

URINARY INCONTINENCE

an overview

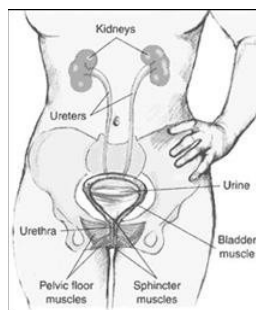
Introduction: the bladder and how it works

The bladder is a balloon-like organ, with a wall of smooth muscle fibres (detrusor) and elastic connective tissue that can expand and contract. It consists of four layers: the innermost mucosal layer is the urothelium.

Beneath the mucosa lies the submucosal layer containing a network of blood vessels, nerves and loose connective tissue known as the lamina propria, below that the smooth muscle detrusor layer and finally the outer layer.

The inner urothelium consists of many tiny folds which allow it to stretch when filling with urine. The function of the bladder is to store urine without leakage and then empty the urine at your convenience when the bladder is full. Most people empty their bladder 4-8 times a day without having to get up in the night.

Filling, storage and emptying

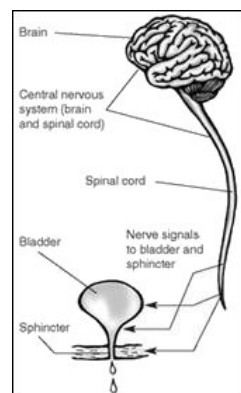


The nervous system, comprising the brain, spinal cord and peripheral nerves, also plays an important role in this storage and emptying function.

When the bladder is full, nerves in the bladder send a message to the brain to say that it is now time to empty the bladder. The brain then gives you the sensation of needing to empty your bladder.

When you have actually reached the toilet and are ready to urinate, the brain sends a message to the sphincter and pelvic floor muscles to tell them to relax and allow the urine out and at the same time tells the bladder muscle to contract to squeeze out all the urine.

What is urinary incontinence?



Urinary incontinence is the involuntary loss of urine. This may be partial leakage of urine, sometimes a few drops, or complete emptying of the bladder, which is beyond the control of the patient. It is a common condition which can affect men and women of all ages, but mainly women at a younger age and both sexes at an older age. Incontinence may occur for a short time on a temporary (transient)

basis or it may be a chronic problem. Chronic incontinence may have a variety of different causes. If the cause is identifiable, the condition can often be treated or managed successfully.

Causes of incontinence

Incontinence is a failure to store urine correctly and consequently an inability to empty the bladder when convenient. Causes may include:

- damage to the nerves controlling the bladder and process of urination
- failure of the neck of the bladder to close adequately
- overactivity of the bladder muscle (detrusor)
- damage to or weakness of the sphincter muscle
- weakness of pelvic muscles
- pelvic fracture, surgery, radical prostatectomy or difficult childbirth
- menopause
- diabetes mellitus
- Parkinson's disease
- strokes
- multiple sclerosis
- physical or functional problems associated with old age
- constipation with stool impaction placing pressure on the bladder
- male incontinence is often related to disorders or treatment of the prostate gland
- medication (including anticholinergics, alpha-blockers, alpha-antagonists, diuretics, calcium channel blockers, sedatives /hypnotics, antipsychotics /neuroleptics).

Possible risk factors include:

- obesity
- cigarette smoking
- diet (e.g. caffeine, carbonated drinks)
- chronic constipation with straining

Some types of surgery, underlying medical conditions, certain medications (e.g. smooth muscle relaxants, antihypertensives), infections or constipation (impacted stool) may cause temporary (transient) incontinence or slight leakage that eventually passes. In some people diet (e.g. alcohol, caffeine, carbonated drinks) or lifestyle may play a role in their urinary incontinence problem. There is no evidence that strenuous exercise on a regular basis causes incontinence.

Different types of incontinence

The three main categories of urinary incontinence are:

- stress urinary incontinence (SUI)
- urgency urinary incontinence (UUI)
- mixed urinary incontinence (MUI)

Other types of incontinence are:

- overflow incontinence
- continuous urinary incontinence
- transient (temporary) incontinence
- functional incontinence

Stress urinary incontinence

Stress incontinence (SUI) is the involuntary leakage of small amounts of urine when sneezing, coughing, exertion, laughing, changing posture or other physical activities requiring effort. The term "stress" as used here means physical stress or exertion and has nothing to do with emotional stress. SUI is a problem commonly experienced by women, including young or middle-aged women, and may be caused by damage or changes to pelvic muscles that control the bladder function as a result of pregnancy, childbirth or menopause or damage to the pudendal or pelvic nerves. This is the most common form of incontinence in women and is treatable. If the pelvic floor muscles are weakened, the bladder may move downwards, preventing muscles that normally shut off the urethra from closing properly. This can lead to leakage of urine during moments of physical stress such as sneezing when increased pressure forces urine out through the urethra. Both men and women have a pelvic floor with pelvic floor muscles which provide support for the bladder and other pelvic organs.

