

INCONTINENCE: A CANADIAN PERSPECTIVE

MAY 2007

COMMISSIONED & REVIEWED BY:



The Canadian
Continenence Foundation

Funded by a restricted grant from Astellas U.S. Foundation

TABLE OF CONTENTS

CONTENTS	PAGE
OVERVIEW	2
WHAT IS URINARY INCONTINENCE?	3
WHAT TRIGGERS INCONTINENCE?	4
ASSOCIATED CONDITIONS	5
PREVALENCE OF URINARY INCONTINENCE	6
CHALLENGES IN DETERMINING PREVALENCE	6
PREVALENCE	6
PREVALENCE – CANADIAN COMMUNITY HEALTH SURVEY DATA	7
INCIDENCE	10
BURDEN OF THE CONDITION	11
DIRECT COSTS	13
INDIRECT COSTS	15
QUALITY OF LIFE ISSUES	17
TREATMENTS AVAILABLE	19
BEHAVIOURAL TREATMENTS	19
PELVIC FLOOR RETRAINING	20
MEDICAL TREATMENTS	21
MECHANICAL TREATMENTS	25
SURGICAL TREATMENTS	26
OTHER TREATMENTS	29
HEALTH AND PUBLIC POLICY ISSUES RELATED TO INCONTINENCE	30
CONCLUSION	32
SOURCES AND REFERENCES	33
WEB SITES	36
THE CANADIAN CONTINENCE FOUNDATION	37

OVERVIEW

Incontinence is a prevalent health condition that is rarely discussed as people living with the condition are often embarrassed to discuss it with their healthcare providers. In fact, the World Health Organization calls incontinence “one of the last medical taboos”¹. However, the fact is that some estimates indicate that as many as 3.3 million Canadians² – nearly 10% of the population - experience some form of incontinence. Recent studies indicate that the number may be even higher, particularly among older populations: “Incontinence occurs in more than half of community-dwelling women 45 years old and older. Almost one of five women in the community reported UI that affected normal activities.”³ The number of individuals living with incontinence is likely increase as the population ages, since the prevalence of the condition tends to increase with age.

Urinary incontinence (UI) affects individuals’ independence and ability to function in daily life. Canadians with urinary incontinence have more frequent visits to their physicians and spend more time in hospitals and nursing homes than those Canadians without UI.

Direct costs associated with urinary incontinence are a significant factor. Each year, a senior with UI living at home will spend an average of \$1,000 to \$1,500 on incontinence supplies. Further, the cost of a senior with incontinence living in a long-term care facility can total an average of \$3,000-\$10,000 per year for supplies and nursing care. Factoring in laundry, clothing and linen changes as well as supply costs and nursing time, the total direct costs of UI in Canada is \$1 billion per year.

Indirect costs such as loss of productivity, absenteeism and individual, familial, and societal impacts are difficult to measure, but it is estimated that the combined direct and indirect costs of incontinence measure up to \$2.6 billion per year.

Considering that this condition does not have a high ‘profile’ in Canada, it is important that Canadians are given accurate information on the true burden of the disease, the treatment options available, as well as health policy issues related to UI.

¹ Vestergom, M *Take control of a leaky bladder* Homemakers.com

² The Canadian Continence Foundation <http://www.continence-fdn.ca/consumers/index.html>

³ Swanson, JG, Kaczorowski, J, Skelly, J Finkelstein, M *Urinary Incontinence. A Common Problem Among Women over 45*. Can Fam Physician. 2005 January 10; 51(1): 85.

What is Urinary Incontinence?

The bladder is the urine storage reservoir, the urethra is a passage through which the bladder is emptied and supportive structures and pelvic and periurethral muscles are responsible for preventing leakage. Incontinence has been defined by the International Continence Society as the “complaint of any involuntary leakage of urine”⁴.

The following are the main types of incontinence:

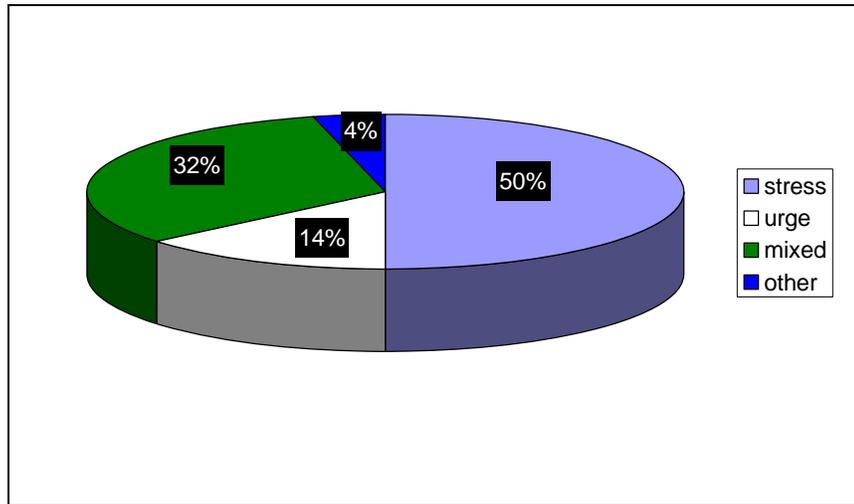
- *Stress Urinary Incontinence (SUI)*, which is the leaking of urine with coughing, sneezing, straining, exercise or any other type of exertion. 50% of individuals with incontinence have SUI.
- *Urge Incontinence (UI)* is leaking of urine associated with the sudden uncontrollable urge to empty the bladder. The urge to empty the bladder cannot be delayed and leakage occurs. UI is a key symptom of the overactive bladder syndrome.
- *Overflow incontinence (OI)* is constant leaking or dribbling from a full bladder. OI implies that normal urination is impossible.
- *Mixed incontinence (MI)* is a combination of stress and urge incontinence.

Other types of incontinence include:

- *Functional incontinence* denotes incontinence related to causes outside of the urinary system. A person may have trouble controlling urine, but this problem is exacerbated by functional factors, such as physical barriers to the toilet, a lack of mobility, a degree of unwillingness to comply, medication issues, etc. This type of incontinence may be managed by addressing the functional factor, such as improving the patient's mobility, motivating the patient, improving access to the toilet, modifying meds, etc.
- *Nocturnal enuresis* is used to describe bedwetting in children who are old enough to be “potty trained” and adults who have loss of control at night.

⁴ Abrams P, Cardozo L, Fall M, et al. The standardisation of terminology of lower urinary tract function: report from the standardisation sub-committee of the International Continence Society. *Neurourol Urodyn* 2002;21:167-78

Comparative Prevalence of different types of Incontinence⁵:



What triggers incontinence?

Urinary incontinence can be caused by a weakening of the pelvic muscles and urethra muscles (the tube that connects the bladder with the outside) or because of damaged ligaments. When weakened, the pelvic muscles and urethra cannot contract enough to hold urine in when stress is placed on them, such as during a strong cough or sneeze.⁶

Urinary incontinence also occurs when a person cannot control the bladder muscle. In these circumstances, the bladder will empty when it has reached a certain degree of filling (such as it does in children before toilet training) or when something happens to make the individual feel the need to urinate.

Other Factors^{7,8}

The following factors are associated with incontinence:

- Occasionally incontinence can be caused by neurological injury or disease;
- Increasing age
- Menopause can bring on or worsen all forms of incontinence because estrogen loss contributes to the weakness of muscles and tissues in the pelvic floor area, which supports the bladder and urinary tract;
- Weakened pelvic muscles;
- Previous pregnancies;

⁵ Minassian VA, Drutz HP, Int J Gynecol Obstet, 2003;82:327-338

⁶ <http://www.med.umich.edu/obgyn/pelvicfloor/understanding.htm>

⁷ Peyrat L, Haillot O, Bruyere F, Boutin JM, Bertrand P, Lanson Y *Prevalence and Risk Factors of Urinary Incontinence in Young and Middle Aged Women* BJU Int 2002 Jan;89(1):61-6.

⁸ College of Family Physicians of Canada

<http://www.cfpc.ca/English/cfpc/programs/patient%20education/urinary%20incontinence/default.asp?s=1>

- Certain medicines (e.g. diuretics);
- Build-up of stool in the bowels;
- Urinary tract (bladder) infection;
- Medical problems such as diabetes and stroke;
- Smoking;
- Physical conditions affecting mobility and dexterity (e.g. MS, arthritis);
- Obesity;
- Caffeine and fluid intake;
- High impact physical activities; and
- Occupations which involve heavy lifting and straining.

Associated Conditions

In a recent study, the author performed statistical analysis on data received from the National Population Health Survey. The author found that “urinary incontinence is associated with strokes, arthritis, and back problems in both sexes.⁹” The author suggests that physicians should be aware the UI might be a side effect of certain therapies, and also that patients with common conditions such as arthritis, back problems, or respiratory problems associated with coughing should be asked if they also have incontinence.

