Urinary incontinence affects about 1.5 million Canadians at a cost of approximately $1.6 billion annually, and is as prevalent as most other chronic diseases. Fortunately, with proper diagnosis, effective treatment is available for most patients.

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Canadian Survey

In November 1997, the first survey to evaluate urinary incontinence in the Canadian adult population was released. The survey estimated that over 1.5 million Canadian adults (non-institutionalized), including 650,000 “baby boom” women, had experienced urinary incontinence in the previous year. Screening questions were included in the national Angus Reid poll to identify individuals with urinary incontinence. The sample included 15,000 Canadians from across the country. Respondents were asked if they had been diagnosed with urinary incontinence by a physician in the last year and whether they had lost urine unintentionally. Individuals who met either or both of these criteria were identified as having urinary incontinence.
incontinence and were asked to participate in a follow-up questionnaire. The survey showed the incidence of incontinence in the adult non-institutionalized Canadian population was one in 14. This represents approximately 7% of the Canadian population. A total of 83% of respondents were female and 17% male. Individuals afflicted with incontinence had problems for more than six years and 40% felt incontinence had a strong negative impact on their lives. The survey revealed urinary incontinence is under-reported by individuals. The most familiar treatments known to the Canadian public are sanitary napkins and adult diapers, as these products have been advertised on national television and many people are aware of them. Other management techniques, such as Kegel exercises, voiding techniques, fluid management, diet modification, medication and surgical treatments, are much less known.

Three myths about incontinence were exposed as a result of the survey. The first is that urinary incontinence is uncommon, the second is that urinary incontinence is a natural part of aging, and finally, the third is that there is no effective treatment available other than diapers and sanitary napkins. Although the survey did not include questions about nursing home residents, data collected showed up to 60% of patients in nursing homes have some degree of incontinence.²

### Definitions

Urinary incontinence is the involuntary loss of urine. The term denotes a symptom, sign and a condition, rather than a disease. The symptom is the patient’s recognition of involuntary loss of urine (e.g., leakage with coughing). The sign is the objective demonstration of urine loss by a caregiver (e.g., vesical prolapse and stress incontinence). The condition is the pathophysiological one underlying incontinence, as demonstrated by either clinical or urodynamic techniques (e.g., bladder neck incompetence and cystocele).

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**Female Urinary Incontinence**

**Summary**

**Approach to Female Urinary Incontinence**

- Urinary incontinence affects about 1.5 million Canadians at a cost of approximately $1.6 billion annually. Many patients will not raise the topic of incontinence with their physician because of embarrassment and social reasons.

- Women with stress incontinence are usually multiparous and have leakage with various forms of activity. Patients with urge incontinence usually have urgency and then leakage, as well as frequency, urgency and nocturia. Mixed incontinence is common and includes both stress and urge components. Overflow is less common and can occur in women with chronic retention or in those with neurogenic bladder. It also can occur in post-operative patients who are in overflow retention. True incontinence is rare and patients usually present with a history, such as recent surgery. Patients with psychogenic incontinence usually have no definitive history and give a vague description of leakage.

- Following clinical evaluation, patients should be given a three-day voiding chart, allowing them to chart their voiding activity. A urinalysis and post-void residual also should be performed.

- Although urinary incontinence can now be diagnosed and treated quite effectively with a variety of techniques, prevention of incontinence is still a very important concept.
Classification

A good and simple classification available separates incontinence into six categories. These include stress, urgency, mixed, overflow, true and psychogenic.

Stress incontinence is related to the loss of urine with various forms of activity, such as coughing, laughing, sneezing, running, changing position, engaging in a sports activity, etc. The most common cause is childbirth and pelvic floor relaxation. Urgency incontinence can be related to urgency and loss of urine. There are a number of causes, including the overactive bladder, cysto-urethritis, urethral stenosis and neurogenic bladder. Mixed incontinence is a combination of the first two categories. Overflow incontinence is related to bladder distention with overflow and leakage, and is more common in men with advanced benign prostatic hypertrophy (BPH). It does however occur in women with chronic retention, and in certain patients with neurogenic bladder. True incontinence is related to some anatomical abnormality, whether it be congenital, such as ectopic ureter or post-surgical (e.g., following a vesicovaginal fistula). Finally, psychogenic incontinence is usually a diagnosis of exclusion where none of the above can be detected, or in certain patients with psychological and psychiatric histories.

History and Physical Examination

Many patients will not raise the topic of incontinence with their physician because of embarrassment and social reasons. It is, therefore, important the physician ask appropriate questions, such as: “Do you have trouble holding your water?” “Do you have trouble with your bladder?” “Do you wear pads?” or “Do you have to change your clothes?” Other questions may include: “Do you know where all the bathrooms are when you go shopping?” or “Do you have bladder accidents?” These questions will usually identify patients with incontinence problems.