SUI can also be caused by surgery to treat prostate cancer, an enlarged prostate, removal of the prostate or radiation therapy.

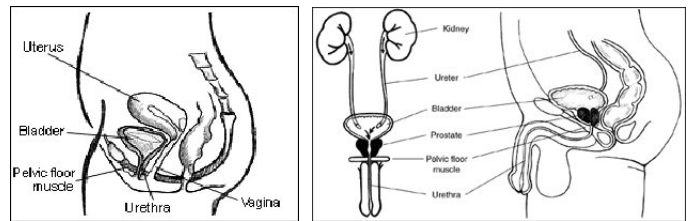
Symptoms of stress urinary incontinence may include involuntary loss of urine when:

- exercising
- sneezing
- laughing
- changing posture
- doing physical activity requiring exertion

Urgency urinary incontinence

Urgency incontinence (UUI) is the sudden, compelling need to urinate that cannot be postponed and results in involuntary leakage of urine due to the inability to reach a toilet fast enough. UUI is a main component of overactive bladder (OAB) and may include overactivity of the bladder detrusor muscle. Some people have urgency without experiencing leakage and with or without frequency during the daytime and/or at night. This is known as overactive bladder syndrome. Symptoms of urgency urinary incontinence may include:

- a sudden, urgent need to urinate which may result in large or small leakage of urine
- a frequent need to urinate (frequency), including at night (nocturia)
- tiredness due to disturbed sleep



Side view of female pelvic muscles Male urinary tract, front and side views

Although all causes of urgency incontinence are not fully understood, causes may include:

- kidney or bladder stones
- stroke
- Parkinson's disease
- tumours that place pressure on the bladder
- tumours that irritate the lining of the bladder
- diet: food & drink that irritates the bladder (alcohol, caffeine, citric acid)
- prostatitis or infection
- age-related changes in the urinary tract
- disease affecting the nervous system such as multiple sclerosis, nerve damage

Mixed urinary incontinence

Mixed urinary incontinence (MUI) is a combination of stress urinary incontinence and urgency urinary incontinence. Treatment is usually first given to the predominant symptom(s) causing the patient the most bother.

Overflow incontinence

Overflow incontinence is a failure to empty the bladder, resulting in constant uncontrolled dribbling if the amount of urine in the bladder exceeds the capacity of the bladder. Or it may only be possible to pass small amounts of urine with a stop/start stream. Uncommon in women, it is mainly a problem experienced by men and may be associated with BPH. Overflow incontinence can also be a consequence of diabetes. In children, overflow incontinence is

- hesitant or weak stream of urine
- involuntary dribbling of urine or leakage of small amounts
- continuing to dribble urine following urination
- difficulty or delay in urinating
- a need to push or strain while urinating
- a feeling that the bladder is still full
- a frequent need to urinate during the day
- a frequent need to urinate during the night (nocturia)
- loss of urine during sleep (nocturnal enuresis)

likely to be caused by a congenital abnormality of the urinary tract or neurogenic bladder (e.g. spina bifida). Symptoms of overflow urinary incontinence may include:

Continuous urinary incontinence

This may be caused by a urinary tract abnormality such as a congenital structural defect in the urinary tract affecting the flow of urine, or continuous loss of urine through the vagina as a result of a urogenital fistula. Fistulas are abnormal connections or holes between organs or structures.

Vesicovaginal fistulas (holes between the bladder and vagina) are very common in developing countries as a result of damage in childbirth and have a devastating effect causing continuous loss of urine through the vagina. Continuous urinary incontinence caused by fistulas in women in developing countries can lead to complete social isolation and stigmatisation, divorce and even worse poverty than before. Continuous urinary incontinence may also be caused by neurogenic bladder, spinal cord injuries, multiple sclerosis and other disorders affecting nerve function.

Transient (temporary) incontinence

Incontinence may occur temporarily as a result of illness, delirium, infection, atrophy, medication, surgery, excess urine output, restricted mobility or severe constipation causing stool impaction.

Functional urinary incontinence

This is a term used when incontinence is due to a person's inability to get to a toilet in time due to physical or mental limitations such as arthritis, dementia, loss or impairment of vision, hearing or speech, or inability to communicate.

