If you or someone you know is affected by loss of bladder control, you are not alone. An estimated 15-20 million people in the United States have bladder control problems. This condition affects men and women, although it is nearly twice as common in women. The prevalence of this condition increases with age. However, this condition should not be considered a normal result of aging.

Urinary incontinence is often caused by specific changes in body function due to related or unrelated diseases and/or usage of medications that affect function of the urinary tract (e.g., diuretics or "water pills," anti-hypertensives or “blood pressure pills”). More often than not, UI is more of an annoyance than a sign of a life-threatening condition. Despite the high prevalence, most people with UI are reluctant to seek help. They might be embarrassed to acknowledge that they have a problem, even to themselves. Or, they might have broached the issue with family members, acquaintances, and/or friends who were discouraging or suggested that no truly useful remedies exist. Thus, many sufferers resort to dealing with the progressively worsening leakage by using the many absorbent products available, including pads and/or diapers. This resignation often results in emotional and psychological vulnerability, including depression and social isolation.

There is absolutely no reason for this to happen. The good news is that 80-90% of cases can be treated successfully. Although complete cure may not be attainable in all cases, substantial improvement can be expected in the vast majority. So, if you or someone you know suffers from this condition, schedule an evaluation and review treatment options appropriate to your condition. The more you know, the more confident you will be in choosing the direction of treatment.

**Types of urinary incontinence**

Female urinary incontinence can be grouped in several distinct categories, although women often have symptoms found in more than one category (i.e., mixed incontinence).

**Stress Incontinence**

Urine leakage occurs with increases in abdominal pressure (hence, mechanical “stress”).

**Urge Incontinence**
Often grouped into problems of “overactive bladder.” Inability to hold urine long enough to reach restroom.

**Mixed Incontinence**

When two or more causes contribute to urinary incontinence. Often refers to the presence of both stress and urge incontinence.

**Overflow Incontinence**

Leakage or “spill-over” of urine when the quantity of urine exceeds the bladder’s capacity to hold it.

**Functional Incontinence**

Leakage (usually resulting from one or more causes) due to factors impairing reaching the restroom in time because of physical conditions (e.g., arthritis)

**Normal Function of the Urinary Tract**

The urinary tract is made up of the following:

**Kidneys**: Two orange-sized organs situated in your back and protected by the rib cage; function to filter blood and produce urine (liquid waste)

**Ureters**: Two thin tubes which deliver urine from the kidneys to the bladder

**Bladder**: Holding tank for urine

**Urethra**: Conduit/value

The urethra has two functions: it serves as a pipeline from the bladder to the outside when you empty your bladder; also it is a valve that needs to stay closed in order for your bladder to retain urine.

Abnormalities to the urethra's closure mechanism are the primary cause of stress urinary incontinence. In most cases, support to the urethra is lacking. The front or anterior wall of the vagina acts as a backboard to the urethra. When you cough, laugh or strain, the pressure rise in the abdomen is transmitted simultaneously to the bladder and to the outside of the urethra. This mechanism compresses
the urethra against the underlying front vaginal wall, effectively pinching the urethra closed (valve mechanism) and preventing loss of urine. If the front vaginal wall, especially beneath the urethra is lax and moves too much (urethral hypermobility) the backboard valve mechanism is compromised. In fewer cases, the resistance provided by the urethra itself is low. The tiny muscles (smooth muscle cells) that make up the wall of the urethra lose their ability to maintain adequate resting tone and pressure and/or to squeeze (pressure rise) during stress-related events (e.g., coughing, straining, etc.) In menopausal patients, the once-abundant mucus in the urethral lining diminishes. This compromises the urethra's ability to seal closed. Any or all of these factors can play a role in the presence of stress urinary incontinence.

**Predisposing Factors to SUI**

- Gender
- Genetic
- Vaginal birth trauma
- Previous pelvic/vaginal surgery
- Radiation therapy
- Menopausal status
- Chronic **medical or occupational conditions**

In general, the causes of SUI are many. Listed above are factors that lead to SUI. You need to keep in mind that like pelvic organ prolapse, SUI does not result from any one of these factors listed, or from a single event. Instead, a combination of these over a span of many years is most likely involved in the initial development and eventual progression of SUI. Some of the above are self-explanatory and others should be discussed.

