

**HOME CARE/PHARMACEUTICALS DIVISION, POLICY AND
COMMUNICATION BRANCH, HEALTH CANADA**

**Evaluation of the Maintenance
and Preventive Function of Home Care**

Final Report

March 2001



**Hollander Analytical Services
308 - 895 Fort Street
Victoria, BC, V8W 1H7**

**Tel: 250-384-2776
Fax: 250-389-0105
info@hollanderanalytical.com**

**HOME CARE/PHARMACEUTICALS DIVISION, POLICY AND
COMMUNICATION BRANCH, HEALTH CANADA**

**Evaluation of the Maintenance
and Preventive Model of Home Care**

Final Report

PROJECT TEAM

**Dr. Marcus Hollander
Ms. Angela Tessaro**

PROJECT ADVISORS

**Dr. Neena Chappell
Dr. Betty Havens
Dr. Walter Muir
Dr. Evelyn Shapiro**

March 2001



**Hollander Analytical Services
308 - 895 Fort Street
Victoria, BC, V8W 1H7**

**Tel: 250-384-2776
Fax: 250-389-0105
info@hollanderanalytical.com**

EXECUTIVE SUMMARY

In the fall of 2000, Health Canada initiated a Request for Proposal for an evaluation of the maintenance and preventive function of home care. This step was taken due to the small number of existing research studies on this type of home care and the conflicting nature of the findings which currently exist. There is now some urgency to this matter in light of a recent study from Saskatchewan by the Health Services Utilization and Research Commission (HSURC) which found that “Seniors receiving preventive home care are more likely to die or lose their independence than seniors not receiving this service.” These findings run counter to widely held beliefs that maintenance and preventive home care reduces the rate of functional decline, leads to a better quality of life and reduces health care costs.

The purpose of Health Canada’s request for proposal was “to contribute to a better understanding of the objectives, services, clients, health benefits and cost-effectiveness of this model of home care, both in terms of inputs for clients and for provincial/territorial health systems.”

The *Report on home care* published in 1990 made a significant contribution in outlining three models of home care (more recently these three models have come to be referred to as the three functions of home care). The three functions are defined as follows:

- **The acute care substitution function**, where home care meets the needs of people who would otherwise have to remain in, or enter, acute care facilities;
- **The long term care substitution function**, where home care meets the needs of people who would otherwise require institutionalization; and
- **The maintenance and preventive function**, which serves people with health and/or functional deficits in the home setting, both maintaining their ability to live independently and, in many cases, preventing health and functional breakdowns, and eventual institutionalization.

Due to the fiscal restraint of the 1990s, and due to the high cost of care in hospitals and long term care facilities, there has been an emphasis to date on studying the extent to which home care can be a cost-effective substitute for institutional care. There is some emerging evidence that home care is more cost-effective than care in acute care hospitals or long term care facilities, in the Canadian context.

In contrast to the above, there has been little Canadian research on the maintenance and preventive function of home care. The findings from the Saskatchewan study appear to be counter-intuitive and refute widely held beliefs regarding the benefits of preventive home care. The issue of the relative effectiveness of maintenance and preventive home care is not simply a matter of academic interest. A number of jurisdictions, including British Columbia, have started, or are starting, to discharge people on home care who have low level care needs. If the Saskatchewan study actually reflects reality this may not be such a bad thing, but if it does not, current policies may be causing both significant hardships for individuals and increases in overall costs to the health care

system. The policy to discharge low level home care clients needs further study because of the significant and real consequences this policy may be having on Canadians.

Our study responds to the need for further research on the maintenance and preventive function of home care. We have used a unique British Columbia data set to analyse the costs and outcomes of care for comparable people who did, and did not, receive home care. This report presents the results of our analysis.

The province of British Columbia instituted a policy to cut from service low level home care clients in late 1994. Most of the actual cuts occurred in the first half of 1995. This situation allowed for a natural experiment in which clients who were cut from service in one Health Unit could be compared to similar clients in other Health Units who were not cut from service, as not all Health Units implemented the policy at the same time, or in the same way. Thus, we were able to compare clients who were cut versus those who remained in service for the year prior to cuts and the three years after cuts.

In terms of research design, a quasi-experimental design was adopted for this study. The following shows our research design in schematic form

	Period One (Year prior to Cuts)	Period Two (First Year After Cuts)	Period Three (Second Year After Cuts)	Period Four (Third Year After Cuts)
Comparison Group (clients who were not cut from service)	Average Cost ¹	Average Cost	Average Cost	Average Cost
Experimental Group (clients who were cut from service)	Average Cost	Average Cost	Average Cost	Average Cost

¹Average cost is the average of the total costs of service related to hospitals, physicians, drugs and continuing care for each client.

In this study, the primary outcome variables are service utilization (as a proxy for health status) and costs. Costs and utilization were analyzed for hospital services, physician services, pharmaceuticals, long term care and extended (chronic) care facilities, home nursing and community rehabilitation, home support (homemakers and personal care) and adult day care services.

Given the data available, it was decided to compare the regions with no cuts to those with severe cuts. This was done because some clients end service every month irrespective of policies around cuts. The available data did not allow us to clearly distinguish which clients were cut due to policy and which would have ended service in any event. Thus, by focusing on regions that made

severe cuts over a short period of time one maximizes the relative proportion of clients who were cut due to policy rather than through the natural flow of events.

There were two urban Health Units that made no cuts and one urban Health Unit and a suburban/semi-rural Health Unit located fairly close to large urban centres that made severe cuts. These four Health Units were selected for analysis as they exemplify most closely a natural experiment in which, during the same period of time, two Health Units had severe cuts and two had no cuts. The two Health Units with cuts will be designated in this report as Health Units 1 and 2 and the two Health Units without cuts will be designated as 3 and 4.

In our analysis we used the following costs to government based on the 1996/97 fiscal year.

Per diem acute care hospital rate and day surgery rate	\$525.00	
Per diem for other hospital days (excluding Extended Care)	200.00	
Per hour homemaker rate	22.46	
Per visit professional home care services (nursing, PT/OT)	60.00	
Per diem for adult day care	70.00	
Facility Care	Personal Care	39.60
(Per diem)	Intermediate Care 1	62.71
	Intermediate Care 2	76.65
	Intermediate Care 3	98.96
	Extended Care	115.00
Medical Services Plan (MSP) Costs		Actuals for each year
Pharmacare Costs		Actuals for each year

It has been said that if you squeeze one part of the health system, it results in a bulge in another part of the system. This can be seen in Tables 1 and 2 which provide data on service utilization and costs for the two Health Units with cuts and the two Health Units without cuts. The differential in costs is essentially attributable to a greater use of hospital beds, increased use of homemaker services in the second and third year after the cuts, and increased rates of admission to residential care.

It was found that there was no statistically significant difference in the average cost to the health system between Health Units with and without cuts for Period Two (the first year after cuts). However, it appears that the differences in costs between the two groups increase over time as cost differences between the two groups were significantly different for Period Three (the second year after cuts) and Period Four (the third year after cuts). The difference in cuts between Period One, and Periods Two, Three and Four combined, was also statistically significant. We also found that a higher proportion of people who were cut from service died.

Table 1: Per Person Average Service Utilization Before and After Cuts for Health Units With and Without Cuts

		Period			
		Year Prior to Cuts	First Year After Cuts	Second Year After Cuts	Third Year After Cuts
Medical Services Plan (MSP) Units	Cuts	47.65	53.29	53.05	48.34
	No Cuts	44.89	47.73	45.93	44.09
Pharmacy Prescriptions	Cuts	20.64	22.37	25.11	25.89
	No Cuts	16.80	17.60	19.28	19.30
Acute Care Hospital Days (including day surgery)	Cuts	2.39	5.72	6.24	6.35
	No Cuts	1.94	4.18	4.41	4.87
Other Hospital Days (excluding EC)	Cuts	0.23	0.99	0.74	1.04
	No Cuts	0.49	0.70	0.92	0.86
Direct Care Visits	Cuts	1.88	3.00	5.36	4.75
	No Cuts	1.10	1.88	2.61	2.61
Homemaker Hours	Cuts	74.21	28.58	94.69	116.47
	No Cuts	71.40	67.63	67.00	70.26
Adult Day Care Days	Cuts	1.49	1.26	1.36	1.63
	No Cuts	1.17	1.54	2.00	2.45
LTC Facility Days	Cuts	0.28	5.93	17.82	36.14
	No Cuts	0.05	1.35	8.25	15.95

Table 2: Per Person Average Costs of Care Before and After Cuts for Health Regions With and Without Cuts

		Period			
		Year Prior to Cuts	First Year After Cuts	Second Year After Cuts	Third Year After Cuts
All Costs	Cuts	5,051.84	6,682.77	9,654.22	11,903.38
	No Cuts	4,535.02	5,963.10	6,771.45	7,807.96
Medical Services Plan (MSP) Costs	Cuts	1,142.90	1,306.22	1,368.87	1,281.97
	No Cuts	1,085.33	1,189.83	1,193.96	1,182.67
Pharmacy Cost	Cuts	705.20	746.91	693.48	713.46
	No Cuts	577.26	579.96	544.57	556.88
Acute Care Hospital Costs (including day surgery)	Cuts	1,256.42	3,005.50	3,277.29	3,333.71
	No Cuts	1,019.58	2,197.10	2,316.33	2,555.55
Other Hospitals Costs (excluding EC)	Cuts	46.40	197.90	148.10	208.65
	No Cuts	97.69	139.83	183.61	172.49
Direct Care Costs	Cuts	112.85	179.93	321.43	285.00
	No Cuts	66.25	112.97	156.80	156.54
Homemaker Costs	Cuts	1,666.68	641.82	2,126.63	2,615.95
	No Cuts	1,603.58	1,518.89	1,504.80	1,577.97
Adult Day Care Costs	Cuts	103.96	88.33	95.52	113.91
	No Cuts	81.86	107.54	139.77	171.63
LTC Facility Costs	Cuts	17.42	516.16	1,622.89	3,350.72
	No Cuts	3.46	116.98	731.60	1,434.22

We originally chose to look at Health Units with high proportions of cuts compared to the average monthly cuts in the 1993/94 fiscal years to maximize the proportion of people who were cut due to the new policy. The above findings are instructive but are based on a total of four months of cuts in two health regions. For this reason, and because a relatively small proportion of people accounted for the increased costs in the “cuts” group, we decided to conduct an additional analysis. In this analysis we included all months for all Health Units (except 1 and 2), for the period November 1992 to December 1995, which had relatively high rates of cuts (the months actually selected ranged from November 1994 to August 1995). Using this criteria, this new cuts group was based on data from 27 monthly periods for seven Health Units (Health Units A to G). The people who were cut were compared with people from the same Health Units who were in service on September 1, 1995. In this new analysis there were 532 people in the cuts group and 7,367 people in the no cuts group. Table 3 presents the findings of this analysis.

While there is some variation across Health Units, the general pattern is very similar to that found in Table 2 where we compared Health Units 1 and 2 (with cuts) to Health Units 3 and 4 (no cuts). Thus, the analysis in Table 3 strengthens the case made earlier in Table 2 that, particularly in the second and third year after cuts, average health expenditures are higher for people in the group which was cut from service compared to expenditures for people in the group without cuts.

An additional, qualitative study, conducted by Georgia Livadiotakis, a Gerontology Masters’ student at Simon Fraser University is also presented in this report in Appendix A. The data are for one health region which made cuts in 1999 and, thus, the results, though quite interesting, should be seen as preliminary and should be interpreted with caution. Further research would be required to corroborate these findings.