A recent study¹⁰ also found a link between depression and incontinence, finding that incontinence is associated with nearly double the occurrence of depression for women with the problem than those without. Younger women with incontinence are also more likely to be depressed than older women with the condition, and the combination of incontinence and depression were found to be associated with many negative effects (stress, increased visits to the physician and lost days from work).

⁹ Finklestein, MM *Medical Conditions, Medications, and Urinary Incontinence* Canadian Family Physician, January 2002, Vol 48.

¹⁰ Vigod SM, Stewart DE, *Major Depression in Female Urinary Incontinence* Psychosomatics 47:147-151, April 2006

PREVALENCE OF URINARY INCONTINENCE

Challenges in determining prevalence

Compared with many other conditions, accurate statistics on the prevalence of incontinence are difficult to source. One of the main reasons for this is the perceived social stigma associated with incontinence. Even people with symptoms of incontinence often will not admit to it, or seek treatment for it. According to the Canadian Urinary Bladder Survey only 26% of those with any bladder problem had seen a doctor or health care professional¹¹.

Patients are often reluctant to discuss this issue with their family, friends and physician and as a result, the under-reporting of symptoms is highly prevalent. Shame and embarrassment are the key deterrents of seeking help. In fact, more than half of women with Stress Urinary Incontinence do not seek help from a healthcare professional.¹²

Variations in how incontinence is defined also leads to significant disparities between studies. For example, the number of people who suffer from symptoms of incontinence daily will vary significantly from those who experience symptoms weekly or even less frequently. Research performed for this paper found differences in the prevalence of incontinence that ranged from 5% of the population to 50% of women over 45 years of age.

Prevalence (% of the population with urinary incontinence)

Despite the challenges in assessing the prevalence of urinary incontinence, Hans Brolmann suggests that prevalence of urinary incontinence ranges between 10% and 20% of women: "Estimates of urinary stress incontinence vary in the literature from 4% to 50%¹³. In 1997 a telephone survey of urinary incontinence was conducted in Canada among a random and representative sample of adult women¹⁴. Nearly 9% of all respondents reported urinary incontinence, 56% of whom were below 55 years of age. Over half of the respondents had never consulted a physician about their incontinence, which underlines the poor self-reporting of the problem. The prevalence of urinary incontinence is therefore considered to range between 10% and 20% of the female population, or even higher."¹⁵

¹¹ Herschorn S, Corcos J, Gajewski J, Schulz J, Ciu E *Canadian Urinary Bladder Survey: Population-Based Study of Symptoms and Incontinence* Neurology and Urodynamics, 2003, Vol 22, Part 5.

¹² www.continence-fdn.ca/consumers/stress.html

¹³ Thom D. Variation in estimates of urinary incontinence prevalence in the community: effects of differences in definition, population characteristics, and study type. *J Am Geriatr Soc* 1998; 46: 473–80.

¹⁴ Fedorkow DM. Prevalence of urinary incontinence, pelvic organ prolapse and anal incontinence in women. In: Drutz HP, Herschorn S, Diamant NE, eds. *Female pelvic medicine and reconstructive pelvic surgery*. London: Springer, 2003; 11–24

¹⁵ Brolmann, HAM *Pelvic Floor Disorders: Diagnosis, Management and New Developments*, Gynaecology Forum, http://www.medforum.nl/gynfo/leading_article10.htm

According to another source, the Canadian Urinary Bladder Survey, 8% of all respondents initially acknowledged having a bladder problem. However, 52% responded “yes” to having one or more bladder symptoms. “With these respondents the commonest symptoms were nocturia (38%), urgency (16%), frequency (14%), stress incontinence (13%), and urge incontinence (7%).”¹⁶

The following table shows the percentage of males and females with any degree of incontinence stratified by age as determined by the Canadian Urinary Bladder Survey:

	Age (years)		
	18-40	41-64	>=65
Males	10%	16%	30%
Females	16%	33%	55%

Prevalence: Canadian Community Health Survey Data

The following data is derived from the Canadian Community Health Survey, 2005 (version 3.1). Respondents were asked whether they suffered from urinary incontinence and results are reported in Tables I, II, III and IV.

These statistics indicate that the overall prevalence of urinary incontinence in Canada is just under 3%, with women having significantly higher rates than men. This figure is significantly lower than the prevalence figures cited by Brolmann above. This may be due to the manner in which the question was asked (i.e. a more appropriate question may have been “have you ever experienced involuntary leaks of urine”), or due to shyness in responding to this question to a stranger.

As can be seen from Table IV, the prevalence of urinary incontinence increases rapidly with age – particularly once adults reach the age of 65 years. If Canadians are lucky enough to live to be more than 80 years, they will have more than a 16% chance of being incontinent.

¹⁶ Herschorn S, Corcos J, Gajewski J, Schulz J, Ciu E *Canadian Urinary Bladder Survey: Population-Based Study of Symptoms and Incontinence* Neurology and Urodynamics, 2003, Vol 22, Part 5.

Table I: Urinary Incontinence, Overall Prevalence & By Gender

Has urinary incontinence	Population	% of Total	Female Population	% of Total Female	Male Population	% of Total Male
YES	808,740	2.98%	554,634	4.03%	254,106	1.90%
NO	26,290,756	96.92%	13,190,581	95.88%	13,100,175	97.99%
DON'T KNOW	18,229	0.07%	7,514	0.05%	10,716	0.08%
REFUSAL	4,396	0.02%	3,061	0.02%	1,335	0.01%
NOT STATED	4,044	0.01%	1,523	0.01%	2,521	0.02%
TOTAL	27,126,165	100.00%	13,757,312	100.00%	13,368,853	100.00%

Table II: Urinary Incontinence by Province & Gender

Province of Residence	Population with UI	%	Male Pop with UI	%	Female Pop with UI	%
Nfld & Lab	13,814	3.08	4,419	2.01	9,394	4.09
PEI	4,083	3.48	1,132	1.99	2,950	4.87
Nova Scotia	24,771	3.11	8,168	2.12	16,603	4.04
New Brunswick	18,019	2.82	5,704	1.83	12,316	3.78
Québec	174,292	2.69	48,284	1.52	123,008	3.75
Ontario	322,349	3.05	109,242	2.10	213,107	3.97
Manitoba	28,493	3.05	6,190	1.35	22,303	4.69
Saskatchewan	31,554	4.01	10,539	2.71	21,015	5.27
Alberta	73,845	2.75	26,240	1.94	47,605	3.57
British Columbia	116,229	3.23	33,862	1.91	82,367	4.51
Yukon/NWT/Nunavut	1,292	1.68	326	0.83	966	2.58
Total	808,740		254,106		551,634	

Table III: Urinary Incontinence By Gender

Gender	Population with UI	% of UI diagnosis by gender
MALE	254,106	31.42%
FEMALE	554,634	68.58%
TOTAL	808,740	100.00%

Table IV: Urinary Incontinence Prevalence by Age Bracket

Age Bracket	Pop. With UI	Prevalence	Male Pop. With UI	Prevalence	Female Pop. With UI	Prevalence
12 TO 14 YEARS	4,481	0.36%	2,413	0.37%	2,068	0.35%
15 TO 17 YEARS	3,556	0.27%	1,258	0.19%	2,298	0.36%
18 TO 19 YEARS	4,180	0.51%	1,018	0.26%	3,162	0.76%
20 TO 24 YEARS	9,336	0.42%	4,269	0.37%	5,067	0.47%
25 TO 29 YEARS	11,705	0.56%	1,827	0.18%	9,878	0.92%
30 TO 34 YEARS	12,126	0.58%	2,351	0.23%	9,774	0.92%
35 TO 39 YEARS	22,365	0.98%	2,014	0.18%	20,351	1.78%
40 TO 44 YEARS	36,551	1.30%	6,734	0.47%	29,816	2.18%
45 TO 49 YEARS	60,272	2.38%	14,162	1.14%	46,110	3.57%
50 TO 54 YEARS	57,291	2.54%	13,979	1.27%	43,312	3.77%
55 TO 59 YEARS	72,338	3.66%	19,015	1.94%	53,322	5.37%
60 TO 64 YEARS	77,300	4.89%	27,004	3.38%	50,297	6.43%
65 TO 69 YEARS	90,733	7.48%	32,399	5.60%	58,334	9.19%
70 TO 74 YEARS	97,514	9.46%	36,962	7.55%	60,552	11.18%
45 TO 79 YEARS	106,174	13.14%	38,507	10.95%	67,667	14.83%
80 YEARS OR MORE	142,821	16.32%	50,195	15.32%	92,626	16.91%
TOTAL	808,740		254,106		554,634	

Incidence (new cases per year of urinary incontinence)

- More is known about prevalence than incidence since incidence requires repeat questioning of the same population after a period of time.
- Study results have ranged from 1% - 22%, depending on the definition of incontinence used and the period of time.