There is little we can do (currently) regarding inheritance of genes for "weak" supportive tissues and muscles. However, if any of your immediate relatives experienced pelvic prolapse conditions or SUI, chances are good for you to develop these problems as well. Obstetricians are becoming more and more aware of the risks of injury to the pelvic floor caused by vaginal delivery. Excessive stretching of the supportive tissues, muscles and nerves, can cause permanent defects even after post-pregnancy healing. This may lead to various pelvic floor support problems for the surrounding organs: bladder (cystocele), rectum (rectocele), and top of vagina and uterus (uterovaginal descensus/ prolapse). Frequently, SUI is present in the period immediately following vaginal delivery. Although the SUI may
resolve with time, its initial presentation may signal the development of more troublesome SUI in the future. And the greater the number of vaginal deliveries (2 or more), the greater the chance of POP and SUI in the future.

Previous pelvic/vaginal surgery for prolapse or radiation therapy to the area can lead to worsening urethral function in the future, by interfering with the blood and nerve supplies to this delicate structure. Also, nearby surgeries like hysterectomy (removal of uterus), whether through an abdominal incision or vaginally, can cause injuries to the bladder and/or urethra. Fistulae (an abnormal tract/connection) between the two structures and the vagina can appear like SUI. Chronic conditions that lead to persistently elevated pressures in the abdomen can result or worsen SUI. Lung conditions (bronchial asthma, bronchitis), obesity, constipation, and occupation/lifestyle situations that involve heavy lifting or straining can lead to SUI. Loss of elasticity is an inevitable part of the normal aging process. This is known to be quickened by loss of estrogen stimulation once estrogen diminishes or ceases after natural or surgical menopause (i.e. removal of ovaries). In addition, decreased estrogen stimulation causes less mucus production by urethral glands, thereby compromising the urethral sealing ability.

**Diagnosis**

An appropriate evaluation helps your physician or other health-care provider pinpoint the type(s) of urinary incontinence you might have. An exhaustive evaluation is not always necessary - your doctor/provider will determine what components will be important in your case.

Before a physical examination and other tests, your doctor/provider will ask you a series of questions. Your responses will assist your doctor/provider in mapping out the tests that will be utilized. Some of the typically asked questions are listed below. A thorough history will be taken, reviewing your past and more recent medical, surgical and Ob/Gyn history. You will be asked to list your medications. A 1 - 3 day voiding diary recording the amount and time of every void will need to be kept by you and reviewed by your provider.

The physical examination will involve some or all of the following:

**Neurologic examination**: basic testing of nerves supplying the legs and vaginal opening; the same nerves service the bladder and urethra.
**Pelvic examination**: a typical GYN examination to identify pelvic floor defects, including those of the front (cystocele), back (rectocele) and top walls (uterine and/or vaginal prolapse).

**Urine specimen**: obtained following voiding to determine how efficiently the bladder empties itself; a specimen is sent for bacterial culture (a urinary infection can cause or worsen urinary incontinence).

**Cystoscopy**: the physician looks into the urethra and bladder with a small, illuminated telescope-like instrument to rule out stones, growths and foreign bodies (sutures from previous anti-incontinence surgery).

**Urodynamic studies**: these are tests that measure pressures in the bladder and urethra simultaneously to tell how both components are working. They are done in an outpatient clinic, take 30-60 minutes, and are not painful.

**Uroflowmetry** measures and records the amount and rate (speed) of urine during voiding.

**Cystometrogram** measures how the bladder operates as it stores larger amounts of urine during filling.

**Urethral pressure profile/closure pressure** measures urethral pressure to determine the urethra's effectiveness as a closure valve.

**Leak point pressure** measures how much pressure it takes to open the urethral sphincter (valve) and allow urine to leak.

**Voiding study** measures simultaneous pressure changes in the urethra (decrease) and bladder (increase) as bladder empties during voiding.

**Treatment Options for SUI**

**Non-surgical**

Absorbent pads/diapers

Kegel exercises:
Pelvic floor muscles act as a hammock or sling to buttress support to the urethra and bladder during stress related activities; exercising these muscles improves the resting tone and strength of active contractions to help close the urethra when coughing or laughing;
innumerable Kegel exercise regimens are used but all have one thing in common: they must be done on a regular basis and indefinitely for the recipient to derive noticeable benefit.

Pessaries:
These simple plastic shapes, worn in the vagina, were originally used only for pelvic organ prolapse. However, properly sized and incontinence modified pessaries can provide support beneath the urethra, compensating for the laxity of urethral support found in most SUI situations.

Special devices:
Urethral plugs and other devices may be available when the above strategies are unsuccessful.

Urethral implant:
Injection into the urethra of sterilized collagen or micro-beads is directed by a telescope-like device (urethroscope) to decrease the size of the gaping urethra. This creates a washer-like effect that assists in closing the urethra during coughing or straining. Unfortunately, more than one injection is usual.