Personal interviews were conducted in seniors’ homes 19 to 21 months after their discharge from Continuing Care. Each interview was conducted by an experienced Case Manager from the health region who had no previous relationship with the client. During the interview, respondents were asked: ***“Overall, how are you coping since your home support service was eliminated and you were discharged from Continuing Care?”*** The opinions and concerns of 137 respondents were summarized into 4 coping themes. These 4 coping themes were:

1. Betrayed and suffering in silence.
2. Picking up the tab.
3. I can do it better!
4. Mixed feelings.

Table 3: Per Person Average Costs for Other Regions With and Without Cuts

		Period			
		Year Prior to Cuts	First Year After Cuts	Second Year After Cuts	Third Year After Cuts
Health Unit A	Cuts	5,469.76	5,237.01	11,102.38	10,926.55
	No Cuts	5,311.83	6,745.11	8,178.95	9,947.31
Health Unit B	Cut	4,785.59	7,734.16	9,376.33	12,344.06
	No Cuts	5,182.34	6,544.29	7,559.50	8,277.09
Health Unit C	Cuts	6,459.91	6,946.67	11,088.20	11,583.59
	No Cuts	5,049.23	7,775.58	8,827.62	9,086.23
Health Unit D	Cuts	12,435.27	16,322.52	12,671.80	14,353.88
	No Cuts	4,782.60	6,196.91	6,891.25	6,449.88
Health Unit E	Cuts	6,631.32	6,839.45	9,400.19	13,352.84
	No Cuts	6,425.17	6,957.00	8,559.67	9,940.16
Health Unit F	Cuts	4,193.48	7,657.89	13,497.36	14,304.68
	No Cuts	5,804.44	7,231.07	8,648.56	10,595.55
Health Unit G	Cuts	7,140.43	8,241.15	9,497.27	12,173.91
	No Cuts	4,526.45	6,768.68	7,154.75	8,175.79
Health Units A-G	Cuts	6,077.39	7,176.96	10,012.95	12,519.86
	No Cut	5,082.59	7,007.55	7,971.19	8,631.09

The first theme, betrayed and suffering in silence, included 40 respondents who reported some form of hardship to themselves as a result of performing their housekeeping tasks on their own. Respondents who revealed that they were suffering in silence commented on the difficulties associated with completing the task, that their health had been affected, that their home was not as clean as it should be and noted financial hardships related to their inability to pay privately for services. Emotional responses of feeling lonely, abandoned and betrayed were heard from an additional 5 respondents. These seniors made reference to being lonely. As one respondent replied, “you talk to nobody, you see nobody.” Two respondents made reference to both suffering in silence combined with feelings of being abandoned, lonely and betrayed. For the majority of the above respondents, their loss of house cleaning service meant that they had to perform the tasks on their own, despite the effect it had on their life.

In regard to the second theme, some 40 clients were able to pay privately for care or were able to obtain additional help from family and/or friends. Some 39 respondents in the third theme group indicated that they were coping with little or no problem as they were more independent compared to when they were receiving service. Some also indicated that they had not been very satisfied with the service they had received. The fourth theme was composed of responses which cut across the first three themes.

It appears from both the quantitative and qualitative data in this report that ignoring the maintenance and preventive aspects of home care may not only lead to increased costs in the overall health system, but may also lead to suffering and emotional distress for a significant portion of the people who are cut from care. The data also reveal that many of the people who are cut from home care come back into the continuing care system, possibly in worse health than if they had never left. This represents a shortening of the quality of life for a significant portion of people who are cut from care. These are clearly negative consequences in both human and fiscal terms.

The findings from this study once again underscore the complex inter-connections in the health care system and the notion that making changes in one part of the health care system may affect other parts of the system. This is important because as long as decisions are made in one part of the system, to deal with pressures facing a particular department, division or branch, without greater consideration of the consequences of policy choices on the larger whole, unseen, unanticipated and perhaps unintended and negative consequences may arise.

There are those who would characterize home care as a “frill” or “boutique” program. Given the findings in this study, and the inter-connected nature of the health system, home care is clearly not a “frill” or “boutique” program. Rather, it is central to the success of health reform and to making the overall health care system function more efficiently and effectively. Home care is central to the health care system because it can often prevent or delay, and substitute for, admission to acute care hospitals and long term care facilities, at a lower cost of care. Thus, it appears to be central to the achievement of future efficiencies which arise from providing lower cost home care services instead of higher cost institutional services. This said, it is clear that there is still an important role

for acute care hospitals and long term care facilities in caring for clients with high care needs, or very ill clients.

The findings of this study also raise policy challenges. For example, policy makers will have to grapple with the second sub-group of people who coped with the cuts by paying for service and/or having family members/friends take on care responsibilities previously funded by the state. The choice to be made is to determine what is the appropriate role of the state in providing care. Is it the responsibility of the state to pay for cleaning services as a way to maintain home care clients at their optimal level of functioning, and to reduce their rate of deterioration (when such services are deemed to be needed by a professional case manager)? That is, are some of the basic and more “social” services provided in home care the responsibility of the state or of individuals and families? The cuts in service to home care clients appear to represent not only an offloading of support from the state to individuals and their families, but also, a shift in philosophy from a universal model of care where everyone is entitled to basic services to a residual social welfare philosophy in which those with “independent” means pay for service and the state only pays for those who cannot afford to pay. In fact, the cuts actually go further and reflect a policy of disenfranchising people from care altogether in that even people receiving the minimum state allowance of Old Age Security and the Guaranteed Income Supplement (OAS/GIS) were cut from service.

Administering the health care system is not easy. It is a complex system with powerful interest groups and a product which is near and dear to every Canadian. There are many excellent administrators and policy makers in our health care system. It is also not possible to fully know the outcomes of many decisions until after they have been implemented. Given that these factors are also realities, it is imperative that key policy decisions are actively studied to identify their consequences. This means a full and meaningful embrace of evidence-based decision making and the provision of adequate resources to provide the needed data and analysis, coupled with a willingness to move quickly to change and improve policies on a continuous basis and not just in the face of a fiscal or political crisis. In addition, it may be useful (and this, too, often occurs already) to institute a philosophical review in the policy process in which the inherent philosophy of a given policy is matched to the overall philosophy of a region or Ministry of Health, and to the philosophical underpinnings of the health care system itself.

ACKNOWLEDGMENTS

We would like to acknowledge Drs. Neena Chappell, Betty Havens, Walter Muir and Evelyn Shapiro for acting as advisors to this project and for their helpful comments and insights. We would also like to acknowledge the contribution made by Angela Tessaro who did the complex computer programming required for this study and Anthony Beks for typing this report. Any errors or omissions remain the responsibility of the author.

We would also like to thank the Home Care/Pharmaceuticals Division of Health Canada for funding this project. The views expressed in this document do not necessarily represent the official policy of Health Canada.

TABLE OF CONTENTS

	<u>Page</u>
Executive Summary	i
Acknowledgments	x
Table of Contents	xi
List of Tables	xii
1. Introduction	1
2. Background and Rationale	1
2.1 Rationale for the Study	1
2.2 The British Columbia Context	2
3. Literature Review	5
3.1 Introduction	5
3.2 Canadian Studies on the Maintenance and Preventive Function of Home Care	5
3.3 International Studies on Specific Preventive Interventions in Home Care	8
3.4 Conclusions	10
4. Design and Methods	11
4.1 Design	11
4.2 Methods	12
4.2.1 Data Cleaning	12
4.2.2 Sample Selection	14
4.2.3 Statistical Tests	16
4.2.4. Unit Cost Allocation	16
5. Preliminary Findings	17
5.1 Introduction	17
5.2 Mortality	17
5.3 Institutionalization	17
5.4 Utilization and Costs	19
5.5 Sensitivity Analysis	23
6. Discussion and Conclusions	27
Bibliography	30
Appendix A: Client Responses to the Discontinuation of Service (By Georgia Livadiotakis)	

LIST OF TABLES

	<u>Page</u>	
Table 2-1:	Service Starts, Ends and Net Change for Personal Care Level Home Care Clients in British Columbia: Fiscal 1992/93 to 1998/99	4
Table 4-1:	Comparison of Ends of Service for Health Units With and Without Cuts	15
Table 5-1:	Relative Mortality Rates for Home Care Clients With and Without Cuts	18
Table 5-2:	Proportion of Clients Who Were Admitted to Long Term Care Facilities in the Cuts and No Cuts Group	18
Table 5-3:	Per Person Average Service Utilization Before and After Cuts for Health Units With and Without Cuts.	20
Table 5-4:	Per Person Average Costs of Care Before and After Cuts for Health Regions With and Without Cuts	21
Table 5-5:	Summary of Per Person Average Costs for Health Regions With and Without Cuts	22
Table 5-6:	Per Person Average Costs for Other Regions With and Without Cuts	24
Table 5-7:	Sensitivity Analysis Based on Average Per Person Costs for Groups With and Without Cuts	26

1. INTRODUCTION

In the fall of 2000, Health Canada initiated a Request for Proposal for an evaluation of the maintenance and preventive function of home care. This step was taken due to the small number of existing research studies on this type of home care and the conflicting nature of the findings which currently exist. There is now some urgency to this matter in light of a recent study from Saskatchewan by the Health Services Utilization and Research Commission (HSURC) (HSURC, 2000) which found that “Seniors receiving preventive home care are more likely to die or lose their independence than seniors not receiving this service” (p. 7). These findings run counter to widely held beliefs that maintenance and preventive home care reduces the rate of functional decline, leads to a better quality of life and reduces health care costs.

The purpose of Health Canada’s request for proposal was “to contribute to a better understanding of the objectives, services, clients, health benefits and cost-effectiveness of this model of home care, both in terms of inputs for clients and for provincial/territorial health systems.”

2. BACKGROUND AND RATIONALE

2.1 Rationale for the Study

The *Report on home care* published in 1990 made a significant contribution in outlining three models of home care (more recently these three models have come to be referred to as the three functions of home care). The three functions are defined as follows:

- **The acute care substitution function**, where home care meets the needs of people who would otherwise have to remain in, or enter, acute care facilities;
- **The long term care substitution function**, where home care meets the needs of people who would otherwise require institutionalization; and
- **The maintenance and preventive function**, which serves people with health and/or functional deficits in the home setting, both maintaining their ability to live independently and, in many cases, preventing health and functional breakdowns, and eventual institutionalization.

(Adapted from Federal/Provincial/Territorial Subcommittee on Long Term Care 1990, p. v.)

Due to the fiscal restraint of the 1990s, and due to the high cost of care in hospitals and long term care facilities, there has been an emphasis to date on studying the extent to which home care can be a cost-effective substitute for institutional care. There is some emerging evidence that home care is more cost-effective than care in acute care hospitals or long term care facilities, in the Canadian context. (HSURC, 1998; Hollander, 1999). There has been a growth in the volume of Canadian research on the acute care and long term care substitution models of home care. This is typified by the range of home care studies funded by Health Canada’s Health Transition Fund,

overall, and its National Evaluation of the Cost-Effectiveness of Home Care (Hollander and Chappell, 1999).

In contrast to the above, there has been little Canadian research on the maintenance and preventive function of home care. The findings from the Saskatchewan study (HSURC, 2000) appear to be counter-intuitive and refute widely held beliefs regarding the benefits of preventive home care. The issue of the relative effectiveness of maintenance and preventive home care is not simply a matter of academic interest. A number of jurisdictions, including British Columbia, have started, or are starting, to discharge people on home care who have low level care needs. If the Saskatchewan study actually reflects reality this may not be such a bad thing, but if it does not, current policies may be causing both significant hardships for individuals and increases in overall costs to the health care system. The policy to discharge low level home care clients needs further study because of the significant and real consequences this policy may be having on Canadians.

Our study responds to the need for further research on the maintenance and preventive function of home care. We have used a unique British Columbia data set to analyse the costs and outcomes of care for comparable people who did, and did not, receive home care. This report presents the results of our analysis.

2.2 The British Columbia Context

In British Columbia, Assessors/Case Managers do initial assessments of clients, provide ongoing monitoring of client needs, assign levels of care on a five level classification system, and authorize service based on client needs. Thus, there is regular review and monitoring of all clients, and their care needs, over time in the British Columbia Continuing Care system. Included in this system are client assessment and case management, home care, home support, and residential long term care and chronic care services, required by the elderly and persons with disabilities (Hollander and Pallan, 1995).

During the early 1990s, relatively adequate funds were available to support increases in home care utilization as well as the increasing salaries of home support workers. This funding was available for two reasons. The first was that fiscal restraint had not yet hit British Columbia as, unlike much of Canada, British Columbia was generally able to avoid the recession of the early 1990s. Another factor was a planning and resource allocation model which was implemented in 1990 which diverted funds allocated by Treasury Board for increases in population changes for all Continuing Care clients, including residential care clients, to home care services, on a planned and pro-active basis. However, in the 1994/95 fiscal year, British Columbia began to feel pressure on government revenues. This resulted in many areas, including home care, receiving relatively status quo budgets which would not cover the full costs of the anticipated demands on service utilization.

