the chance of recovering voluntary voiding after acute retention of urine (AUR)? *Eur Urol*. 1998;33.
12. Muruganandham K, Dubey D, Kapoor R. Acute urinary retention in benign prostatic hyperplasia: Risk factors and current management. *Indian J Urol*. 2007 Oct-Dec; 23(4): 347-353. doi: 10.4103/0970-1591.35050.
13. Fisher E, Subramonian K, Omar MI. The role of alpha blockers prior to removal of urethral catheter for acute urinary retention in men. *Cochrane Database Syst Rev*. 2014 Jun 10;(6):CD006744. doi: 10.1002/14651858.CD006744.pub3.
14. Mahadik P, Vaddi SP, Godala CM, Reddy VK, Sambar VK. Factors Affecting Trial Without Catheter for First Spontaneous Acute Urinary Retention. *Int Neurourol J*. 2013 Sep; 17(3): 121–126. doi: 10.5213/inj.2013.17.3.121.
15. McConnell JD, Roehrborn CG, Bautista OM, Androile GL, Dixon CM, Kusek JW, et al. for the Medical Therapy of Prostatic Symptoms (MTOPS) Research Group. The long-term effect of doxazosin, finasteride, and combination therapy on the clinical progression of benign prostatic hyperplasia. *N Engl J Med*. 2003;349(25):2387–2398. doi: 10.1056/NEJMoa030656.
16. Fitzpatrick JM, Kirby RS. Management of acute urinary retention. *BJU Int*. 2006 Apr;97 Suppl 2:16-20; discussion 21-2. doi: 10.1111/j.1464-410X.2006.06100.x.
17. Mebust WK, Holtgrewe HL, Cockett AT, Peters PC. Transurethral prostatectomy: immediate and postoperative complications. A cooperative study of 13 participating institutions and evaluating 3,885 patients. *J Urol* 1989; 141: 243-7. doi: 10.1016/s0022-5347(17)40731-2.

# Urinary Retention Management Guidelines

Department of Urology



Advisory, not mandatory

## DEFINITION

**Acute Urinary Retention (AUR)** is defined as a painful, palpable or percussable bladder, when the patient is unable to pass any urine. Whilst **Chronic Urinary Retention (CUR)** is said to occur when there is a non-painful bladder, which remains palpable or percussable after the patient has passed urine.

## ACUTE URINARY RETENTION

AUR may be spontaneous or may be preceded by a trigger factor. In **spontaneous AUR** there is no trigger identified, with AUR being part of the natural history of Benign Prostatic Hyperplasia (BPH), usually after a long period of LUT symptoms (LUTS).

**Triggered AUR** may be preceded by bladder over-distension, surgery with general or regional anaesthesia, excess fluid intake, alcohol consumption, urinary tract infection, prostatic inflammation, faecal impaction, ano-rectal pain or use of drugs with sympathomimetic, anticholinergic or anti-histamine effects.

