

To scan or not to scan? Detecting urinary retention

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A bladder scan uses a noninvasive, portable ultrasound device that provides a virtual 3D image of the bladder and the volume of urine retained within the bladder. Retained urine is a reservoir for bacteria and pathogens, which can cause urinary tract infections, leading to damage of the renal structures, pain, and urosepsis.

Bladder scans are commonly utilized in acute care, long-term care, and rehabilitation environments, as well as in physicians' offices. Without the use of a bladder scanner, urinary retention is assessed by performing an invasive "in and out" urinary catheterization, which can be uncomfortable and pose a direct risk of introducing more pathogens into the bladder, increasing a patient's risk of infection.

Portrait of a bladder scan

An alternative to bladder palpation, a bladder scan can be used to assess patients for postvoid residual (PVR) volume, which shouldn't be higher than 100 mL. The scan is typically performed 10 minutes after a patient has last voided and consists of two components: an ultrasound monitor and a handheld scanner.

The typical ultrasound unit provides a 3D image of the bladder on a display screen. This portable ultrasound monitor can be carried by hand or placed on a rolling stand.

The scanner is a handheld, wandlike device containing a transducer, which sends out ultrasound waves that bounce off the

bladder and are sent back to the computer for interpretation.

When scanning is indicated

Before performing a bladder scan, make sure your patient doesn't have abdominal wounds over the midline lower abdominal area and that your female patient isn't pregnant. Bladder scanning may be contraindicated in these two types of patients.

Consider bladder scanning for patients with the following conditions:

- **post-op decreased urinary output.** If the patient has undergone an abdominal surgical intervention that may impair the ability to void by causing localized edema in the abdomen, the edema may compress the urethra, resulting in partial or complete occlusion.
- **an enlarged prostate.** This condition can impair the patient's ability to void by partially compressing the urethra and occluding the urinary exit pathway.
- **a urethral stricture.** This can impair the patient's ability to fully empty the bladder because the urethral pathway, through which urine exits, is narrowed.
- **neurogenic bladder.** The patient's inability to void may be due to damaged neural pathways to or from the bladder.
- **spinal cord injuries.** These conditions can cause urinary retention because of edema resulting from the injury.
- **stroke.** A stroke patient may experience an impaired ability to void because of

Is your patient retaining urine?



A bladder scan is an alternative to “in and out” catheterization.



neurologic injuries, such as paralysis or cerebral edema.

- **impaired cognitive ability.** This may prevent the patient from correlating the sensation of needing to void with the physical act of voiding.
- **renal calculi or renal mass.** Renal calculi (kidney stones) or a renal mass may physically obstruct the outflow of urine. Although a bladder scan isn't utilized to diagnose an obstructive mass or stone, occasionally these conditions can be visualized during the scan.
- **urinary incontinence.** This can result in incomplete emptying of the bladder due to infection, neurologic conditions, or anomalies of the renal structures. A bladder scan can assist the nurse in noting the frequency and volume of retained urine to tailor an individualized bladder retraining program for the patient.
- **diabetes.** Patients with diabetes may not have the sensation or urge to void.

Medication mayhem

You should review your patient's home medication regimen when an increased PVR volume is noted. Many medications may cause increased urinary retention, such as:

- anticholinergics
- antispasmodics
- tricyclic antidepressants
- antipsychotics
- antiparkinsonian drugs
- opioids
- anesthetics.

Time to scan

After washing your hands, ensuring privacy, and explaining the procedure, assist your patient into a supine position. Explain to your patient that conductive ultrasound gel is applied on the skin over the area being scanned to ensure an acoustic pathway between the probe and skin. The gel creates an airtight seal between the device and the skin, providing optimal visualization of the bladder and its contents.

Turn the scanner on and select your patient's sex. If your patient is a woman who has undergone a hysterectomy, use the male setting. Apply transducer gel to your patient's lower abdomen. Use the symphysis

pubis as a landmark. Place the scanner 1 inch above the symphysis pubis and tilt it down toward the bladder to ensure correct placement. After the bladder is visualized, don't move the transducer scanning tip until the scan is complete. If your patient has a large amount of loose skin, or if he or she is obese, it may be necessary to pull extra tissue to the side before performing the scan.

The bladder will appear on the monitor, and most machines will cue the operator when the scan is complete. Most machines will also allow you to print the image or transfer the digital image. The volume of retained urine can be estimated from the image.

All transducer gel should be cleansed from your patient's abdomen after the scan is complete. Utilize an antibacterial solution approved by your facility and the manufacturer to decontaminate the bladder scanner immediately afterward. This prevents the potential spread of pathogens to other patients. Document the results of the scan and how your patient tolerated the procedure. Notify the healthcare provider if the scan indicates urinary retention.

Scanning for optimal outcomes

A bladder scan is a safe, painless, reliable procedure that allows you to assess the volume of urine retained within the bladder. Using a scanner instead of urinary catheterization alleviates discomfort, pain, and the introduction of outside pathogens to the patient's bladder. Bladder scanners are the safest option for healthcare providers to use for patients experiencing urine retention. ■

Learn more about it

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