BURDEN OF THE CONDITION

The Canadian Urinary Bladder Survey (CUBS 2003) showed that 21.8% of Canadians 18 or older have bladder problems, costing Canadians \$1.5 billion per year.¹⁷ Another study¹⁸ conducted in the year 2000, estimated that 17 million community-dwelling adults in the United States had daily urinary incontinence (UI), and an additional 33 million suffered from the overlapping condition, overactive bladder. Estimates of the total annual cost of these conditions ranged up to \$32 billion US (approximately \$37.5 billion CDN); the largest components of which were management costs and the expenses associated with nursing home admissions attributable to UI.

A study conducted in 1995¹⁹ estimated that the direct and indirect costs associated with urinary incontinence for individuals over the age of 65 in the United States totalled \$26.3 billion (\$27.4 billion CDN), or \$3,565 (\$4,140 CDN) per incontinent individual.

TABLE VI: COSTS OF URINARY INCONTINENCE IN 1995 (IN MILLIONS US\$) FOR INDIVIDUALS 65 YEARS OF AGE OR OLDER IN THE UNITED STATES²⁰

Cost Factor	Cost (in Millions US \$)
Diagnostic costs	393.5
Treatment costs	
Behavioral	64.0
Pharmacologic	9.3
Surgical	655.0
Routine care costs	1,1405.9
Incontinence consequence costs	
Skin irritation	419.1
UTIs	4,181.6
Falls	58.4
Additional admissions to institutions	2,172.1
Longer hospitalization periods	6,229.1
Total direct costs	25,588.0
Indirect costs (value of home care services)	704.4
Total costs of urinary incontinence	26,292.4

¹⁷ <http://www.icsoffice.org/publications/2003/pdf/049.pdf>

¹⁸ Levy, R & Muller, N. *Urinary incontinence: economic burden and new choices in pharmaceutical treatment* Advanced Therapy, 2006, Jul-Aug;23(4):556-73.

¹⁹ Wagner TH, Hu T. Economic costs of urinary incontinence in 1995. *Urology* 1998;51:355-361.

²⁰ Wagner TH, Hu T. Economic costs of urinary incontinence in 1995. *Urology* 1998;51:355-361.

In comparison, a study of women aged 18 and older in Australia estimated the total annual cost of urinary incontinence at \$AU 710.44 million (approx. \$651 million CDN), comprising \$338.47 million (\$309 million CDN) in treatment costs and \$371.97 million (\$340 million CDN) in personal costs²¹. Another study of women over the age of 40 in Italy estimated the annual treatment cost of Urinary Incontinence at L351 800 billion, (approx. \$277 million CDN) considering diapers and drugs only²².

TABLE VII: Costs of Incontinence, Studies Compared

Study & Date	Country & Population	Total Annual Cost (CDN)	Notes
Canadian Urinary Bladder Survey (CUBS, 2003)	Canada, 33 million	\$1.5 billion	
Levy & Muller 2000	United States 300 million	\$37.5 billion	Majority of costs are management costs & expenses associated with nursing home admissions
Wagner & Hu 1995	United States 300 million	\$26.3 billion	Costs of urinary Incontinence for individuals over 65 years of age.
Doran, Chiarelli & Cockburn 2001	Australia 20.2 million	\$651 million	\$309 million in treatment costs & remainder in personal costs
Tediosi, et. al. 2000	Italy 58.1 million	\$277 million	Study considers the cost of drugs and diapers only

The combination of Canada's ageing population and the tendency for urinary incontinence to become more prevalent with age, means that incontinence will likely become an increasing burden on society.

When assessing the burden of any condition, it is important to consider not only the direct costs, but also the indirect costs even though these are often much harder to quantify.

²¹ Doran, Christopher M; Chiarelli, Pauline; and Cockburn, Jill. Economic costs of urinary incontinence in community-dwelling Australian women *MJA* 2001; 174: 456-458

²² Tediosi F.; Parazzini F.; Bortolotti A.; Garattini L. The Cost of Urinary Incontinence in Italian Women: A Cross-Sectional Study. *PharmacoEconomics*, Volume 17, Number 1, January 2000, pp. 71-76(6)

Direct Costs

According to a research study on the cost of SUI, the average direct medical cost was US\$5,642 (approx \$6,400 CDN) per person.²³ This research is based on data from 1998, so it is likely that these costs are a conservative estimate and have likely increased.

Physician Care Expenditures

The direct costs of physician care related to Urinary Incontinence include the time spent by general practitioners with patients to diagnose the condition, develop management strategies and refer them to specialists. If a patient is referred to a specialist, then the incremental physician care costs would include the time spent by the specialist on their assessment of the patient, evaluation for treatment, implementing the treatment and patient follow-up.

Drug Expenditures

Recent innovations in molecular design and new dosage forms of UI medications offer the promise of fewer and less severe adverse effects and, thus, better treatment outcomes for patients. Additionally, the availability of multiple agents within a therapeutic class offers health care providers a spectrum of choices with which to personalize treatment for each individual patient. Alternate dosage forms, which include patches and sustained-release formulations, may benefit patients who have difficulty chewing, swallowing, or remembering to take medications.

Hospital Care Expenditures

While conservative treatments such as bladder retraining and pelvic muscle exercises are the first treatments of choice for incontinence, surgical options are available for those who do not respond to other types of treatments. Surgical options include colposuspension (retropubic suspension) and slings.

In Ontario the trends in the surgical interventions for the treatment of stress urinary incontinence between 1998/99 and 2004/05 indicate a shift in the use of colposuspension in favour of midurethral slings over time. There has been approximately a \$4 million increase in the cost of treating women with stress urinary incontinence from 1998/99 to 2004/05 (from approximately \$7 -11 million), however, almost twice as many women were treated in 2004/05 than were treated in 1998/99²⁴.

²³ Birnbaum H, Leong S, Oster E, Kinchen K, Sun P. *Cost of Stress Urinary Incontinence: A Claims Data Analysis*. *Pharmacoeconomics*, 22(2):95-105, 2004.

²⁴ OHTAC Recommendation, *Midurethral Slings for Women with Stress Urinary Incontinence* Feb 21, 2006
http://www.health.gov.on.ca/english/providers/program/mas/tech/recommend/rec_mus_022106.pdf

The cost of the midurethral sling procedure is estimated to be \$2,600 including professional fees, hospital costs and the cost of the device. Colposuspension is estimated to cost approximately \$3,700.²⁵

Long-term care

Urinary incontinence is currently the most common cause of admissions to long-term institutional health care centres in Canada and the United States. According to a study by Dr. Ian McDowell, Department of Epidemiology and Community Medicine, University of Ottawa, the incidence of incontinence rises dramatically for seniors in long term care institutions: "For seniors in institutions, daily urinary incontinence was nine to ten times higher (men 36.8% and women 36.9%) than among seniors residing in the community."²⁶ Furthermore, prevalence of this condition peaks specifically with people in their 50's and 80's. As the population ages, the cost of SUI to the healthcare system is expected to increase.

A study examined the incremental costs associated with caring for individuals with incontinence in long term care facilities versus those without incontinence. Shih, Hartzema et. al. found that the incremental labour costs (per shift) of caring for those patients with occasional incontinence was \$3.31 (2002 US dollars) and \$5.16 for those with frequent UI. "Combining patients with frequent UI (more than 70% of all UI patients) and occasional UI, the weighted average incremental costs per shift were 4.52 dollars. With incremental labor costs of 4.52 dollars per patient per shift, UI costs an additional 13.57 dollars to treat per day, or 4957 dollars annually."²⁷

New pharmacologic and surgical treatment options for UI have the potential to allow greater independence for older persons who reside at home and to delay or avoid the costs of admission to long-term care facilities. Although these newer products and treatments are generally more expensive than older forms of therapy, they typically have more favorable cost-effectiveness ratios. Access to these new medications and surgical treatments for patients enrolled in public and private health care plans may help to reduce the economic and social burden of UI care.²⁸

People in nursing homes can develop incontinence if their mobility is limited and the attendants/nurses do not have time to take them to the bathroom when needed. Incontinence and immobility lead to decubitus ulcers and urinary tract infections that

²⁵ OHTAC Recommendation, *Midurethral Slings for Women with Stress Urinary Incontinence* Feb 21, 2006

http://www.health.gov.on.ca/english/providers/program/mas/tech/recommend/rec_mus_022106.pdf

²⁶ Public Health Agency of Canada, Division of Aging and Seniors http://www.phac-aspc.gc.ca/seniors-aines/pubs/info_exchange/incontinence/exch6_e.htm

²⁷ Shih YC, Hartzema AG, Tolleson-Rinehart S *Labor costs associated with incontinence in long term care facilities* Urology 2003, Sept;62(3):442-6.

²⁸ Levy, R & Muller, N. *Urinary incontinence: economic burden and new choices in pharmaceutical treatment* Advanced Therapy, 2006, Jul-Aug;23(4):556-73.

have been estimated to add “consequence costs of incontinence”²⁹. Costs associated with increasing the number of facility staff may be defrayed by decreased costs associated with caring for those with incontinence.

