CCN Integrated Care Pathway:

Acute Urinary Retention

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First, a Friendly Reminder. . .

This Integrated Care Pathway was developed by and for members of the AAMC CCN.

These materials will refer to some resources available **only** to CCN members and their patients.

Not a CCN member?

We invite you to join the CCN! Membership is free. Contact Renee Kilroy at rkilroy@aahs.org

Learning Objectives

- This CME material will help you to:
  - Evaluate the patient with acute urinary retention (AUR) and determine the need for intervention
  - Choose the right intervention at the right time, using clinical judgment and evidence-based protocols
  - Reduce complications of bladder catheterization

Intended Audience and Scope

- **Intended Audience for this Pathway**
  - Hospitalists, ED clinicians, nurses, and residents as well as SNFists who take care of our patients in skilled nursing facilities and assisted living facilities
- **Scope of Pathway**
  - ED and hospitalized patients who present with signs and symptoms suggestive of AUR

The WHY of this Integrated Care Pathway

AUR is a common presentation in our ED and inpatient care settings.

Our staff wants to know how to evaluate and manage AUR in this setting, and to prevent patient harm.

AUR Definition

-AUR is the painful inability to voluntarily pass urine.

-This is in contrast to CHRONIC urinary retention which is painless and often associated with incontinence.

-The distinction is important to know because in the hospital and ED, we see BOTH acute and chronic urinary retention – and the management of each is different.

AUR Facts

- 13:1 male to female ratio of incidence
- Age is a risk factor for men:
  - 70 years old: 10% of men have episode of AUR within 5 years
  - 80 years old: 33% of men have episode of AUR within 5 years
- Women: 3 events per 100,000 women per year
- Major cause in men (not the only one):Benign prostatic hypertrophy (BPH)
- Major cause in women (not the only one): Detrusor muscle underactivity

AUR Pathogenesis and Etiologies

Three factors predominate:

1. Outflow obstruction
2. Neurologic impairment
3. Inefficient detrusor muscle

Let's consider each, because the cause of AUR often points to the treatment.

Obstruction

- The most common cause of AUR
- May be mechanical or dynamic or both
  - **Mechanical:**
    - Physical narrowing of the urethral channel
      - Men: BPH, constipation, prostate or bladder cancer, prostate or bladder infection, urethral stricture, urolithiasis, phimosis, paraphimosis
      - Women: cystocele, rectocele, pelvic masses, urethral diverticulum, problematic pessaries
  - **Dynamic:**
    - Increased muscle tone in and around the urethra
      - Sympathomimetics (see list in appendix), pain (e.g. postpartum)

Neurologic Impairment

- Interruption of sensory or motor nerve supply to the detrusor muscles
  - Acute spinal injury
  - Stroke
  - Guillain-Barre Syndrome
  - Meds
    - Opioids and anticholinergics decrease bladder sensation
    - Anticholinergics also decrease detrusor contractility

See Appendix for a list of medications that can cause or exacerbate AUR

Inefficient Detrusor Muscle

Much more common in women as cause of AUR. Typical scenarios:

-Excessive fluid intake or bolus causing bladder overdistension

-General/spinal/epidural anesthesia

-Meds: anticholinergics

Approach to the Patient with AUR

We've reviewed the common causes of AUR. Let's now consider the evaluation of the patient with AUR.

-Your patient may present to the ED or may be already hospitalized, perhaps because he or she is postsurgical or post-partum, or is receiving treatment for a medical condition.

- You are alerted that he or she has not voided in the past 6-8 hours. You ask that a bladder scan be done immediately as you make your way to the bedside.

Evaluation of AUR, cont'd

Upon arriving at the bedside, you learn the bladder scan showed >300 cc of urine. The patient appears uncomfortable and restless.

-300 cc in most guidelines is the "magic number". If the scan suggests LESS than this, AND the patient is comfortable, you may continue to observe. Also consider why the patient's urine volume is low: dehydration?

- If the scan suggests <300 cc AND the patient is UNcomfortable, then proceed as if there were >300 cc of urine

Targeted History and Physical Considerations

- ***History***: h/o AUR or lower urinary tract symptoms, prostate disease, pelvic or prostate surgery, radiation, pelvic trauma? Any fever, hematuria, dysuria, neurologic symptoms, rash (herpes)? Review med list, including OTCs
- ***Physical:*** lower abdominal exam, rectal exam (rule out mass, impaction), pelvic exam in women, neuro exam for reflexes, sensation, muscle tone

Studies

- Urinalysis (and culture if indicated) -may require cath to obtain!
- Chemistries -rule out renal failure from obstruction
- Bladder ultrasound -but don't wait if patient is in distress!

