TEST

Cystometric study

A cystometric study measures how your bladder stores urine and responds as it fills.

WHAT IT MEASURES
Bladder pressure, capacity, sensation, and urine storage

SAMPLE
None; pressure and urine flow measurements

FASTING NEEDED?
No

HOW LONG IT TAKES
About 30 to 60 minutes

RESULTS IN
Usually same day; laboratory reporting turnaround varies

USED FOR
Diagnosing and assessing bladder control problems

MAIN LIMITATION
Testing may not reproduce your usual bladder symptoms

Overview

A cystometric study measures what happens inside your bladder as it fills. It is usually part of a group of tests called urodynamic testing, which examines how the bladder and urethra store and release urine. The urethra is the tube that carries urine out of your body.

During the test, a thin tube called a catheter is passed into your bladder. Another small pressure-measuring tube may be placed in the rectum or vagina. Your bladder is slowly filled with sterile water while the equipment records pressure changes.

You will be asked when you first notice filling, when you feel an urge to urinate, and when your bladder feels full. The test may also show whether your bladder muscle contracts unexpectedly or whether urine leaks during coughing or movement.

A cystometric study does not give a diagnosis on its own. Your results need to be considered alongside your symptoms, medical history, examination, bladder diary, and other tests.

Why the test is ordered

The test may be ordered when the cause of a bladder problem remains unclear or when detailed pressure measurements could change treatment.

It can help investigate:

It may also be used before certain procedures for urinary leakage or bladder emptying problems. Not everyone with urinary symptoms needs cystometry. A urine test, bladder diary, urine flow test, or measurement of urine left after urinating may provide enough information in some cases.

- Urgent or frequent needs to urinate
- Urine leakage
- Difficulty starting or maintaining urine flow
- A feeling that the bladder does not empty fully
- Repeated urinary retention, meaning difficulty passing urine
- Bladder problems linked to a neurological condition
- Mixed or complicated urinary symptoms

Who should have the test

You may be offered cystometry if your symptoms are persistent, difficult to explain, or have not responded as expected to initial treatment. It can be especially useful when symptoms and simpler test results do not agree.

People with conditions affecting the brain, spinal cord, or nerves may need urodynamic testing to assess how safely the bladder stores urine. Examples include spinal cord injury, multiple sclerosis, or some forms of spina bifida.

Tell the clinic if you may be pregnant. Standard cystometry does not use radiation, but video urodynamic testing may use X-rays and contrast material. The team can decide whether testing should proceed or be postponed.

The test may be delayed if you have symptoms of a urinary tract infection, such as burning when urinating, fever, or newly cloudy or strong-smelling urine.

How to prepare

Follow the instructions from your testing centre because preparation differs between clinics. You may be asked to arrive with a comfortably full bladder so that your natural urine flow can

be measured before the bladder is emptied.

You can usually eat normally. Fasting is not normally required.

Bring a list of your medicines. Medicines that affect bladder contraction, urine production, or the urethra may change the findings. These include water tablets like furosemide or hydrochlorothiazide , medicines for overactive bladder, and some medicines used for prostate symptoms. Do not stop a prescribed medicine unless the clinic specifically tells you to do so.

You may be asked to:

Wear clothing that is easy to remove. You may wish to bring a spare pad or underwear because leakage can occur during the test.

- Complete a bladder diary for several days
- Provide a urine sample to check for infection
- Record how much you drink and urinate
- Tell the clinic about latex, antiseptic, or medicine allergies
- Use the toilet or keep your bladder full at a stated time

What happens during the test

You may first be asked to urinate into a special toilet that measures the speed and amount of urine flow. An ultrasound scan or catheter may then measure how much urine remains in your bladder.

For cystometry, a clinician gently passes a narrow catheter through the urethra and into the bladder. Local anaesthetic gel may be used to reduce discomfort. A second small tube is often placed in the rectum or vagina to record pressure outside the bladder. Comparing the measurements helps show whether pressure changes come from the bladder muscle or from coughing and abdominal movement.

Sterile water is slowly pumped into your bladder. You will be asked to report several sensations, including when you first notice filling and when you would normally go to the toilet.

The clinician may ask you to cough, strain, change position, or describe any sudden urge. These actions can show whether pressure causes leakage. Once your bladder feels full, you may be asked to urinate while the pressure tubes remain in place.

The catheters are then removed. The appointment commonly takes about 30 to 60 minutes, although a broader urodynamic assessment may take longer.

Understanding your results

The report may describe:

For example, an involuntary contraction during filling may help explain sudden urgency or leakage. Leakage caused by coughing without a bladder contraction may support a different type of bladder control problem. Weak flow can have several possible causes and must be interpreted with the pressure measurements.

There is no single result range that applies to everyone. Measurements and interpretation vary by laboratory, age, sex, pregnancy status, medicines, neurological conditions, testing position, and clinical context.