Diagnosis

Seeking help

Many men and women with incontinence problems are reluctant to seek help. This may be due to embarrassment, shame, cultural taboos or simply, in the case of the elderly, the belief that it is a normal part of the aging process and that nothing can be done about it. It is vital to seek help from a doctor or nurse since everyone with incontinence can be helped in some way either with medical treatment or surgery or by use of special products. There is no need to suffer in silence.

Tests and examinations

Below are some of the tests that your doctor or nurse may carry out to find out what is causing your incontinence problems. You may be referred to a urologist or gynaecologist for more specialised tests. These tests and examinations may include:

- urinalysis: a sample of your urine is tested to see if you have an infection, diabetes, a kidney problem, prostatitis or if there is blood in the urine
- urine culture: this may need to be needed to determine if you have any infection
- blood tests
- residual urine test: to see if any urine remains in your bladder after urination
- pelvic examination: this will include an internal vaginal examination for women and a rectal examination for men; this is done for example to test the strength of the pelvic floor muscles and in the case of men to see if there is any enlargement of the prostate gland
- voiding diary to be done at home to assess the amount of fluid

you drink, the amount you urinate and the frequency of urination

- measurement of bladder capacity
- ultrasound: an imaging technique using high frequency sound waves and their echoes to visualise the urinary tract and other organs
- urodynamics: techniques to measure pressure in the bladder and the flow of urine
- cystoscopy: internal examination of the urethra and bladder by inserting a thin tube with a miniature camera through the urethra into the bladder; this can determine the presence of e.g. bladder stones, tumours, painful bladder syndrome / interstitial cystitis

Treatment

Treatment may consist of exercises, electrical or magnetic stimulation, biofeedback, bladder retraining, timed voiding or prompted voiding by caregiver, medication, injections, pessaries, catheterisation, surgery, diet management, use of absorbent pads or undergarments.

Exercises

Pelvic floor exercises, known as Kegel exercises, may help to strengthen the muscles in the pelvic floor and may improve bladder control if carried out on a regular basis.

Electrical stimulation

Electrical stimulation of the pelvic floor may help some people, both men and women. Probes carrying mild electrical pulses can be inserted in the vagina for women or rectum for men. This treatment can help to strengthen the pelvic floor muscles.

Magnetic stimulation

Therapy using a chair containing a magnetic field generator treatment head in the seat. The patient sits on the chair fully clothed. Repeated sessions are required. It might be effective in mild stress incontinence, but its mechanism of action is not fully understood.

Biofeedback

Biofeedback can improve pelvic muscles and consequently bladder control by locating the right muscles that need exercising by means of a vaginal electrode.

Bladder retraining

Bladder retraining: a programme of progressive voiding (urination) with increasing intervals between each scheduled voiding over a period of around 12 weeks. This retrains the bladder to hold on longer before urination.

Medication

Antimuscarinics (anticholinergics) such as tolterodine, solifenacin, darifenacin, trospium and propantheline and drugs with mixed action such as oxybutynin (also available

as a transdermal patch and as an extended release once daily oral drug) and propiverine are used for urgency incontinence and detrusor overactivity. They are aimed at increasing the volume of urine that is passed each time and reducing the urgency, frequency and incontinence. These are sometimes used in combination with tricyclic antidepressants which cause the bladder muscle to relax and the smooth muscles at the bladder neck to contract. Desmopressin (an antidiuretic) is commonly used for nocturnal bedwetting.

Duloxetine is a new drug used for the treatment of stress urinary incontinence and appears to increase urethral sphincter muscle contraction. Alpha-blockers are used to treat voiding problems caused by prostate enlargement and bladder outlet obstruction. Antibiotics may be prescribed if the incontinence or urgency is caused by infection of the bladder or prostate.

Intravesical injections

Botulinum toxin, types A or B (mainly A), is currently being used as an intravesical injection for urgency urinary incontinence. Still relatively experimental.

Collagen is one of the bulking agents injected into tissues around the bladder neck and urethra to add bulk and close the bladder opening to reduce stress incontinence.

Pessaries

A pessary is a device made of rubber, soft plastic or silicone that is inserted by a doctor or nurse into the vagina, where it provides support to pelvic organs and relieves pressure on the bladder. Pessaries can be used on a temporary or long-term basis. However, those using pessaries should be on their guard against the possibility of vaginal and urinary tract infections.

Catheterisation

In some cases a catheter may be needed to drain the bladder, either permanently as an indwelling catheter, or inserted from time to time.