Individual expenses

Each year, a senior with incontinence living at home will spend an average of \$1,000 to \$1,500 on incontinence supplies. These costs, which are paid covered by individuals with Urinary Incontinence, include:

- The cost of adult diapers;
- The cost of mini and maxi pads;
- Additional laundry expenses;
- Additional dry cleaning expenses;
- Additional toilet paper and paper towels;
- Incontinence products;
- Homecare services; and
- Medications/surgical treatments not covered by healthcare plans.

Indirect Costs

Loss of productivity

The Canadian economy suffers losses related to Urinary Incontinence through reduced employee productivity. According to a research study on the cost of SUI, the average indirect workplace cost was approximately \$4,929 per person.³⁰ This research was based on data from 1998, so these costs have likely increased.

This cost to the economy can manifest either in the form of increased absenteeism or presenteeism.

Absenteeism

Absenteeism refers to the loss of productivity that results from an employee taking unplanned days off. While it is expected that employees will miss some days at work due to illness, conditions such as Urinary Incontinence tend to increase this prevalence dramatically.

Presenteeism

Presenteesim refers to the loss of productivity that results from an employee being on the job but, because of medical conditions, is not able to function at their normal level. This can be a common problem for people with Urinary Incontinence as they may be reluctant to engage in any activities where their condition may become apparent.

²⁹ McCommick KA, Cella M, Scheve A, Engel BT *Cost effectiveness of treating incontinence in severely mobility-impaired long term care residents* Qual Rev Bull 1990 Dec;16(12):439-43.

³⁰ Birnbaum, Howard; Leong, Stephanie; Oster, Emily; Kinchen, Kraig; Sun, Peter. *Cost of Stress Urinary Incontinence: A Claims Data Analysis*. *Pharmacoeconomics*. 22(2):95-105, 2004.

Family caregiver

Depending on factors such as the severity of Urinary Incontinence or the age of the person, it may be necessary for a family member to act as a caregiver. If the family member must stay home full-time, they are foregoing their ability to provide additional income for their family. Even if the family member only needs to stay home part-time, it can influence their performance at work and impact on their career development.

Physician Care Expenditures

It is not uncommon for people with Urinary Incontinence to be concerned about a social stigma or to feel depressed. The cost of counselling related to these, and other, mood disorders is an additional indirect cost of Urinary Incontinence that must be covered by the patient.

Additional costs include an increased risk of falls that can lead to fractures in patients with urge incontinence symptoms³¹.

Overactive Bladder

Many of the costs associated with Overactive Bladder – both direct and indirect – are comparable to those of Urinary Incontinence. In 1998, a US managed care claims study³² of the direct medical care resources and costs associated with OAB treatment found an average cost of \$462 per patient per month.

As with most chronic diseases, an increased risk of depression has been seen in patients with overactive bladders³³.

³¹ Brown JS, Vittinghoff E, Wyman JF, et al. Urinary incontinence: Does it increase risk for falls and fractures? *J Am Geriatr Soc* 2000; 48:721-725.

³² Hall J. Direct medical care resources and costs associated with the treatment of overactive bladder using retrospective medical care claims data. *JMCP* In press.

³³ Zorn BH, Montgomery H, Pieper K, Gray M, Steers WD. Urinary incontinence and depression. *J Urol* 1999;102:82-84.

QUALITY OF LIFE ISSUES

The human toll of this condition is significant as it impacts negatively on one's physical, psychological, sexual, social and overall quality of life. Women living with incontinence are much more likely to suffer from depression than their continent peers.³⁴ In fact, in one study, urinary incontinence, Alzheimer's disease, and stroke are the 3 chronic health conditions that most adversely affect an individual's health-related quality of life³⁵.

"Incontinence can be an emotionally devastating condition that causes social isolation, as women with chronic incontinence may avoid social situations for fear of having an 'accident'. It often leads to lower self-esteem and fear of intimacy."³⁶ New research has indicated that women are so concerned with becoming incontinent later in life that they are beginning to opt for birth by caesarean section, as they have heard that a vaginal birth can damage the pelvic muscles, and thus contribute towards incontinence³⁷.

A recent study was conducted to correlate the health-related quality of life with lower urinary tract symptoms. The study of over 6000 men from four countries found that lower urinary tract problems increase with age and that the reported health-related quality of life decreased as symptoms became more severe.³⁸

A similar study of over 1,200 men and their female partners indicating similar increases in prevalence with age³⁹. Ten percent of men aged 40-49 reported moderate to severe symptoms compared with 44 per cent of men over 70. Interestingly, while 29 per cent of the men with severe lower urinary tract symptoms reported having a poor disease specific quality of life, another 28 per cent of these men reported excellent disease specific quality of life.

Finally, a study determined that women were willing to pay a significant amount in order to decrease symptoms or reduce the number of incontinence episodes. According to the authors, a high willingness to pay for incontinence improvement is an indication of the high "human" costs of the condition. "Women in this study were willing to pay almost \$40 per month for 50% improvement to over \$70 per month for cure of incontinence,

³⁴ Vigod SM, Stewart DE, *Major Depression in Female Urinary Incontinence* Psychosomatics 47:147-151, April 2006

³⁵ Schultz SE, Kopec JA. Impact of chronic conditions. *Health Rep.* 2003;14:41-53

³⁶ Dr. Lesley Carr, quoted in a Homemakers.com article by Marylene Vestergom *Take control of a leaky bladder*

³⁷ Comparison of levator ani muscle defects and function in women with and without pelvic organ prolapse *Obstetrics & Gynecology*, Feb 1, 2007, 109 (2)

³⁸ Girman, CJ; Jacobsen, SJ; Tsukamoto, T; Richard, F; Garraway, WM; Sagnier, PP; Guess, HA; Rhodes, T; Boyle, P; Lieber, MM. *Health-related quality of life associated with lower urinary tract symptoms in four countries*, *Urology*, 1998, vol. 51, n°3, pp. 428-436.

³⁹ Sonke, GS; Kolman, D; de la Rosett, JJ; Donkers, LH; Boyle, P; Kiemeneij, LA. *Prevalence of lower urinary tract symptoms in men and its influence on their quality of life: Boxmeer Study* [Article in Dutch] *Ned Tijdschr Geneesk.* 2000 Dec 30;144(53):2558-63.

similar to what women were willing to pay...for partial relief of other chronic medical conditions like migraine headaches or gastroesophageal reflux.”⁴⁰

Psychosocial impact on individuals, families, and caregivers

“UI imposes a significant psychosocial impact on individuals, their families, and caregivers. UI results in a loss of self-esteem and a decrease in ability to maintain an independent lifestyle. Dependence on caregivers for activities of daily life increases as incontinence worsens.”⁴¹

“Studies of women show that the condition is associated with depressive symptoms and leads to embarrassment about appearance and odour, although such reactions may be related more to illness than to incontinence. Excursions outside the home, social interactions with friends and family, and sexual activity may be restricted or avoided entirely in the presence of incontinence. Spouses and other intimates also may share the burden of this condition.”⁴²

Restriction of activities

As a result of Urinary Incontinence, some people may restrict their activities. Urinary Incontinence can:

- Limit physical fitness (reluctance to exercise due to potential triggering of condition);
- Limit ability to work (due to potential triggering of condition and social perception); and/or
- Limit social engagement.

⁴⁰ Subak LL, Brown JS, Kraus SR, Brubaker L, Lin F, Richter HE, Bradley CS, Grady D, and Diagnostic Aspects of Incontinence Study (DAISy) Group *The “costs” of urinary incontinence for women* *Obstet Gynecol.* 2006 April; 107(4): 908–916.

⁴¹ Urinary Incontinence in Adults: Acute and Chronic Management. Pamphlet by: U.S. Department of Health and Human Services, March 15, 1996.

⁴² National Institutes of Health, Consensus Development Program
<http://consensus.nih.gov/1988/1988UrinaryIncontinence071html.htm>

TREATMENTS AVAILABLE

A wide spectrum of treatment options is available for men and women with UI. New concepts in continence mechanisms, behavioural treatments and new medications have led to advances in treatment. If conservative treatments such as behavioural treatments and pelvic floor exercises are not effective, less conservative treatments may then be considered.

Diapers or pads are used throughout many treatments. Patients who are treated successfully may still require diapers, but to a lesser extent.

Behavioural Treatments

Behaviour modification is sometimes overlooked as the first treatment option for patients with urge incontinence. In a study⁴³ assessing the treatment of 372 patients with urge incontinence, drug therapy was the first-line treatment for 50% of the patients, and only 13% were treated with behaviour therapy first. The Canadian Continence Foundation and other national and international bodies recommend conservative (behavioural - non-drug, non-surgical) treatment as the first response to managing UI.

Efficacy of Treatment

There is level, but limited, evidence that conservative management including behaviour training, education, scheduled voiding, positive reinforcement and pelvic muscle exercises with various techniques can help control urinary incontinence.

