

Veterans Affairs Canada and the Government of Ontario

Continuing Care Research Project

Literature Review on the Cost-Effectiveness of Continuing Care Services
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Prepared by

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EXECUTIVE SUMMARY

Introduction

This literature review is one of the deliverables for a large-scale, national study on the costs and outcomes of home care, supportive housing and long term residential care services conducted for Veterans Affairs Canada and the Government of Ontario. The project, called the Continuing Care Research Project, has two major components or substudies. One substudy evaluates the impact of a major policy change to provide veterans, who previously were only eligible for residential long term care, a home and community care based option. A pilot study of this initiative resulted in a significant reduction in facility waiting lists. The second substudy evaluates the comparative costs and outcomes, by level of care need, for veterans receiving home care, supportive housing and residential care.

This literature was developed to provide background information on the state of the current literature on costs and outcomes, across sites of care, for people receiving continuing care services (home/community care, long term and chronic residential care, and case management). While the primary focus of the Continuing Care Research Project is on the comparative costs and outcomes of home care, supportive housing and residential care, this literature review goes beyond the direct needs of the project *per se*. It was developed to serve as a more general reference document for those involved in the Continuing Care Research Project and others with an interest in continuing care.

It should also be noted that this is not a strict, academic, literature review which only includes results from randomized control studies (RCTs), rather, it was designed to present an overview of the current state of the literature, and includes studies which used a range of generally accepted research methods and designs.

Overview of Economic Evaluations

Drummond, O'Brien, Stoddart and Torrance (1987) have noted that different types of economic evaluations can be conducted based on two key dimensions: whether or not there is a comparison of two or more alternatives; and whether or not both the costs (inputs) and consequences (outputs) of the alternatives are examined. They identified four possible approaches to full economic evaluation: cost-minimization analysis; cost-effectiveness analysis; cost-utility analysis; and cost-benefit analysis.

Cost-minimization analysis is an analysis in which the costs of alternatives are compared and the consequences of service are considered to be equivalent (e.g., a search for the lowest cost alternative). Cost-effectiveness analysis is an analysis in which the costs and consequences of programs are measured in comparable, appropriate, natural physical units (e.g., costs are related to a single effect that may differ across alternatives). Cost-utility analysis is an analysis in which the costs and consequences of programs are measured in time units adjusted by health utility weights (e.g., costs are related to one or more effects which are not necessarily common to each alternative by a standardized utility measure such as quality-adjusted life years). Cost-benefit analysis is an analysis in which the costs and consequences of programs are both valued in

monetary terms (e.g., costs are related to one or more effects which are not necessarily common to each alternative by the standardized measure of money).

While a great deal of methodological development has taken place in regard to economic evaluation, much of it has been focused on drug trials and experiments using Randomized Clinical Trials (RCT) methods. There has been relatively little development of methodology for economic evaluations of continuing care services. It appears that for applied policy research projects, cost-minimization and cost-effectiveness analyses may be the most appropriate approaches. The term cost-effectiveness analysis is used in this document as a generic descriptive term to refer to the four types of economic evaluations, and the broader concept of value-for-money.

Preventive Home Care

The existing literature evaluating the cost-effectiveness of the maintenance and preventive function of home care is relatively limited. There are very few Canadian studies on the maintenance and preventive function of home care, and the results are mixed. The typology of the three models or functions of home care (prevention/maintenance, long term care residential substitution, and acute care substitution), which is widely used in Canada, does not appear to be used in the international literature. In addition, 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*.

Hollander (2001a) conducted a study related to the maintenance and preventive function of home care. He studied a natural experiment which occurred in British Columbia in the 1994 to 1995 period in which some health regions cut people from care who were at the lowest level of care need and were only receiving housecleaning services (one component of home support services), and some regions which did not make such cuts. He studied the overall costs to the health care system of people who were cut from service in two health regions compared to people who were not cut from service in two similar regions where there were no, or limited, cuts. In the year before the cuts the average annual cost per client for those who were cut from service was \$5,052 and the cost per client for the comparison group was \$4,535. In the third year after the cuts were made the comparative costs were \$11,903 and \$7,808, respectively, for a net difference of some \$3,500. Thus, on average, the people who were cut from care cost the health care system some \$3,500 more in the third year after the cuts than people who were not cut. Total costs over the three year period after the cuts were \$28,240 and \$20,543, respectively, for those who were cut from care compared to those who were not cut. Thus, the findings of the study seem to indicate that even basic home support services such as housecleaning can have a significant impact on the cost-effectiveness of a health care system.

Home Care as a Substitute for Facility Care

Findings That Home Care is Not Cost-Effective

A considerable amount of research has been conducted on studies of home care as a substitute for facility services in the United States. Much of the literature is based on two series of federally funded studies: 14 community care demonstration projects which were funded in the late 1970s and the early 1980s, and an additional 10 projects which were funded between 1982 and 1985.

Given the nature of the American continuing care system in the 1980s, it was considered that the appropriate way to study whether or not home care was a cost-effective alternative to facility care was to introduce case management (often with an enhanced home care program) into a community and then randomly assign eligible clients to existing community services or to enhanced services. Researchers then determined whether or not the enhanced services led to greater quality of life and client satisfaction, decreased morbidity and mortality, increased functional status, and reduced admissions to long term care facilities and hospitals.

Generally, researchers found that the experimental group had greater satisfaction and quality of life and somewhat reduced costs relative to the control group (Mathematica Policy Research Inc., 1986, April). However, when the costs of the enhanced home care program were added into the equation, the overall costs were generally greater for the experimental group than for the control group (Berkeley Planning Associates, May 1985; Mathematica Policy Research Inc., 1986, May).

Hedrick and Inui (1986) analyzed 12 studies on the cost-effectiveness of home care that used experimental or quasi-experimental research designs and were deemed to be methodologically sound by the authors. These studies involved chronically ill individuals. Hedrick and Inui found that home care services appeared to have no impact on mortality, patient functioning or long term care facility placements. They also found that home care had either no effect on hospitalization or tended to increase the number of hospital days. In addition, they found that either the cost of home care was not affected or was increased by up to 15%.

Weissert (1985) argued that it is difficult to make home and community based services cost-effective because: community care is an add-on to other services and is not a substitute for facility care; community care does not reduce institutionalization rates; only short long term care facility stays can be avoided by community based care; screening and assessment costs are high; overhead costs can be relatively high particularly when community services are small; and improvements in health status are limited.

Weissert et al. (1988) expanded on this analysis in a study that looked at over 700 citations published since 1960 with regard to the relative costs of community and home based services versus long term care facility services. Of the 700 documents, 150 were selected for review and the 27 most rigorous and generalizable studies were chosen for detailed analysis. Weissert et al. concluded that their analysis indicated that home and community based long term care services usually raised overall health care service use and costs. They also noted that small

savings for institutional care were often offset by the costs of the new home and community service.

Given the findings of the above studies, and other studies, American and other researchers concluded, by the late 1980s and early 1990s, that home care was not a cost-effective alternative to facility care because it did not decrease the rate of admission to long term care facilities and, therefore, that home care constitutes an add-on cost.

Findings That Home Care is Cost-Effective

International Studies

The research reviewed above suggests that home care is not cost-effective compared to facility care. However, the research generally does not compare the costs of community and home based services versus the costs of long term facility care directly. Rather, the studies tend to compare costs associated with the introduction of a new home care service to existing community services. Several recent studies have shown that when the costs of community-based services are compared directly with the costs of long term care services, home care has the potential to be a cost-effective substitute for facility care.

Weissert, Lesnick, Musliner and Foley (1997), in an American study, showed that home care can be cost-effective when home and community based services are designed to be a substitute for facility care. In a study examining the Arizona Long Term Care System, which was the first capitated, long term care Medicaid program in the United States, Weissert and his colleagues noted that overall systems costs were less when home care was included than they would have been without home care. The investigators suggest that savings probably came from several sources, including the use of a payment methodology that encouraged program contractors to place clients in home and community based services rather than risk losing money by using more facility days than their monthly capitated rate allowed.

