

# Practice Tips

Christopher Frank, MD, CCFP Peter Brooks, MD

## Bedside cystometry *Simple diagnostic skill for family physicians*

Urinary incontinence is a common problem among elderly people with a prevalence of approximately 20% among seniors living in the community and up to 50% among residents of nursing homes.<sup>1,2</sup> Despite this prevalence, many patients never seek or receive evaluation or treatment.<sup>3</sup> After identifying patients with urinary incontinence and doing an initial assessment,<sup>4</sup> family physicians often face long waits for urologic or gynecologic consultation and for urodynamic studies. Family physicians can, however, perform cystometry, a simple maneuver, in the office to aid diagnosis and guide treatment.

Although urodynamics remains the gold standard for urologic function testing, cystometry has adequate sensitivity and specificity for assessing detrusor instability or overactivity<sup>5</sup> and can identify stress incontinence and urinary retention. A United States clinical practice guideline on managing incontinence gave cystometry an 'A' recommendation (supported by scientific evidence from well designed trials) for assessing bladder compliance and contractility and measuring postvoid residual bladder volume and bladder capacity.<sup>6</sup>

Bedside cystometry can be done in the office by a physician or clinic nurse and is well tolerated by patients. The equipment for it is inexpensive and usually found in the office (**Table 1**). The procedure itself takes approximately 10 minutes, although preparation and catheterization of the patient, which does not require the physician's attendance, takes additional time. At the South Eastern Regional Geriatric Program, we perform bedside cystometrics on all patients if the cause of urinary incontinence is unclear after history,

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12 to 14 French clear catheter

Catheterization tray

60-mL syringe with catheter tip and plunger removed

Sterile water

Sterile measuring cup (eg, urine specimen cup)

Measuring tape

"Toilet hat" or other urine collection device

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physical examination, and postvoid residual volume (PVR) measurement. The procedure can be used in the office instead of a PVR for convenience and to save time.

### Procedure

Ask patient to perform a stress maneuver (ie, cough or sneeze to increase intrathoracic pressure) with a full bladder to identify presence of stress incontinence.

Ask patient then to empty bladder fully into a collection device (eg, a "toilet hat") to measure the voluntary voiding amount.

Insert a nonballoon catheter and measure postvoid residual volume.

Attach a 60-mL catheter-tip syringe with plunger removed to the catheter.

Measure 15 cm from the pubic symphysis to the ➤

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**Dr Frank** is on staff in the Division of Geriatric Medicine at Queen's University, St Mary's of the Lake Hospital, in Kingston, Ont. **Dr Brooks** is a second-year resident in family medicine at Queen's University.



Figure 1. Filling the bladder with sterile water

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middle of the syringe to provide adequate bladder filling pressure, and fill the bladder using 30-mL aliquots of sterile water (Figure 1).

Measure the following.

- Volume at patient's first urge to void.
- Volume at first detrusor contraction (column of fluid rises in catheter or into syringe with contraction).
- Volume when patient first reports fullness and requests you to stop filling (stop test at 600 mL if patient is not reporting fullness).
- Remove the catheter.
- Repeat the stress maneuver.
- Ask patient to empty bladder into collection device.
- Estimate postvoid residual bladder volume by subtracting voided volume from volume instilled into bladder.

### Interpretation

**Postvoid residual volumes should be less than 100 mL.** Elevated postvoid residual volumes or large bladder volumes indicate overflow incontinence related to retention.

**Bladder should fill easily with 15 cm of filling pressure.** Slow filling with 15 cm of pressure suggests a noncompliant bladder due to causes such as previous radiotherapy or infiltrating tumour.

**Detrusor contractions should occur with bladder volumes greater than 200 to 250 mL.** Bladder contractions seen with small volumes suggest urge incontinence due to upper motor neuron disease or local bladder conditions.

**Patients should report fullness at bladder volumes of less than 600 mL.** Lack of fullness at large volumes could indicate an insensate bladder from neurologic causes or might indicate chronic overdistention.

It is important to note that older patients could have more than one cause of urinary incontinence. A diagnosis of stress incontinence is supported by loss of small volumes of urine with the Valsalva maneuver. Normal results of a cystometrics test might point to functional incontinence in frail elderly patients.

Referral to specialists should be considered if cystometrics reveals unexplained detrusor instability, presence of a treatable cause of overflow incontinence, a large-capacity insensate bladder, or when diagnosis remains unclear.

For patients in hospital, we frequently do a simple PVR urine measurement initially and follow it with cystometrics if history, physical examination, and PVR measurement do not identify the cause of incontinence. For outpatients, we often use cystometrics first, instead of initial PVR measurement. By doing this procedure, recommending a trial of treatment based on underlying causes, and using the criteria for referral outlined above, we have decreased our need for specialist consultation by more than 50% for frail elderly patients. ❖

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