Developing a continence care centre using an urban/academic model of continence care

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Background: *This paper describes the process of adopting the Canadian Continence Foundation's urban/academic model of continence care in the development of British Columbia's Bladder Care Centre, using a process that can serve as a model for other jurisdictions across Canada and internationally.*

Method: *A multidisciplinary Working Group assessed the existing system, analyzed local and national statistics, and reviewed the literature on urinary incontinence and models of health care. Following approval from university and hospital authorities, continence services were reorganized including changing infrastructure, altering the location of multidisciplinary services and restructuring of funding and resource allocation. The process was overseen by a steering committee.*

Results: *The plan for the Bladder Care Centre involves diagnostic services and tertiary care coordinated with translational research in voiding dysfunction. Affiliations to university programs and teaching hospitals enable comprehensive interdisciplinary health professional education, training and research, which are distinguishing features of the Canadian Continence Foundation urban academic model.*

Conclusion: *From the planning perspective, the Canadian Continence Foundation's urban/academic model of continence care was feasible to implement but required significant changes to hospital budgets and infrastructure related to the existing health care system. Program evaluation markers built into the plan will allow future reporting on whether actual improvements can be achieved, and the degree to which the plan can deliver cost savings.*

Key Words: urinary incontinence, cost, budget, tertiary care, multidisciplinary

Introduction

The International Continence Society defines urinary incontinence (UI) as "the complaint of any involuntary leakage of urine".[1] Incontinence is a demoralizing and costly problem that severely affects the quality of life of both patients and caregivers.[2] The disorder is associated with many comorbid disorders and all age groups, affecting more than 1.5 million Canadians, including one out of every five individuals over the age of 65.[3] Yet, while evidence in the literature shows that incontinence and voiding dysfunction can be effectively managed or cured, it is one of the most under-reported health concerns in Canada today, primarily due to the social stigma associated with the condition.

At a 1998 national interdisciplinary forum on incontinence organized by the Canadian Continence Foundation (CCF), the key issue identified was the lack of a system in Canada to facilitate an individual's access to appropriate assessment, treatment and follow-up of urinary incontinence.[4] The Foundation challenged jurisdictions to create workable models of care for this patient population. This paper describes the process of adopting the CCF's urban/academic model of continence care and the development of British Columbia's Bladder Care Centre, using a process that can serve as a model for other jurisdictions across Canada and internationally.

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Methods

A multidisciplinary Working Group and a Steering Committee of senior health authority administrators were established to facilitate the development of a centre for voiding dysfunction and incontinence in keeping with the recommendations from the CCF. The two groups represented all key stakeholders and agencies within the health region. The Working Group consisted of specialists working at the university teaching hospital in the disciplines of urology and urogynecology, specialist nurses, specialist physiotherapists, hospital managers of budgets related to urology and urogynecology, representatives from community health, and a consumer. The Working Group met weekly for 6 months to develop the proposal and structure for the condensing and streamlining of continence services. The Steering Committee consisted of university heads of urology, gynecology, and nursing, physiotherapists and hospital administrators, who oversaw and guided the Working Group's progress. A project manager with expertise in the health sciences attended all meetings, maintained and disseminated minutes and assisted with compilation of the data into a final business plan.

Stakeholder groups were consulted to assess the status quo of continence care in British Columbia. This process included interviews and site visits to the teaching and non-teaching hospitals, community health centers and the offices of private physicians who were sub-specialists in continence care. Interviews were held with operating room and outpatient clinic administrators. A database was established of existing equipment used in continence care, its location and age and who purchased the equipment (either hospital, provincial health authority or through the hospital foundation). Existing budgets which were used to contribute to continence care were tabulated.

To catalog existing infrastructure, the Working Group compiled a list of existing buildings used within university teaching hospitals and community care centres where continence services were currently being delivered. The Group projected existing and future target population needs by extrapolating from local and national statistics and a review of the literature. The Statistics Canada and CCF websites were visited for information accrual.

Selection and integration of a model of care that would fit with both the needs of the community and the mandate set out by the health authority were based on a review of the literature and stakeholder consultation. A Medline search using the words incontinence, bladder, continence care and medical models were cross-referenced from 1970 to date without restriction of language.

