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Urology

**Urodynamic Tests**

**What is Urodynamics?**

The bladder and kidneys are part of the urinary system. These are the organs that make, store, and pass urine. When the urinary system is working well, the kidneys make urine and move it into the bladder. The bladder is a balloon shaped organ that serves as a storage unit for urine. It is held in place by pelvic muscles in the area below your belly. When it is not full of urine, your bladder is relaxed. Nerve signals in your brain let you know that your bladder is getting full. Then you feel the need to urinate. The brain tells the bladder muscles to squeeze (or “contract”). This forces the urine out through your urethra, the tube that carries urine from your body. Your urethra has muscles called sphincters that help keep the urethra closed so urine doesn’t leak before you’re ready to go to the bathroom. These sphincters open up when the bladder contracts.

Urodynamic studies (UDS) are used to diagnose problems with the way the bladder, sphincters, and urethra work. There are many studies for this. Typically, one or more UDS are performed at the same time to learn what’s causing your symptoms. These test can show if or why there is a leak, blockage (urine does not flow out of the bladder and down the urethra freely), pain or other problem in the lower urinary tract.

The most common urodynamic tests are:

* Cystometry (CMG)
* Electromyography (EMG)
* Urethral Pressure Profile
* Uroflowmetry
* Voiding Pressure Study (Pressure Flow Study)

**Preparing for your test**

You don’t need to prepare for most of these tests. You may be asked to stop a medicine or drink differently before a test. For some tests, you’ll want to arrive with a full bladder.

Urodynamic studies help find the cause of problems related to:

* Urine leaks/controlling your urine
* Emptying your bladder all the way
* The need to use the bathroom often
* The need to use the bathroom urgently
* A weak urine flow
* Urine flow that stops and starts (“intermittent”)
* Painful and ongoing urinary tract infections

Your Urologist will first talk with you about your symptoms. Then, you should have a physical exam and provide a clean urine sample for a sample urine test. If more information is needed for a diagnosis, your urologist would use other imaging/diagnostic tests.

In addition, you may be asked to complete a bladder diary. Writing down when you make trips to the bathroom for a few days can help you and your Urologist understand your symptoms better. A diary may help show you some things that make your symptoms worse. Your treatment plan will be based on your diagnosis.

**About the test**

**Cystometry (CMG)**

Cystometry (CMG) is used to measure your bladder sensation, bladder elasticity, bladder capacity and detect if there are abnormal bladder spasms. A catheter measures pressure inside the bladder. These tests help diagnose problems with urine control. For example: incontinence (leaking) and/or overactive bladder.

* Just before the procedure, you will be asked to urinate.
* You will lie down on an examining table. You will be positioned to access your urethra.
* A thin, soft tube, or catheter, is carefully passed through your urethra and into the bladder, and any residual urine is measured and recorded.
* After the fluid is drained from your bladder, the catheter is connected to a device called a cystometer, which monitors bladder pressure.
* Next, saline solution or water (or in some cases carbon dioxide gas) is slowly introduced into the bladder at a controlled rate, usually while you are in a seated position. During this process, bladder pressures are recorded.
* The doctor will ask you to indicate when you first feel the urge to urinate and then when you feel urgency, indicating your bladder is full.
* You may be asked to cough or strain to determine the presence of any leakage.
* The fluid is then drained and the catheter removed if no additional tests are required.

The test usually takes about 45 minutes.

**Electromyography (EMG)**

Electromyography (EMG) tests the electrical activity of the muscles and nerves in your pelvic area. EMG is used if a urinary problem is from nerve of muscle damage. Small sticky sensors are placed near the rectum to test muscle and nerve activity. It measures the coordination of muscles and sphincters during the filling and emptying of the bladder.

* You will lie down on an examining table. You will be positioned to access your rectum (males) and urethra (females).
* A special paste is applied, and several electrodes are taped in place on the skin; they are typically placed in the area around the urethra in women and around the anus in men. An additional electrode that serves as a ground is usually taped to your thigh.
* A catheter is gently inserted through your urethra and into your bladder.
* Electrical activity is recorded while you are relaxed and your bladder is empty.
* For additional measurements, you may be asked to cough; the examiner may gently tug on the catheter; and you may be asked to contract and relax the sphincter muscles so that voluntary activity can be assessed.
* Next, your bladder is filled with room-temperature water, the catheter is removed, and you will be asked to urinate.
* The electrodes are then removed, and the affected area is cleaned and dried.
* The test usually takes 30 to 60 minutes.

**Urethral Pressure Profile**

This test studies the strength of your urethra and its outlet. This test may also be used to find the cause of incontinence (leaking). A catheter with a sensor records information about pressure in your urethra.

* You will be positioned to access your urethra. A catheter is gently inserted through your urethra and into your bladder, and attached to a machine that monitors pressure.
* Fluids or gas are instilled through the catheter. As the catheter is withdrawn slowly, pressures along the urethral walls are measured.
* A syringe pump maintains a constant infusion of the fluids or gas.
* The catheter is removed.
* The test usually takes less than 15 minutes.

**Uroflowmetry**

Uroflowmetry measures how much urine comes out and how fast. Often for this test, you will be asked to arrive with a full bladder for best results. Your doctor may suggest this test if you have trouble urinating or have difficulty emptying your bladder. By measuring the average and fastest rates of urine flow, it can show if there is a blockage (from an enlarged prostate).

* You will be escorted to a private room with a special uroflowmetry commode that measures the flow rate as you urinate.
* You are left alone.
* To maximize the accuracy of results, remain still as you urinate and avoid straining.
* The test takes about 10 minutes.

**Pressure Flow Study**

A pressure flow study measures the pressure in your bladder as you urinate. In addition, it measures the urine flow rate. This study can find blockage of the urethra. The catheter is small and your urine will flow around it. This study measures how well your bladder muscles work as it empties.

* You will lie down on an examining table, with your knees bent and feet resting in stirrups.
* A catheter equipped with a special pressure sensor is gently inserted through the urethra into the bladder. A similar device may be inserted into the rectum.
* Fluid is instilled through the catheter to fill the bladder. You should report when you first feel the urge to urinate, and when the sensation becomes urgent.
* When you feel a strong urge to urinate, you will be instructed to urinate around the catheter.
* The catheter(s) are withdrawn.
* The test takes about 10 minutes.

**What to expect afterwards**

Resume your normal diet and any medications that were withheld before the test, according to your doctor’s instructions.

These tests may leave you with slight discomfort for a few hours when urinating. It helps to drink several glasses of fresh water after the tests. You may find comfort with a warm, damp washcloth placed over the urethral opening. Your health care provider will discuss test results with you. After you learn more, you and your health care provider will decide on the best treatment plan.

**What are the possible risks of Urodynamics?**

**Uroflowmetry:**

* There are no risks associated with this test.

**Cystometry, urethral pressure profile, pressure-flow studies, electromyographic studies:**

* Temporary mild irritation of the urethra is common. Other possible risks include infection.

Call your doctor if:

1. You have a temperature over 101 F, chills, or are unable to void for 5-6 hours.
2. You have a significant amount of clots that prevent urination or the flow of urine.

\*\* If you experience any of these problems when the office is closed, you will need to go to the emergency room.

**Contact**

If you have any questions about Urodynamics, please call Mary Black Physicians Group Urology at (864) 253-8055. The office is open from 8:30 am to 4:30 pm, Monday-Friday.