Four systematic reviews⁴⁴⁴⁵⁴⁶⁴⁷ have been identified that investigated behaviour therapy to manage urinary incontinence. A Cochrane review⁴⁷ of bladder training in adults with urinary incontinence reported that the studies that investigated bladder training were of variable quality and reported various outcome measures, which makes comparing the studies difficult. Wallace et al.⁴⁷ concluded that bladder training seemed effective in the management of urinary incontinence; however, they could not comment on if bladder training was better than other available treatments.

⁴³ Gnanadesigan N, Saliba D, Roth CP, Solomon DH, Chang JT, Schnelle J et al. The quality of care provided to vulnerable older community-based patients with urinary incontinence. *J Am Med Dir Assoc* 2004; 5(3): 141-146

⁴⁴ Berghmans LCM, Hendriks HJM, De Bie RA, Van Waalwijk van Doorn ESC, Bo K, Van Kerrebroeck P. Conservative treatment of urge urinary incontinence in women: a systematic review of randomized clinical trials. *BJU Int* 2000; 85(3): 254-263

⁴⁵ Hay-Smith E, Bo K, Bergmark M, Hendriks H, De Bie R, Van Waalwijk van Doorn ESC. Pelvic floor muscle training for urinary incontinence in women (Cochrane Review). *Cochrane Database Syst Rev* 2005; Issue 1(Art. No.: CD001407. DOI: 10.1002/14651858.CD001407.pub2.)

⁴⁶ Teunissen TAM, de Jonge A, van Weel C, Lagro-Janssen ALM. Treating urinary incontinence in the elderly--conservative measures that work: a systematic review. *J Fam Pract* 2004; 53: 25-32

⁴⁷ Wallace SA, Roe B, Williams K, Palmer M. Bladder training for urinary incontinence in adults. *Cochrane Database Syst Rev* 2004; Issue 1(Art. No.: CD001308. DOI: 10.1002/14651858.CD001308.pub2)

A Cochrane review by Haye-Smith et al.⁴⁵ investigating behaviour therapy in people with urinary incontinence specifically focused on pelvic floor muscle exercises in women. They reported that pelvic floor exercises were effective to manage stress and mixed incontinence; however, the evidence supporting or refuting the use of pelvic floor exercises in women with urge incontinence was unclear. Similar to the conclusions by Wallace et al., Hay-Smith et al. reported that the studies included in their review reported various outcomes with little consistency between studies.

Behaviour therapy seems to be effective in some groups of patients, but not in others. Behaviour therapy requires resources such as staff (i.e. administrative staff, nurse continence advisors, trained physiotherapists and other specialists) and clinic space in order to effectively teach patients the behaviours. According to a study performed in Australia, it was found that physiotherapy was effective in treating stress urinary incontinence in 80% of cases⁴⁸. Physiotherapy has further been found to be effective in helping treat persistent post-natal stress incontinence⁴⁹.

Bladder Retraining

Bladder retraining combines education on healthy bladder behaviours with positive reinforcement and a scheduled voiding routine.

Healthy bladder behaviours include⁵⁰:

- Limiting or avoiding caffeine/alcohol (coffee, tea, carbonated drinks);
- Drinking non-caffeinated fluids – up to six to eight cups (1.5-2.0 litres) per day;
- Trying to avoid getting up more than twice a night;
- Not “pushing” when urinating;
- Maintaining a healthy weight;
- Not smoking. The chronic cough associated with smoking is a risk factor for incontinence; and,
- Eating more fibre to avoid constipation, which strains and weakens the pelvic floor.

Pelvic Floor Retraining

The following is an example of a Kegel exercise:

- Sit on a firm chair so you can feel your buttocks. Keep feet flat on the floor;
- Pretend you need to stop gas from passing and squeeze those rectal muscles – by pulling in;
- Try not to tighten your abdominal and buttock muscles;
- Hold for three counts, relax for three counts. Remember to breathe; and

⁴⁸ Medical-Net *Physiotherapy is effective in treating stress incontinence* 20 May 2005, <http://www.news-medical.net/?id=10257>

⁴⁹ Vega C, *Physiotherapy helpful for persistent postnatal stress urinary incontinence* 23 September 2004, <http://www.medscape.com/viewarticle/489935>

⁵⁰ Adapted from Vestergom, M *Take control of a leaky bladder* Homemakers.com

- You should feel a tweaking at the front of the pubic bone when you are holding.
- Repeat this squeezing exercise ten times. This equals one set. Do one set five times per day.

All of these Kegel techniques require education, which may lead to behaviour changes that will also help to improve continence.

Intermittent Self-Catheterization⁵¹

Some women experience a problem with an inability to empty their bladder completely. In severe cases, the amount of urine left in the bladder is so large that it causes frequent urination and possibly, overflow incontinence. Intermittent self-catheterization involves passing a small disposable catheter through the urethra and into the bladder to empty it. This procedure can be done several times each day to keep the bladder from getting too full. It must be done in a clean environment to avoid infection.

Medical Treatments

Estrogen Treatment

While it has been used as a treatment, there is no compelling, objective evidence that exogenous estrogen is effective in treating urge or stress incontinence. Topical vaginal estrogen may improve urogenital aging symptoms such as vaginal dryness and some sensory bladder symptoms.

Injectables

Injecting bulking agents, such as collagen, to narrow the urethral walls has been shown to be successful and is minimally invasive. Compared to surgical options, research studies have shown limited efficacy for bulking agents since after 3 years following the treatment, fewer than half of the women who underwent the procedure maintain continence. Another barrier to this approach in Canada is that the cost of the injectable is usually borne by the patient, and this can be as much as \$2000.

Overall, up to 75% of women with SUI may benefit from injectable treatment for short periods of time. There are various agents available (collagen, silicone rubber particles, ethylene vinyl alcohol, non-animal stabilized hyaluronic acid). Many physicians use Botox also, although it is not yet approved.

BOTOX

Botox is a purified form of Botulinum toxin type A. Botox blocks the transmission of nerve cells, and causes muscle relaxation. Botox received FDA approval in 1989 and was first reported for use in bladder conditions for incontinence caused by neurological disease in 1999, and for non-neurological incontinence in 2001. As of 2006, results of

⁵¹ Womens' Bladder Health <http://www.womensbladderhealth.com/content/coping/index.html>

research trials on Botox treatment for non-neurological urge incontinence have been reported for a total of less than 300 patients world-wide. The use of Botox in treating UI is considered “off-label”. (Botox has been given approval by Health Canada for use in treating a number of medical conditions, however at the present time urinary incontinence is not listed as one of these conditions.) This treatment is therefore limited to a small number of specialists with an interest in these bladder conditions, and it is only offered to patients with specific types of incontinence, and only after other approved therapies have been tried. In some areas, Botox treatment is limited to clinical research trials only.

As the use of Botox in UI is not an approved use by Health Canada, coverage by regional or provincial health authorities, or individual insurance plans is limited to certain situations only.

Drug Therapies

There are 4 general types of drugs used to treat patients with overactive bladder:

- Anticholinergic medications (e.g., oxybutynin, tolterodine, imipramine, trospium): these reduce feelings of urgency and inhibits contraction of the detrusor muscle.
- Tricyclic antidepressants (e.g., imipramine): these exert an anticholinergic effect by blocking norepinephrine or serotonin amine uptake.
- Combined anticholinergics and smooth muscle relaxants (e.g., oxybutynin chloride).

Recent innovations in molecular design and new dosage forms of UI medications offer the promise of fewer and less severe adverse effects and, thus, better treatment outcomes for patients. Additionally, the availability of multiple agents within a therapeutic class offers health care providers a spectrum of choices with which to personalize treatment for each individual patient. New pharmacologic treatment options for UI have the potential to allow greater independence for older persons who reside at home and to delay or avoid the costs of admission to long-term care facilities. Alternate dosage forms, which include patches and sustained-release formulations, may benefit patients who have difficulty chewing, swallowing, or remembering to take medications.⁵²

There have been some relatively recent advances in the development of drug therapies for managing urge incontinence. Two drugs, tolterodine and oxybutynin, have “long-acting” or “extended release” formulations. With these, a patient needs to take only 1 pill per day, and there may be fewer adverse effects because the long-acting formulations are more stable than the original versions.⁵³

⁵² Levy, R & Muller, N. . *Urinary incontinence: economic burden and new choices in pharmaceutical treatment*. *Advanced Therapy*, 2006, Jul-Aug;23(4):556-73

⁵³ Government of Ontario, *Sacral Nerve Stimulation for urinary urge incontinence, urgency-frequency, urinary retention, and fecal incontinence* March 2005
http://www.health.gov.on.ca/english/providers/program/mas/tech/reviews/pdf/rev_sns_030105.pdf

Before the release of these new drugs, poor compliance rates had been reported among patients using drug therapy to manage the symptoms of urinary urge incontinence because of the adverse effects of the drugs. The adverse effects reported included dry mouth, blurred vision, dry eyes, decreased sweating, and gastrointestinal effects.⁵⁴

Drug therapy is effective and safe for many patients with urge incontinence, and with advances in drug technology, ideally the adverse effects of these drugs will continue to decline. Nonetheless, there is still a subset of patients for whom drug therapy does not work to control their urge incontinence.