Results

Assessment of status quo

Figure 1 is a graphic representation of the map of services for U I in the Vancouver Coastal Health Authority. There were four urodynamics testing facilities within the teaching hospitals, all of which were running less than 5 days per week.

The development of the services depicted in Figure 1 preceded both population-based and needs-

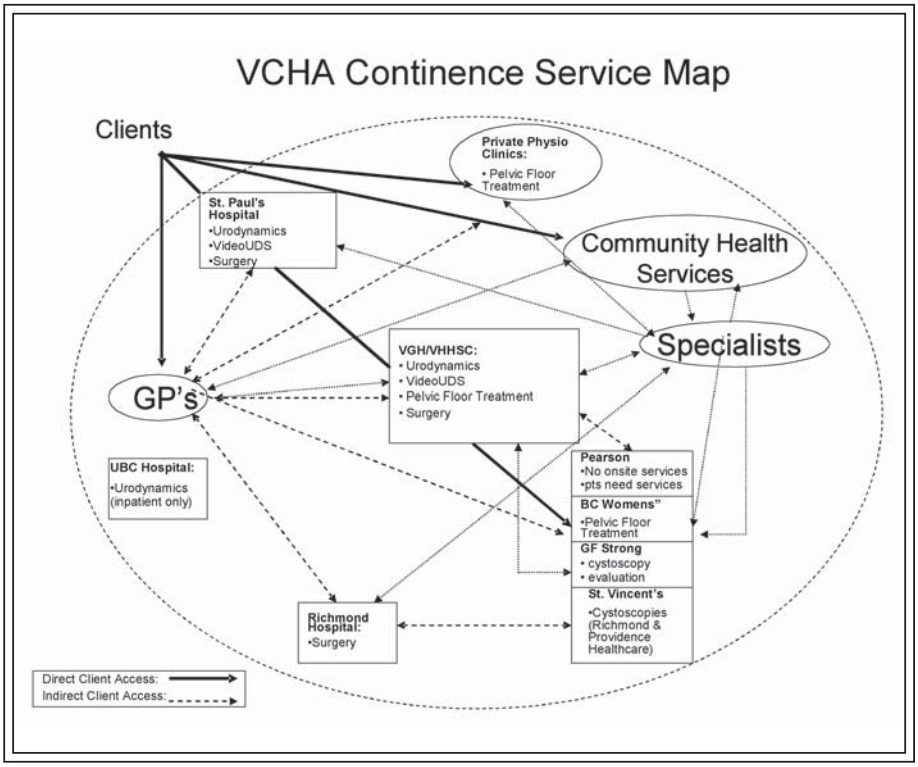

Figure 1. An illustration of "status quo" for the provision of continence services in the Vancouver Coastal Health Authority.

based regional planning practice. As a result, these services largely evolved in a random fashion and in isolation of one another.

Target group

Over one and a half million Canadians are affected by urinary incontinence, two thirds of whom are women.4. The other predominant group is seniors. Based on information in the literature, as well as that gathered by the CCF, urinary incontinence affects up to 60% of women with a history of problems during childbirth; up to 50% of all long term care residents; 35% of people in acute care settings; 15%-30% of persons over age 50, and up to 40% of elderly people in the community; 25% of all middle aged women; 15%-20% of all men 60 years and over; and 10% of 6 year olds.

British Columbia has five key geographically based health authorities. Vancouver Coastal Health Authority is the largest of these, with a population of 1,054,097. Within the Vancouver Coastal Health Authority are three Health Service Delivery Areas which include 25% of BC's population. Three quarters of these individuals (740,000) reside in Vancouver and Richmond.[5] The Vancouver Health Service Delivery Area contains six Community Health Areas, and Richmond constitutes one Community Health Area. The two groups most likely to be affected by UI are seniors (> 65 years) both in and outside of residential care, and women who are of childbearing age into their post-menopausal years (25-64 years). The following estimates were based on specific assumptions within these two groups only, and therefore the numbers are conservative. Table 1 outlines each assumption, and estimates the size of the target group for continence services within each Community Health Area for Vancouver and for Richmond.