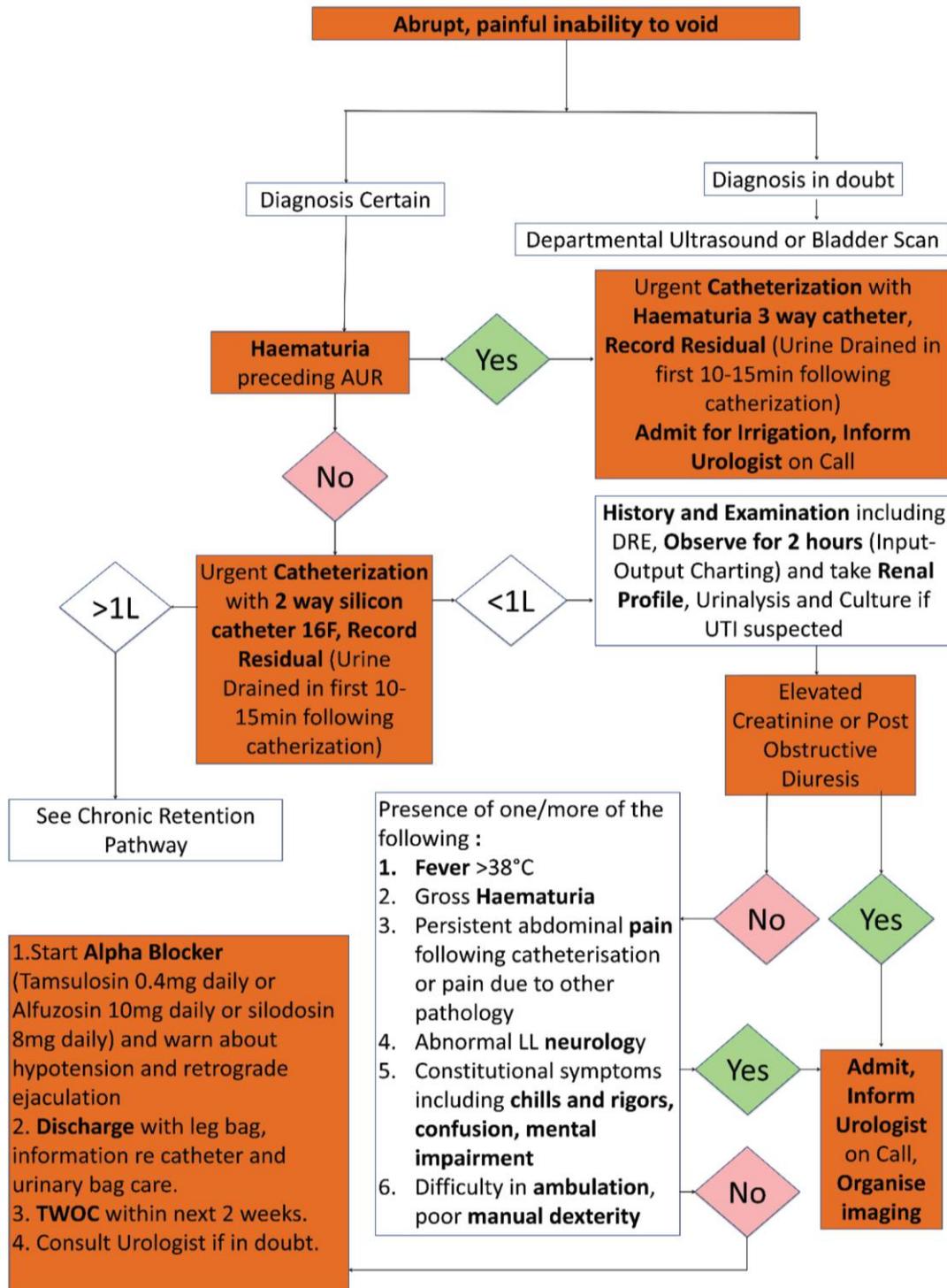


Advisory, not mandatory

© Urinary Retention Management  
MDHCPG/URO01v1.0/2018

July 2018  
Page 1 of 4

## ACUTE URINARY RETENTION – MANAGEMENT PATHWAY



Advisory, not mandatory

© Urinary Retention Management  
MDHCPG/URO01.v1.0/2018

July 2018  
Page 2 of 4

---

## CHRONIC URINARY RETENTION

CUR is often defined by the volume of **post void residual (PVR)**. However, there is **no consensus** on the cut off PVR and whilst some have defined it as a volume of 300mls, others have defined alternative PVRs as the cut off volumes or have given no cut off PVR at all.

CUR is classified as **High Pressure (HPCUR)** or **Low Pressure (LPCUR)** based on urodynamic findings.

**LPCUR** patients complaining of hesitancy, slow stream and incomplete emptying. These patients are usually followed up in an outpatient setting and only require catheterisation if symptomatic.

**HPCUR** patients complain of urgency. Their serum creatinine tends to be elevated and imaging reveals dilation of the upper urinary tracts. HPCUR patients require immediate catheterisation with careful recording of residual volumes and close monitoring of electrolytes as **inpatients**.

---

## POST OBSTRUCTIVE DIURESIS

**Urine production exceeding 200 mL per hour for 2 consecutive hours or producing greater than 3 L of urine in 24 hours is diagnostic of POD.**

These patients require admission for close monitoring including input-output charting, daily weight and renal profile 12 hourly. They also require fluid replacement run at a negative balance, with fluid type tailored to serum and urinary electrolyte levels and hydration status. They will also benefit from consultation with a nephrologist.