Once these questions have been answered, it is important to separate the various causes as noted in the classification above. Women with stress incontinence usually have classical histories. They are usually multiparous and have leakage with various forms of activity. Patients with urge incontinence will usually have urgency and then leakage. These patients also have frequency, urgency and nocturia. Their lives may often revolve around the bathroom and they will usually know where the washrooms are when they go shopping. Mixed incontinence is quite common and includes both stress and urge components. Overflow is less common and can occur in women with chronic retention and in women with neurogenic bladder. It also can occur in post-operative patients who are in overflow retention. True incontinence is quite rare, and, usually, there is a history, such as recent surgery, which is a clue to diagnosis. Finally, there is psychogenic incontinence, which is usually a diagnosis of exclusion with no definitive history and a vague description of leakage. It is important to ask the patient about any medications she is taking, as some can affect bladder function. It is also important to inquire

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Female Urinary Incontinence

about previous surgery, especially bladder repair and pelvic surgery, as this will influence the symptoms.

There are seven causes of reversible urinary incontinence which can also be considered, based on the patient’s history and physical examination. The term to remember is DIAPPERS, which stands for delirium, infection, atrophic vaginitis and urethritis, pharmaceuticals, psychological, excessive urine production, restricted mobility, and stool impaction.2

Physical examination is extremely important. It should include a general examination assessing for endocrine, neurological, and gastrointestinal (GI) abnormalities. Abdominal and pelvic examinations are extremely important. It is important to examine for bladder distention following voiding. The pelvic examination is critical and should be performed among all patients being assessed for urinary incontinence, whatever the reason. The integrity of the vaginal and introital tissue should be carefully examined, and, in the older population, one should inspect for atrophic change. The examination should check for tenderness of the underlying pelvic organs, including tenderness of the urethra, bladder neck, or bladder, which could suggest some form of cysto-urethritis. One should check for prolapse of various internal organs, including the bladder (cystocele), small bowel (enterocele) and rectum (rectocele).

A Marshall test should be performed to test for stress incontinence. With the bladder relatively full, the patient is asked to cough in order to determine whether or not there is prolapse and leakage. The physician should then place a finger on either side of the bladder neck to compresses it and ask the patient to cough again to determine whether or not the leakage stops. If the test is positive, appropriate elevation of the bladder neck by surgery will alleviate the urinary incontinence.

Differential Diagnosis

Following clinical evaluation, patients should be given a three-day voiding chart, allowing them to chart their voiding activity. A urinalysis and post-void residual also should be performed. Once these have been completed, a differential diagnosis can be considered and treatment recommended. In certain patients, further evaluation is required and referral should be considered to either a urologist or urogynecologist. Such patients include:

- Those with underlying medical problems, such as neurological conditions (e.g., multiple sclerosis, spinal cord injury, Parkinson’s disease, etc.);
- Patients with endocrine problems, such as diabetes;
- Patients who have had previous urological and gynecological procedures;
- Patients who present with complex incontinence where the etiology is not clear; and
- Patients taking a variety of medications that might interfere with bladder control.

These patients will, on many occasions, require more complex evaluation, including multichannel urodynamic assessment, cystoscopy and radiological imaging, such as ultrasound, voiding cystourethrogram and computed tomography (CT) scan. These studies can be very effective in pinpointing a very specific diagnosis. Video-uro-
dynamics is the most sophisticated evaluation available for the assessment of urinary incontinence. It is not recommended for all patients, but for those who have had previous surgery or present with a complex condition. The studies allow for accurate measurement of bladder, urethral and sphincter pressures, as well as radiological imaging simultaneously and in real time. Less sophisticated urodynamics also are available and are very helpful in patients who present with less complex conditions.

It is important to emphasize, however, that the majority of patients can be diagnosed and treated by the family doctor after an adequate history, physical examination and brief laboratory work-up, as detailed above.

Conservative Measures

Patients found to have mild stress incontinence can be treated conservatively. This includes fluid management, diet modification and Kegel exercises. Patients should be advised as follows:

- Do not let the bladder become overdistended;
- Avoid consuming certain fluids, such as alcohol and caffeinated drinks; and
- Perform Kegel exercises.

It is important, however, for patients to learn how to perform Kegel exercises adequately and, if necessary, they should be referred to a physiotherapist. Currently, physiotherapists with resources to teach Kegel exercises and to add biofeedback techniques, if necessary, are available in most areas of the country. The author has found biofeedback and electrical stimulation are very effective treatment options for women with mild stress incontinence.

It is quite reasonable for patients who present with mild incontinence to have this treatment before offering them any form of surgery. Other conservative options for stress incontinence include the use of a pessary and/or hormone vaginal creams for patients with atrophic urethritis and for the elderly population.

Referral to a specialist is warranted for patients who have failed to benefit from the treatments as described above or for those have had multiple failed procedures. These patients are further assessed with urodynamics, and surgical options should be considered. There are
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over 100 surgical procedures that have been described for urinary incontinence. The specialist will determine whether or not the patient has some form of prolapse and anatomical abnormality (Type 2 stress incontinence or Type 3 stress incontinence), or whether there is intrinsic damage to the bladder neck and sphincter mechanism.