The number of prospective patients per Community Health Area ranges from 3286 in Community Health Area #1 (three Bridges) to 6085 in #7 (Richmond). The average number of patients per Community Health Area is 4146. The number of people experiencing UI is expected to grow significantly over the next

TABLE 1. **Target group size by community health area**

Assumptions about target group	**%**	**CHA #1**	**CHA #2**	**CHA #3**	**CHA #4**	**CHA #5**	**CHA #6**	**CHA #7**	**Total V/RHB**
No. of women with potential for or history of childbirth		29,344	14,910	27,117	38,092	27,892	34,478	49,976	221,809
% of women who have actually given birth	75%	22,008	11,183	20,338	28,569	20,919	25,859	37,482	166,357
% of women who experience postbirth leakage	40%	8,803	4,473	8,135	11,428	8,368	10,343	14,993	66,543
% with persisting or long term UI problems	25%	2,201	1,118	2,034	2,857	2,092	2,586	3,748	16,636
% of women who self-identify for help	50%	1,100	559	1,017	1,428	1,046	1,293	1,874	8,318
Seniors assumptions (> 65 years)									
No. of seniors		11,814	8,776	15,113	20,542	11,290	21,629	22,764	111,928
% in residential care	10%	1,181	878	1,511	2,054	1,129	2,163	2,276	11,193
Rate of UI in residential care	50%	591	439	756	1,027	565	1,081	1,138	5,596
% in community	90%	10,633	7,898	13,602	18,488	10,161	19,466	20,488	100,735
rate of UI in community	30%	3,190	2,370	4,081	5,546	3,048	5,840	6,146	30,221
% who self-identify for help	50%	1,595	1,185	2,040	2,773	1,524	2,920	3,073	15,110
Total seniors target group		2,186	1,624	2,796	3,800	2,089	4,001	4,211	20,707
Total prospective patients per CHA		**3,286**	**2,183**	**3,813**	**5,229**	**3,135**	**5,294**	**6,085**	**29,025**

CHA = Community Health Area; V = Vancouver; R = Richmond; HB = Health Board

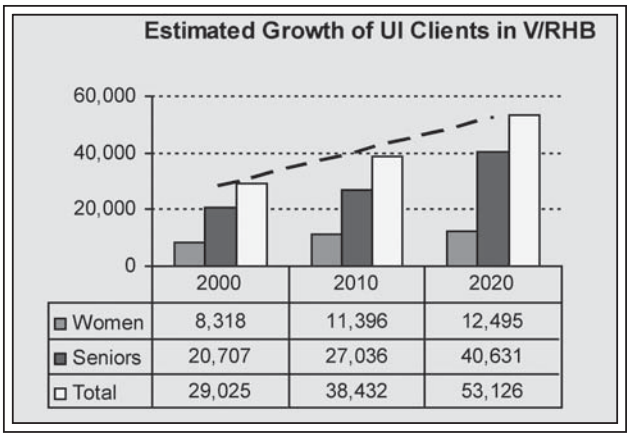

Figure 2. Estimated growth in number of patients with urinary incontinence in the Vancouver/Richmond Health Board catchment 2000 to 2020.

20 years. The primary drivers for this growth will be an expanding population, aging baby-boomers, an increasing number of seniors, trends toward later-age childbirth and increasing awareness of UI, which is reducing the stigma associated with coming forward for help. Figure 2 indicates the anticipated growth rate in the two primary user groups in Vancouver and Richmond over the next 20 years.

Needs requirements

The needs and key requirements identified for a revised service delivery model for continence care in the Region include, but are not limited to: local, user friendly, and easy access for patients; coordination of care between providers; integration of hospital and community systems; improved responsiveness to patients; patient involvement; waitlist management across the entire continuum; consistency in clinical approaches and practices; outcome evaluation at all levels of care; patient and culturally sensitive care; cost-effectiveness and long term sustainability.