- How much fluid your bladder held
- When you first felt the bladder filling
- How pressure changed during filling
- Whether the bladder muscle contracted unexpectedly
- Whether coughing or straining caused leakage
- How well the bladder stretched without a large pressure rise
- Pressure and urine flow while you urinated
- Whether urine remained afterward

What affects the results

Cystometry deliberately recreates bladder filling in a clinical setting. That setting can change how your bladder behaves even when the equipment is working correctly.

Important influences include:

Tell the clinician if the sensations or leakage during the test did not feel like your usual symptoms. That information is part of the interpretation.

- A urinary infection: Infection can cause urgency, discomfort, or unusual bladder contractions.
- Bladder fullness at arrival: An empty bladder may prevent a useful natural flow measurement.
- Fluid and caffeine intake: Too little fluid can delay filling, while caffeine may increase urgency or urine production.

- Medicines: Water tablets, bladder-relaxing medicines, and medicines affecting the urethra can alter storage or flow.
- Anxiety or embarrassment: Some people cannot relax enough to urinate normally during testing.
- The catheter: Its presence can affect sensation, urine flow, or bladder contractions.
- Body position: Findings may differ when sitting, standing, or lying down.
- Filling speed and fluid temperature: Artificially rapid filling may produce sensations or contractions that do not occur at home.
- Constipation: A full rectum can affect comfort, pelvic pressure, and bladder emptying.

Accuracy and limitations

Cystometry directly measures pressure and can reveal bladder behaviour that simpler tests cannot. However, it is a short test performed under artificial conditions.

The test can miss a problem if your usual urgency, leakage, or difficulty urinating does not happen during the appointment. Intermittent bladder contractions are particularly easy to miss. There is no single reliable percentage for how often this occurs because accuracy changes with the condition being investigated, the testing method, and the group being tested.

It can also record findings that do not reflect your everyday bladder function. Catheters, rapid filling, anxiety, coughing, or an unfamiliar position may trigger unusual sensations or contractions. A recorded abnormality therefore does not always explain your symptoms.

Other tests may be better for different questions. A bladder diary shows patterns over several days. Ultrasound can measure urine left after voiding. Cystoscopy looks directly inside the bladder for structural problems. Imaging may be needed when the urinary tract anatomy is the main concern.

Risks and complications

The catheter can cause brief stinging, pressure, or discomfort. Mild burning when urinating and a small amount of blood in the urine can occur afterward.

There is also a small risk of a urinary tract infection. Drinking your usual amount of fluid after the test may make urination more comfortable unless you have been told to restrict fluids.

Contact the clinic promptly if burning, bleeding, or discomfort is not improving. Seek urgent

medical advice for fever, worsening pelvic or back pain, difficulty passing urine, or clearly increasing blood in the urine.

Seek emergency help if you become severely unwell, confused, faint, or unable to urinate with severe lower abdominal pain.

What happens next

You can usually return to normal activities immediately. If you feel sore, gentle activity and your usual fluid intake may be more comfortable for the rest of the day.

Some results are visible during the test, but a specialist may need to review all pressure and flow recordings before issuing a report. At routine follow-up, the findings will be compared with your symptoms and other test results.

Possible next steps include monitoring, bladder training, pelvic floor therapy, reviewing medicines, further testing, or discussing a procedure. An unusual measurement does not automatically mean that treatment is needed.

Common questions

Can I drink coffee before a cystometric study?

You can usually drink normally, but caffeine may increase urgency and urine production. Follow the clinic's instructions, especially if you have been asked to arrive with a comfortably full bladder.

Does the time of day matter?

There is no standard time that is best. Choose an appointment you can attend while following any instructions about drinking, medicines, and bladder fullness.

Can I exercise beforehand?

Ordinary exercise does not usually interfere with the pressure measurements. Avoid arriving dehydrated, and tell the clinician if strenuous exercise has changed your usual drinking or urination pattern.

Does the test hurt?

Catheter insertion can sting or feel uncomfortable, but severe pain is not expected. Tell the clinician immediately if you have significant pain during filling or catheter placement.

Do I need a full bladder?

Often, yes, because the clinic may measure your natural urine flow first. Instructions differ, so use the toilet if you are painfully full and tell the clinic what happened.

Can I drive home afterward?

Most people can drive and return to normal activities. If your test includes sedation or another procedure, follow the separate instructions provided by the clinic.

Sources

- National Institute of Diabetes and Digestive and Kidney Diseases: Urodynamic Testing
- National Health Service: Urinary incontinence-diagnosis
- National Institute for Health and Care Excellence: Urinary incontinence and pelvic organ prolapse in women-management
- European Association of Urology: Guidelines on Non-neurogenic Female Lower Urinary Tract Symptoms-Diagnosis
- Rosier PFWM, et al. International Continence Society Good Urodynamic Practices and Terms 2016. Neurourology and Urodynamics . 2017;36:1243-1260