Given the above situation, officials in the Continuing Care Division of the British Columbia Ministry of Health and Ministry for Seniors (hereafter the Ministry of Health) conducted a review of alternatives to cope with the simultaneous pressures of minimal budget increases and added pressure on utilization. A variety of measures were considered including efforts to reduce costs by

salary rollbacks, promotion of the entry of new, lower cost, providers, and increased user fees. It was believed that the most feasible approach would be to allocate resources based on relative need. Thus, it was decided in June, 1994, to send out a directive to the Health Units across British Columbia to stop admitting Personal Care level clients (Personal Care is the lowest of the five levels of care used in British Columbia) and to shift the resources to people at higher care levels who had greater needs for care. The directive was clear that exceptions could be made if the alternative would be to admit a person to facility care, and for other extenuating circumstances.

It subsequently became clear that the restraint of fiscal 1994/95 would continue into the future. Thus, further communications were held with Health Units in the fall of 1994. Subsequently, Health Units moved to discharge clients at the Personal Care (PC) and Intermediate Care 1 (IC1) levels (the next lowest level of care need). This activity was codified in a memorandum sent out in June 1995 which encouraged Health Units to no longer admit clients at PC and IC1 levels, to reduce housekeeping for clients with higher care needs to four hours per month, and to discontinue service for PC and IC1 clients who only required housekeeping services. Room for some discretion was still provided.

Most of the cuts to service occurred in the first six months of 1995. In the early fall of 1995, program staff were instructed to stop discontinuing service to clients. In the spring of 1999 some Regional Health Authorities started a second round of cuts to PC and IC1 clients to deal with their own fiscal pressures.

An overview of the impact of not admitting new clients, and discontinuing service for existing clients, is presented in Table 2-1 which shows the number of starts and ends of service. In British Columbia, services for clients are authorized using a "care advice" or "service authorization" form. Any time a service is added, or dropped, or there is any other change to the client's status, the existing service authorization is ended and a new service authorization is started. Thus, the numbers in Table 2-1 relate to changes in service status. Any given client could have one, or more, such changes.

Table 2-1: Service Starts, Ends and Net Change for Personal Care Level Home Care Clients in British Columbia: Fiscal 1992/93 to 1998/99

Fiscal Year	Care Episode Starts	Care Episode Ends	Net Change
1992/93	8114	5135	2979
1993/94	7869	4973	2896
1994/95	4199	7182	-2983
1995/96	2136	5057	-2921
1996/97	1660	2356	-698
1997/98	1398	1645	-247
1998/99	908	2536	-1628

3. LITERATURE REVIEW

3.1 Introduction

The existing literature evaluating the cost-effectiveness of the maintenance and preventive function of home care is relatively limited. While a comprehensive literature research was conducted using Medline and Health Star, relatively few documents were found on this topic.

In reviewing the materials obtained it was ascertained that there were very few Canadian studies on the maintenance and preventive function of home care. In addition, the concept of the three models or functions of home care, which is widely used in Canada, does not appear to be used in the international literature. Similarly, linkages between levels of care and preventive activities are generally not found in the international literature. The most relevant studies in the international literature typically focus on certain types of preventive programs, rather than on the broader preventive functions of home care *per se*. Thus, this chapter will have two primary parts, a section on Canadian studies of the preventive aspects of home care and a section on international studies of particular preventive programs. It is interesting to note that Canadian studies tend to have negative findings on the efficacy of preventive home care while the international literature has a number of examples of cost-effective models of specific preventive interventions.

3.2 Canadian Studies on the Maintenance and Preventive Function of Home Care

Five Canadian articles were found on prevention and home care, two of which provide a direct evaluation of the cost-effectiveness of this approach and one which evaluates a particular type of service, the quick response team. There are generally considered to be the three levels of prevention. They are:

- **Primary Prevention** which focusses on general preventive activities for a population and includes programs such as lifestyle counselling and immunization. Specific activities would include the promotion of regular aerobic exercise, tobacco reduction and safe driving initiatives.
- **Secondary Prevention** which focusses on the identification of individuals at risk through preventive activities related to early detection of subclinical disease by screening or case finding to prevent disability. Examples of such activities include screening questionnaires for problem drinking, hearing impairment and diminished visual activity, and regular mammography and clinical examinations for breast cancer.
- **Tertiary Prevention** which focusses on minimizing disability and handicap from established diseases.

(Adapted from Patterson and Chambers, 1995)

Our study focusses primarily on tertiary prevention aimed at allowing people to function at their optimal capacity and reducing the rate of deterioration in health and functional status.

Patterson and Chambers (1995) note that while there is some evidence for the effectiveness of primary and secondary prevention, the evidence on tertiary prevention seems to indicate that it is not cost-effective in regard to improving the functional status of older people. They note that there is greater utilization of community services such as physiotherapy, domestic help, and chiropody, and that there are more referrals for specialist opinions (Patterson and Chambers, 1995, p. 1614).

With regard to Canadian studies on specific program interventions, Darby (1992) found that a Quick Response Team in the Greater Niagara Hospital in Ontario was able to prevent 206 admissions from the Emergency Department to the hospital of frail, elderly adults, out of 237 referrals over a 12 month period. While Darby does not provide a cost comparison, he does indicate that by being able to send people home, with enhanced services, the Quick Response Team was able to free up the equivalent of 8 to 10 beds for a one year period.

With regard to methods related to costing home care services and services provided by family caregivers, Jacobs and McDermott (1989) conducted a study entitled "Family caregiver costs of chronically ill children: Method and literature review." While it is beyond the scope of our study to assess the cost impacts on the informal care system, the paper by Jacobs and McDermott can provide useful guidance for future research.

There were two Canadian studies which were specifically designed to evaluate whether or not preventive home care for lower level care clients is cost-effective. The first study was conducted in Lachute, Québec by Contandriopoulos, Tessier and Larouche (1986). The study looked at two different cohorts, one before a home care service was introduced and one after it was introduced. The hypotheses in the study were the following:

Setting up home aid services will decrease the utilization of health care resources by those 65 and over (global impact).

The establishment of home aid services will decrease the utilization of the resources of the health care system by the program's clients (specific impact).

(Contandriopoulos, Tessier and Larouche , 1986, p. 733)

The authors used multiple regression to study the impacts of socio-demographic, economic and health status variables, and the presence or absence of home care, as independent variables. The utilization of hospital inpatient services, emergency and outpatient hospital services, physician services, and home care services, were used as dependent variables. While the authors only present findings for the use of hospital services they note that the results were similar for all of the services. In both the global and specific impacts analyses the presence of home aid services was not a significant variable in regard to the use of hospitals or other services. The two variables which were significant were age and the number of tests or examinations the client had received.

The second Canadian study was conducted in Saskatchewan (HSURC, 2000) and was a retrospective, observational cohort study which used administrative data. Some 26,490 seniors from across Saskatchewan were in the sample of whom 36 percent (9,524) received preventive home care (defined as being at level 1 or 2 of a four level classification system) and nine percent (2,484) were in seniors housing. This cohort of seniors was studied for eight years. The major findings of the study were that 50 percent of those receiving preventive home care were more likely to lose their independence or die than those not receiving this service. In addition, costs for clients on preventive home care were three times as high as for clients not receiving this service.

Given the data the researchers had to work with, the methods seem appropriate. However, there are a number of issues that could have affected the results of the study. The first issue is the extent to which the researchers were able to have true comparability between clients on home care and those not on home care. The authors note that they had a limited number of variables with which they could adjust the non-home care subjects in the study. This could be a serious limitation as the people who are accepted into a home care program must have care needs sufficient to make them eligible for services. In addition, the fact that home care services are available is widely known or easily discovered by prospective clients or family members making a few phone calls to the health region office or to their physician. Thus, there is good reason to believe that individuals on home care have higher care needs, and greater functional deficits, than those who are not on home care because if the non-home care individuals had the same needs, many of them would have applied for, or been “self-selected” into, home care services.

A major shortcoming of the study was that the research team did not have data on the functional status of clients not in home care. As classification systems in Canada for the elderly and people with disabilities rely heavily on functional status (the ability to perform activities of daily living such as bathing and eating) and, in some jurisdictions, the ability to perform instrumental activities of daily living such as shopping, it would be difficult to make statistical adjustments to truly match clients on home care, and not on home care, without information on the functional status of the subjects in the study. Thus, there is some question about the comparability of the home care and non-home care subjects in the Saskatchewan study. In addition, the study did not have information on the availability of informal supports, another important factor that can have an impact on service utilization and health outcomes.

In order to address these issues of selection bias several sets of statistical adjustments were made.¹ Even though we have no reason to believe that the adjustments were inappropriate, one has to question the extent to which a series of different types of adjustments based on a limited administrative data set that lacks information about functional status can reflect the complex and real

¹The HSURC team used survival analysis and propensity score analysis to test whether people on home care were more likely to die than people not on home care. Given that people on home care were likely to be more sick than the average person receiving health services, the researchers adjusted their results to standardize for differences related to age, sex, previous health status, use of health services, and previous receipt of health services, between the home care and non-home care clients.

world dynamics of the home care system and the characteristics of home care clients. The researchers themselves recognized most of the above noted shortcoming in their study (HSURC, 2000).

3.3 International Studies on Specific Preventive Interventions in Home Care

In the group of international studies, discussed below, which analyze particular home care interventions, most studies had positive results. However, a few had negative or mixed results. In a study of comprehensive rehabilitation services for elderly homebound patients with arthritis and orthopedic disability it was found that there were no overall significant differences in functional scores, institutionalization or contentment between clients receiving a goal oriented outreach rehabilitation program and those receiving usual care (Liang, Partridge, Larson, Gall, Taylor, Berkman, Master, Feltin and Taylor, 1984).

Mixed results were found by Stuck, Aronow, Steiner, Alessi, Büla, Gold, Yuhás, Nisenbaum, Rubenstein and Beck (1995) with regard to a trial of in-home comprehensive geriatric assessment for elderly people living in the community. This was a three-year, randomized, controlled trial of in-home comprehensive geriatric assessment and follow-up for people 75 years of age or older living in the community. There were 215 people in the intervention group and 199 people in the control group. The latter received regular medical care. Nine people in the intervention group compared to 20 in the control group were permanently admitted to nursing homes and, after three years, 12 percent of surviving participants in the intervention group, compared to 22 percent of people in the control group required assistance in performing the basic activities of daily living. That is, a higher proportion of clients had deteriorated in regard to their functional status over time in the control group. However, the proportion of people needing assistance with the instrumental activities of daily living did not differ significantly between the two groups. Similarly, the number of admissions to acute care hospital, and short term nursing home stays, did not differ significantly between the two groups. In the second and third year of the study the intervention group members had significantly higher numbers of visits to physicians than the control group members.

There were two studies related to the impact of home care services on preventing re-admissions to hospital. Melin and Bygren (1992) in a Swedish study evaluated the impacts of a primary home care intervention program for people discharged from a short stay hospital. Some 249 clients were randomly assigned to the intervention group (150) and to the control group (99). The intervention group received service from a physician-led primary home care and home assistance team providing 24-hour service. The control group received standard care. The clients in this study were frail elderly individuals with higher level care needs. At 6-month follow-up, the intervention group members showed significant improvements in the instrumental activities of daily living (p.#.04) and outdoor walking (p.#.03). They also used less long term hospital services (p.<.001) than controls. Unfortunately, the authors do not provide a comparative cost analysis for the two groups.

The second study was an American study which looked at hospital re-admissions for congestive heart failure for 142 clients who received a nurse-directed multidisciplinary intervention comprised of client and family education, a prescribed diet, social service consultation, planning for early discharge, a review of medications, and intensive follow-up, and 140 control group clients who

received conventional care. The number of re-admissions for heart failure was reduced by 56.2 percent in the treatment group compared to 28.5 in the control group. In a subgroup of 126 clients, quality-of-life scores at 90 days post discharge improved more from baseline for the treatment group compared to the control group ($p < .001$) and, because of the reduction in hospital re-admissions, the overall cost of care was \$460 (US) less per client in the treatment group.

Another important preventive program is that of preventing falls among the elderly. Rizzo, Baker, McAvay and Tinetti (1996) conducted a cost-effectiveness study of a multifactorial, targeted prevention program for falls among community living elderly persons. Their study consisted of 301 participants aged 70 years of age or older who possessed at least one targeted risk factor for falling. Some 153 participants were randomly assigned to the treatment group and received a combination of medication adjustment, behavioural recommendations, and exercises, determined by their baseline assessment. The remaining 148 participants were randomized to the control group and received a series of home visits by a social work student. The findings of the study were that, overall, the mean health care cost was \$2,000 (US) less for the treatment group than the control group. This reduction in cost was due to lower overall health care costs and fewer falls. Subgroup analysis indicated that within the treatment group, the strongest effects were for individuals at high risk of falling, defined as having at least four of the eight targeted risk factors.