Selection of care model

A review of the literature led the Working Group to the urban/academic model of care developed and published by the Canadian Continence Foundation.[4] The model provides for initial management, mainly at the primary and community-outreach levels of care, and for referral to specialized management at secondary or tertiary levels when appropriate, as suggested in the guidelines. Clinical practice guidelines by the Canadian Continence Foundation and the International Continence Society were reviewed including those for men, women and the elderly.

Discussion

Well over 50% of incontinence is believed to be unreported, which suggests that urinary incontinence is very much a "hidden" problem.[6] The target group for continence services in Vancouver and Richmond is predicted to increase by over 32% by 2010, and will nearly double (96% for seniors, and 83% overall) between now and 2020. Even these conservative estimates based only on the two primary patient user groups indicate that the need for a coherent approach to continence services will continue to grow.

The Working Group's combination of a cross-section of consumer and health provider perspectives and expertise produced a dramatically different result from the initial proposal of October 2000, reinforcing the value of population-based, authority-wide health services planning. The group recognized the deficiencies and inefficiencies of services at all points of care throughout the region, and worked to design a service delivery model that is fully compatible with current initiatives for primary health care renewal. The plan incorporates relevant principles of chronic illness management including adult learning and behavioral sciences, patient enablement and goal setting and support for individuals and families in their environments, and a shift from incontinence management to continence promotion.

In an urban centre there is a dense population of several different groups of patients who in principle have the opportunity to access a large number of health care professionals with knowledge of continence care. The urban/academic model provides accessible services at primary, secondary and tertiary care levels, all of which are coordinated through the Bladder Care Centre.

As shown in the flow chart in Figure 3, there is a web of connections between the tertiary level of care, and sites for screening and primary care, as well as secondary level clinics operated by independent specialists. The characteristic level of care in this setting is the tertiary level, providing specialized management of incontinence on referral from specialists (urologists, gynecologists, and geriatricians) in the urban centre and its surrounding region. The tertiary and secondary levels receive referrals from their own urban community (for complex cases), but also from small cities and rural/remote areas in the region. Continence care services in this model have to augment the care that is provided at the primary and secondary levels in rural areas and small cities, where there are fewer available resources and multidisciplinary specialists. Equally important functions are to provide screening, primary, and secondary care within the urban centre, and to ensure excellence of care at all levels through a strong educational and research component. Because

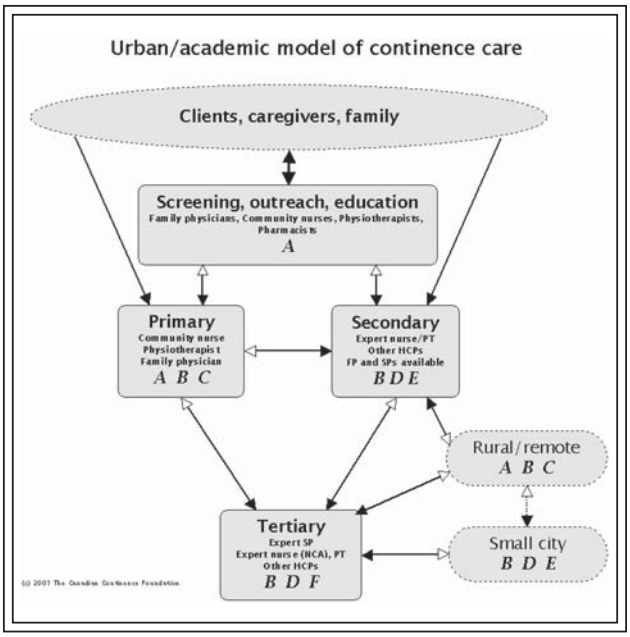

Figure 3. The Canadian Continence Foundation's Urban/academic model of continence care.

the tertiary level is the distinguishing feature of the urban/academic model, it received most attention in the design of the Bladder Care Centre, together with the screening level, but the secondary and primary levels of care were considered just as important, because many patients never require tertiary-level care. The multidisciplinary team is led by specialists with sub-specialization in an incontinence-related field.