There are also other international studies which demonstrate the comparative cost-effectiveness of home care. A Belgian study of people with dementia (Scuvee-Moreau, Kurz, Dresse, & the NADES Group, 2002) found that the average monthly costs in Belgian francs was 445.50 francs for dementia patients treated at home and 2,301.70 francs for dementia patients in institutions. The comparable costs for persons with severe dementia were 556.88 francs and 2,465.28 francs, respectively. Stuart and Weinrich (2001) conducted a broad systems level analysis of the costs of continuing care services in Denmark by comparing the cost trends in Denmark and the United States. Denmark has for many years had an integrated system of care delivery for the elderly and persons with disabilities which puts a priority on home care, and includes a home support component. The authors found that, over the 12-year period after this integrated system was put into place, Danish long term care expenditures leveled off, while expenditures in the United States continued to increase over the same time period. More specifically, they found that for the period 1985 to 1997, per capita expenditures on continuing care services for individuals 65 years of age or older increased by 8% in Denmark and 67% in the United States. For individuals 80 years of age or older, costs actually decreased by 12% in Denmark while they increased 68% in the United States. It appears that the savings in Denmark

were the result of reducing nursing home beds by 30%. In the United States, over the same period of time (i.e., 1985 to 1997), there was a 12% increase in nursing home beds. Thus, an increasing proportion of people were cared for at home without decreases in client satisfaction or health status.

Canadian Studies

With regard to findings from Canada, Hollander (2001b) in a study of the cost-effectiveness of long term home care found that over time, and for all levels of care needs, home care, on average, was significantly less costly than care in a long term care facility. For example, average annual costs to government for people with moderate care needs (Intermediate Care 1 or IC1) in the mid-to-late 1990s, in British Columbia, was \$9,624 for persons on home care and \$25,742 for people in institutions. For people at the highest, or chronic, level of care (Extended Care) the corresponding costs were \$34,859 and \$44,233. In a related study, Hollander, Chappell, Havens, McWilliam and Miller (2002) noted that similar cost differences are seen even if one adopts a broader societal perspective which incorporates out-of-pocket expenses and the care time of informal caregivers into the analysis.

It should be noted that the savings from substituting home care services for facility services are not only theoretical. Actual savings were achieved in British Columbia by holding down future construction of long term care facilities and making investments in home care (Hollander 2001b). Utilization of home and community care services in fiscal 1984/85 was 92 person years per 1,000 population 65 years of age and older and 71.7 person years, or beds, for facility care for a total of 163.7. The overall utilization rate was also 163.7 for the 1994/95 fiscal year, but the utilization rate for facility services (long term care and chronic, or extended care, services) was reduced to 50.7 and the utilization rate of home care increased to 113. Thus, over a 10 year period, due to a pro-active policy of substituting home care services for facility services, the utilization of some 21 person years per 1000 population 65 years or older was shifted from facility care to home care, for individuals with ongoing care needs.

What role has home support played in regard to the cost-effectiveness of long term, or chronic, home care? It turns out that home support is central to this form of home care and the cost-effective substitutions it can engender. Hollander (2001b) provided evidence on the relative costs of home support and professional home care (e.g., nurses, physiotherapists) in long term home care. He found that approximately 90% of the expenditures for long term home care, for people with higher level care needs, were for home support services while 10% were for professional services. Thus, any substitution effect of home care compared to facility care is, in large part, due to home support services.

Some Canadian studies have focused on the cost-effectiveness of home care for individuals with cognitive impairments. Using data from the Canadian Study of Health and Aging (CSHA),¹ Østbye and Crosse (1994) calculated the net economic costs of dementia, that is, costs that were incurred because of the dementia, using both direct costs (such as home support, physiotherapy, respite care, day centre care) and indirect costs (such as time spent by informal caregivers in assisting clients with activities of daily living). Østbye and Crosse estimated that the annual direct costs of caring for someone without dementia in the community was \$1,790. In contrast, the annual direct costs of caring for someone with dementia in the community was estimated to be \$4,506 for those with mild dementia and \$8,109 for those with severe dementia. For individuals with dementia, it was estimated that the annual net cost of providing care for those in the community was \$10,100 (\$4,970 for direct costs and \$5,130 for indirect costs). In contrast, it was estimated that the annual net cost of providing care to individuals with dementia in a facility was \$19,100.

Hux, O'Brien, Iskedjian, Goeree, Gagnon and Gauthier (1998), also using data from the CSHA, examined the costs of caring for individuals with Alzheimer's disease. The authors found that costs increased significantly in relation to the severity of the disease. The annual societal cost, per person, was estimated to be \$9,451 for those with mild Alzheimer's disease and \$36,794 for those with severe Alzheimer's disease. This study provided detailed cost estimates for both formal and informal care services. While the authors did not do a direct comparison of all costs for community and facility services, they did provide comparative costs for component parts of their analysis. A comparison of the community and facility costs for those with severe Alzheimer's disease indicated that the cost of facility care was significantly higher than the cost of care in the community.

Palliative Care

A number of writers have reported on the findings of the National Hospice Study in the United States. This study was conducted in the early 1980s and compared the costs of 833 home based patients, 624 hospital-based hospice patients and 297 patients in conventional care with cancer (Bosanquet, 2002). It was found that, on average, home based hospice costs were \$4,000 lower than conventional care and that hospital based hospice costs were \$1,300 lower than conventional care. However, most of the difference was found in the last month of life and, in fact, the costs for people with long hospice stays (over 3 – 4 months) were higher than the costs of conventional care.

In a Canadian review article Chochinov and Kristjanson (1998) review a number of articles on the cost-effectiveness of hospice. Among their conclusions they note that the cost savings reported for home based palliative care may be a function of nearness to death, that family related costs for end-of-life care are substantial, and are often not factored into most cost

¹ The Canadian Study of Health and Aging Working Group (1994) estimated that approximately 8% of the population 65 years of age and older are affected by some form of dementia, and that the prevalence of dementia increases with age, affecting about 35% of those 85 years of age and older. Approximately 50% of those with dementia live in the community. A more recent study estimated that 60,150 new cases of dementia are identified each year in Canada (Canadian Study of Health and Aging Working Group, 2000). Alzheimer's disease is the most common form of dementia, accounting for approximately two-thirds of the individuals with dementia (Canadian Study of Health and Aging Working Group, 1994).

analyses, and that there may be a two tiered system of palliative care in which families with higher incomes may be better able to afford the help required to support home deaths. In another Canadian study in Alberta, Fassbender, Fainsinger, Brenneis, Brown, Braun, and Jacobs (2005) found that a new community based palliative care program was, overall, revenue neutral and reduced time spent in hospitals. Thus, they found a substitution effect between palliative home care and residential hospice care, and care in hospitals.

In an Italian study, Maltoni, Nanni, Naldoni, Serra and Amadori (1998) noted that there are cost savings for home based palliative care in the last three months of life. They conclude that home care hospices are more satisfactory to patients than conventional home care and that the savings from such hospice care are mainly attributable to shorter stays in hospital.

In a British review article Higginson, et al. (2003) found that, while there were few rigorous cost-effectiveness studies, the evidence did seem to indicate that compared to other models, the benefit was strongest for home care.

Assisted Living/Supportive Housing

The Emergence of a New Sector

Assisted living and supportive housing services are a new and emerging component of the care continuum for seniors. While new, they have many antecedents, which have, in fact, been in place in various forms over time. What is new is a shift by policy makers to provide more of a focus on this sector and begin to promote and develop assisted living arrangements more formally into the care continuum. There is no current, agreed upon, definition of assisted living. *Assisted Living* is, in fact, an umbrella term which, at least currently, seems to incorporate a number of new, and previously existing, housing arrangements such as group homes, congregate living, room and board (to the extent some additional supportive services are included), group living situations, and supportive housing.

A number of factors have been noted with respect to the emergence of assisted living. In a comprehensive review of the expanding concept of home care, R. Kane (1995) discussed the move of home care from being “care in the home” to care for people living in the community, including assisted living arrangements. Some of the rationales which have been put forward for assisted living are:

- The ability to focus on individualized care, compared to nursing homes (i.e., long term care facilities).
- Greater freedom around schedules, lifestyles, the choice of food and other “independence” factors, compared to nursing homes.
- The belief that assisted living can provide a cost-effective alternative to nursing homes.