Drug Use in Canada

The following table lists some of the drugs used in Canada for managing urge incontinence and their possible adverse effects.

TABLE: Drugs Prescribed to Treat Urge Incontinence⁵⁵⁵⁶

Drug	Drug Type	Typical Dosing	Adverse Effects
Oxybutynin (Ditropan & generics) Extended Release (Ditropan XL) Skin Patch (Oxytrol)	Anticholinergic/ Spasmolytic	2.5 mg twice or three times daily Once daily Apply patch every 3 to 4 days	<ul style="list-style-type: none"> • Dry mouth • Sensitivity to light • Blurred vision • Dry eyes • Decreased sweating • Flushing • Drowsiness • Constipation
Tolterodine (Detrol) Prolonged Release (Detrol LA)	Anticholinergic	2 mg twice daily (4mg daily for LA)	<ul style="list-style-type: none"> • Dry mouth • Abnormal Vision • Sensitivity to light
Imipramine (sometimes prescribed in combination with	Anticholinergic/ Antidepressant	25-75 mg daily	<ul style="list-style-type: none"> • Gastrointestinal effects • Drowsiness • Weakness/tiredness • Dry mouth

⁵⁴ Desgagne A, LeLorier J. Incontinence drug utilization patterns in Quebec, Canada. Value Health 1999; 2: 452-458

⁵⁵ http://www.health.gov.on.ca/english/providers/program/mas/tech/reviews/pdf/rev_sns_030105.pdf

⁵⁶ Canadian Continence Foundation <http://www.continence-fdn.ca/>

oxybutin or tolterodine)			<ul style="list-style-type: none"> • Excitement/anxiety
Flavoxate (Urispas & generics)	Anticholinergic Antispasmodic	2.5-5.0 mg Up to four times daily	<ul style="list-style-type: none"> • Dry Mouth • Nausea & Vomiting • Headache • Drowsiness
Oxybutynin CR (Uromax)	Anticholinergic, Antispasmodic	10-15 mg once daily	<ul style="list-style-type: none"> • Dry Mouth • Pharyngitis
Darifenacin (Enablex)	Anticholinergic (selective M3 blocker)	7.5-15 mg once daily	<ul style="list-style-type: none"> • Dry mouth • Constipation • Blurred vision
Solifenacin (Vesicare)	Anticholinergic	5-10 mg once daily	<ul style="list-style-type: none"> • Dry mouth • Constipation • Blurred vision
Trospium (Trosec)	Anticholinergic	20 mg twice daily	<ul style="list-style-type: none"> • Dry mouth • Constipation • Dyspepsia • Headache

Mechanical Treatments

Pessary

A vaginal pessary is a nonsurgical way to treat certain problems caused by weak pelvic muscles, such as urinary incontinence. A pessary is a rubber device that is inserted into the upper vagina where it touches the cervix. The pessary presses on the urethra through the vaginal wall and holds up the bladder neck and uterus, if present. It may also pinch the urethra closed to help retain urine in the bladder. It is usually not necessary to remove the pessary to urinate. Normal bladder contractions can usually force urine out through the pinched-off urethra.

Pessaries help to keep the pelvic organs in place and can reduce the discomfort caused by a prolapsed uterus, bladder, or rectum. These devices also can provide patients with an interim solution until it is convenient to schedule surgery or to help healing after surgery.

Some pessaries are inflatable and may be easier to insert than the plastic or rubber devices.

Surgical Treatments

Surgery may be the best option for many women with Stress Urinary Incontinence to become incontinence-free. Various surgical procedures have been devised to help patients become incontinence free, including:

Retropubic suspension technique (also called colposuspension & the Burch procedure, MM)

During this procedure, stitches are placed into the vaginal wall on the side of the urethra and sutured to either the symphysis pubis or to the front of the pelvic bone to provide a rigid backboard to the urethra. These techniques have been shown to have good long-term efficacy.

Slings

This technique involves using a graft of fascia (strong tissue lining muscles) that is placed under the urethra for support. The sling is fastened to the abdominal wall.

Mid-urethral sling

The midurethral sling procedure is a minimally-invasive procedure which is highly effective at reducing the symptoms associated with stress urinary incontinence in women who have failed conservative treatments for SUI, such as pelvic floor muscle therapy and behaviour modification.⁵⁷

This technique involves the use of a loose-weave polypropylene mesh ribbon placed under the urethra, which is supported via the retropubic space by the abdominal wall. This application requires limited vaginal dissection and only light anaesthetic requirements. A polypropylene mesh is applied around the midurethra in order to hold it securely. This provides support without fixation of the bladder neck.

Transobturator approach

Rather than supporting the tape via the abdominal wall, a number of French surgeons have devised a technique to support it via the pelvic bone or transobturator area. This allows the surgeon to stay out of abdominal cavity, thereby reducing the small risk of bleeding and other complications. It is still a minimally invasive out patient procedure that is expected to be equivalent to other mid-urethral sling techniques.

⁵⁷ OHTAC Recommendation, *Midurethral Slings for Women with Stress Urinary Incontinence* Feb 21, 2006 http://www.health.gov.on.ca/english/providers/program/mas/tech/recommend/rec_mus_022106.pdf

Surgical Approaches Compared

These techniques have been compared with each other and the Leach et al⁵⁸ study showed the Burch and sling techniques had fairly good durability. The less invasive alternatives (Needle Suspensions) had better safety profiles and morbidity but the long-term outcomes were poorer. This study was published in 1997.

Colposuspension (either through an open procedure or laparoscopically) was historically the gold standard surgical intervention for stress urinary incontinence. Trial results demonstrate that midurethral slings are as effective as open colposuspension, and more effective than laparoscopic colposuspension. The time required for the procedure of insertion of a midurethral sling is significantly shorter than for colposuspension. In addition, the midurethral sling procedure is an outpatient procedure in Ontario, while colposuspension is an inpatient procedure⁵⁹.

In Ontario the trends in the surgical interventions for the treatment of stress urinary incontinence between 1998/99 and 2004/05 indicate a shift away from the use of colposuspension in favour of midurethral slings. There has been approximately a \$4 million increase in the cost of treating women stress urinary incontinence from 1998/99 to 2004/05, however, almost twice as many women were treated in 2004/05 than were treated in 1998/99⁶⁰. TVT was first introduced 10 – 15 years ago. There have been many series of patients treated with this technique but it was with the publication of the first prospective randomized trial of TVT versus Burch that it became much more widely accepted⁶¹. The study compared TVT with Burch at 6 months and again at 2 years in the same groups of patients and found the durability and effect on SUI were equivalent. However, the overall patient morbidity and quality of life was better with the TVT compared to the Burch procedure. The cost of the midurethral sling procedure is estimated to be \$2,600 including professional fees, hospital costs and the cost of the device. Colposuspension is estimated to cost approximately \$3,700.⁶²

(There have been a number of modifications of the TVT procedure including the ability of introducing the device either through the vaginal approach or via the abdominal wall and the concept of stabilization of the tape laterally through the obturator foramen.)

According to the Cochrane Collaboration Systematic Review completed in May 2005⁶³: “Muscle-strengthening exercises can help, and there are surgical techniques to improve

⁵⁸ Leach GE, Dmochowski RR, Appell RA, Blaivas JG, Hadley HR, Luber KM, et al. *Female Stress Urinary Incontinence Clinical Guidelines Panel summary report on surgical management of female stress urinary incontinence*. *J Urol* 1997;158:875– 80.

⁵⁹ OHTAC Recommendation, *Midurethral Slings for Women with Stress Urinary Incontinence* Feb 21, 2006 http://www.health.gov.on.ca/english/providers/program/mas/tech/recommend/rec_mus_022106.pdf

⁶⁰ *ibid*

⁶¹ Ward K, Hilton P. *Prospective multicentre randomised trial of tension-free vaginal tape and colposuspension as primary treatment for stress incontinence*. *BMJ* 2002; **325**: 67–73

⁶² *ibid*

⁶³ Cochrane Systematic Reviews Open retropubic colposuspension for urinary incontinence in women <http://www.cochrane.org/reviews/en/ab002912.html>

support or correct problems. Open retropubic colposuspension involves lifting the tissues around the junction between the bladder and the urethra. The review of trials found that this is an effective surgical technique for stress and mixed urinary incontinence in women, resulting in long term cure for most women. New techniques, particularly sling operations (including the use of TVT - tension-free vaginal tape) and keyhole (laparoscopic) colposuspension, look promising but need further research particularly on long term performance.”