Affiliations to university programs and teaching hospitals enable comprehensive interdisciplinary health professional education training, and research, which are distinguishing features of this model. As well, tertiary care centers often serve as regional and/or provincial referral centers for outlying areas for consultation and or direct service.

The entry point for continence care will be by patient self-referral to a family physician and/or to a local Community Health Centre (CHC) or other primary care facility in the community. The primary care setting provides screening, initial assessment, conservative ("low-tech") interventions such as dietary and lifestyle modifications, urinalysis, biofeedback and pelvic floor muscle retraining, and environmental and behavioral modifications. Within the Continence Centre Network, each CHC will have a Continence Team consisting of a physiotherapist and a Continence Advisor (who is either a nurse or physiotherapist) who act as Continence Advisors in each Community Health Centre. This team is supported by a part-time program assistant and other professionals within the centers, including dietitians, social workers, occupational therapists and home care nurses, as needed. Primary care extends beyond the CHC into patients' homes, residential care facilities, group home and rehabilitation facilities, doctors' offices, and acute hospitals as indicated. Patients are referred to secondary or tertiary care levels at any point if more advanced assessment or treatment is required.

Secondary level care is provided largely within pre-existing hospital-based clinics or "satellite sites" within the region: Vancouver General Hospital, St. Paul's Hospital, Richmond Hospital and GF Strong Rehabilitation Centre. Patients are assessed and referred onward from the primary care level for further assessment, treatment or management by a continence specialist, or they may choose to access care directly through a continence specialist at this level. These sites are intentionally maintained in or near acute centers where access to in-hospital services and/or specialized staff expertise is offered. Currently, only Vancouver General Hospital and St. Paul's provide urodynamics testing with the other sites limited to cystoscopies. In order to create access to services for all patients throughout the region and to improve waiting times for testing, this plan proposes that urodynamics testing be implemented at all four satellite sites.

At the tertiary care level, patients have access to a high level of expertise on referral from specialists in the urban centre and surrounding region, including the involvement of clinical research activities in conjunction with the University of British Columbia. As in other settings, an interdisciplinary team is involved in each patient's care, in this case led by specialists with sub-specializations in a continence-related field (e.g., urology, gynecology, or urogynecology). Examples of interventions at this level include video urodynamics testing, complex surgeries and clinical trials. In the tertiary setting, there is also a strong emphasis to ensure excellence of care at all levels through a strong educational and research component.

A critical step in the adaptation of the model was the creation of a business plan specific to the health region. This document allowed medical personnel and administrators to discuss details of condensing and moving resources between hospitals at a practical rather than a theoretical level. The business plan included a detailed budget of resources which was required also to justify the proposed actions and led to a clearer understanding between institutions of where resources were to be distributed.

The model for continence care in an urban/academic centre, Figure 4 resembles that of the National Centre in the Israeli model, described in the environmental scan of existing continence services.[7] We believe that it