Let's Assume Your Brief History and Physical Reveal the Patient to be in AUR.

What now?

Bladder Decompression

-A Foley catheter* should be placed**, except under certain circumstances***.

-Measure the volume of urine passed via catheter in 10-15 minutes.

- -If >400 cc, leave catheter in
- -If 200-400 cc, use clinical judgment
- -If <200 cc, remove catheter

*More on the type of catheter in a minute

**Epic order should include indication for catheter, so that nursing can implement appropriate catheter protocol

***If patient has recently had urologic surgery, or trauma to the pelvis, patient may need suprapubic cath; consult urology.

Next: Whether You Left the Catheter In or Not, Remove or Lessen Provocative Factors

- Treat infection (UTI, herpes)
- Disimpact feces and treat constipation
- Reduce or discontinue opioids, anticholinergics, sympathomimetics if safe to do so*
- Improve mobility
- **In men with BPH**, unless contraindicated, begin alpha-1 adrenergic blocker therapy with tamsulosin (Flomax) or alfuzosin (Uroxatral) or silodosin (Rapaflo). See next slide!

*see Appendix for drugs that can cause or exacerbate AUR.

What Alpha-1-Adrenergic Blockers Do For Men with BPH and AUR

Start right now! Right after that catheter is placed. And have the patient remain on the drug after discharge.

These drugs relax the smooth muscle at the bladder neck and the prostatic capsule. When started with initial catheterization, these drugs have been shown to:

- Increase success rates of voiding trials* without a catheter (TWOC)
- Delay the time to recurrence of AUR
- Reduce the need for future surgery

*Voiding Trial Definition: after the catheter is removed, patient is typically observed for ability to voluntary void over the next six hours

What About 5-alpha Reductase Inhibitors* for Men with BPH? Start One Now Too?

Start these after the patient follows up with urology. No rush: patients must be on these for at least a year before there is benefit seen in reducing AUR and reducing the need for surgery.

*finasteride (Proscar), dutasteride (Avodart)

Back to the Bedside: Our Patient with AUR Who Now has a Catheter: For How Long?

-The duration of catheterization depends on the underlying etiology for AUR. If the cause of the AUR is being treated and is expected to resolve (e.g. UTI), then remove the catheter in the next day or two and begin a voiding trial. ***Especially in women, prolonged catheterization is not necessary. Do a TWOC after a day or two.***

-In other cases, catheterization may become chronic (spinal cord injury) and suprapubic catheterization or clean intermittent catheterization is necessary

See next slide for BPH-specific considerations for duration of catheterization for men.

Duration of Catheterization In Setting of AUR Due to BPH

-Optimal duration of catheterization in men with AUR due to BPH has been evaluated, but the literature reports contradictory findings.

-Some studies support leaving the catheter in for 3 or fewer days before TWOC

-Some studies support ≥ 1 week before TWOC

Experience with this population suggests that *the initial urine volume drained in the first 10-15 minutes* after catheter insertion predicts ultimate success of TWOC and guides how long to leave the catheter in. Men who drained >500 cc seem to do best with leaving the catheter in for 7 days, and even 2 weeks if > 1000 cc.

Catheters: Considerations

Resource Nurses on the units (and ED and OR) have been trained to place indwelling catheters in patients with AUR. They are the local experts. They call on the urologists if needed.

- A 14-18 French catheter is generally inserted as first-line therapy for uncomplicated scenarios.

- A 10 or 12 French catheter is used in cases of suspected urethral scar or stricture

- A 20-22 French catheter with a coude tip may be used with BPH – Use your Resource Nurse!

TWO PEARLS NOT TO FORGET!

Pearl #1:

In men with AUR, assume they have BPH, even if not diagnosed, and even if that is not the principal reason for AUR, and therefore have the Resource Nurse insert a coude tip catheter. This practice will minimize harm to your patient.

The prevalence of BPH in men age 51-60 is about 50%, rising to over 80% in men 80 and above.

TWO PEARLS NOT TO FORGET!

Pearl #2:

NEVER inflate the catheter balloon UNTIL YOU SEE URINE IN THE TUBE.

In fact, in men*, insert the catheter all the way to its bifurcation, then look for urine in the tube, then inflate.