Transurethral resection of prostate

Transurethral resection of the prostate (TURP) has been suggested as a treatment for overflow incontinence in men. The TURP procedure is usually used to treat benign prostatic hypertrophy (enlargement of the prostate that interferes with urine voiding). During the course of the procedure, the surgeon threads a thin tube through the penis, up the urethra to the prostate. The tube has a looped wire attached to it that is heated with an electric current and used to cut away a small portion of the prostate.

Sacral Nerve Modulation (SNM)

During SNM, a device is implanted to stimulate electrically the sacral nerves in an attempt to manage voiding conditions. It is a reversible procedure, in that the device can be removed without permanent injury. The role of SNM is to manage patients who have not been treated successfully with behaviour therapy, drug therapy, or external stimulation (for urgency incontinence).

The sacral nerves play an integral role in micturition (process for discharging urine). The micturition reflex is a 2-part cycle consisting of: filling (storage) and emptying. For the reflex to function properly, both systems must be intact. First, the receptors and neurotransmitters must be balanced for the muscles to operate properly. Second, the neurosensory pathway along the brain, spinal cord, and bladder must be intact. The receptors in the bladder signal the sacral nerves that the bladder is full or empty. An interruption in this process causes voiding difficulties. SNM aims to correct the disruption between the nervous system and the bladder so that normal voiding can resume. By stimulating the sacral nerve with electrical pulses, the device mimics the signals required for normal micturition.

There are three types of bladder problems for which this treatment may help: Overactive bladder with or without incontinence, Painful Bladder Syndrome/Interstitial Cystitis, and Voiding Dysfunction.

Sacral Nerve Modulation Use in Ontario and Canada

As of January 2005, 6 health centres in 4 provinces across Canada were using Sacral nerve modulation: Alberta, Ontario, Quebec, and Nova Scotia. On a per capita basis, Alberta is the most active province for the SNM procedure. One hospital in Ontario

performs SNM – The Toronto Western Hospital. It funds 12 SNM procedures per year. In January 2005, The Toronto Western Hospital reported that they had a waiting list of 47 people (*Personal communication, January 2005*) and estimated that in the Metro Toronto catchment area (population about 5 million), there would be 50 new patients per year with urge incontinence, 12 new patients with urinary retention, and 20 new patients with urgency-frequency that would be identified as candidates for SNS (i.e., 80–85 SNM procedures in Metro Toronto per year) (*Personal communication, December 2004*).⁶⁴ In Nova Scotia approximately 15-20 implants are performed each year.

Other Treatments

New treatments using stem cells are currently in initial phases of research.

⁶⁴Government of Ontario, *Sacral Nerve Stimulation for urinary urge incontinence, urgency-frequency, urinary retention, and fecal incontinence* March 2005
http://health.gov.on.ca/english/providers/program/mas/tech/reviews/sum_sns_030105.html

HEALTH AND PUBLIC POLICY ISSUES RELATED TO INCONTINENCE

Underreporting of SUI

Getting an accurate sense of the number of people affected by Urinary Incontinence is a challenge since it is a condition that is often underreported. This is partially a result of how some surveys are worded (ie. Whether they ask “Have you been diagnosed with SUI” versus “Have you experienced any leakage”), the stigma relating to the condition and a general lack of awareness.

Public Education

Urinary Incontinence is a condition that not many people are aware of and also one that not many people ask their doctor about – even if they have it. A public health awareness campaign would help to de-stigmatize the condition and educate people about some of the effective treatment options.

Similarly, there is a general lack of information that is readily and privately available to women and men living with incontinence. A survey⁶⁵ of Canadian websites that provide information on urinary incontinence found:

- Canadian UI websites have minimal Canadian content;
- The reading level of most sites is too high for the average consumer; and
- Websites have low specific-UI information quality.

Long wait times for care

If a patient overcomes their reticence and discusses their incontinence with their physician, they will often have to wait 6-9 months before they will see a specialist. Another 4-6 month wait is generally required to assess their incontinence, and if surgery is an option, patients can wait up to two years to receive the surgical treatment that they require.⁶⁶

Lack of availability of treatments and products

Many incontinence treatments (such as injectable bulking agents, which cost as much as \$2,000) are not covered by public or private health plans, meaning that the patient will need to cover the full cost of the treatment.

Lack of access to the newest medicines

Most of the drugs for overactive bladder (OAB) that are covered by provincial formularies are older and have negative side effects. Providing some relief to OAB

⁶⁵ Farrell KD, Robinson LM, Baydock SA, Farrell SA, Irving LE, O’Connell CM, *A Survey of Canadian Websites Providing Information About Female Urinary Incontinence* JOGC August 2006.

⁶⁶ Carr L, Urologist, Sunnybrook Health Sciences, presentation, *Shedding light on a neglected women’s health issue stress urinary incontinence*, September 22, 2006.

sufferers are newer, more effective drugs. These are however, not covered on the public formularies, therefore if a person suffering from incontinence wants to use these newer, more effective treatments, they will have to pay for them out of their own pockets. As the prevalence of incontinence increases with age, it is often seniors living on fixed incomes who would want to take these medicines, but often lack the financial ability to do so.

Cost of products for incontinence

Each year, an individual with incontinence living at home will spend an average of \$1,000 to \$1,500 on incontinence supplies. Incontinence supplies are not covered by the provincial public health plans, or by most private insurance companies, meaning that the full cost of supplies is borne by the individual.

Lack of Physician Knowledge

According to a recent survey of family physicians' knowledge, attitudes and practices, the authors found that "Although most respondents reported that urinary incontinence was common in their practices, less than half (46.0%) indicated that they clearly understood incontinence and just 37.9% had an organized plan for incontinence problems. Only 35.0% of respondents felt very comfortable dealing with incontinence."⁶⁷ The results of this survey indicate that when a person suffering with incontinence gathers the courage to ask their doctor about their condition, the vast majority will not be provided with appropriate treatment as there are such variations in knowledge, and comfort level among family physicians dealing with this condition.

Initiation of Long Term Care

Loss of bladder control is one of the most common reasons why caregivers institutionalize their elderly parents – a situation that is psychologically difficult for all parties because of feelings of humiliation and guilt.⁶⁸ Further, older adults who have to get out of bed to use the bathroom in the middle of the night are more likely to fall in the dark than those who do not have this problem. Falls can lead to broken hips, which is another major cause of institutionalization of older adults, and loss of independence.

If an elderly patient arrives at a long term care facility without incontinence, it is likely that they will develop incontinence in the first year of their stay. Risk factors for developing incontinence over the first year of admission include male gender, faecal incontinence, dementia, mobility impairment and poor behavioural adjustment to the nursing home.⁶⁹

⁶⁷ Swanson, JG, Skelly, J, Hutchison, B, Kaczorowski, J *Urinary Incontinence in Canada* Canadian Family Physician, January 2002.

⁶⁸ Women's Health Matters http://www.womenshealthmatters.ca/facts/quick_show_d.cfm?number=434

⁶⁹ Palmer MH, *Urinary Incontinence in Long Term Care* Business Briefings: Long Term Healthcare Strategies, 2003 http://www.touchbriefings.com/pdf/14/lth031_r_palmer.PDF

Furthermore, as behavioural treatment is considered to be the first treatment of choice, it is often not implemented in nursing homes as it can be resource-intensive (requires time from staff, and access to trained nurses or physiotherapists in order to be most effective.) Many long term care facilities are concerned with the rising cost of human resources and the costs of caring for their patients.

However, if incontinence is not treated, costs will increase. Incontinence can lead to other conditions which will require further treatment such as depression, falls, fractures (requiring extensive treatment) and skin lesions.

CONCLUSION

Urinary incontinence is a prevalent and important condition that affects the lives of many Canadians. Canadians with incontinence need not suffer in silence any more; there is a variety of treatments now available ranging from the conservative (pelvic floor exercises, behavioural training) to medications, to surgical interventions. Treating this condition will allow incontinence sufferers the chance to live without bulky aids such as adult diapers and pads, will decrease their personal health care costs, increase their quality of life, a return to symptom-free living and decrease health costs for the overall system.

Increased awareness of this condition and its impacts is required at the public, health care provider, and decision maker levels.

SOURCES & REFERENCES

Abrams P, Cardozo L, Fall M, et al. The standardisation of terminology of lower urinary tract function: report from the standardisation sub-committee of the International Continence Society. *Neurourol Urodyn* 2002;21:167-78

Berghmans LCM, Hendriks HJM, De Bie RA, Van Waalwijk van Doorn ESC, Bo K, Van Kerrebroeck P. *Conservative treatment of urge urinary incontinence in women: a systematic review of randomized clinical trials*. *BJU Int* 2000; 85(3): 254-263

Birnbaum H; Leong S, Oster E, Kinchen K, Sun P *Cost of Stress Urinary Incontinence: A Claims Data Analysis*. *Pharmacoeconomics* 22(2):95-105, 2004.