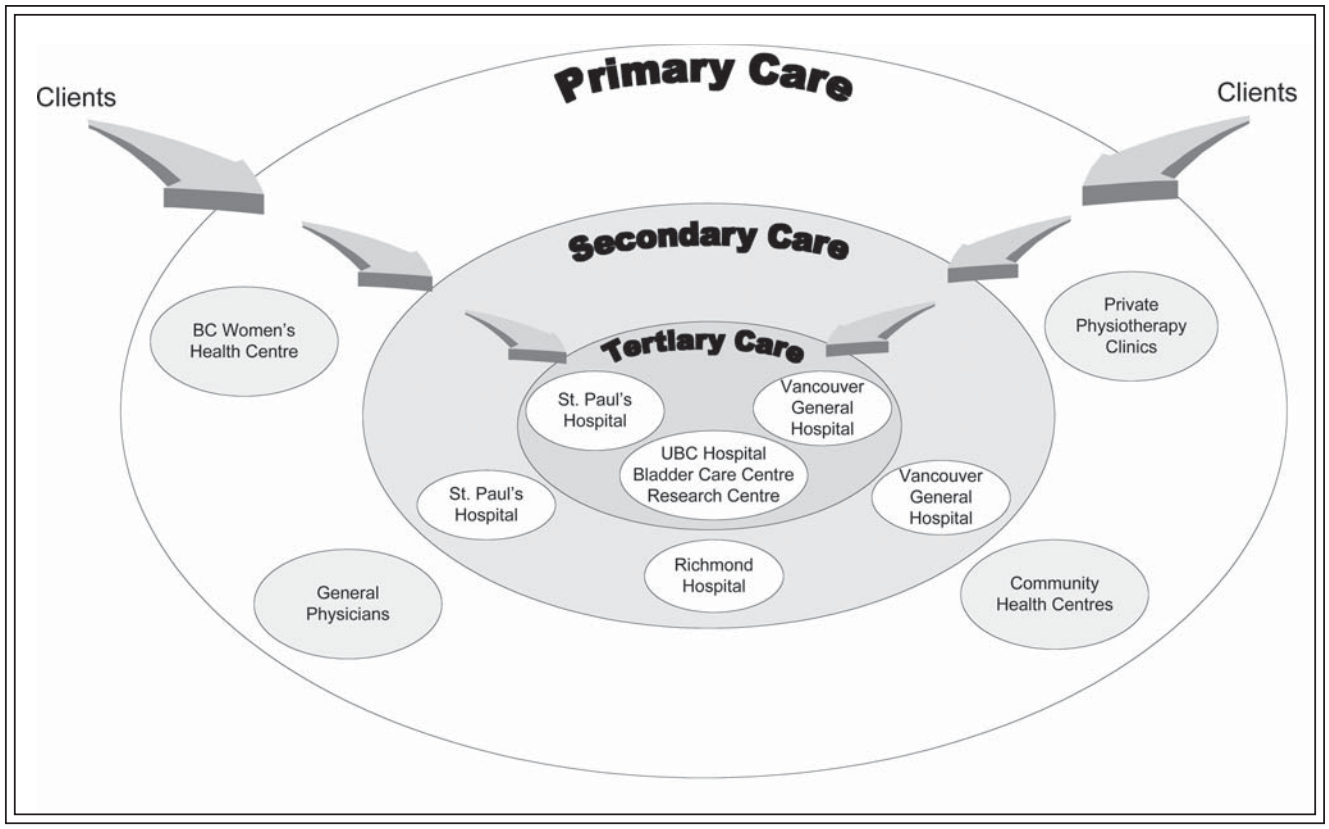

Figure 4. Proposed model for continence service delivery in Vancouver and Richmond.

reflects a logical, patient-focused approach to continence care in urban Canada. The model provides for initial management, mainly at the primary and community-outreach levels of care, and for referral to specialized management at secondary or tertiary levels when appropriate, as suggested in the guidelines.

Implementation of the continence care program in its entirety was expected to generate several benefits. Benefits to patients include an improved quality of life; fewer negative social and emotional consequences of UI; resolution, cure or improved management of UI; fewer medical complications secondary to UI; reduced spending on continence supplies; improved access to services; decreased wait time for services at all levels; less duplication of required information; opportunity to participate in clinical research activities, providing patients with benefits of latest medical advancements; and better access to information on UI. Benefits to service providers include: improved clinical outcomes; improved communication/interaction with colleagues; greater opportunity for learning and information sharing; increased research and educational opportunities; fewer inappropriate referrals; improved decision-making ability through patient outcome information and enhanced peer contact; enhanced teaching and training capacity for much needed health professionals including quaternary medical training for urologist and gynecology fellows who wish to sub-specialize in this area of practice; and less duplication of effort for care providers.

Benefits to the health care system are proposed but not yet proven. They may include: improved health outcomes; cost savings through the implementation of clinical practice guidelines treatment protocols;[8] more effective utilization of regional resources; greater accountability within the system; reduced number of acute hospital admissions due to complications of UI; reduced average length of acute stay for patients; improved ability to recruit and retain scarce professionals with training in the area of incontinence; improved responsiveness to patients based on waitlist management and optimization of services; and greater capacity to maintain individuals in their communities at less cost to the health care system.