Suprapubic catheterisation (indwelling catheter inserted through a small incision above the pubic bone) is sometimes used for women with incontinence that fails to respond to treatment.

Condom catheters that fit over the penis and have a drainage bag strapped to the leg are available for men. Urinary tract infection is the most common complication with indwelling catheters.

Surgery

Surgery is undertaken if it is the only way of solving the incontinence or if the incontinence is caused by obstruction (enlarged prostate) or prolapse of the bladder, urethra or uterus (womb). The type of surgery depends on the nature and cause of the incontinence. Some of the more common

procedures include bladder neck suspension, colposuspension or use of slings.

As a very last resort, there is the possibility of a urinary diversion where urine is diverted to a surgically created opening in the abdomen and requires an external urine collection bag. Another form of urinary diversion replaces the bladder with a continent urinary reservoir, an internal pouch made from sections of the bowel or other tissue. This method allows the person to store urine inside the body (in the pouch) until a catheter is used to empty it through a stoma.

Diet management

It is essential to drink sufficient fluid daily, since too little causes over-concentration of the urine and will exacerbate bladder problems. Too little fluid consumption can also lead to infections (dark, strong-smelling urine is a sign of over-concentration of urine and that too little fluid is being consumed). However, limitation of drinks in the evening and at night can help restrict night-time frequency (nocturia) or bedwetting (enuresis). Drinks containing caffeine (coffee, tea, cola), alcohol, carbonated drinks and acidic food or drinks should be avoided as these may irritate the bladder. If constipation with impacted stools is a problem, the daily diet should be adapted accordingly.

Use of absorbent pads or undergarments

Absorbent products can be subdivided into light incontinence and heavy incontinence. These absorb leaks from the bladder. Absorbent underpads are also available for use on chairs or beds. Since urine can be very irritating to the skin, daily washing is paramount. Perfumed soaps or harsh detergents should be avoided. Protective skin creams are available from the doctor or nurse.

Incontinence in the elderly

With the aging of the population worldwide, incontinence in the elderly is becoming an increasing problem. This is likely to have a socioeconomic and healthcare impact in all countries in the coming years. Incontinence is a common cause of institutionalisation in nursing homes. If the elderly are cared for informally, incontinence and toilet assistance places a greater physical burden on the carers, leading to burnout. Incontinence can also place a substantial financial burden on the sufferers or carers.

When being cared for informally by family or friends, elderly people may find it embarrassing to discuss their incontinence problem. Their generation still considers such matters taboo, something you don't talk about. They feel that there is a social stigma attached to incontinence.

Incontinence is not always a question of a bladder or urinary tract disorder. For those who are immobile, arthritic, suffering from dementia or other cognitive impairment, there is a high risk of incontinence episodes simply due to

the inability to reach a toilet independently on time or to cope with buttons, zips and clothing (functional incontinence). Caregivers may not always be on hand to help. Clothing should therefore be selected that is easy to undo and remove.

Medical conditions that may contribute to incontinence in the elderly population are diabetes, degenerative joint disease, chronic lung disease with cough, heart conditions, severe constipation, urinary tract infections, stroke, Parkinson's disease and dementia. Furthermore, some medications can cause or exacerbate urinary incontinence in the elderly. However, it should be emphasised that while incontinence may result from impairment and diseases due to aging, it is not an automatic, inevitable part of aging. Not all elderly people become incontinent.

Since this group of patients often has multiple health disorders and may be taking many different drugs as well as over-the-counter or herbal remedies, special care has to be taken about drug interaction.

Among frail elderly people with urgency incontinence and nocturia, there is a high risk of falls and consequent fractures when going to the bathroom in the night. The risk of falls can be limited by providing a commode or other receptacle for urination next to the bed and by keeping access to the bathroom uncluttered and safe.

Impact on quality of life

Urinary incontinence may be a mildly bothersome complaint or a very distressing condition with a devastating impact on quality of life. People suffering from incontinence feel socially disabled and stigmatised and may be too embarrassed to seek help. They may not even be aware that treatment is available. Their fear of public embarrassment through leakage may prevent them from playing a full role in society and cause them continual anxiety and stress. They may consequently end up isolated, feeling like social outcasts. Incontinence may also have a major impact on sexual relationships and sufferers may find it difficult to discuss this embarrassing problem with their partner, family or carers.

Seeking help and obtaining the right treatment can be the first step towards helping sufferers to regain control over their life.

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Simon Foundation: <http://www.simonfoundation.org>

Incontact: www.incontact.org

The Continence Foundation: www.continence-foundation.org.uk

International Continence Society www.continet.org

Illustrations courtesy of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)