This practice will also prevent harm to your patient.

*no need to insert to bifurcation in women, but look for urine in the tube prior to inflating balloon!

Potential Complications from Catheterization

1. Urethral Damage: uncommon in skilled hands. Most often occurs with intraurethral inflation of balloon. Use your Resource Nurse!
2. Hematuria: unless related to #1 above, typically not clinically significant
3. Infection: proper technique and maintenance are needed to prevent infection – **NOTE: prophylactic antibiotics are NOT indicated.**
4. Transient Hypotension: occurs after initial bladder decompression and usually normalizes on its own
5. Postobstructive Diuresis: usually seen with CHRONIC urinary retention, not acute. Usually managed with increasing oral intake of fluids. Sometimes IVFs are necessary if patient is voiding more than 200 cc an hour. Check serum sodium level.

Catheterization and Hospitalization

- Indications for hospitalizing the newly catheterized ED patient with AUR include urosepsis, obstruction secondary to malignancy, acute renal failure, acute myelopathy.
- Otherwise, a patient can go home with his Foley catheter and THREE things:
  - Instructions on Foley care
  - Medication Instructions (what to start and stop)
  - A follow up appointment already made with urology

Foley Care

Epic allows you to print out “Urinary Catheter Care, Adult” for patients.

Nursing should review this material with the patient and caregiver and have the patient practice emptying the drainage bag and positioning the catheter and drainage bag properly.

Red flags should be reviewed with the patient: fever, abdominal and/or back pain, cloudy urine, excessively bloody urine, no urine. Patient should be seen right away if those develop.