Carr L, Urologist, Sunnybrook Health Sciences, *presentation, Shedding light on a neglected women's health issue stress urinary incontinence*, September 22, 2006.

Comparison of levator ani muscle defects and function in women with and without pelvic organ prolapse *Obstetrics & Gynecology*, Feb 1, 2007, 109 (2)

Desgagne A, LeLorier J. *Incontinence drug utilization patterns in Quebec, Canada* *Value Health* 1999; 2: 452-458

Farrell KD, Robinson LM, Baydock SA, Farrell SA, Irving LE, O'Connell CM, *A Survey of Canadian Websites Providing Information About Female Urinary Incontinence* *JOGC* August 2006.

Finklestein, MM *Medical Conditions, Medications, and Urinary Incontinence* *Canadian Family Physician*, January 2002, Vol 48.

Flood GC, Drutz HP, *Physicians' perception of urinary incontinence as a health care problem in Women* *International Urogynecology Journal*, Vol 6, No 2, March 1995.

Girman, CJ; Jacobsen, SJ; Tsukamoto, T; Richard, F; Garraway, WM; Sagnier, PP; Guess, HA; Rhodes, T; Boyle, P; Lieber, MM. *Health-related quality of life associated with lower urinary tract symptoms in four countries*, *Urology*, 1998, vol. 51, n°3, pp. 428-436

Gnanadesigan N, Saliba D, Roth CP, Solomon DH, Chang JT, Schnelle J et al. *The quality of care provided to vulnerable older community-based patients with urinary incontinence*. *J Am Med Dir Assoc* 2004; 5(3): 141-146

Government of Ontario, *Sacral Nerve Stimulation for urinary urge incontinence, urgency-frequency, urinary retention, and fecal incontinence* March 2005

http://www.health.gov.on.ca/english/providers/program/mas/tech/reviews/pdf/rev_sns_030105.pdf

Hay-Smith E, Bo K, Bergmark M, Hendriks H, De Bie R, Van Waalwijk van Doorn ESC. *Pelvic floor muscle training for urinary incontinence in women (Cochrane Review)*. *Cochrane Database Syst Rev* 2005; Issue 1(Art. No.: CD001407. DOI: 10.1002/14651858.CD001407.pub2.)

Herschorn S, Corcos J, Gajewski J, Schulz J, Ciu E *Canadian Urinary Bladder Survey: Population-Based Study of Symptoms and Incontinence* Neurology and Urodynamics, 2003, Vol 22, Part 5.

Leach GE, Dmochowski RR, Appell RA, Blaivas JG, Hadley HR, Lubner KM, et al. *Female Stress Urinary Incontinence Clinical Guidelines Panel summary report on surgical management of female stress urinary incontinence.* *J Urol* 1997;158:875– 80.

Levy, R & Muller, N. *Urinary incontinence: economic burden and new choices in pharmaceutical treatment.* *Advanced Therapy*, 2006, Jul-Aug;23(4):556-73

McComrmick KA, Cella M, Scheve A, Engel BT *Cost effectiveness of treating incontinence in severely mobility-impaired long term care residents* *Qual Rev Bull* 1990 Dec;16(12):439-43.

Medical-Net *Physiotherapy is effective in treating stress incontinence* 20 May 2005, <http://www.news-medical.net/?id=10257>

Minassian VA, Drutz HP, *Int J Gynecol Obstet*, 2003;82:327-338

OHTAC Recommendation, *Midurethral Slings for Women with Stress Urinary Incontinence* Feb 21, 2006

http://www.health.gov.on.ca/english/providers/program/mas/tech/recommend/rec_mus_022106.pdf

Palmer MH, *Urinary Incontinence in Long Term Care* Business Briefings: Long Term Healthcare Strategies, 2003 http://www.touchbriefings.com/pdf/14/lth031_r_palmer.PDF

Peyrat L, Haillet O, Bruyere F, Boutin JM, Bertrand P, Lanson Y *Prevalence and Risk Factors of Urinary Incontinence in Young and Middle Aged Women* *BJU Int* 2002 Jan;89(1):61-6

Schultz SE, Kopec JA. *Impact of chronic conditions.* *Health Rep.* 2003;14:41–53

Shih YC, Hartzema AG, Tolleson-Rinehart S *Labor costs associated with incontinence in long term care facilities* *Urology* 2003, Sept;62(3):442-6.

Sonke, GS; Kolman, D; de la Rosett, JJ; Donkers, LH; Boyle, P; Kiemeneij, LA. *Prevalence of lower urinary tract symptoms in men and its influence on their quality of life: Boxmeer Study* [Article in Dutch] *Ned Tijdschr Geneeskd.* 2000 Dec 30;144(53):2558-63.

Subak LL, Brown JS, Kraus SR, Brubaker L, Lin F, Richter HE, Bradley CS, Grady D, and Diagnostic Aspects of Incontinence Study (DAISy) Group *The "costs" of urinary incontinence for women* *Obstet Gynecol.* 2006 April; 107(4): 908–916.

Swanson, JG, Kaczorowski. J, Skelly, J Finkelstein, M *Urinary Incontinence. A Common Problem Among Women over 45.* *Can Fam Physician.* 2005 January 10; 51(1): 85.

Swanson, JG, Skelly, J, Hutchison, B, Kaczorowski, J *Urinary Incontinence in Canada* *Canadian Family Physician*, January 2002.

Teunissen TAM, de Jonge A, van Weel C, Lagro-Janssen ALM. *Treating urinary incontinence in the elderly--conservative measures that work: a systematic review.* *J Fam Pract* 2004; 53: 25-32

US Department of Health and Human Services: *Pamphlet: Urinary Incontinence in Adults: Acute and Chronic Management* March 15, 1996.

Vega C, Physiotherapy helpful for persistent postnatal stress urinary incontinence 23 September 2004, <http://www.medscape.com/viewarticle/489935>

Vestergom, M *Take control of a leaky bladder* Homemakers.com

Vigod SM, Stewart DE, *Major Depression in Female Urinary Incontinence* Psychosomatics 47:147-151, April 2006

Wallace SA, Roe B, Williams K, Palmer M. *Bladder training for urinary incontinence in adults.* Cochrane Database Syst Rev 2004; Issue 1(Art. No.: CD001308. DOI: 10.1002/14651858.CD001308.pub2)

Ward K, Hilton P. *Prospective multicentre randomised trial of tension-free vaginal tape and colposuspension as primary treatment for stress incontinence.* *BMJ* 2002; **325**: 67–73

WEB SITES

British Columbia Ministry of Health, BC HealthGuide <http://www.bchealthguide.org/>

The Canadian Continence Foundation www.continence-fdn.ca

College of Family Physicians of Canada

<http://www.cfpc.ca/English/cfpc/programs/patient%20education/urinary%20incontinence/default.asp?s=1>

Cochrane Collaboration, Systematic Reviews

<http://www.cochrane.org/reviews/en/ab002912.html>

National Institutes of Health, Consensus Development Program

<http://consensus.nih.gov/1988/1988UrinaryIncontinence071html.htm>

Public Health Agency of Canada, Division of Aging and Seniors http://www.phac-aspc.gc.ca/seniors-aines/pubs/info_exchange/incontinence/exch6_e.htm

Riverview Health Centre <http://www.riverviewhealthcentre.com/index.cfm?pageID=121>

University of Michigan Health System, Department of Obstetrics and Gynaecology
<http://www.med.umich.edu/obgyn/pelvicfloor/understanding.htm>

Women's Bladder Health <http://www.womensbladderhealth.com/>

Women's Health Matters

http://www.womenshealthmatters.ca/facts/quick_show_d.cfm?number=434

THE CANADIAN CONTINENCE FOUNDATION

Founded in 1986, The Canadian Continence Foundation (formerly The Simon Foundation for Continence Canada) is the only national non-profit organization serving the interest of people experiencing incontinence. The organization is led by people with incontinence and by professionals from all health disciplines. The Canadian Continence Foundation is supported by donations from the public healthcare professionals and private industry.

The mission of the Canadian Continence Foundation is to enhance the quality of life for people experiencing incontinence by helping, them and/or their caregivers, to confidently seek and access cures and treatment options. To this end, the Foundation will implement and encourage important public and professional education, support, advocacy and research to advance incontinence treatment and/or management.

ACTIVITIES:

- The Canadian Continence Foundation offers a wealth of information on incontinence. Books, videotapes, and newsletters are available. We operate a toll free number which is 1-800- 265- 9575.
- Each year the Canadian Continence Foundation responds to thousands of requests for information and education from people experiencing incontinence, healthcare professionals, and industry.
- The Foundation interacts with the media to increase public awareness and knowledge of incontinence and to encourage people to seek help. It also provides individuals with lists of specialists in their local area.
- The Foundation initiated and now coordinates Incontinence Awareness Month in November of each year, promoting public and professional awareness-building and educational activities about incontinence around the country.
- The Canadian Continence Foundation encourages and supports research to advance incontinence management/treatment.