Mann, Ottenbacher, Fruss, Tomita and Granger (1999) conducted a study of the effectiveness of assistive technology and environmental interventions in maintaining independence and reducing home care costs for the frail elderly. This was a randomized controlled trial of 104 home based frail elderly persons living in western New York state. All 104 participants received a comprehensive functional assessment. The 52 people in the treatment group received assistive devices and environmental interventions depending on their needs. The 52 clients in the control group received usual care services. After an 18 month intervention it was found that scores for the Functional Independence Measure (FIM) were reduced for both groups but that there was a significantly greater decline for the control group. While the costs of assistive devices and environmental interventions were higher for the treatment group (\$2,620) than the control group (\$443), the control group had significantly greater expenditures for institutional care (\$21,846 versus \$5,630) and, surprisingly, for nurse and case manager visits (\$1,035 versus \$536). The authors note that there was no statistically significant difference for overall costs even though the average cost per person was \$14,173 for the treatment group and \$31,610 for the control group.

Johnson, Wheeler, Deuser and Sousa (2000) conducted an evaluation of the Kaiser Permanents Tele-Home Health Care project. The objective of this study was to evaluate the effectiveness of remote video technology in the home care setting. This was a quasi-experimental study conducted from May 1996 to October 1997. Clients were randomly assigned to a control group (110) and an intervention group (102). Both groups received routine home health care consisting of home visits and telephone contact. The treatment group received an interactive video system so that clients and formal caregivers could see and talk to each other in real time. Peripherals for this system included an analog stethoscope, digital blood pressure machine and a magnifying lense that could be attached to the camera for closeup viewing. While there were no differences in quality of care or client satisfaction indicators, the total mean cost, excluding home care costs were \$1,948 (US) for

the intervention group and \$2,674 (US) for the control group. The cost for home health care services were \$1,830 for the intervention group and \$1,167 for the control group. Thus, on the surface it appears that the costs were about even for the intervention and control groups (\$3,778 versus \$3,841), however, the full costs of the video equipment and peripherals were included in the cost calculations for the treatment group. The authors note that if the costs of this equipment were depreciated over time, this would result in an average savings of some \$900 per client in the treatment group, that is, a cost of \$2,878 instead of \$3,778. It is also interesting to note that the productivity standard of personal, in-home visits to clients per day was 5 to 6 visits. The authors note, however, that it was possible to do 15 to 20 video visits per day.

Finally, Burke and Andrasik (1989) report on a home versus clinic based biofeedback program for pediatric migraine. They studied 9 children aged 10-14 in a series of single-subject clinical replication studies comparing: clinic based and therapist administered, home based and child administered, and home based and parent administered, biofeedback treatment formats. While they do not provide cost estimates they conclude that "... home-based treatment may represent an equally efficacious and more cost-effective alternative to traditional clinic-based treatments." (Burke and Andrasik, 1989, p. 434). They also found that the effects of treatment were stable and that results were maintained through a one year follow-up period.

3.4 Conclusions

There are clearly mixed findings in the literature. It is interesting to note that some specific, targetted preventive programs do appear to have a positive impact while the provision of home care services, in general, does not appear to have a positive impact. From the existing, although limited, literature these findings seem relatively consistent. However, at least part of the negative findings may be related to the choice of outcome measures. For people with limited functional impairments, morbidity may not be an ideal outcome measure because many other factors could intervene over time to produce this result. Also, improvements in the activities of daily living and the instrumental activities of daily living may not be useful measures because it is difficult to reverse functional decline. Home care services are "care" services rather than "cure" services. Thus, measures related to the ability to function at optimal capacity and measures related to the comparative rate of deterioration may be more appropriate outcome measures. In addition, service utilization rates, over time, for a range of health services would also be appropriate measures as one would expect faster deterioration, and more use of health services, for people who do not receive care, compared to people who receive care.

4. DESIGN AND METHODS

4.1 Design

In terms of research design, a quasi-experimental design was adopted for the main analysis. Our study is a retrospective study which compares clients who experienced service cuts in two regions with clients from two similar regions where cuts were not made. The following shows the research design in schematic form.

	Period One (Year prior to Cuts)	Period Two (First Year After Cuts)	Period Three (Second Year After Cuts)	Period Four (Third Year After Cuts)
Comparison Group (clients who were not cut from service)	Average Cost ¹	Average Cost	Average Cost	Average Cost
Experimental Group (clients who were cut from service)	Average Cost	Average Cost	Average Cost	Average Cost

¹Average cost is the average of the total costs of service related to hospitals, physicians, drugs and continuing care for each client.

In this study, the primary outcome variables are service utilization (as a proxy for health status) and costs. Costs and utilization were analyzed for hospital services, physician services, pharmaceuticals, long term care and extended (chronic) care facilities, home nursing and community rehabilitation, home support (homemakers and personal care) and adult day care services.

Sample selection proceeded in several steps. To ensure that we had data for at least two years prior to the cuts, and to be able to study whether or not cuts had impacts on clients at other levels of care, we selected all new and existing clients in continuing care for the 1992/93 fiscal year to the 1998/99 fiscal year. Data were obtained from the linked database at the University of British Columbia. The next step included a time series analysis of the end of service segments for Personal Care clients on Home Care to determine when the cuts appear to have been made in each region and to identify clients whose services were cut in each region. This analysis enabled us to select two Health Units with steep cuts and two Health Units with essentially no cuts. We also analyzed clients at the Intermediate Care 1 level but the cuts to this group were less severe than for Personal Care clients. Thus, for this study, we focused our analysis on Personal Care clients.

4.2 Methods

4.2.1 Data Cleaning

The data used for the analysis in this study were obtained from the University of British Columbia (UBC) which maintains a linkable longitudinal database with data for hospitals, physicians, drugs, continuing care, mental health and some aspects of vital statistics. UBC's Centre for Health Services and Policy Research (CHSPR) has done extensive work to link data by developing probabilistic linkages. Tests indicate a very high degree of accurate matches. More recently, after the advent of the unique health number in British Columbia, linkages have been made using this unique health number (Chamberlayne, Green, Barer and Hertzman, 1998).

Once the data were obtained, an extensive process of cleaning the data was undertaken. Each data set was analyzed for potential data related problems by inspecting the ranges of each variable to be used in the analysis. MSP and Pharmacare data provided information on the number of billings, prescriptions and costs. Numerous types of distributions, including unit costs and service utilization distributions, were analyzed. The drug-related data used for this study are Pharmacare Schedule A data which are data for all community dwelling individuals 65 years of age or older and Pharmacare Schedule B data which are data for individuals in long term care facilities. Schedule B, however, does not include the costs of drugs in extended care facilities where drugs come under the pharmaceutical portion of the hospital budget.

In the BC continuing care system extended care clients are generally treated in extended care units which may be stand alone hospitals, or wings of acute care hospitals. Their bed days are recorded in the hospital database. However, in order to obtain access to such hospital based extended care services, clients must be assessed through continuing care. Thus, the continuing care database contains a record of extended care clients even if they are in extended care wards in hospitals.

The document used to authorize access to all long term care services is the "Care Advice" form. A care advice form is completed to order services for new clients. After the initial service order, a care advice form is filled out for any change from approved service such as a change of service, a change in care level, discharge or death.

It was found that there were overlaps in dates between extended care and acute care stays in hospital. Thus, there may have been less than optimal recording of internal transfers within hospitals. In addition, stand alone extended care hospitals do not complete hospital abstracts and, thus, are not included in the hospital database. In order to deal with these issues it was decided to base the estimate of the number of extended care days in this study on information from the care advice form. Given that extended care hospital days were calculated based on the care advice form, the extended care flag in the hospital data was used to exclude all extended care days from the analysis for counts of days in acute care hospitals. However, all other types of hospital days are included in the count of acute care days. For the analysis in this study, we separated acute care days from other types of hospital days such as rehabilitation, discharge planning units, geriatric

rehabilitation and long term care (i.e., long term care eligible clients occupying an acute care bed). We counted day surgeries as constituting one acute care day.

While it appeared that the database for direct care services (nursing, PT/OT) was generally reliable it had the most anomalies. Direct care services are not ordered through the same care advice form as long term care community services such as homemakers and adult day care. Data on visits are recorded every 6 months for active clients, and at discharge, on a separate direct care database. Inspection of the data revealed clients who had very few visits and clients who had large numbers of visits.

Direct care services can be provided on an intensive basis for short periods of time. Thus, the following exclusion criteria were used for care episodes. A care episode (but not the client) was excluded if it averaged more than five visits per day for stays of 1 to 14 days, more than four visits per day for stays of 15 to 89 days and more than three visits per day for stays of 90 days or more. In addition, care episodes which averaged less than 0.5 visits per month were also excluded. Policy and common practice were used to derive these cut-off points. While complex clients may have multiple visits per day, it is unlikely that many would have more than three visits per day for a sustained period. If there were such clients it would mean the direct care costs reported in this study are lower than the actual costs. The criterion of a minimum of 0.5 visits per month was based on discussions with experts in the area. While 0.5 visits per month is quite low, the practice was to provide limited maintenance service for some clients. Some clients had no end dates and had no apparent continuation of service. For these clients the date of the last update was used as the end date.

With regard to homemaker hours, data were obtained from the care advice form which designates the number of approved hours per month. However, given that some months have five weeks, the practice is to approve hours based on a five week month in order not to exceed approved limits in such months. Previous analysis indicated that an estimate of 80 percent of approved hours was a fairly accurate estimate of the actual hours used. This analysis was conducted in the 1980s and was based on a comparison of approved hours with actual paid hours from the financial payment database. This 80 percent ratio was used to estimate the hours of homemaker service provided to clients in this study.

No major adjustments were required for adult day care data for which utilization is based on approved numbers of days per week (usually 1-2) from the care advice form, or for long term care facility data.

Using the above data cleaning criteria, care segments which fell outside the criteria were dropped. However, this data set was fairly clean and the number of segments deleted were minuscule compared to the total number of care segments.

4.2.2 Sample Selection

Once the data were cleaned, we selected the clients who were to be included in our study. We also did one more check to ensure that we were not including people in our study who moved out of province or, for some other reason, were absent from the province, by only including clients who had at least one MSP claim after April 1, 1996, in our study cohorts. This reduced the sample for the four Health Units in our analysis by 32 clients.

Given the data available, it was decided to compare the regions with no cuts to those with severe cuts. This was done because some clients end service every month irrespective of policies around cuts. The available data do not allow us to clearly distinguish which clients were cut due to policy and which would have ended service in any event. Thus, by focusing on regions that made severe cuts over a short period of time one maximizes the relative proportion of clients who were cut due to policy rather than through the natural flow of events.

There were two urban Health Units that made no cuts and one urban Health Unit and a suburban/semi-rural Health Unit located fairly close to large urban centres that made severe cuts. These four Health Units were selected for analysis as they exemplify most closely a natural experiment in which, during the same period of time, two Health Units had severe cuts and two had no cuts. The two Health Units with cuts will be designated in this report as Health Units 1 and 2 and the two Health Units without cuts will be designated as 3 and 4.

Table 4-1 presents data for January to September, 1995, the period in which most cuts were made. It can be seen that most of the cuts in both regions that experienced cuts were made during a two month period. The cuts group was composed of Personal Care clients cut in Region 1 in April and May, 1995 and in Region 2 in February and March of 1995. For the no cuts group, Personal Care clients were selected for the study who were active clients in Health Units 3 and 4 on March 1, 1995.

It should be noted that the end of service records are simply the end of a given segment of care. For example, a client could be receiving homemaker service and then also get adult day care. There would be an end for homemaker service only and a start for homemaker and adult day care services. Where segments were very close to each other, we have combined them. This reduced the number of cases with ends of service. Also, some people re-started care within the first 14 days after an end service. In our analysis these people are treated as if they had not been cut. This significantly reduced the number of people in the group that experienced cuts in service. Thus, while there were some 1933 end of services records using the service authorization forms, there were, ultimately 763 individual clients in the group which received actual cuts in services and 3,417 clients in the no cuts group.