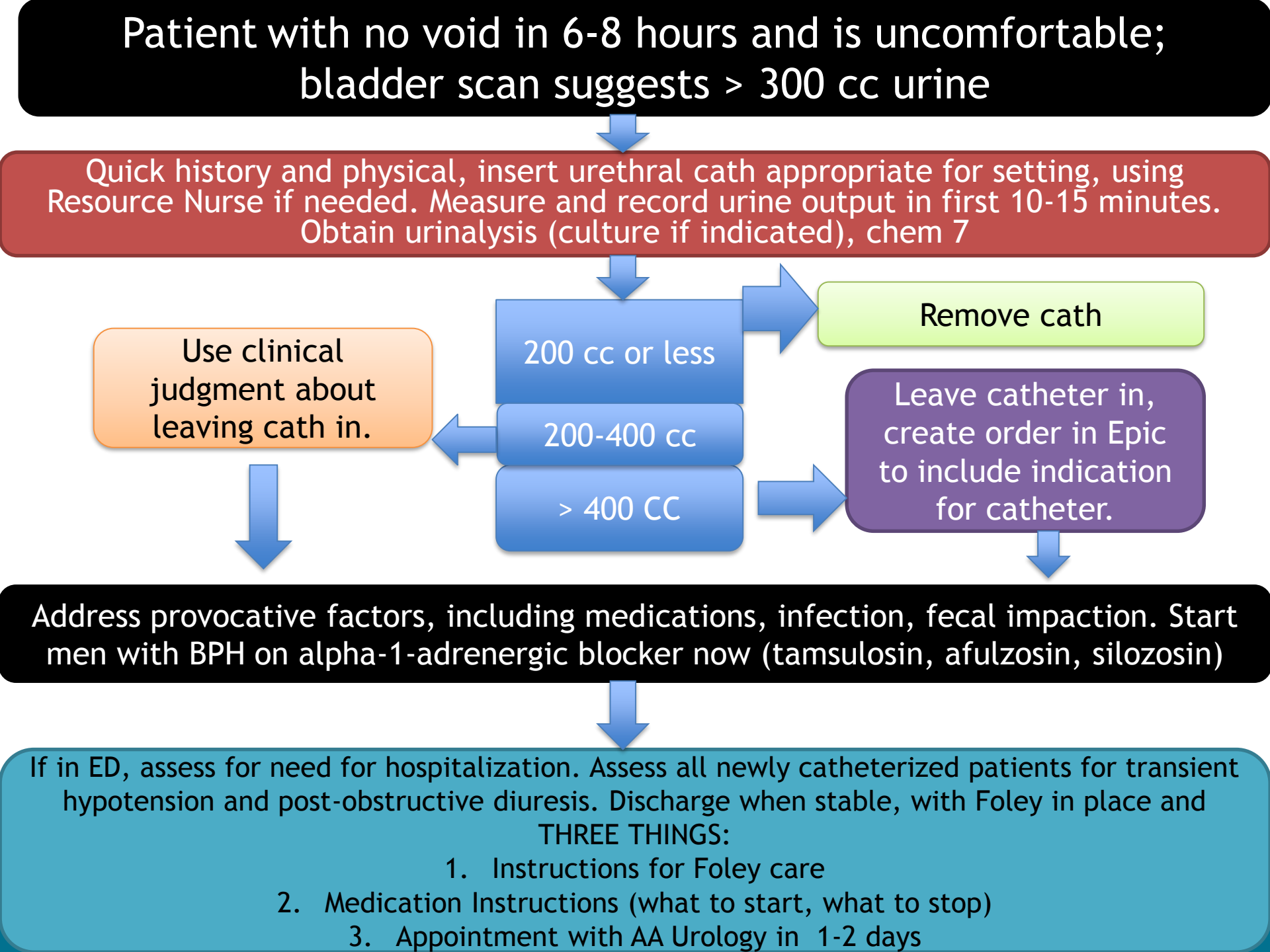
Urology Follow Up

Anne Arundel Urology is your CCN colleague and partner. The best way to obtain a follow up appointment for your patient prior to discharge is to call 410 266 8049. You can also securely text an Anne Arundel Urology colleague, or simply call the paging operator at 443 481 1100 and ask to be connected to the cell phone of the urologist on call.

What Happens to Your Patient After Discharge?

- Your patient will in future days have his catheter removed and a TWOC will begin.
- He may need intermittent clean catheterization during the trial until he can void reliably and completely on his own.
- After that, he may undergo urodynamic testing to evaluate the roles of obstruction versus detrusor muscle underactivity in causing AUR. The results will guide ultimate treatment of his condition.

Putting It All Together. . .


Patient with no void in 6-8 hours and is uncomfortable; bladder scan suggests > 300 cc urine
Quick history and physical, insert urethral cath appropriate for setting, using Resource Nurse if needed. Measure and record urine output in first 10-15 minutes. Obtain urinalysis (culture if indicated), chem 7
200 cc or less
Remove cath
Use clinical judgment about leaving cath in.
200-400 cc
Leave catheter in, create order in Epic to include indication for catheter.
> 400 CC
Address provocative factors, including medications, infection, fecal impaction. Start men with BPH on alpha-1-adrenergic blocker now (tamsulosin, afulzosin, silozosin)
If in ED, assess for need for hospitalization. Assess all newly catheterized patients for transient hypotension and post-obstructive diuresis. Discharge when stable, with Foley in place and THREE THINGS:
1. Instructions for Foley care
2. Medication Instructions (what to start, what to stop)
3. Appointment with AA Urology in 1-2 days

What This Material Was Designed to Help You Achieve

- Evaluate the patient with acute urinary retention (AUR) and determine the need for intervention
- Choose the right intervention at the right time, using clinical judgment and evidence-based protocols
- Reduce complications of bladder catheterization

Please move on to the test module so that we can gather your feedback and you can get CME credit.

Thank you!

Appendix follows.

Appendix: Nonexhaustive List of Common Drugs Associated with AUR, Slide 1 of 2

Sympathomimetics:
Ephedrine
Phenylephrine
Phenylpropanolamine
Pseudoephedrine
Isoproterenol
Metaproterenol
Terbutaline

Anticholinergics:
Atroprine
Scopolamine
Glycopyrrolate
Oxybutynin
Hyoscyamine
Belladona
Dicyclomine

Antihistamines:
Diphenhydramine
Chlorpheniramine
Hydroxyzine

Antidepressants:
Nortriptyline
Amitriptyline
Doxepin

Antihypertensives:
Hydralazine
Nifedipine

Appendix: Nonexhaustive List of Common Drugs Associated with AUR, Slide 2 of 2

AntiParkinsonian Agents:
Benztropine
Amantadine
Levodopa,
Dopamine
Bromocriptine

Hormones:
Progesterone
Estrogen
Testosterone

Muscle Relaxants:
Diazepam
Baclofen
Cyclobenzaprine

Antipsychotics:
Haloperidol
Thiothixene
Fluphenazine

Miscellaneous:
Morphine and other opioids
Carbamazepine
Anesthetic Agents
Vincristine
Amphetamines
Indomethacin
Prochlorperazine

Antiarrhythmics:
Quinidine
Procainamide
Disopyramide