**Surgical**

Many operations are available to cure stress urinary incontinence. These are intended to restore the support of the front vaginal wall immediately beneath the urethra; thereby enhancing compression of the urethra against the backboard of the front vaginal wall. The Burch, MMK and sling, including TVT (tension-free vaginal tape) use sutures and graft material (natural or synthetic) to provide cure rates that approach 95%, but the specific procedure for your problem must be carefully selected.

**Urge Urinary Incontinence**

**Definition**

Urge Incontinence is the inability to control the flow of your urine as well as when and where your bladder empties. Typically, urge incontinence is thought of as the feeling of “gotta go” and “when I have to urinate, I can’t get to the bathroom fast enough before I leak.”

Urgency and frequency of urination is the persistent sensation of needing to urinate during the daytime, nighttime (waking you from
sleep more than 1-2 times per night), or both (day and night). This sensation may be associated with bladder spasms or a sensitive bladder. Urgency and frequency alone may not necessarily cause leakage of urine and is sometimes referred to as 'overactive bladder'.

If you suddenly lose urine at the wrong time and place, you may have urge incontinence. Because this urge cannot be stopped, this type of incontinence is called urge incontinence. Conversely, when the bladder is healthy, we are in control and can decide when and where to urinate.

The most common cause of urge incontinence is a spasm or contraction of the bladder muscle. When the bladder spontaneously contacts, you leak urine. The wetness can be any amount from dribbling up to “flooding” or soaking our clothes.

Urge incontinence is the leakage that can occur when you put your hands under running water, when you hear running water, after drinking a small quantity of liquids, or when you rush home and put your key in the lock of your door and experience a bladder contraction and leakage. This last situation is so common that it is called 'Key-in-lock syndrome'. In the great majority of women suffering from urgency and/or urgency incontinence, there is no known cause. Occasionally, urge incontinence and the spasm of the bladder muscles happen because of damage to the nerves of the bladder, nervous system or the bladder muscles themselves.

**Incidence of Urge Incontinence**

People of all ages have bladder control problems. Many young women may find that they cannot hold their urine after having a baby. Others may have problems when they stop having they near or enter menopause. Urgency/urge incontinence is common among these postmenopausal women and becomes still more common as women become older. More than thirteen million Americans are estimated to experience incontinence and greater than eleven million of those are women. This is because women have babies and their urethras are shorter than the urethras of men.

One in four women ages 30-59 have experienced at least one episode of urinary incontinence. One-half of the people living in nursing homes are incontinent. Billions of dollars are spent each year in America on disposable paper products (diapers) for adults who are incontinent.
Incontinence may effect you and your family, your friends, or most importantly, your health and quality of life.

**Risk Factors**

Women experience incontinence two times more than men do. Women are most likely to develop incontinence during pregnancy, childbirth or after hormonal changes that occur with menopause. The structure of the female urinary tract may account for this difference. Older men can become incontinent as the result of prostate surgery. Both women and men can become incontinent from excessive caffeine, urinary tract infections, several neurologic disorders or certain medication.

Incontinence can be improved in 8 out of 10 women but ironically, less than one-half discuss their incontinence problem with their physicians. The condition often goes unnoticed. Many women are embarrassed. More often, women are told that bladder control problems (urinary incontinence) are a normal part of aging and that they should learn to live with it. These statements are untrue. Urinary incontinence is not normal. It can be cured or markedly improved in the great majority of cases.

**Evaluation Tools**

The first step toward getting better is to see a doctor who is knowledgeable about incontinence and can learn the type that you have. Most urologists specialize in the urinary tract, while urogynecologists focus on bladder and other pelvic floor problems in women.

Your doctor will first ask you about your symptoms, medical history, family history, surgical history, and your medications. Your doctor will do a physical, gynecologic and neurologic examination. A urine sample will be sent for tests to determine if any infection or other problems are present. During the physical exam, your physician will also examine you for signs of medical conditions causing incontinence. You may be asked to keep a voiding diary to record your normal urination and any leakage you may have. You may be asked to indicate the volume of liquids you drink as well as recording the times. The urine volume can be measured with a special basin that you place under the toilet seat. The basin’s ounces or milliliters are written on it and you simply read off the amount and record it in your voiding diary.
A urodynamic evaluation may be needed. It is slightly uncomfortable and somewhat immodest but not painful. The test lasts about 20 to 40 minutes and will determine the cause of the leakage. It uses simple and computerized tests to measure pressure in the bladder, the flow of urine and other measurements of bladder and urethral function.