Most patients have a combination of both Type 2 and Type 3 stress incontinence, especially those who have had previous surgery. The various surgical procedures are quite effective and offer a 70% to 85% success rate, depending on the patient’s history and number of previous repairs. The decision to perform a procedure abdominally with a Burch or sling procedure or to perform it vaginally, using one of the forms of anterior repair or slings, depends on the preference and experience of the surgeon. Overall results over many years currently do not suggest one technique is superior to the other. Finally, if a patient does have a significant component of Type 3 incontinence, standard surgery usually is not effective. These patients either require some form of bladder neck reconstruction or the use of injectables, such as collagen. The overall success rate with collagen, however, has not been satisfactory, as the results are not durable and many patients require multiple treatments. Nonetheless, reconstruction is effective in selected patients, especially in the elderly population who have had multiple procedures and have this particular condition.

Urga incontinence is usually not treated surgically. It is important to make an accurate diagnosis and try to understand the underlying cause for the incontinence. Underlying factors, such as urethral stenosis, if corrected, may allow for spontaneous improvement. Underlying medical conditions, such as multiple sclerosis (MS), Parkinson’s disease, etc., when treated, may allow for improvement. The reversible causes of incontinence (DIAPPERS) should be carefully sought because if they are eliminated, this may allow for dramatic improvement of incontinence.

The standard principles of diet modification and fluid management pertain to this type of leakage as well. The main treatment for urge incontinence, however, remains pharmacological. There are a number of different agents and drug groups available. For patients with atropic change, some form of estrogen replacement, whether it be by pill, patch, or cream, should be considered. Tricyclic agents, such as low-dose imipramine 10 mg to 25 mg before bedtime (hs) are helpful in selected patients. The mechanism appears to be multifactorial, including anticholinergic and anti-anxiety. When treating the elderly population, it is important to use a very small dosage, as side
effects (e.g., confusion) are quite common.

The mainstay pharmacological treatment, however, is the use of anticholinergic agents, and there are numerous products now available on the market. The mechanism of action is the same in that these drugs decrease detrusor contractility and increase bladder outlet resistance. The mainstay of action, however, is acetylcholine-induced stimulation of post-ganglionic, parasympathetic cholinergic receptors on bladder smooth muscle. The drugs inhibit the binding of acetylcholine to the cholinergic receptor, thereby suppressing involuntary bladder contractions of any etiology. The drugs usually increase the volume of the first involuntary contraction, decrease the amplitude of that contraction and increase the bladder capacity.

The current first choice drug is oxybutynin in doses of 2.5 mg to 5.0 mg twice daily (bid) or three times daily (tid). This medication has been available for many years and is quite effective. Nonetheless, the side effects can be quite significant and include salivary gland inhibition with corresponding dry mouth. Associated dry eyes and constipation also may occur. The treatment is contraindicated in certain patients with glaucoma. Recently, a new drug, tolterodine L-tartrate, was introduced. It is a competitive muscarinic receptor antagonist, specifically designed to treat the overactive bladder. It is not selective to any particular muscarinic receptor subtype, but is more potent in inhibiting acetylcholine-induced urinary bladder contractions, as compared to induced salivation. It has been available for a few years, and, in clinical practice, appears to be as effective as oxybutynin with fewer side effects.

In the last few months oxybutynin has been upgraded, which like tolterodine L-tartrate, should have fewer side effects. Both tolterodine L-tartrate

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**Female Urinary Incontinence**
and the upgraded version of oxybutynin, however, are more expensive than oxybutynin. It is reasonable to begin treatment with oxybutynin initially. If it is not successful or the patient has significant side effects, one can then switch to either tolterodine L-tartrate or the oxybutynin upgrade.

Prevention

Although urinary incontinence can now be diagnosed and treated quite effectively with a variety of techniques, prevention of incontinence is still a very important concept. The First International Conference for the Prevention of Incontinence was held in the United Kingdom in June 1997. The group looked at prevention in various age groups. For example, it recommended a study of the effect of childbirth practices, such as episiotomy and assisted delivery on long-term continence. The group also looked at the effect of early Kegel exercises on later development of incontinence. In middle-aged females, researchers postulated the effect of hysterectomy on bladder function, as well as the effect of menopause and hormone replacement therapy on the urinary tract in general. In the older age population, the effects of various drugs, such as sedatives and hypnotics, chronic constipation, chronic cough and the role of stroke, were considered. Prevention will likely become an important concept in the future.

Continence Center

Incontinence is now recognized as a very common problem, affecting at least 7% of the adult population in Canada. Although the majority of incontinence patients can be diagnosed and treated effectively by family doctors, there are a number of patients who present with more complex problems and require referral. Currently, in Vancouver, the author’s group is looking at the development of a continence centre, which would be multidisciplinary and would involve urogynecologists, urologists, nurses, physiotherapists and dieticians in the evaluation and treatment of this condition. This would be an academic, university-based center, with the goal of attaining sophisticated diagnoses and treatment, education and research. The concept of a multidisciplinary approach to incontinence seems to be the key to better understanding this condition and its treatment for the future.

References