- Positive examples of home care organizations with a short stay residential component such as the On Lok program in San Francisco's Chinatown and a number of related programs referred to as Programs for All-Inclusive Care for the Elderly (PACE).
- The trend to delegation of professional nursing functions to home support staff or care aides, facilitating supportive care in a congregate environment.
- Advocates have claimed that hospitals and nursing homes discriminate on the basis of health and disability through diagnosis and treatment, and case mix funding (e.g., more funding for higher care needs clients). Thus, facility settings make distinctions based on disability while housing arrangements do not.

Kane (1995) also points out potential negative factors related to assisted living. The first is the interface between assisted living and licensed care facilities, and that at some point people may be forced to move out of assisted living arrangements into care facilities, by policy or legislation, against their will. Issues of legal liability are also a concern related to transfer of function arrangements in which professional functions are transferred to non-professionals. There are also potential liability issues related to health and safety considerations, particularly if a substantial portion of the residents have aged in place and require significantly more care services than they did when they first came into the assisted living setting. Policy makers are also concerned that while advocates promote independence, they still wish to hold the state liable for accidents or other mishaps.

Similar issues to those noted above, and cost estimates, are made by other authors (Becker, Stiles and Schonfeld, 2002; Bicknell and Pike, 1993; Bowe, 1993; Fahrenfort, 1995; Hatton, Emerson, Robertson, Henderson, and Cooper, 1995; Moore, 1991; Moore, 1995; Moore, 1996; Ruchlin and Morris, 1987; Sohng, 1996; Valins, 1995).

The Cost-Effectiveness of Assisted Living/Supportive Housing

There is now an emerging body of evidence on the cost-effectiveness of assisted living/supportive housing. Most of these studies compare the costs, or costs and outcomes, of these services with long term care facilities. This literature is coming out of a number of countries.

In a Swedish study, Wimo, Mattson, Krakau, Eriksson, Welvig, and Karlsson (1995) conducted a cost utility analysis of a group living situation for dementia patients. The authors compared 46 patients in group living with 39 patients receiving home care and 23 institutionalized patients. Their overall finding was that the cost per gained quality-adjusted life year was most favourable for the group living alternative.

In a British study of different types of living situations, Emerson, Robertson, Gregory, Hatton, Kessissoglou, Hallam, Järbrink, Knapp, Netten and Walsh (2001) analyzed the comparative quality and costs of supported living residences and group homes in the United Kingdom. The authors found that, once adjustments were made for client characteristics, there were no statistically significant differences in service costs. The sample consisted of 63 people in

supported living residences, 55 in group homes of 1 to 3 people (small group homes) and 152 people in large group homes (4 to 6 co-residents). There were also relatively few differences in outcomes across the three groups.

Nyman (1994), in an American study, conducted a review of studies of the costs of assisted living arrangements and concluded that, overall, the unit costs of assisted living are lower than the unit costs of long term care facilities.

In another American study, Leon and Moyer (1999) conducted an analysis of the comparative costs of assisted living versus nursing homes for patients with Alzheimer's disease. Costs of care were moderately lower in assisted living arrangements compared to nursing homes. Combining all levels of severity, the authors found that the annual costs of assisted living were 13.9% lower than the costs for nursing homes.

Discussion

As noted above, it is clear that while there is some emerging evidence of the cost-effectiveness of home care and assisted living/supportive housing, the evidence is still limited and somewhat mixed. In addition, there is a paucity of research on the impacts of home support services on the cost-effectiveness of home care, and on the ability of home care to delay admissions into long term care facilities and hospitals. While there is now some evidence that home support is a critical component in making home care cost-effective, more research needs to be conducted. This is particularly the case now as policy makers seem to be shifting the focus of home care to short term home care. While current findings are encouraging, more focused research is required on the cost-effectiveness of home care in order to determine if it is truly cost-effective. The evidence on the cost-effectiveness of assisted living/supportive housing is only beginning to emerge. Nevertheless, there is currently considerable interest by policy makers in developing such options, but more research is also required in this area.

Thus, while there are encouraging results, the results are still mixed. Given the alternative visions of home care that have emerged across Canada, and the ongoing debate about the cost-effectiveness of home care, the current project should go a long way to building Canadian evidence for, or against, the cost-effectiveness of long term home care (including home support), and assisted living/supportive housing.

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1. INTRODUCTION

This literature review is one of the deliverables for a large-scale, national study on the costs and outcomes of home care, supportive housing and long term residential care services conducted for Veterans Affairs Canada and the Government of Ontario. The project, called the Continuing Care Research Project, has two major components or substudies. One substudy evaluates the impact of a major policy change to provide veterans, who previously were only eligible for residential long term care, a home and community care based option. A pilot study of this initiative resulted in a significant reduction in facility waiting lists. The second substudy evaluates the comparative costs and outcomes, by level of care need, for veterans receiving home care, supportive housing and residential care.

This literature was developed to provide background information on the state of the current literature on costs and outcomes, across sites of care, for people receiving continuing care services (home/community care, long term and chronic residential care, and case management). While the primary focus of the Continuing Care Research Project is on the comparative costs and outcomes of home care, supportive housing and residential care, this literature review goes beyond the direct needs of the project *per se*. It was developed to serve as a more general reference document for those involved in the Continuing Care Research Project and others with an interest in continuing care.

It should also be noted that this is not a strict, academic, literature review which only includes results from randomized control studies (RCTs), rather, it was designed to present an overview of the current state of the literature, and includes studies which used a range of generally accepted research methods and designs. Furthermore, it should be noted that, in this report, the term “cost-effectiveness” is used as a descriptive term to refer to analyses of costs and outcomes, and the comparative value-for-money of different approaches to care delivery. The term “cost-effectiveness” is used as a technical term, and has a specific meaning, in economic analysis. As noted in Chapter 4 it refers to comparisons of the ratios of costs to some natural unit of outcome, to determine which alternative approach may be more efficacious, considering both costs and outcomes.

Finally, the literature review looked at broader categories of care. However, as part of this process citations were obtained on specific types or models of care. These citations have been incorporated into this literature review, as appropriate. Thus, where reference is made to a specific approach the citations may only represent a sub-set of all potentially relevant documents on the topic.²

The following topics are discussed in this report. Chapters 2, 3 and 4 provide, respectively, introductory overviews of home and community care, the methods used for this literature review, and economics analysis. Chapters 5 to 7 presents literature on: the cost-effectiveness of preventive home care; home care as a substitute for residential care; and home

² It should be noted that, given the approach taken, not all aspects of service delivery are covered in this document. For example, an important area is that of respite care but there were few Canadian cost-effectiveness studies on this topic. The interested reader is referred to reports by Keefe and Manning (2005) and Dunbrack (2003) for overviews of respite care in Canada.

care as a substitute for acute care. Chapter 8 provides an overview of the emerging literature on palliative care. Chapter 9 presents information on a new and emerging sector, supportive housing. It provides a context for the evaluation of supportive housing, a discussion of models of supportive housing, the cost-effectiveness of supportive housing and information on supportive housing in the Canadian context. Chapter 10 provides a brief discussion and conclusions.

2. INTRODUCTION TO THE FUNCTIONS OF HOME AND COMMUNITY BASED SERVICES

There are generally considered to be three main functions of home and community care. The first function is to prevent or delay further deterioration and to maintain the client at his/her optimal level of care for as long as possible. This “preventive and maintenance” function of home/community care focuses on preventing or delaying admission to a long term care facility, or to a hospital. The second function of home/community care is to act as a substitute for residential long term care. This function of home/community care deals with clients who have higher level care needs and, in the absence of home care, would be likely to be admitted to a long term care facility. Thus, home/community care acts as a substitute for residential long term care for people who are deemed to be eligible for placement in a long term care facility. This is referred to as the residential care substitution function. People may also receive preventive or substitutive home/community care in other community based settings such as supportive housing environments.

The third function of home care is to act as a substitute for hospital care. In this approach, people are discharged early from hospitals (at the end of the acute care phase of their illness). Instead of spending the convalescent part of their illness in the hospital they convalesce at home with the assistance of professional health care providers such as nurses and/or physiotherapists, and home support workers, as required. Home care is also used to prevent new admissions, and re-admissions, to hospital, and can be a direct substitute for acute care. These three aspects are referred to more broadly as the acute care substitution function of home care.