Table 4-1: Comparison of Ends of Service for Health Units With and Without Cuts¹

Month	Ends of Service for Health Units With Cuts				Ends of Services for Health Units Without Cuts			
	Health Unit 1		Health Unit 2		Health Unit 3		Health Unit 4	
	n	%	n	%	n	%	n	%
January, 1995	6	43.6	85	93.5	52	68.1	18	108.5
February, 1995	10	72.7	896	985.5	41	53.7	12	72.4
March, 1995	13	94.6	450	495.0	33	43.2	11	66.3
April, 1995	243	1789.1	98	107.8	42	55.0	15	90.1
May, 1995	344	2501.6	61	67.1	64	83.8	16	96.5
June, 1995	24	174.6	51	56.1	59	77.3	9	54.3
July, 1995	57	414.6	43	47.3	46	60.1	7	42.2
August, 1995	39	283.6	27	29.7	40	52.4	13	78.4
September, 1995	21	152.7	26	28.6	40	52.4	2	12.1

¹Note: % is the percent of end services compared to the average monthly end services in the 1993/94 fiscal year. The term no cuts group or “without cuts” refers to the comparison group. These terms refer to the fact that there were no significant increases in end service records during the January to September 1995 period, that is, there did not appear to be any cuts related to the new policy. However, technically, there were some end service records for these Health Units but these were consistent with end service records for the two years prior to the implementation of the policy to institute cuts in service. The percentages of end services are less than 100 percent because of the reduced number of Personal Care admissions to service after the summer of 1994.

4.2.3 Statistical Tests

In terms of statistical tests, the test used for the main analysis was an analysis of covariance. This test was used because the differences in average costs between the “cuts” and “no cuts” groups were statistically significantly different in the base year, that is, Period One, the year prior to the cuts. The analysis of covariance adjusts the dependent variable(s) (average costs in Periods Two, Three and/or Four) so that the adjusted scores are what would be found if the scores for the two groups were equivalent in the base year (Period One). In order to use the analysis of covariance one should have homogeneity of regression for the two sets of scores. It was found that this criteria was not met for Period Two (F= 14.496, p. < .001), that is, the test showed that there was a statistically significant difference in the homogeneity of regression in Period Two, the first year after the cuts were made. The test was, however, met in Periods Three (F=0.587, p.=.444) and Four (F=0.203, p.=.652). The test for homogeneity of regression was borderline when the dependent variable was the sum of the average yearly costs for Periods Two, Three and Four (F=4.171, p.=.041).

4.2.4 Unit Cost Allocations

The cost analyses in Tables 5-7 to 5-11 use the following costs to government based on the 1996/97 fiscal year.

Per diem acute care hospital rate and day surgery rate	\$525.00 ²	
Per diem for other hospital days (excluding Extended Care)	200.00	
Per hour homemaker rate	22.46	
Per visit professional home care services (nursing, PT/OT)	60.00	
Per diem for adult day care	70.00	
Facility Care	Personal Care	39.60
(Per diem)	Intermediate Care 1	62.71
	Intermediate Care 2	76.65
	Intermediate Care 3	98.96
	Extended Care	115.00
Medical Services Plan (MSP) Costs		Actuals for each year
Pharmacare Costs		Actuals for each year

Facility costs were estimated from the 1998 Ministry of Health report entitled *Home Support Services*, and extrapolations based on costs noted in Substudy 1 of the National Evaluation of the Cost-Effectiveness of Home Care and the 1998 Ministry report. Given the data we had, it was felt that using actual costs for MSP and Pharmacare would be preferable compared to available methods of determining rates for Fiscal 1996/97 and extrapolating them to other years.

²While there were some minor differences in average Resource Intensity Weights (RIW) between the groups with cuts and no cuts, overall the RIW scores were almost identical. Our data did not have up-to-date RIW scores for all of the years included in our study. Thus, we opted to use standard per diem rates for the two types of acute care days. We also designated day surgery as being the equivalent of one day in an acute care bed.

5. PRELIMINARY FINDINGS

5.1 Introduction

As noted earlier, the experience in British Columbia provided a natural experiment. There are several interesting aspects to this experiment. One is the set of policy responses adopted by the Health Units (Health Units were converted to Health Regions in the 1997/98 fiscal year) to the direction given by the provincial Ministry of Health. There was what can be considered to be a continuum of responses. A few Health Units did not appear to make any cuts but did manage to reduce the number of admissions. Some Health Units made minor cuts and reduced admissions, some made moderate cuts, some made fairly substantial cuts over several months and a few made very significant cuts in a short period of time. All Health Units restricted new admissions.

5.2 Mortality

The Saskatchewan study (HSURC, 2000) indicated that there was a higher proportion of clients who were in home care who died compared to clients who were not in home care. While we are not convinced that mortality is a particularly good outcome indicator for people with fairly low care needs, we conducted a parallel analysis. Table 5-1 provides data on the percentage of people who died in the Health Units with and without cuts.

As can be seen in Table 5-1, death rates were higher for people who were cut from service. How can we explain the difference in findings between our study and the Saskatchewan study? It was noted in the Substudy 1 report of the National Evaluation of the Cost-Effectiveness of Home Care that a significant proportion of people came into home care due to a health crisis. The Saskatchewan study used statistical techniques to identify people who were comparable to people on home care. However, people not on home care, even if they had similar care needs, may not have gone through similar crisis episodes. Because all of the clients in our study were already on home care, morbidity related to the entry into home care was not an issue. The linkage of a health crisis to morbidity may, however, also explain the higher death rates, in our study, among the group that was cut from service, as greater proportions of people who were cut from home care may have had health crises than people who were not cut.

5.3 Institutionalization

If it is the case that a consequence of being cut is potentially greater health problems, then people who were cut from service may be more likely to die, as noted above, and to be institutionalized. Table 5-2 presents data on the percentage of people who were admitted to a long term care facility as a percentage of the total cohort. Data are presented on the percentage of clients admitted to a facility, some of whom may not have stayed for a full year, and on the percentage of full time equivalent clients. The full time equivalent client data are based on the total days of facility care divided by the days in the year (365) to yield the equivalent to the number of persons who would have remained in facility care for a full one year period.

Table 5-1: Relative Mortality Rates for Home Care Clients With and Without Cuts

	Percent Who Died	
	Health Units With Cuts (%)	Health Units Without Cuts (%)
First Year After Cuts	6.3	4.9
Second Year After Cuts	8.9	5.3
Third Year After Cuts	6.4	4.3
Cumulative Total	21.6	14.5

Table 5-2: Proportion of Clients Who Were Admitted to Long Term Care Facilities in the Cuts and No Cuts Groups

	Health Units with Cuts		Health Units Without Cuts	
	% of Actual Admissions	% of FTE Admissions	% of Actual Admissions	% of FTE Admissions
First Year After Cuts	4.8	1.7	1.8	0.4
Second Year After Cuts	12.2	5.1	5.1	2.3
Third Year After Cuts	20.9	10.3	8.1	4.4
Cumulative Total	37.9	17.1	15.0	7.1

There is clearly a higher proportion of people who were cut from service who were admitted to facility care. Other analyses also confirmed that people who were cut did come back into the continuing care system but they tended to be at higher levels of care than the people who changed care levels but were not cut. This, at least in part, accounts for the anomaly that in the second and third years there were more homemaker hours for the group that was cut than for the group that remained in care.

Thus, it appears that while some people are cut and can remain outside the system for some period of time, and cost the same or less than people who remain in care, there is a significant proportion of people who have a health crisis after they are cut. Some are able to cope for a year or so but many come back into care after being cut. They come back in a crisis and this accounts for increased costs, death rates and rates of institutionalization.

While the original logic of cutting people who only needed cleaning seemed reasonable, the results appear to be that while cuts may have few ill effects on some people, others end up in a crisis. It is the people in crisis who are most likely responsible for the result of increased overall costs, over a three year period, for the group that was cut.

5.4 Utilization and Costs

It has been said that if you squeeze one part of the health system, it results in a bulge in another part of the system. This can be seen in Tables 5-3 to 5-4 which provide data on service utilization and costs for the two Health Units with cuts and the two Health Units without cuts. The differential in costs is essentially attributable to a greater use of hospital beds, increased use of homemaker services in the second and third year after the cuts, and increased rates of admission to residential care.

We conducted statistical tests of covariance for Periods Two, Three and Four and for the sum of these three periods. It was found that there was no statistically significant difference in the average cost to the health system between Health Units with and without cuts for Period Two (the first year after cuts) ($F=1.814$, $p=.178$). However, it appears that the differences in costs between the two groups increase over time. The analysis of covariance for Period Three (the second year after cuts) was significant ($F=37.702$, $p.<.001$) indicating that average health care expenditures for people who were cut from service were significantly higher than for people who were not cut. As noted in Table 5-4, this differential increased even further in Period Four (the third year after cuts) and was again statistically significant ($F=59.834$, $p.<.001$). The difference in costs between Period One, and Periods Two, Three and Four combined, was also statistically significant ($F=56.929$, $p.<.001$)³ Data on the total three years combined, compared to the base year (Period One) are presented in Table 5-5.

³For those who are more statistically inclined we also conducted a multivariate analysis of covariance with Period One scores as the covariates and the scores for Periods Two, Three and Four as the three dependent variables. The results were, again, statistically significant (F (based on Wilks' Lambda) = 23.925, $p.<.001$).

Table 5-3: Per Person Average Service Utilization Before and After Cuts for Health Units With and Without Cuts

		Period			
		Year Prior to Cuts	First Year After Cuts	Second Year After Cuts	Third Year After Cuts
Medical Services Plan (MSP) Units	Cuts	47.65	53.29	53.05	48.34
	No Cuts	44.89	47.73	45.93	44.09
Pharmacy Prescriptions	Cuts	20.64	22.37	25.11	25.89
	No Cuts	16.80	17.60	19.28	19.30
Acute Care Hospital Days (including day surgery)	Cuts	2.39	5.72	6.24	6.35
	No Cuts	1.94	4.18	4.41	4.87
Other Hospital Days (excluding EC)	Cuts	0.23	0.99	0.74	1.04
	No Cuts	0.49	0.70	0.92	0.86
Direct Care Visits	Cuts	1.88	3.00	5.36	4.75
	No Cuts	1.10	1.88	2.61	2.61
Homemaker Hours	Cuts	74.21	28.58	94.69	116.47
	No Cuts	71.40	67.63	67.00	70.26
Adult Day Care Days	Cuts	1.49	1.26	1.36	1.63
	No Cuts	1.17	1.54	2.00	2.45
LTC Facility Days	Cuts	0.28	5.93	17.82	36.14
	No Cuts	0.05	1.35	8.25	15.95

Table 5-4: Per Person Average Costs of Care Before and After Cuts for Health Regions With and Without Cuts

		Period			
		Year Prior to Cuts	First Year After Cuts	Second Year After Cuts	Third Year After Cuts
All Costs	Cuts	5,051.84	6,682.77	9,654.22	11,903.38
	No Cuts	4,535.02	5,963.10	6,771.45	7,807.96
Medical Services Plan (MSP) Costs	Cuts	1,142.90	1,306.22	1,368.87	1,281.97
	No Cuts	1,085.33	1,189.83	1,193.96	1,182.67
Pharmacy Cost	Cuts	705.20	746.91	693.48	713.46
	No Cuts	577.26	579.96	544.57	556.88
Acute Care Hospital Costs (including day surgery)	Cuts	1,256.42	3,005.50	3,277.29	3,333.71
	No Cuts	1,019.58	2,197.10	2,316.33	2,555.55
Other Hospitals Costs (excluding EC)	Cuts	46.40	197.90	148.10	208.65
	No Cuts	97.69	139.83	183.61	172.49
Direct Care Costs	Cuts	112.85	179.93	321.43	285.00
	No Cuts	66.25	112.97	156.80	156.54
Homemaker Costs	Cuts	1,666.68	641.82	2,126.63	2,615.95
	No Cuts	1,603.58	1,518.89	1,504.80	1,577.97
Adult Day Care Costs	Cuts	103.96	88.33	95.52	113.91
	No Cuts	81.86	107.54	139.77	171.63
LTC Facility Costs	Cuts	17.42	516.16	1,622.89	3,350.72
	No Cuts	3.46	116.98	731.60	1,434.22

Table 5-5: Summary of Per Person Average Costs for Health Regions With and Without Cuts