**How is Urge Incontinence Treated?**

A bladder infection will be treated with antibiotic medications. Excessive intake of citrus, some spices and alcohol can increase urgency/frequency symptoms. Therefore with behavior modification, you can alter your intake of beverages and foods that may cause your bladder to be overactive. Your voiding diary can be used to keep a record of your actual fluid intake level and timing of this intake. For example, you may suffer from nighttime bladder urgency/frequency and not know that you are drinking excessive fluids in the evening. Your physician will see this in the voiding diary. Simply by lessening your evening fluid intake, your symptoms may improve.

**Bladder Retraining**

Timed voiding or bladder retraining drills are very helpful and usually the first line of therapy for Overactive Bladder. This excellent treatment is free, completely safe and effective in curing or improving symptoms in two thirds of women suffering from this very common disorder. In timed voiding you may fill out a chart of voiding and leaking such as the voiding diary mentioned in the last paragraph. From the patterns that appear in the voiding chart, you can plan to empty before you would otherwise leak. The intervals that you urinate at can gradually be lengthened by 15 minutes each week while you are awake. In this way, you may stretch or increase the intervals at which you void. Another similar approach to bladder drills is to begin voiding every hour on the hour, except while in bed, whether the urge is felt or not. This pattern is continued for two weeks. Then, you move up to voiding every hour and a half. Every two weeks, you increase the interval between voids by 30 minutes, until you have retrained yourself up to voiding at a comfortable interval of, for example every three to four hours. This biofeedback technique known as bladder training can alter or change the bladder’s schedule for storing or emptying urine. These techniques are effective for urge incontinence, urgency, and frequency of urination and overactive bladder.

**Kegel Exercises**
Pelvic muscle exercises (Kegel) are used to strengthen or retrain the muscles of the pelvic floor. Regular daily exercising of the pelvic muscles can improve and even prevent urinary incontinence. This is helpful for younger women. These exercises may be performed alone or with the assistance and direction of a pelvic floor therapist. The Kegel exercises should be performed 30-80 times daily for six to eight weeks before you may notice any difference. Although most Kegel exercises do not require equipment, there are some techniques which can be used to modify Kegel exercises. One technique involves the use of weighted cones which indicates which muscles need strengthening. With time and effort, your pelvic muscles will strengthen and your symptoms of urgency, frequency, and urge incontinence may decrease.

**Pelvic Floor Stimulation**

Other biofeedback techniques such as pelvic floor electrical stimulation also improve urge incontinence. This technique will help women identify their pelvic muscles. It works with a little bit of effort on your part. The electrical stimulation exercises the pelvic muscle for you. A small instrument is inserted into the vagina to deliver a tiny electrical pulse that causes the pelvic muscles to contract for you.

It feels like a hum and a pull in your pelvic muscle and is not uncomfortable. This technique may reduce urgency, frequency symptoms, overactive bladder and especially urgency incontinence.

**Medications**

Some medications prevent contractions of an overactive bladder and tighten muscles at the neck of the bladder and urethra preventing leakage. You may need to try several prescription medications before finding the medication and dosage that is right for you. Hormone Replacement Therapy (estrogen or estrogen/progesterone) is also believed to cause the muscles and nerves in urination to function normally. Hormone replacement therapy is available in oral pill form, patch, vaginal form pill, cream, or vaginal ring. Talk to your doctor about the risks and benefits of long-term use of hormone replacement therapy.

**Devices**

*Interstim*
This electronic device can be used to treat severe urge incontinence when it is not improved with medical, dietary and behavioral therapy. It consists of a battery-powered stimulator connected to a wire, which is placed near the root of one of the sacral nerves in the back. It is meant to 'down regulate' the bladder muscle's sensitivity and thereby decrease bladder contractions and the resulting urgency, frequency and urge incontinence.

**Pessary**

Your doctor can place a PESSARY in the vagina. This flexible, plastic device, usually used for Prolapse (descent of pelvic organs/floor) will help hold the bladder and vagina up, sometimes preventing leakage. Pessaries also come with an incontinence modification. Surgery (other than Interstim) is very rarely used to treat urge incontinence. It is very useful for Stress Incontinence.

Several tips you can use to reduce incontinence: improving your access to toilets, urinating on a schedule, decrease excess fluids, avoid caffeine. Disposable garments/paper incontinence products are used to keep people dry. They do not cure bladder control problems. You may wish to consider having a carpenter make changes to your house. A hallway light or downstairs bathroom can be helpful. Make your floor less slippery, putting down a safety carpet.

Do not let embarrassment, fear or wrong information about incontinence prevent you from speaking to your doctor. The great majority of women suffering from urinary incontinence can be cured or, at least become far less wet.