Naturally, while the focus of home care is often on substitution, home care must also be recognized in its own right as a valuable service which can complement other components of the health care system.

3. METHODS FOR THE LITERATURE REVIEW

A number of search terms were identified for each component. Search terms were a combination of Medical Subject Headings (MeSH Terms) and Keywords for six databases on OVID (a library database and search engine). They included all EBM reviews, the Cumulative Index to Nursing & Allied Health Literature (CINAHL), EMBASE, OVID MEDLINE(R), and OVID MEDLINE In-Process and other Non-Indexed Citations. The detailed list of MeSH terms and keywords for the search are presented in Table 1.

Five separate literature searches were undertaken using the databases mentioned above. All of the searches were limited to English language articles. The first three searches were limited to dates between 2004 and 2006. The reasoning behind this was that Hollander Analytical Services recently completed a similar literature searches on continuing care and, therefore, the search was rerun to include only the most recent citations. The last two searches on models of supportive housing, and the cost-effectiveness of palliative care, were new searches. They were limited to citations covering the period 1990 to 2005.

The first search requested articles containing at least one term (Medical Subject Heading or keyword) from each of these components: Home Care, Facility Care, and Cost. The second search looked for articles containing at least one term from each of these components: Housing and Cost. The third search sought out articles containing at least one term from each of these components: Integrated Care, Aged, and Cost. The fourth search looked for articles containing at least one term from each of these components: Housing and Models. The fifth search looked for articles containing at least one term from each of these components: Palliative Care and Costs.

An extensive set of citations and abstracts was reviewed by the author. Citations which were on topic and which had generally acceptable research methods were selected. For the selected citations, copies of the full articles were obtained, and form the basis of materials used to prepare this document. As noted earlier, our purpose was to prepare a document which fairly reflected the current literature, rather than a document which only contained the most rigorous articles which used randomized controlled trials (RCTs).

Table 1: Components, MeSH Terms and Keywords

Component	MeSH Terms (/)	Keywords (.mp)
Home Care	Home care services Home nursing Homemaker services Community health services AND Aged	Home health care Community long term care Home support
Facility Care	Nursing homes Homes for the aged Intermediate care facilities Skilled nursing facilities Long term care	Chronic care Extended care
Aged	Aged	
Integrated Care	Delivery of health care, Integrated	Integrated care Continuing care Continuum of care
Cost	Cost-benefit analysis	Cost-benefit: Cost-effective: Cost-minim: Cost compare:
Housing	Housing for the Elderly	Supportive housing Congregate housing Assisted living
Models	Models, Organizational Innovative Models	
Palliative Care	Palliative Care Terminal Care Hospice Care	Care for Dying End of Life

4. AN OVERVIEW OF ECONOMIC ANALYSIS

4.1 Introduction

This overview of economic analysis³ is intended to provide a context, and conceptual basis, for understanding the methods used, and findings obtained, in the literature noted in this report. Many of the references noted in this report can be better understood, and evaluated, with a basic grounding in economic evaluation.

There continues to be a growing literature on the techniques of economic analysis in health care. A number of excellent books and articles have been published on this topic (Donaldson, 1990; Drummond, O'Brien, Stoddart and Torrance, 1997; Drummond, Stoddart and Torrance, 1987; Eisenberg, 1989; Ganiats and Schneiderman, 1988; Stoddart and Drummond, 1984a, 1984b; Weinstein, 1990). Drummond et al. (1987) note that economic analysis deals with two aspects: the inputs and outputs, or costs and consequences, of activities; and, choices between alternatives. Thus, economic analysis can be defined as: "the comparative analysis of alternative courses of action in terms of both their costs and consequences" (Drummond et al., 1987, p. 8). Drummond et al. (1987) have developed a typology for the different types of economic analysis based on the dimensions of inputs and outputs, and choices about alternatives. This schematic is presented in Figure 1. The primary area of interest for cost-effectiveness studies is box 4 in Figure 1, full economic evaluation, particularly cost-minimization and cost-effectiveness analysis.⁴ Finally, it is important to note that cost-effectiveness analysis is not only about costs. Equal weight is given to the outcomes or consequences of the services in question. This includes outcomes such as satisfaction with care, and the quality of life of the client, from the perspectives of clients and informal caregivers.

4.2 Design Issues

Methodologically, many of the more advanced techniques of economic analysis have similar characteristics to quasi-experimental research, clinical trials and outcome evaluation. All of these approaches have certain common elements. Some type of program or experimental condition (e.g., a new drug) is introduced and applied to some set of subjects, and the consequence of this act is analyzed to determine the nature of the outcome of introducing the

³ Drummond, O'Brien, Stoddart, and Torrance (1997) note that economic analysis focuses on two aspects: the costs and consequences of activities; and choices between alternatives. There are four methods of economic evaluation, namely, cost-minimization, cost-effectiveness, cost-utility, and cost-benefit analysis. For ease of reporting, the term *cost-effectiveness* will be used here as a generic term to refer to all four methods.

³In contrast to Drummond et al. (1997), some researchers consider cost-minimization analysis to be a variant of cost-effectiveness analysis. This is an important distinction for continuing care because it uses an ongoing "care," rather than a short term "cure" model of service. Thus, it may be that the "effects" of care are similar, that is, similar levels of satisfaction, similar rates of deterioration and so on. To the extent this is true, one can actually do a cost-minimization study instead of a cost-effectiveness study.

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Figure 1: Types of Economic Evaluation

Is there a comparison of two or more alternatives?	Are both costs (inputs) and consequences (outputs) of the alternatives examined?		
	NO		YES
	Examines only consequences	Examines only costs	
NO	1A PARTIAL EVALUATION Outcome description	1B Cost Description	2 PARTIAL EVALUATION Cost-outcome description
YES	3A PARTIAL EVALUATION Efficacy or effectiveness evaluation	3B Cost Analysis	4 FULL ECONOMIC EVALUATION Cost-minimization analysis Cost-effectiveness analysis Cost-utility analysis Cost-benefit analysis

(Source: Adapted from Drummond et al., 1987, p. 8)

The types of evaluations noted in the above schematic are as follows:

- . **Outcome Description:** A description of the program or service provided.
- . **Cost Description:** A description of the cost components of the service provided.
- . **Cost-Outcome Description:** A description of both the costs and outcomes of a single service.
- . **Efficacy or Effectiveness Evaluation:** An analysis in which only the consequences of the alternatives are compared.
- . **Cost Analysis:** An analysis in which only the costs of the alternatives are compared.
- . **Cost-Minimization Analysis:** An analysis in which the costs of the alternatives are compared and the consequences of service are deemed to be equivalent, for example, a search for the lowest cost alternative.
- . **Cost-Effectiveness Analysis:** An analysis in which the costs and consequences of programs are measured in comparable, appropriate, natural physical units, for example, costs are related to a single effect which may differ in magnitude across alternatives.
- . **Cost-Utility Analysis:** An analysis in which the costs and consequences of programs are measured in time units adjusted by health utility weights, for example, costs are related to one or more effects, which are not necessarily common to each alternative, by a standardized utility measure such as quality-adjusted life years.
- . **Cost-Benefit Analysis:** An analysis in which the costs and consequences of programs are both valued in monetary terms, for example, costs are related to one or more effects, which are not necessarily common to each alternative, by the standardized measure of money

program or experimental condition. There is a temporal dimension to this approach such that the intervention is typically done at one point in time and the consequences of that action are studied over time. Programs receiving the experimental condition, are usually compared to control groups, or to other, alternative programs

4.3 Perspective

Perhaps the most essential feature of an economic analysis is the perspective inherent in the question being asked. Perspective has significant implications for analysis. Ideally, the widest range of costs and benefits should be considered in doing an economic analysis, that is, the perspective of society as a whole. However, this is often not done in actual studies. Rather, writers often consider costs and benefits from a more restrictive perspective, for example, the government, the agency, or the client. Even within a government or funder perspective one may only consider a given agency, or type of service, rather than the whole system of care. By not adopting a comprehensive perspective one may, however, come to erroneous conclusions. For example, consider 1) clients who pay a user fee for homemaker services but who pay no fee for home nursing care services, 2) a government which wishes to reduce costs, and 3) a home care agency which wants to maximize profits. Government may ask for an economic analysis of a new program where certain functions typically provided by nurses are transferred to homemakers through a transfer of function agreement. An economic analysis is conducted, from the government perspective, which shows that 20 percent of the volume of work can be transferred and that homemakers are paid half as much as home care nurses. This finding tells government that it can save 10 percent of the costs of its home nursing care program by instituting the transfer of function program.