		Period		
		Costs in Year Before Cuts (\$)	Costs in 3 Years After Cuts (\$)	Percentage Change in Costs over Three Years (%)
All Costs	Cuts	5,051.84	28,240.36	559.01
	No Cuts	4,535.02	20,542.52	452.98
Medical Services Plan (MSP) Costs	Cuts	1,142.90	3,957.07	346.23
	No Cuts	1,085.33	3,566.47	328.61
Pharmacy Costs	Cuts	705.20	2,153.85	305.42
	No Cuts	577.26	1,681.41	291.27
Acute Hospital Costs (including day surgery)	Cuts	1,256.42	9,616.51	765.39
	No Cuts	1,019.58	7,068.98	693.32
Other Hospitals Costs (excluding EC)	Cuts	46.40	554.65	1,195.48
	No Cuts	97.69	495.93	507.67
Direct Care Costs	Cuts	112.85	786.36	696.79
	No Cuts	66.25	426.31	643.53
Homemaker Costs	Cuts	1,666.68	5,384.39	323.06
	No Cuts	1,603.58	4,601.66	286.96
Adult Day Care Costs	Cuts	103.96	297.76	286.42
	No Cuts	81.86	418.95	511.77
LTC Facility Costs	Cuts	17.42	5,489.77	N/A
	No Cuts	3.46	2,282.79	N/A

We originally chose to look at Health Units with high proportions of cuts compared to the average monthly cuts in the 1993/94 fiscal years to maximize the proportion of people who were cut due to the new policy. The above findings are instructive but are based on a total of four months of cuts in two health regions. For this reason, and because a relatively small proportion of people accounted for the increased costs in the “cuts” group, we decided to conduct an additional analysis. In this analysis we included all months for all Health Units (except 1 and 2) for the period November 1992 to December 1995 which had monthly end services that were 200 percent or more of the average number of monthly end services for the 1992/93 fiscal year (the months actually selected ranged from November 1994 to August 1995). They were all also above the 200 percent mark for the 1993/94 fiscal year. Using this criteria, this new cuts group was based on data from 27 monthly periods for seven Health Units (Health Units A to G). The people who were cut were compared with people from the same Health Units who were in service on September 1, 1995. In this new analysis there were 532 people in the cuts group and 7,367 people in the no cuts group. Table 5-6 presents the findings of this analysis.

While there is some variation across Health Units, the general pattern is very similar to that found in Table 5-4 where we compared Health Units 1 and 2 (with cuts) to Health Units 3 and 4 (no cuts). One would expect that the differences in health expenditures would be somewhat narrower in the analysis presented in Table 5-6 because the people who were not cut would have had greater care needs than the people who were cut as, according to policy, the people who were not cut would have required some “hands on” care in addition to any housekeeping services they may have obtained. Thus, the analysis in Table 5-6 strengthens the case made earlier in Table 5-4 that, particularly in the second and third year after cuts, average health expenditures are higher for people in the group which was cut from service compared to expenditures for people in the group without cuts.

Finally, we also did a cost analysis of people who had end services in the 1992/93 and 1993/94 fiscal years to see if their costs were higher as well. It was found that the average cost for this group, in Periods One to Four, were \$5,983.59, \$9,530.19, \$8,389.41 and \$9,261.96, respectively, somewhat higher than for the no cuts groups in the analyses presented in Tables 5-4 and 5-6, but well below the average costs for the cuts groups for Periods Three and Four.

5.5 Sensitivity Analysis

There are many factors which could have an effect on the results noted in the previous section. The series of factors analyzed for this study are discussed below.

It could be that many individuals who were cut from service returned to service quickly. This would increase costs in the first year after cuts due to people coming back in a crisis.

Another factor is death rates. Would the results be different if people who died were excluded. That is, are costs higher in the group which was cut because they had more people who died? People who die typically have high utilization rates. It should be noted that in the analyses conducted for this study we used a fairly conservative approach which included all of the people in

Table 5-6: Per Person Average Costs for Other Regions With and Without Cuts

		Period			
		Year Prior to Cuts	First Year After Cuts	Second Year After Cuts	Third Year After Cuts
Health Unit A	Cuts	5,469.76	5,237.01	11,102.38	10,926.55
	No Cuts	5,311.83	6,745.11	8,178.95	9,947.31
Health Unit B	Cut	4,785.59	7,734.16	9,376.33	12,344.06
	No Cuts	5,182.34	6,544.29	7,559.50	8,277.09
Health Unit C	Cuts	6,459.91	6,946.67	11,088.20	11,583.59
	No Cuts	5,049.23	7,775.58	8,827.62	9,086.23
Health Unit D	Cuts	12,435.27	16,322.52	12,671.80	14,353.88
	No Cuts	4,782.60	6,196.91	6,891.25	6,449.88
Health Unit E	Cuts	6,631.32	6,839.45	9,400.19	13,352.84
	No Cuts	6,425.17	6,957.00	8,559.67	9,940.16
Health Unit F	Cuts	4,193.48	7,657.89	13,497.36	14,304.68
	No Cuts	5,804.44	7,231.07	8,648.56	10,595.55
Health Unit G	Cuts	7,140.43	8,241.15	9,497.27	12,173.91
	No Cuts	4,526.45	6,768.68	7,154.75	8,175.79
Health Units A-G	Cuts	6,077.39	7,176.96	10,012.95	12,519.86
	No Cut	5,082.59	7,007.55	7,971.19	8,631.09

the cuts and no cuts groups for the full four periods. We did not exclude people who died from the analysis.

In our analysis we have included all clients who were cut at a given time in Health Units 1 and 2 compared to clients in Health Units 3 and 4 who were in care at the time cuts were made. These samples include people who may be newly admitted to home care. If there is a different proportion of new clients between the two groups this could impact on service utilization and costs. Thus, we did a separate analysis for clients who had been in care, at the Personal Care level, for 4, 12, and 18 months before the cuts were made. The latter analysis allows for a four to six month stabilization period and a full year of data, before cuts, on people who had been stabilized and remained in care.

Another factor which could impact results is the age of the client. Thus, we conducted separate analyses for people aged 75 years of age or older, people 65-74 and people less than 65 years of age. It appears that there was much less of a difference in average costs between the cuts and no cuts groups for people under 65, but the number of people in this group was quite low as there were only 26 clients in the cuts group. We also analyzed results separately for males and females.

Finally, income could have a major impact on outcomes. Wealthy clients could simply purchase the care that had been provided by government and thus be no worse off than people who stayed in care. This may have happened. However, it must be remembered that clients are income tested for homemaker services in British Columbia. Therefore, more well to do individuals would not qualify for a subsidy and would not be on home care. Thus, even those who had some money were still people of fairly modest means. Overall, some 75% of clients paid no user fees which meant that their only income was the Old Age Security and the Guaranteed Income Supplement (OAS/GIS). To see if income was a factor we did an analysis of those who received only OAS/GIS and, thus, were too poor to have to pay a user fee. Table 5-7 presents data for all of the above adjustments. As can be seen from these tables, there are relatively minor differences between scenarios, again indicating that the study findings are fairly robust.

This study has focused on an empirical analysis of health expenditures for lower care needs clients who were, and were not, cut from service in 1995. Health Canada indicated an interest in, if possible, including some qualitative data in our study to provide a picture of how people who were cut from service coped with having been cut. It was not possible, nor would it have been advisable, to conduct interviews with people who were cut from service in 1995. However, a very preliminary assessment of the impacts of service cuts on clients can be provided based on data from a Masters' thesis by Georgia Livadiotakis who is in the Gerontology Program at Simon Fraser University. It should be stressed that these results are preliminary, are based on a relatively small sample, and are for cuts made in 1999 in one health region. Nevertheless, the results represent an initial assessment of the impact of health care cuts and the beginning of a possible typology of client responses to being cut. Naturally these findings would need to be corroborated through further research. The data provided by Georgia Livadiotakis is presented in Appendix A.

Table 5-7: Sensitivity Analysis Based on Average Per Person Costs for Groups With and Without Cuts

		Period			
		Year Prior to Cuts	First Year After Cuts	Second Year After Cuts	Third Year After Cuts
Overall Average	Cuts	5,051.84	6,682.77	9,654.22	11,903.38
	No Cuts	4,535.02	5,963.10	6,771.45	7,807.96
Analysis excluding clients who returned to care in 90 days	Cuts	4,955.38	6,561.65	9,632.27	11,942.23
	No Cuts	4,517.01	5,970.30	6,799.68	7,841.73
Clients who lived at least 1 year after cuts	Cut	4,979.74	6,272.09	9,926.52	12,256.74
	No Cuts	4,394.05	5,504.75	7,071.82	8,155.79
Clients who did not die in 3 years	Cuts	4,780.76	5,303.02	8,063.48	11,874.06
	No Cuts	4,300.49	5,034.57	6,207.41	8,095.88
Clients with at least 4 months of service	Cuts	5,035.34	6,574.55	9,646.83	12,012.86
	No Cuts	4,536.68	5,953.43	6,808.88	7,782.16
Clients starting service at least 1 year prior to the cut date	Cuts	4,719.11	6,482.64	9,764.48	12,271.84
	No Cuts	4,300.19	5,895.54	6,803.00	7,771.25
Clients starting service at least 18 months prior to the cut date	Cuts	4,647.40	6,423.45	9,405.24	12,247.02
	No Cuts	4,331.85	5,917.03	6,911.28	7,767.78
Clients Aged 75+ or older	Cuts	4,800.75	6,361.25	9,707.87	12,448.17
	No Cuts	4,490.15	6,445.36	7,480.79	8,734.00
Clients aged 65 - 79	Cuts	5,582.41	6,520.96	9,605.59	10,928.41
	No Cuts	4,688.22	5,808.35	6,365.53	7,399.10
Clients aged under 65	Cuts	6,526.08	8,541.30	10,396.66	7,893.06
	No Cuts	4,792.34	4,624.03	5,134.09	5,755.24
Clients with zero contribution rate	Cuts	5,068.03	6,635.20	9,191.75	11,557.18
	No Cuts	4,327.05	5,865.74	6,816.54	7,846.02
Clients with non-zero contribution rate	Cuts	5,021.92	6,770.63	10,508.39	12,542.80
	No Cuts	4,989.92	6,176.08	6,672.83	7,724.71
Females	Cuts	4,948.04	6,875.34	9,522.55	11,510.34
	No Cuts	4,477.39	5,841.47	6,672.79	7,846.09
Males	Cuts	5,465.64	5,915.01	10,179.16	13,470.38
	No Cuts	4,705.03	6,321.93	7,062.51	7,695.48

6. DISCUSSION AND CONCLUSIONS

“An ounce of prevention is worth a pound of cure.” “Penny wise and pound foolish.” These expressions are often ignored in our fast paced, electronic lifestyle in the new millennium. However, they have lasted over time because they often reflect the truth of a situation. They continue, it appears, to apply to home care policy in Canada.

It appears from both the quantitative and qualitative data in this report that ignoring the preventive aspects of home care may not only lead to increased costs in the overall health system, but may also lead to suffering and emotional distress for a significant portion of the people who are cut from care. The data also reveal that many of the people who are cut from home care come back into the continuing care system, possibly in worse health than if they had never left. This represents a shortening of the quality of life for a significant portion of people who are cut from care. These are clearly negative consequences in both human and fiscal terms. How did we come to such a state?

Let us compare and contrast the nature of the decision to institute cuts and the belief in preventative health care in light of the findings of this study. It appears that the logic of decision makers in making the cuts was quite reasonable. They based their decision on client needs. It was felt that, with restrained budgets, resources should go to those in greatest need, that is, clients at higher levels of care who were receiving hands on supportive and/or professional services. The people who were cut only obtained home cleaning services for a few hours per month and, thus, it was felt could probably adapt. The preventive function of home care incorporates the belief that basic preventive services will keep all of the people receiving such services from deteriorating further and faster than if such preventative services are not provided. There is considerable truth to both of the above notions but reality, as usual, is more complex.

As seen in the qualitative data, about one-third of the people who were cut were no worse off or even improved and regained greater independence. This supports the notion that cuts would not be harmful and people would adapt and is counter to beliefs about the efficacy of preventive care. Similarly, people adapted by paying for service or having family and friends provide greater help. Again, people adapted with some success. However, there was a sub-group of people who were cut and did not adapt for a number of reasons including having a change in their health status after having been cut. This set of people contradicts the assumption that people could adapt with limited harm if cuts were made and supports the argument inherent in the preventive approach to home care. It appears that, over time, more and more people fall into this latter category. Their health deteriorates and/or they have a health crisis and come back into the system, some with greater care needs than if they had never left. It is the health resources which are required to deal with this sub-population of people who were cut and came back that increases the overall costs for the group of people who were discharged compared to those who remained in care. Many of these people experienced a premature deterioration in their health status and quality of life compared to what may have occurred if they had remained in care.