Savings to the health care system should be realized through the overall improved coordination of care, reduction of service duplication, consolidation of fragmented and isolated services, and the reduction of acute and surgical interventions due to the introduction of a less costly network of primary care

services at the community level. A reduction in the cost of incontinence will also result from raising awareness among health care providers and the public to the potential treatment options and resources available to manage or resolve incontinence, and dispelling the myth that is a natural part of aging.[9] Accurate UI costing information is difficult to conclude from current programs or from the literature, and the Bladder Care Centre plans to improve the accuracy of measuring and reporting actual costs of urinary incontinence.

Finally, the Bladder Care Centre also aims to improve the quantity and quality of interdisciplinary incontinence education delivered to health professionals at undergraduate levels. It will do this by participating in curriculum development with the Medicine, Nursing, and Physiotherapy programs at the University of British Columbia, and by offering clinical placements to students from these and other related health disciplines.

The Bladder Care Centre opened its doors in 2005. Canada's universal health care system, whereby hospitals and patient services are government funded (there are no user fees), facilitated the implementation of the Care Centre. Patient services, including physician fees and diagnostic tests, were already funded through the BC Medical Services Plan. The challenge was to get all parties to agree to the centralization of the budget. Within the health region, funds had to be transferred between hospitals and amalgamated into a single budget for the Centre. A benefit of this amalgamation was sufficient funding for full-time staff members who can now provide services to the entire multidisciplinary team working out of the Centre.

Another challenge was that equipment that had been distributed throughout the region had to be manually inventoried, and the inventory circulated to ensure that the correct permissions were obtained to centralize the equipment. Once all the equipment was centralized, a site license was required to upgrade and standardize software applications. A benefit of equipment centralization has been economies of scale in ordering inventory.

Research projects are now centralized through the Centre. As a result, the number of research studies from both and competitive and non-competitive sources have increased, and there is potential for more complex studies because of the multidisciplinary team and centralized diagnostic procedures.

Another benefit is that patients can now arrange multiple visits (e.g., physician, physiotherapist and nurse continence advisor) and diagnostic tests on the same day.

A formal analysis of the benefits accrued from implementing the urban/academic model, in terms of costs, waiting lists, and patient and team satisfaction has not yet been conducted.

Conclusion

The goal of the urban/academic model is to expedite access and referral of patients to the appropriate level of continence care, create a logical flow of services and enhance consistency of care and communication between health care providers across the sites. From the planning perspective, the Canadian Continence Foundation's urban/academic model of continence care was possible to adapt in practice to the urban / academic centre of Vancouver and the University of British Columbia. Program evaluation markers built into the plan will allow future reporting on whether actual improvements can be achieved, and the degree to which the plan can deliver cost saving. □

References

1. Sand PK, Dmochowski R. Analysis of the standardization of terminology of lower urinary tract dysfunction. *Neurourol Urodynam* 2002;21:167-178.
2. Grimbly A et al. The Influence of Urinary Incontinence on the Equality of Life of Elderly Women. *Age Ageing* 1993;21:211-215.
3. Raiwet C, Phillips D. A Regional Approach to Continence Management. *Can Nurse* 2001;97(4):16-20.
4. Canadian Continence Foundation. Promoting a collaborative consumer-focused approach to continence care in Canada. A Health Canada National Project. The Canadian Continence Foundation, 2001.
5. Demographic Profiles: Population by Age and Sex, 2000, 2010, 2020. Vancouver/Richmond Health Board 2000.
6. Brocklehurst JC. Urinary incontinence in the community – Analysis of a MORI poll. *BMJ* 1993;306:832-834.
7. Milne JL, Moore KN. An exploratory study of continence care services worldwide. *Int J Nurs Stud* 2003;40(3):235-247.
8. Agency for Health Care Policy and Research. Urinary incontinence in adults: acute and chronic management. A clinical practice guideline. Update. Rockville, Md: US Department of Health and Human Services; 1996. Publication 96-0862.
9. Skelly J, Kenny K. Establishing the nature of the cost of incontinence care in a home care population: implications for nursing practise and health services. *Clin Effect Nursing* 1997;1(4):206-211.