The client sees it differently. Clients who are affected may pay more for the added homemaker service (for which they may pay a user fee) than they would if nurses, for which no user fee is required, continue to provide the service. The position of the agency in this scenario is determined by its comparative profit margins for nurses versus homemakers. Depending on the relative ratios of user fees, and staff specific profit margins, the result of adopting the program, when all matters are considered together, could be: no actual change but a cost-shift from government to clients and/or agencies; an actual overall saving, but less than projected from the government perspective alone; or, an actual increase in overall costs, particularly if homemakers take longer to provide the service than nurses.

There is also a fourth group which could be affected, that is, informal caregivers such as family members. Homemakers may provide care to the client but may not teach family members how to care for the client in a correct and efficient manner. To the extent that nurses do so, there could be a differential impact on the amount of time and resources family members would have to devote to caring for the client. Time may constitute real direct costs to family members if they take non-paid leave from work. Thus, the decision to transfer nursing functions to homemakers may have economic impacts not only on the government, the agency, and the client, but also, on the client's family.

4.4 Determining Costs

As noted above, one must properly consider what is the appropriate range of costs and benefits to be included in a given study. An important issue in costing is how to assign costs for non-market goods such as the time of family members. Drummond et al. (1987) note that there are four possible approaches, the first two of which are the most common.

The four approaches are:

- **Market valuations**—taking actual valuations where these exist (for example, for most resource items) or imputing valuations by reference to the market price of similar commodities (for example, the value of housewives' time could be imputed by reference to the wages paid to domestic staff) [*sic*].
- **Client's willingness-to-pay estimates**—assessed directly (by asking them) or indirectly (by observing their behaviour) (for example, asking people what they would pay for a quicker form of travel, or observing the trade-offs they make between expenditures and travel time savings).
- **Policy-makers views**—either explicitly stated or implicit in their actions (for example, the decisions made about building safety regulations could be used to impute policy-makers' valuations of human life).
- **Practitioners' views or professional opinions**—such as those on the appropriateness of different forms of care for given categories of patients (for example, court awards might be used to impute the value of the unpleasantness of a disfiguring injury).

(Adapted from Drummond et al., 1987, pp. 149-150)

Another important aspect of costing is that of **discounting**. In economic analysis, future costs, and benefits, are discounted back to present values. Thus, the further out in time a cost or benefit occurs, the lower is its present value because it is discounted at a given annual rate e.g., five percent. Discounting is done because it is believed that people have a "time preference," that is, goods received now have a higher value than goods received in the future. If an inflation factor is added to "time preference" discounting, one is said to be using an inflation adjusted discount rate.

4.5 Determining Benefits

It is usually difficult in a health related cost-benefit study to value the outputs of health care interventions in strictly monetary terms. One can try to ascribe costs to a life saved but determining the cost of a human life is controversial, and, analysts who have attempted to do so typically come up with a wide range of costs. One can also attempt to assign dollar values to foregone income or the willingness to pay for avoiding some condition. Currently, there appears to be little substantive consensus on the valuation of the benefits of health interventions in monetary terms.

The outcomes in cost-utility analysis are measured in Quality Adjusted Life Years (QALYs). This is an advance over cost-effectiveness analysis in that one can incorporate the quality of the life years saved into the analysis. QALY scores can be determined in a number of ways. One may wish to adopt values already published in the literature, conduct studies of persons with a given condition to obtain their utility scores for given conditions, ask experts such as physicians to assign values to different conditions, or, ask informed members of the general public to assign values. Any given set of QALY scores should be subjected to extensive sensitivity analysis, and to analyses of their validity and reliability.

In cost-effectiveness analysis, no attempt is made to place a monetary value on the quality of outcomes. The outcomes are measured in appropriate natural or physical units such as years of life gained. The result of a cost-effectiveness analysis, therefore, is a determination of the relative cost per unit, for example, cost per year of life gained. Totally different interventions, for different groups of people, can thus be compared to determine where one can have the most impact, for example, maximize the number of life years saved for a given cost. In cost-minimization analysis, the benefits are assumed to be equivalent. Therefore, no separate valuation of outcomes is required (as they are deemed to be equivalent). Thus, there is only a valuation of the comparative costs of two or more programs.

4.6 Sensitivity Analysis

A sensitivity analysis is another aspect of economic analysis which allows the investigator to determine the extent to which the results of a study differ when different values, or assumptions, are used for certain key aspects of the analysis, for example, how different are the outcomes of a study if one varies the calculation of the costs of informal care from costs based on the minimum wage to costs based on market rates for similar work. Again, this discussion is provided to familiarize the reader with the methods of economic analysis.

Drummond et al. (1987) note that the steps to be taken in conducting a sensitivity analysis are as follows:

- Consider which of the estimates made in the analysis are:
 - Subject to debate because no estimates were available and informed guesses were made (for example, the effectiveness of new, unproven, medical procedures);
 - Subject to debate because of known imprecision in the estimation procedure (for example, hospitalization costs based on average, *per diem*, figures); and
 - Subject to debate because of methodological controversy or the potential for different value judgements (for example, the choice of discount rate).
- Set upper and lower bounds on the possible range of estimates. Depending upon the source of uncertainty or debate surrounding the estimations, this might be done by:

- Considering empirical evidence from other research studies;
 - Considering current practice in the literature; and
 - Soliciting judgements from those who will be making decisions based on the cost-effectiveness study.
- Calculate study results based on combinations of the "best guess", "most conservative" and "least conservative" estimates of the variables concerned.

4.7 Informal Care

Finally, it should be noted that there is relatively little information on the costs, or cost-effectiveness, related to unpaid, (or informal/family) caregivers. Nevertheless, these family supports are often critical in both reducing the costs of the formal care system and in helping to maintain those in need at home for as long as is reasonable, feasible and safe. In a Swedish study Andersson, Carstensen, Levin and Emtinger (2003) note that, whether or not the time of informal caregivers was included as a cost, the cost of informal care provision was higher than the cost of providing formal, or paid, care services. Andersson, Levin and Emtinger (2002), in another article, note that the cost of informal care are often excluded or underestimated in economic evaluations of care for the elderly. As a counterpoint, it needs to be noted that in any assessment of services provided by informal caregivers/family members, one should only include time spent that is directly related to the health condition of the client. Given that the health condition of clients receiving continuing care services is generally marked by a deterioration of functions related to the activities of daily living, assisting with matters related to the health condition of the individual can, appropriately, include supportive help such as shopping, cleaning the house, making a meal, washing the dishes, etc. However, as these are also normal household activities the distinction is whether or not they are being done because of the condition of the individual who needs assistance. Thus, for example, if one usually makes meals for loved ones, only the time and cost over and above the norm, which is specifically due to the condition of the client, should be included in the calculations. It is often not clear in published studies if, and how, this was done.

5. THE MAINTENANCE AND PREVENTIVE FUNCTION OF HOME CARE

5.1 Introduction

The existing literature evaluating the cost-effectiveness of the maintenance and preventive function of home care *per se* is relatively limited. While a comprehensive literature research was conducted, relatively few documents were found on this topic. Studies in the international literature typically focus on certain types of preventive programs, rather than on the broader preventive functions of home care. Many of these studies related to comparisons between preventive home care and hospital care. These matters are discussed in Chapter 7.

The only studies found which focused more broadly on the maintenance and preventive function of home care were Canadian studies. Thus, these are the studies presented in this section. There were a number of studies related to specific prevention strategies, primarily to reduce hospital utilization. These preventive studies are discussed in Chapter 7.