The findings from this study once again underscore the complex inter-connections in the health care system and the notion that making changes in one area of the health care system may

affect other parts in the system. This is important because as long as decisions are made in one part of the system, to deal with pressures facing a particular department, division or branch, without greater consideration of the consequences of policy choices on the larger whole, unseen, unanticipated and perhaps unintended and negative consequences may arise.

There are those who would characterize home care as a “frill” or “boutique” program. Given the findings in this study, and the inter-connected nature of the health system, home care is clearly not a “frill” or “boutique” program. Rather, it is central to the success of health reform and to making the overall health care system function more efficiently and effectively. Home care is central to the health care system because it can often prevent or delay, and substitute for, admission to acute care hospitals and long term care facilities, at a lower cost of care. Thus, it appears to be central to the achievement of future efficiencies which arise from providing lower cost home care services instead of higher cost institutional services. This said, it is clear that there is still an important role for acute care hospitals and long term care facilities in caring for clients with high care needs, or very ill clients.

The findings of this study also raise policy challenges. For example, rather than the blunt instrument of cuts to all lower care needs home care clients it may be desirable to try to identify which people could regain independence with some support. Many of these people could be expected to look after themselves for some years to come. Combine this with the lower cost of keeping people who may deteriorate in care and one has a superior, and lower cost, policy choice compared to across the board cuts. This approach is also consistent with the philosophy of promoting greater personal independence. However, mechanisms would also have to be put into place in this model to intervene quickly and flexibly to mobilize care for people immediately at the exact time that their health *starts* to deteriorate.

Policy makers will have to grapple with the second sub-group of people who coped with the cuts by paying for service and/or having family members/friends take on care responsibilities previously funded by the state. The choice to be made is to determine what is the appropriate role of the state in providing care. Is it the responsibility of the state to pay for cleaning services as a way to maintain home care clients at their optimal level of functioning, and to reduce their rate of deterioration (when such services are deemed to be needed by a professional case manager)? That is, are some of the basic and more “social” services provided in home care the responsibility of the state or of individuals and families? The cuts in service to home care clients appear to represent not only an offloading of support from the state to individuals and their families, but also, a shift in philosophy from a universal model of care where everyone is entitled to basic services to a residual social welfare philosophy in which those with “independent” means pay for service and the state only pays for those who cannot afford to pay. In fact, the cuts actually go further and reflect a policy of disenfranchising people from care altogether in that even people receiving the minimum state allowance of OAS/GIS were cut from service.

Administering the health care system is not easy. It is a complex system with powerful interest groups and a product which is near and dear to every Canadian. There are many excellent administrators and policy makers in our health care system. It is also not possible to fully know the

outcomes of many decisions until after they have been implemented. Given that these factors are also realities, it is imperative that key policy decisions are actively studied to identify their consequences. This means a full and meaningful embrace of evidence-based decision making and the provision of adequate resources to provide the needed data and analysis, coupled with a willingness to move quickly to change and improve policies on a continuous basis and not just in the face of a fiscal or political crisis. In addition, it may be useful (and this, too, often occurs already) to institute a philosophical review in the policy process in which the inherent philosophy of a given policy is matched to the overall philosophy of a region or Ministry of Health, and to the philosophical underpinnings of the health care system itself.

Finally, it should be said that what we have provided in this report is a comparative cost analysis. If no new hospital or long term care beds are used, or constructed, to accommodate the people who were discharged from home care and come back with greater care needs then there is no actual cost increase to the system aside from the increased homemaker hours which are provided to the group that was cut. However, the “lower cost” alternative of not making cuts represents systems efficiencies compared to the systems inefficiencies of caring for people who were cut and come back into care. The increased bed utilization by people who were cut meant that other people who needed a bed could not get one, and waiting lines may have increased. Given the current concern over people who are denied beds in hospitals or who face ever increasing waiting lists for long term care beds, the argument that the cuts did not “actually” increase costs is a hollow consolation. In overall systems terms, the increased demand on hospital and residential beds has meant that, because of the cuts, the overall health system functioned less efficiently than it would have if the cuts had not been made.

BIBLIOGRAPHY

Bohny, B. J. (1997). A time for self-care: Role of the home healthcare nurse. *Home Healthcare Nurse, 15*(4), 281-286.

Branch, L. G., Wetle, T. T., Scherr, P. A., Cook, N. R., Evans, D. A., Hebert, L. E., Masland, E. N., Keough, M. E., & Taylor, J. O. (1988). A prospective study of incident comprehensive medical home care use among the elderly. *American Journal of Public Health, 78*(3), 255-259.

British Columbia Ministry of Health and Ministry Responsible for Seniors. (1998) *Home Support Services - Operational analysis*. Victoria: author.

Burke, E. J., & Andrasik, F. (1989). Home- vs. clinic-based biofeedback treatment for pediatric migraine: Results of treatment through one-year follow-up. *Headache, 29*(7), 434-440.

Capozza, C. M., & Sousa, A. M. (1994). Preventing malnutrition in the home care client. *Caring, 13*(11), 68-71.

Chamberlayne, R., Green, B., Barer, M.L., & Hertzman, C.C. (1998). Creating a population-based linked health database: A new resource for health services research. *Canadian Journal of Public Health, 89*, 270-273.

Clark, D. O., von Korff, M., Saunders, K., Baluch, W. M., & Simon G. E. (1995). A chronic disease score with empirically derived weights. *Medical Care, 33*(8), 783-795.

Contandriopoulos, A., Tessier, G., & Larouche, D. (1986). The effects of Quebec home aid services on the utilization profile of sociosanitary resources: A substitution study. *Social Science and Medicine, 22*(7), 731-736.

Darby, P. W. (1992). Quick response teams: A new approach in utilization management. *Leadership in Health Services, 1*(5), 27-31.

Federal/Provincial/Territorial Subcommittee on Long Term Care. (1990). *Report on home care*. Ottawa: Health and Welfare Canada.

Grizzard, M. B., Harris, G., & Karns, H. (1991). Use of outpatient parenteral antibiotic therapy in a health maintenance organization. *Reviews of Infectious Diseases, 13*(Suppl 2), S174-179.

Hanser, S. B., & Thompson, L. W. (1994). Effects of a music therapy strategy on depressed older adults. *Journal of Gerontology, 49*(6), P265-269.

Hollander, M.J. (1999). Substudy 1: *Comparative cost analysis of home care and residential care services*. Victoria: National Evaluation of the Cost-Effectiveness of Home Care.

Hollander, M.J. and Chappell, N. (1999). *Overview of the national evaluation of the cost-effectiveness of home care*. Victoria, National Evaluation of the Cost-Effectiveness of Home Care.

Hollander, M.J., & Pallan, P. (1995). The British Columbia continuing care System: service delivery and resource planning. *Aging: Clinical and Experimental Research*, 7, 94-109.

Jacobs, P., & McDermott, S. (1989). Family caregiver costs of chronically ill and handicapped children: method and literature review. *Public Health Reports*, 104(2), 158-163.

Johnston, B., Wheeler, L., Deuser, J., & Sousa, K. H. (2000). Outcomes of the Kaiser Permanente tele-home health research project. *Archives of Family Medicine*, 9(1), 40-45.

Kerkstra, A., Castelein, E., & Philipsen, H. (1991). Preventive home visits to elderly people by community nurses in The Netherlands. *Journal of Advanced Nursing*, 16(6), 631-637.

Kraus, A. S., & Armstrong, M. I. (1977). Effect of chronic home care on admission to institutions providing long-term care. *Canadian Medical Association Journal*, 117(7), 747-749.

Krothe, J. S. (1997). Giving voice to elderly people: Community-based long-term care. *Public Health Nursing*, 14(4), 217-226.

Liang, M. H., Partridge, A. J., Larson, M. G., Gall, V., Taylor, J., Berkman, C., Master, R., Feltin, M., & Taylor, J. (1984). Evaluation of comprehensive rehabilitation services for elderly homebound patients with arthritis and orthopedic disability. *Arthritis and Rheumatism*, 27(3), 258-266.

Mann, W. C., Ottenbacher, K. J., Fraas, L., Tomita, M., & Granger, C. V. (1999). Effectiveness of assistive technology and environmental interventions in maintaining independence and reducing home care costs for the frail elderly. *Archives of Family Medicine*, 8(3), 210-217.

Melin, A. L., & Bygren, L. O. (1992). Efficacy of the rehabilitation of elderly primary health care patients after short-stay hospital treatment. *Medical Care*, 30(11), 1004-1015.

Patterson, C., & Chambers, L. W. (1995). Preventive health care. *The Lancet*, 345(8965), 1611-1615.

Rich, M. W., Beckham, V., Wittenberg, C., Leven, C. L., Freedland, K. E., & Carney, R. M. (1995). A multidisciplinary intervention to prevent the readmission of elderly patients with congestive heart failure. *The New England Journal of Medicine*, 333(18), 1190-1195.

Rizzo, J. A., Baker, D. I., McAvay, G., & Tinetti M. E. (1996). The cost-effectiveness of a multifactorial targeted prevention program for falls among community elderly persons. *Medical Care*, 34(9), 954-969.

Roghamm, K. J. (1985). Intervention strategies for children: A research agenda. *Health Services Research*, 19(6, Pt 2), 887-943.

Saskatchewan Health Services Utilization and Research Commission (HSURC). (1998). *Hospital and home care study*. Saskatoon: HSURC.

Saskatchewan Health Services Utilization and Research Commission (HSURC). (2000). *The impact of preventive home care and seniors housing on health outcomes*. Saskatoon: HSURC.

Schlenker, R. E., Shaughnessy, P.W., & Hittle, D. F. (1995). Patient-level cost of home health care under capitated and fee-for-service payment. *Inquiry*, 32(3), 252-270.

Sevick, M. A., Kamlet, M. S., Hoffman, L. A., & Rawson, I. (1996). Economic cost of home-based care for ventilator-assisted individuals. *Chest*, 109(6), 1597-1606.

Steel, K., Markson, E., Crescenzi, C., Hoffman, S., & Bissonnette, A. (1982). An analysis of types and costs of health care services provided to an elderly inner-city population. *Medical Care*, 20(11), 1090-1100.

Stuck, A. E., Aronow, H. U., Steiner, A., Alessi, C. A., Büla, C. J., Gold, M. N., Yuhas, K. E., Nisenbaum, R., Rubenstein, L. Z., & Beck, J. C. (1995). A trial of annual in-home comprehensive geriatric assessments for elderly people living in the community. *The New England Journal of Medicine*, 333(18), 1184-1189.

Vaczek, D. (1994). Shmo-mentum (social health maintenance organizations). Feds experiment with home-care benefit models. *Contemporary Long Term Care*, 17(5), 44-48.

APPENDIX A

CLIENT RESPONSES TO THE DISCONTINUATION OF SERVICES

(prepared by Georgia Livadiotakis)

APPENDIX A: CLIENT RESPONSES TO THE DISCONTINUATION OF SERVICE (By Georgia Livadiotakis)

Introduction

The views presented in this Appendix are from 137 adults aged 60 years or older who were living in a suburban/partly rural Regional Health Authority. This health region is one of the 18 regions in B.C. Roughly 11% of the region's population is comprised of seniors aged 65 years of age or older.

Personal interviews were conducted in seniors' homes 19 to 21 months after their discharge from Continuing Care. Each interview was conducted by an experienced Case Manager from the health region who had no previous relationship with the client. During the interview, respondents were asked: ***“Overall, how are you coping since your home support service was eliminated and you were discharged from Continuing Care?”*** Their opinions and concerns were organized into 10 coping strategies:

1. Suffering in silence
2. Abandoned, lonely and betrayed
3. Suffering in silence and abandoned, lonely and betrayed
4. Involuntary shift of caring to family and friends
5. Involuntary shift of care costs to the client
6. Independence was regained or was created
7. Unhappy with former home support service
8. Independence was regained or was created and unhappy with former home support service
9. Involuntary shift to family/friends or client and abandoned, lonely and betrayed
10. Cross-strategy responses

As a means to summarize the responses in each of the 10 strategies, 4 coping themes were created. These 4 coping themes are:

1. Betrayed and suffering in silence (categories 1, 2 and 3)
2. Picking up the tab (categories 4 and 5)
3. I can do it better! (categories 6, 7 and 8)
4. Mixed feelings (categories 9 and 10)

Sample Characteristics

The study sample consisted of 77% females and 23% males. The average age of respondents was 80 years. The majority were not married, were living alone and had a low income. About half were re-assessed at the interview as being at the PC level and rated their health as poor or fair even though they may have reported during the interview that they did not experience a change in their health during the past year. As a measure of clients' health condition, up to 4 medical diagnoses were recorded for each respondent. Of the respondents in this sample, 78 had arthritis/osteoarthritis, 51 had high blood pressure/hypertension, 46 had a diagnosis of ischemic heart disease that includes a

coronary heart failure and/or a myocardial infarction, 37 had glaucoma and/or cataracts and 35 had osteoporosis and/or disc degeneration. Some people had more than one of these diagnoses. Table 1 presents an overview of the characteristics of the clients in the sample for each coping theme.