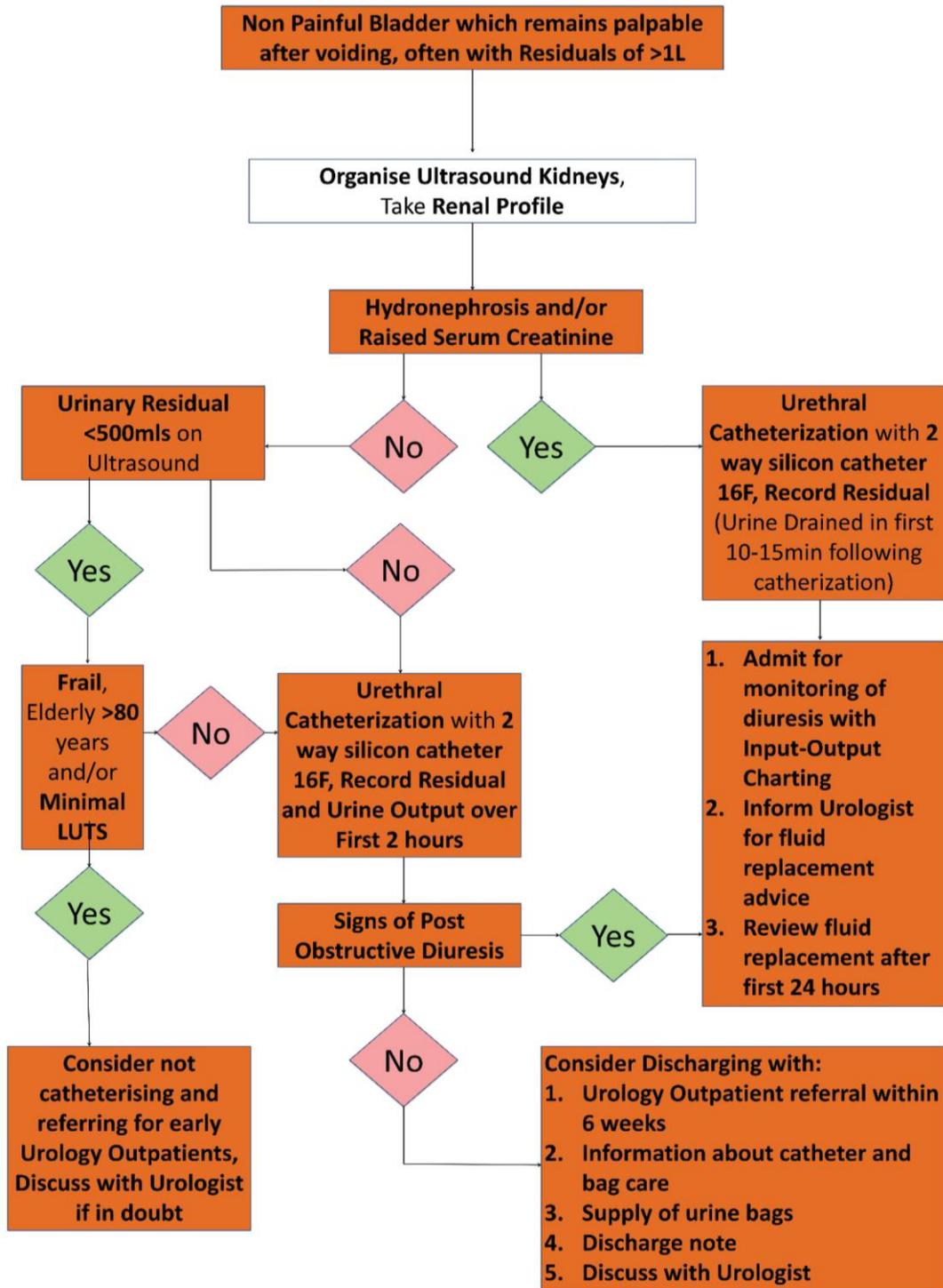


Advisory, not mandatory

© Urinary Retention Management  
MDHCPG/URO01v1.0/2018

July 2018  
Page 3 of 4

**ACUTE ON CHRONIC URINARY RETENTION MANAGEMENT PATHWAY**



Advisory, not mandatory

© Urinary Retention Management  
MDHCPG/URO01.v1.0/2018

July 2018  
Page 4 of 4