There are generally considered to be three levels of prevention. They are:

- **Primary Prevention** which focuses on general preventive activities for a population and includes programs such as lifestyle counseling and immunization. Specific activities would include the promotion of regular aerobic exercise, tobacco reduction and safe driving initiatives.
- **Secondary Prevention** which focuses 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 focuses on minimizing disability and handicap from established diseases.

(Adapted from Patterson and Chambers, 1995)

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

5.2.1 Canadian Studies Indicating Home Care is Not Cost-Effective

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).

There were a few Canadian studies which were specifically designed to evaluate whether or not preventive home care is cost-effective, Contandriopoulos, Tessier and Larouche (1986) in a study conducted in Lachute, Québec, 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); and
- 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).

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 impact analyses the presence of home aid services was not found to be 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.

Another 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% (9,524) received preventive home care (defined as being at level 1 or 2 of a four level classification system) and 9% (2,484) were in seniors housing. This cohort of seniors was studied for eight years. The major findings of the study were that 50% 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.

There are a number of issues that could have affected the results of this study. The first issue is the extent to which the researchers were able to have true comparability between clients receiving home care and those not receiving 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 receiving home care have higher care needs, and greater functional deficits, than those not receiving home care. 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 receiving 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 receiving home care, and not receiving home care, without information on the functional status of the people in the study. Thus, there is some question about the comparability of the home care and non-home care people 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 the above issues of selection bias, several sets of statistical adjustments were made. Even though there is 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 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).

5.2.2 Canadian Studies Indicating Home Care is Cost-Effective

In contrast to the above findings, other recent evidence indicates that preventive home care is cost-effective. Hollander (2001a) conducted a study of a natural experiment which occurred in British Columbia in the 1994 to 1995 period in which some health regions cut people from care who were at the lowest level of care need and were only receiving housecleaning services (one component of home support services), and some regions did not make such cuts. He studied the overall costs to the health care system of people who were cut from service in two health regions compared to people who were not cut from service in two similar regions where there were no, or limited, cuts. In the year before the cuts the average annual cost per client for those who were cut from service was \$5,052 and the cost per client for the comparison group was \$4,535. In the third year after the cuts were made the comparative costs were \$11,903 and \$7,808, respectively, for a net difference of some \$3,500. Thus, on average, the people who were cut from care cost the health care system some \$3,500 more in the third year after the cuts than people who were not cut. Total costs over the three year period after the cuts were \$28,240 and \$20,543, respectively, for those who were cut from care compared to those who were not cut.

In examining the data, it was found that most of the differences in costs were accounted for by increased costs for acute care and long term residential care. Over the three years, there was a net difference in hospital costs of some \$2,300 (i.e., an average additional costs of \$2,300 for people who were cut from care compared to those who were not cut) and residential long term care service costs of some \$3,200. Thus, the findings of the study seem to indicate that even basic home support services can have a significant impact on the cost-effectiveness of our health care system. While the reasons for increased costs could not be directly ascertained in the study, there was some anecdotal evidence to indicate that the findings are consistent with the following scenario. The people who were receiving cleaning services had been assessed by a health professional as needing government-funded services to enable them to remain independent. The assessment would have indicated that the clients needed cleaning to maintain a normal, sanitary

home environment due to frailty or some other limiting condition(s). Thus, one can hypothesize that if these people were not able to pay for cleaning, or did not have family members who could assist, or in some cases even if they did, they may have attempted to clean and vacuum by themselves. This may have led to an accident requiring hospitalization, or a more rapid deterioration in function which may have led to institutionalization.

5.3 International Studies

Most international studies focused primarily on home care as a substitute for hospital care, or as a means of preventing admissions and/or re-admissions to hospitals. Thus, the topic of preventive home care in the international context is addressed in Chapter 7.

6. HOME CARE AS A SUBSTITUTE FOR RESIDENTIAL CARE

6.1 Findings That Home Care is Not Cost-Effective

A considerable amount of research has been conducted on studies of home care as a substitute for residential services in the United States. Much of the literature is based on two series of federally funded studies: 14 community care demonstration projects which were funded in the late 1970s and the early 1980s, and an additional 10 projects which were funded between 1982 and 1985. While these studies are now quite dated they have, nevertheless, had a significant impact on policy and the thinking of key decision-makers, which may have continued to the current day. Therefore, they are provided, in summary form, in this report.

Given the nature of the American continuing care system in the 1980s, it was considered that the appropriate way to study whether or not home care was a cost-effective alternative to residential care was to introduce case management (often with an enhanced home care program) into a community and then randomly assign eligible clients to existing community services or to enhanced services. Researchers then determined whether or not the enhanced services led to greater quality of life and client satisfaction, decreased morbidity and mortality, increased functional status, and reduced admissions to long term care facilities and hospitals.

Generally, researchers found that the experimental group had greater satisfaction and quality of life and somewhat reduced costs relative to the control group (Mathematica Policy Research Inc., 1986, April). However, when the costs of the enhanced home care program were added into the equation, the overall costs were generally greater for the experimental group than for the control group (Berkeley Planning Associates, May 1985; Mathematica Policy Research Inc., 1986, May).

A study which illustrates the general approach used in the United States to analyze the cost-effectiveness of home and community based services is that of Skellie, Favor, Tudor and Strauss (1984) who analyzed the Georgia Alternative Health Services Project. Enrollees in this study were required to be Medicaid-eligible, at least 50 years of age, and certified as eligible for residential care. The experimental group was comprised of 444 individuals who received a comprehensive range of community based services including alternative living services, adult day rehabilitation and home delivered services. They also received screening and case management services. The control group of 135 individuals was eligible to receive existing community services. Clients were randomly assigned to the two groups.

After the first two years of enrolment, 22% of the control group (that is, individuals receiving standard community services) and 21% of the experimental group (that is, individuals receiving enhanced community services) were admitted to a long term care facility. Thus, there was no difference between the groups. It was found that the costs of the experimental group were considerably higher than that of the control group and, as such, constituted "add-on" costs to Medicaid-reimbursed services. The authors noted that the cost per quarter for the experimental group was, however, considerably lower than the cost for residential care and suggested that savings should be possible where home care could be substituted for residential care. The authors also noted that it was difficult, under a voluntary screening system, to select individuals for

whom community based services could be cost-effective. In addition, given the low demand for project services, the low volume of clients screened resulted in higher administrative and direct service costs.

In a related study, Vertrees, Manton and Adler (1989) examined the Georgia and California Medicaid waiver programs. These programs were enhancements of earlier programs and placed a greater emphasis on screening to ensure that those receiving community based services would be likely candidates for admission to a long term care facility. The authors found that, for California, the monthly cost of community care was \$350 while monthly long term care facility costs were \$1,144 for a savings of \$794. However, not all individuals admitted to the community program were eligible for residential care and for those who were eligible, community services did not prevent admissions. This also occurred in Georgia. The rate of admission to a long term care facility was similar for controls (that is, individuals receiving standard community services) and for those in the enhanced community program.

Hedrick and Inui (1986) analyzed 12 studies on the cost-effectiveness of home care that used experimental or quasi-experimental research designs and were deemed to be methodologically sound by the authors. These studies involved chronically ill individuals. Hedrick and Inui found that home care services appeared to have no impact on mortality, patient functioning or long term care facility placements. They also found that home care had either no effect on hospitalization or tended to increase the number of hospital days. In addition, they found that either the cost of home care was not affected or was increased by up to 15%.

Weissert (1985) argued that it is difficult to make home and community based services cost-effective because: community care is an add-on to other services and is not a substitute for residential care; community care does not reduce institutionalization rates; only short long term care facility stays can be avoided by community based care; screening and assessment costs are high; overhead costs can be relatively high particularly when community services are small; and improvements in health status are limited.

Weissert, Cready and Pawelak (1988) expanded on this analysis in a study that looked at over 700 citations published since 1960 with regard to the relative costs of community and home based services versus residential long term care services. Of the 700 documents, 150 were selected for review and the 27 most rigorous and generalizable studies were chosen for detailed analysis. They concluded that their analysis indicated that home and community based long term care services usually raised overall health care service use and costs. They also noted that small savings for institutional care were often offset by the costs of the new home and community service.