Findings

The first strategy, suffering in silence, included 40 respondents who reported some form of hardship to themselves as a result of performing their housekeeping tasks on their own. Respondents who revealed that they were suffering in silence commented on the difficulties associated with completing the task, that their health had been affected, that their home was not as clean as it should be and noted financial hardships related to their inability to pay privately for services. Emotional responses of feeling lonely, abandoned and betrayed were heard from 5 respondents. These seniors made reference to being lonely. As one respondent replied, “you talk to nobody, you see nobody”. Two respondents made reference to both suffering in silence combined with feelings of being abandoned, lonely and betrayed. These three coping strategies were combined into the first coping theme titled ‘betrayed and suffering in silence’.

For the majority of the above respondents, their loss of house cleaning service meant that they had to perform the tasks on their own, despite the effect it had on their life. The impact on seniors’ health was apparent as 60 percent of this sample reported that they experienced a change in their health during the past year when service was not delivered. For these seniors, suffering in silence was their coping strategy. Some examples of what seniors said include:

“Some days I’m not good. I suffer for it when I do housework afterwards with shoulder and pack pain.”

“I agreed that I would try without help, but since I’ve been using my walker and recently fell, I realize I need help.”

“I just don’t clean as often, just a little at a time. I don’t have any company visiting because of the effort. Many things are left undone.”

“It’s very hard ... extremely hard to do. The place needs a really good cleaning and I just can’t do it.”

Table 1: Frequency Counts and Percents by Four Coping Themes

	N	Betrayed and Suffering in Silence (n=47)	Picking up the Tab (n=40)	I Can do it Better! (n=39)	Mixed Feelings (n=11)	Total (n=137)
Gender						
Female	106	38 (80.9%)	31 (77.5%)	28 (71.8%)	9 (81.8%)	106 (77.4%)
Male	31	9 (19.1%)	9 (22.5%)	11 (28.2%)	2 (18.2%)	31 (22.6%)
Age						
60-69 years	10	5 (10.6%)	1 (2.5%)	3 (7.7%)	1 (9.1%)	10 (7.3%)
70-79 years	48	21 (44.7%)	13 (32.5%)	10 (25.6%)	4 (36.4%)	48 (35.0%)
80+ years	79	21 (44.7%)	26 (65.0%)	26 (66.7%)	6 (54.5%)	79 (57.7%)
Marital status						
Married	28	11 (23.4%)	9 (22.5%)	6 (15.8%)	2 (18.2%)	28 (20.5%)
Not married	108	36 (76.7%)	31 (77.5%)	32 (84.2%)	9 (81.8%)	108 (79.4%)
Household						
Lives alone	94	33 (70.2%)	24 (60.0%)	31 (79.5%)	6 (54.5%)	94 (68.6%)
Others	43	14 (29.8%)	16 (40.0%)	8 (20.5%)	5 (45.5%)	43 (31.4%)
GIS recipient						
Yes	68	25 (56.8%)	17 (48.6%)	21 (56.8%)	5 (45.5%)	68 (53.5%)
No	59	19 (43.2%)	18 (51.4%)	16 (43.2%)	6 (54.5%)	59 (46.5%)
Self rated health						
Poor/Fair	74	28 (65.1%)	20 (52.6%)	20 (54.1%)	6 (85.7%)	74 (79.2%)
Good/Excellent	51	15 (34.9%)	18 (47.4%)	17 (45.9%)	1 (14.3%)	51 (40.8%)
Care Level						
PC	68	21 (45.7%)	17 (42.5%)	23 (60.5%)	7 (63.6%)	68 (50.4%)
IC1	59	21 (45.7%)	20 (50.0%)	14 (36.8%)	4 (36.4%)	59 (43.7%)
IC2	8	4 (8.7%)	3 (7.5%)	1 (2.6%)		8 (5.9%)
Health Change						
Yes	60	27 (60.0%)	16 (41.0%)	12 (31.6%)	5 (45.5%)	60 (45.1%)
No	73	18 (40.0%)	23 (59.0%)	26 (68.4%)	6 (54.5%)	73 (54.9%)

These comments clearly reveal that this should be an area of concern. If seniors are reporting health changes, their functional ability to complete tasks may also become restricted. Frailty may even result which, in turn, may eventually lead to their readmission into Continuing Care. Other comments are presented in Table 2.

Some 40 clients were able to pay privately for care or were able to obtain additional help from family and/or friends. Some of the 21 clients who paid directly for service stated:

“I continued fine. Fortunately, I had some money so I continued service as before. I had to give up some things and do without other things but I made this a priority as I’ve always been fussy about my home.”

“I’ve coped because I’ve had to hire someone to do what I can’t.”

“It would have been hard but I knew this cleaning lady and I got her right away because I couldn’t do it. I just have less money to spend now.”

“I’ve coped thank goodness. I have little money so I purchased help but I don’t know how long I’ll be able to do it as my rent just went up to over \$900 per month.”

Some 19 seniors reported that their family and/or friends were able to help out. They stated:

“It hasn’t been a big change, but increased responsibility for my son who has three children and I know he’s busy with his job and three kids. I don’t like to ask too much.”

“It has made me more dependent on my family which I don’t like.”

“I guess I cope all right because I am here [moved into daughter’s home] and my daughter can help. But, I don’t think its right for parents to impose on their children especially when they themselves are sick. They should have their own lives.”

Additional comments are provided in Table 3.

Table 2: Commentary Examples of “Betrayed and Suffering in Silence”

Suffering in Silence	“The effect has been financial burden. I used to pay privately, but I couldn’t manage because it was too expensive.”
	“It’s been terrible. I’m worse now than I was then. I used to think that they didn’t earn their money, but now I realize what they did for me.”
	“I’m coping with difficulty, especially within the past year because of my back and knee problem. I’ve been for a bone scan within the past month. My apartment is not as clean as it used to be. I can’t afford to pay someone to come and clean. I’m on a fixed income. My two pensions are not enough to include cleaning service.”
	“They’ve taken the help away and I obviously can’t do it, but I try until I can’t anymore and it leaves me depressed. It has affected my health. I want to do things but I just don’t have the energy to do it. All I ask is two hours a week at least to help me.”
	“I’m not coping. I don’t know what its like to have a day without pain.”
	“I’ve done things the best I can. I can’t get in the corners or move furniture. It was helpful having the homemakers even if I had to help them. My breathing and bending over are really difficult.”
	“I’m managing but many things are not getting done like bathing.”
Abandoned, Lonely and Betrayed	“I feel deserted. With the home support worker, there was someone there to care for you. Without them, I just feel deserted.”
	“It’s terrible, they cut me off when I really needed it. I’m angry about the loss of service. I’m alone and unsupported.”
	“I’m coping poorly. You are depressed a lot. You talk to nobody, you see nobody.”
Combination of Suffering in Silence and Abandoned, Lonely and Betrayed	“I’m angry at the lack of funding from the government for community resources and the lack of homemakers. I don’t have a daughter to rely on like other families. I’m not a happy camper but, I’ve worked all my life and life has been hard. They came every other week and I paid for it, but then it stopped. Now I have to do it as much as I can. I don’t have the money to hire someone else.”
	“Not as well. I don’t have the secure feeling that all is well and I don’t have [former worker] coming on a permanent basis. I am uptight about not having the help and not being able to do it for myself. It’s affected my health and it’s a sense of being abandoned.”

Table 3: Commentary Examples of Picking Up the Tab

Shift to the Client	<p>“I have to spend money on cleaning help that I would spend on things I need like new clothes. I haven’t any money to be frivolous.”</p>
	<p>“I’m coping with two hours of paid service.”</p>
	<p>“I’ve been coping with private house cleaning. I couldn’t afford it too often.”</p>
	<p>“I certainly miss the help. I always appreciated the girls when they came. I am managing with the cleaning girl.”</p>
	<p>“I had to pay this girl to come every two weeks as I’m alone and things have to wait as I couldn’t do things for myself. I have to adapt.”</p>
Shift to Family/Friends	<p>“It’s the pits on certain things. If it wasn’t for my friends help I’d be knee deep in trouble. There are too many things I can’t do or I’m afraid to do on my own.”</p>
	<p>“I manage okay because my kids are helping me.”</p>
	<p>“I can’t manage anything. Most of the time I am waiting for my daughter to come, otherwise things would remain dirty.”</p>
	<p>“It was hard. I really needed it. I hated to go to my son and his wife for everything when they’re working all the time.”</p>

Some 39 seniors indicated that they are coping with little or no problem as they are more independent compared to when they were receiving service. Some also indicated that they had not been very happy with the service they had received. These seniors' comments included the following:

“Well, I just made up my mind- I had to do what I could do so, I guess that did give me a little more strength. I couldn't get any more so I had to do what I could do.”

“I guess the government expects me to take care of myself and that is what I am doing. I am doing the best I can.”

“My grand daughter used to help me, but now I have a lighter vacuum and I can manage myself.”

Further comments are provided in Table 4. The remaining 11 responses were a 'mixture of feelings, and are presented in Table 5.

Table 4: Commentary Examples of “I Can Do It Better!”

Independence Regained or Created	“I was angry at first, but now I feel better about it because I have a schedule now and I am moving along and have something to occupy myself with. I feel it has helped me and now I get out everyday. I am walking everyday and I follow my schedule. I am more independent.”
	“I’m coping pretty good. I’m doing the best I can.”
	“I’ve coped fine by myself.”
	“We’re getting by on our own.”
	“I’d say just fine because they cutback at a time when I could manage on my own.”
	“It was disappointing to lose it, but I can do it.”
Unhappy with Service	“I wasn’t getting the assistance with heavy cleaning, like curtains, that I needed anyways.”
	“They didn’t do a good job. They just made more of a mess.”
	“I’m glad I lost the home support worker because they sent difficult people all the time and I got sick of telling them what to do. They took too many short cuts and they arrived late.”
Combination of Independence and Unhappy with Service	“I really never liked having the ladies come anyways. Actually, I’m better without them because being independent gives me something to do everyday.”
	“I think I’ve done okay. Right now its not as clean as it could be. She was a nice girl but she didn’t seem to know how to clean.”
	“I dong good. I felt the home support worker worked too slowly and weren’t effective. Occasionally you would get a good one.”

Table 5: Commentary Examples of “Mixed Feelings”

Shift to Family/Friends or Client and Abandoned, Lonely and Betrayed	“I was angry at the time and I remain angry and feel my wife was forced to retire sooner than she would have otherwise as I was unable to pull my load at home and she couldn’t do both- work and home. It’s about my manhood. My wife does what home support used to do and I feel this is very unfair in her retirement just because I’m prideful and have tried to stay as independent as possible. Life goes on but the quality of that life has been seriously affected. I think its terrible to give service and then take it away- better not give it at all.”
	“I’m coping just fine, but I was upset when service was cut without notice. The girls just said they couldn’t come anymore and that was it. I felt they were cut off too soon. I continued a homemaker one more time privately and then cancelled- it cost too much. My daughter came down from Kelowna and helped me until I was feeling better for approximately two weeks after the home support worker left.”
	“I am paying my grand daughter to do the vacuuming. I was devastated when the homemaker was discontinued. I felt they didn’t look at us as individuals enough. I was in very poor shape when it was discontinued and I needed them.”
Unhappy with Service and Suffering in Silence	“I’ve lost too many things when the homemaker was in. I’m coping but with difficulty. Nothing is done once a week. It gets done when you do it. I take an extra pain killer and do it myself.”
Shift to Client and Unhappy with Service	“Well okay, because I’ve got someone to do it. What I didn’t like about home support is when you get used to a girl, they would switch then and there is so much variability in the quality of the work they do.”
	“I get by on my own so I’m managing. They couldn’t do what I wanted them to do anyways.”