There is also some evidence that home care is not a cost-effective alternative to residential care from countries other than the United States. Two studies from Taiwan (Chiu, Shyu, and Liu, 2001; Chiu and Shyu, 2001) indicate that residential services are considerably more cost-effective than home care. However, a significant portion of the cost is attributed to the labour provided by informal caregivers, at replacement wages. If one eliminates the informal labour costs, then home care (including out-of-pocket expenses of informal caregivers and clients) is less costly than residential care.

Given the findings of studies such as those reviewed above, American, and other researchers concluded that home care was not a cost-effective alternative to residential care because it did not decrease the rate of admission to long term care facilities and, therefore, that home care constituted an add-on cost.

6.2 Findings That Home Care is Cost-Effective

6.2.1 International Studies

The research reviewed above suggests that home care is not cost-effective compared to residential care. However, the research generally does not compare the costs of community and home based services versus the costs of long term residential care directly. Rather, the studies tend to compare costs associated with the introduction of a new home care service to existing community services. Several recent studies have shown that when the costs of community based services are compared directly with the costs of long term care services, home care has the potential to be a cost-effective substitute for facility care.

Weissert, et al. (1997), in an American study, showed that home care can be cost-effective when home and community based services are designed to be a substitute for facility care. In a study examining the Arizona Long Term Care System, which was the first capitated, long term care Medicaid program in the United States, Weissert and his colleagues noted that the cost of an integrated care program with case management and home care was less costly than a regular American care delivery system, due to reductions in admission rates to facility care. The investigators suggested that savings probably came from several sources, including the use of a payment methodology that encouraged program contractors to place clients in home and community based services rather than risk losing money by using more facility days than their monthly capitated rate allowed.

There are also other international studies which demonstrate the cost-effectiveness of home care. A Belgian study of people with dementia (Scuvee-Moreau, Kurz, Dresse, and the National Dementia Economic Study Group, 2002) found that the average monthly costs in Belgian francs was 445.50 francs for dementia patients treated at home and 2,301.70 francs for dementia patients in institutions. The comparable costs for persons with severe dementia were 556.88 francs and 2,465.28 francs, respectively. Stuart and Weinrich (2001) conducted a broad systems level analysis of the costs of continuing care services in Denmark by comparing the cost trends in Denmark and the United States. Denmark has, for many years, had an integrated system of care delivery for the elderly and persons with disabilities which puts a priority on home care, and includes a home support component. The authors found that, over the twelve year period after this integrated system was put into place, Danish long term care expenditures leveled off, while expenditures in the United States continued to increase over the same time period. More specifically, they found that for the period 1985 to 1997 per capita expenditures on continuing care services per persons 65 years of age or older increased by eight percent in Denmark and 67% in the United States. For persons 80 years of age or older costs actually decreased by 12% in Denmark while they increased 68% in the United States. It appears that the savings in Denmark were the result of reducing nursing home beds by 30%. In the United States, over the same period of time (1985 to 1997) there was a 12% increase in nursing home beds. In a related

study comparing France and the United States, Stuart and Weinrich (2004) note that the French health care system is considerably less costly than the system in the United States. They attribute this difference in costs to a range of factors including lower physician salaries, lower administrative costs, and the preventive care and disease management systems which exist in France for persons requiring chronic, or long term, care.

6.2.2 Canadian Studies

With regard to findings from Canada, Hollander (2001b) in a study of the cost-effectiveness of long term home care found that over time, and for all levels of care needs, home care, on average, was significantly less costly than care in a long term care facility. For example, average annual costs to government for people with moderate care needs (Intermediate care 1 or IC1) in the mid-to-late 1990s, in British Columbia, was \$9,624 for persons on home care and \$25,742 for people in institutions. For people at the highest, or chronic, level of care (Extended Care) the corresponding costs were \$34,859 and \$44,233. In a related study, (Hollander, Chappell, Havens, McWilliam and Miller, 2002; Chappell et al., 2004) note that similar cost differences are seen if one adopts a broader societal perspective which incorporates out-of-pocket expenses and the care time of informal caregivers into the analysis. Finally, in a Veterans Affairs Canada study Pedlar and Walker (2004) report on an At Home Pilot study which offered Overseas Veterans who previously were only eligible for residential care, a home care option. The veterans preferred this option resulting in significant reductions in waiting lists for facility care.

It should be noted that the savings from substituting home care services for residential services are not only theoretical. Actual savings were achieved in British Columbia by holding down future construction of long term care facilities and making investments in home care. (Hollander 2001b). Utilization of home and community care services in fiscal 1984/85 was 92 person years per 1,000 population 65 years of age and older and was 71.7 person years, or beds, for residential care for a total of 163.7. The overall utilization rate was also 163.7 for the 1994/95 fiscal year, but the utilization rate for residential services (long term care and chronic, or extended care, services) was reduced to 50.7 and the utilization rate of home care increased to 113. Thus, over a 10 year period, due to a pro-active policy of substituting home care services for residential services, the utilization of some 21 person years per 1000 population 65 years or older was shifted from residential care to home care for persons with ongoing care needs.

What role has home support played in regard to the cost-effectiveness of long term, or chronic, home care? It turns out that home support is central to this form of home care and the cost-effective substitutions it can engender. Hollander (2001b) provides evidence on the relative costs of home support and professional home care (e.g., nurses, physiotherapists) in long term home care. He found that approximately 90% of the expenditure for long term home care, for people with higher level care needs, were for home support services while 10% were for professional services. Thus, the cost-effectiveness of home care compared to residential care is, in large part, due to home support services.

Some Canadian studies have focused on the cost-effectiveness of home care for individuals with cognitive impairments. Using data from the Canadian Study of Health and Aging (CSHA),⁵ Østbye and Crosse (1994) calculated the net economic costs of dementia, that is, costs that were incurred because of the dementia, using both direct costs (such as home support, physiotherapy, respite care, day centre care) and indirect costs (such as time spent by informal caregivers in assisting clients with activities of daily living). Østbye and Crosse (1994) estimated that the annual direct costs of caring for someone without dementia in the community was \$1,790. In contrast, the annual direct costs of caring for someone with dementia in the community was estimated to be \$4,506 for those with mild dementia and \$8,109 for those with severe dementia. For individuals with dementia, it was estimated that the annual net cost of providing care for those in the community was \$10,100 (\$4,970 for direct costs and \$5,130 for indirect costs). In contrast, it was estimated that the annual net cost of providing care to individuals with dementia in a facility was \$19,100.

Hux, et al. (1998), also using data from the CSHA, examined the costs of caring for individuals with Alzheimer's disease. The authors found that costs increased significantly in relation to the severity of the disease. The annual societal cost, per person, was estimated to be \$9,451 for those with mild Alzheimer's disease and \$36,794 for those with severe Alzheimer's disease. This study provided detailed cost estimates for both formal and informal care services. While the authors did not do a direct comparison of all costs for community and residential services, they did provide comparative costs for component parts of their analysis. A comparison of the community and facility costs for those with severe Alzheimer's disease indicated that the cost of residential care was significantly higher than the cost of care in the community.

Finally, Hebert et al. (2001) found mixed results in a study comparing the costs of home care services, long term care facilities and "intermediate care" residences (similar to supportive housing). Using regression analysis they compared costs by level of care score (scores from 0 to 87) using the SMAF, a functional assessment tool. They found that in regard to costs to government, there was a clear and consistent pattern, across all levels of care scores, which indicated that home care was the least costly option and long term facility care was the most costly option, with intermediate care residential settings having an intermediate cost between home care and care in long term care facilities.

When a broader societal perspective was used, intermediate care residential settings were less costly than long term care facilities, across all scale scores. The researchers found, however, that home care costs were progressively higher than care in the other two settings, the higher the score on the 87 point classification scale. This finding was primarily due to the costs attributed to informal caregivers and community agencies. It is not clear to what extent these costs were strictly limited to activities and/or out-of-pocket expenses due solely to the health condition of the client. A similar study (Chappel et al. 2004), which used fairly strict criteria to ensure that

⁵ The Canadian Study of Health and Aging Working Group (1994) estimated that approximately 8% of the population 65 years of age and older are affected by some form of dementia, and that the prevalence of dementia increases with age, affecting about 35% of those 85 years of age and older. Approximately 50% of those with dementia live in the community. A recent study estimated that 60,150 new cases of dementia are identified each year in Canada (Canadian Study of Health and Aging Working Group, 2000). Alzheimer's disease is the most common form of dementia, accounting for 64% of the individuals with dementia (Canadian Study of Health and Aging Working Group, 1994).

non-government costs were directly attributable to the condition of the client, did not find the same kind of cost escalation as the level of care increased. In fact, this study found that, even using a broader societal perspective, home care costs were lower than residential care costs, by level of care.

7. THE COST EFFECTIVENESS OF HOME CARE COMPARED TO ACUTE CARE HOSPITALS

7.1 Introduction

While current Canadian policy related to short term, acute home care appears to be based primarily on an assumption that home care can act as a substitute for hospital services, through early discharge combined with follow-up from home care, there are, in fact, three aspects to acute care related home care. The first is the direct substitution of home care for hospital care by allowing hospital clients to be discharged earlier and cared for in the community by home care. The second is a direct substitution of community based care for acute care. The third is a preventive function which relates to the reduction of hospital admissions, or re-admissions, by using targeted home care services. These preventive services may also reduce, or delay, admissions to long term care facilities.

7.2 Studies Related to Early Discharge From Hospital

In a British study, Hollingworth, Todd, Parker, Roberts and Williams (1993), studied the cost-effectiveness of early discharge to a hospital at home for hip fracture patients, compared to regular hospital care. The authors found that the patients in the experimental group spent 9.2 fewer days in hospital, resulting in a comparative cost reduction of £722 per patient⁶.

In an Australian study Caplan, et al. (1998) studied an early discharge model plus home/community care for patients who underwent herniorrhaphy or laparoscopic cholecystectomy. They found that the overall cost of treatment was \$200 less for people in the experimental group compared to the control group.

There were three papers which dealt with early discharge plus home/community support for patients with acute chronic obstructive pulmonary disease (COPD). Nicolson, et al (2001) in an Australian study found that, while outcomes were similar, care at home was considerably less than care in hospital (\$745 compared to \$2,543). However, the sample sizes in this study were quite small. In a British study, Roberts (2001) conducted a Randomized Clinical Trial (RCT) of early discharge plus home/community care in Edinburgh. The findings of the study were that while outcomes were similar, the costs of care were lower for the home/community option than for people who stayed in hospital (£877 versus £1,753). Similar results to those above were also found in an Irish study (Murphy, Bryne and Costello, 2002).

Teng, et al (2003) in a Canadian randomized controlled trial (RCT) study found, for persons requiring rehabilitation, that the initial costs were similar for the early discharge stroke group and the hospital group. However, the standard care (hospital care group) had considerably more readmissions, resulting in comparative costs of \$7,784 versus \$11,065 for the early supported discharge group compared to the standard care group. Beech, Rudd, Tiling and Wolfe (1999) found, in an RCT conducted in an inner-city London teaching hospital, that “early discharge to community rehabilitation for stroke victims is cost-effective.” In a New Zealand

⁶ In reporting findings we use the terminology of “patient” or “client” as used by the authors of the respective papers.

review article Anderson, Ni Mhurchu, Brown and Carter (2002) studied the cost-effectiveness of early discharge and home/community rehabilitation for persons who had suffered strokes. Their meta-analysis indicated that the overall costs for the early intervention group were 15% lower than for the standard care group.

Holmqvist, et al. (1998), in a Swedish study, conducted a RCT to evaluate early discharge plus rehabilitation at home for stroke victims. There were no differences in outcomes but there was a 52% reduction in hospitalization for the home rehabilitation group, over a three month period. In a British Cochrane Collaboration paper the Early Discharge Supported Trialists (2002) looked at early discharge plus home rehabilitation for stroke patients. They found that the early supported discharge group had significant reductions in hospital lengths of stay.

Casiro, et al. (1993) in a Canadian study of early discharge of low birth weight infants found a cost saving of \$153,381 for 29 infants in the 1501 to 2000 gram birth weight group. The cost-effectiveness of the early discharge plus home/community support option was greatest for this age group of infants. In a similar American study Brooten, et al (1986) found net savings of \$18,560 for each infant. In another American study Dore (1998) looked at the effects of early hospital discharge with home follow-up care by a clinical nurse specialist for women with high risk pregnancies. A RCT method was used. It was found that the overall cost was significantly lower for the intervention group than the standard care group (\$7,087 versus \$8,952). In addition, women enrolled in the intervention group, before delivery, had fewer hospital re-admissions and greater satisfaction with the care provided than women in the standard care group. In a Swiss study Petrou, et al. (2004) compared early postnatal discharge plus home midwifery support with standard care. They found that while outcomes were similar, there was an estimated average savings of 1221 Swiss francs per mother-infant dyad. Finally, in a Cochrane Collaborative Systematic Review of early discharge plus home support for stable preterm infants who had not established full oral feeds, Collins, Makrides and McPhee (2005) only found one high quality clinical trial, which indicated a shorter hospital stay and a lower risk of infection during home care.

In contrast to the above findings of cost-effectiveness, Coyte, Young and Croxford (2000) in a Canadian study of joint replacement patients found that patients referred to home care actually stayed longer in hospital, had overall higher costs, and had higher readmission rates. Stevens, McKeever, Coyte, Daub, Dunn et al. (2001) in another Canadian study found that early discharge from hospital for low birth weight infants was not cost-effective as the amount of time spent in hospital by the experimental group was almost the same as that of the control group.

7.3 Community Substitutes for Hospital Care

7.3.1 Hospitals and Home/Community Based Care

Patel, Knapp, Perez, Evans and Kalra (2004) compared hospital versus community care services and found that total care costs were £11,450 for persons cared for in the hospital based stroke unit compared to £6,840 for those who received care at home.

There were two Italian studies on the impact of an integrated home care program (including social and health services) on hospital use (Landi, et al. 1999; Landi, et al 2001). These studies indicate a significant reduction in hospitalizations, hospital days and costs, when one compares data for the same patients before and after the implementation of the integrated home care program.

Tousignant, Hébert, Desrosiers and Hollander (2003) conducted an economic (cost-benefit) evaluation of a geriatric day hospital in Québec by comparing changes in the functional autonomy of clients before and after a program of treatment in day hospital services. They found that for every dollar invested in a geriatric day hospital, there was a commensurate benefit for the health care system of \$2.14.

Finally, a Canadian review article of international models of systems of care delivery for the elderly by Johri, Béland and Bergman (2003) found that home care, as part of an integrated system of care delivery, tended to result in overall system efficiencies due to reductions in the number of hospital admission/days and admissions to long term care facilities. Similar findings were obtained by Leung, Liu and Chi (2004) in a Hong Kong cost-benefit, RCT study of the impacts of case management for community dwelling individuals. They found that after the introduction of case management, hospital admissions were reduced by 36.8% and bed days were decreased by 53.1%, compared to the control group. Finally, Hollander and Chappell (2002), in the synthesis report of the Canadian National Evaluation of the Cost-Effectiveness of Home Care also note that integrated systems of care delivery provide greater opportunities for cost-effectively substituting home care services for residential care and acute care services.

7.3.2 The Hospital at Home

There seems to be an emerging literature on the cost-effectiveness of models of care described as “hospital at home.” These are similar to the original model of the Extra-Mural Hospital in New Brunswick.

There were three studies from the United Kingdom on this topic. Jester and Hicks (2003) found that hospital at home was more effective and less costly than care in an acute care hospital. The lower costs were attributable to a 0.9 day reduction in the length of stay and the lack of hospital overhead costs. Coast et al. (1998) conducted a cost-minimization analysis of early discharge to a hospital at home compare to standard care in a hospital. They found that, on average, the cost for the hospital at home option was £2,516 compared to £3,292 for standard care in the hospital. They also note that the findings of lower costs for the hospital at home option were fairly robust based on a number of sensitivity analyses which were conducted as part of the study. In contrast to the above findings, Shepperd, Harwood, Gray, Vessey and Morgan (1998) in a cost-minimization RCT found that there was no difference in costs between the hospital at home option compared to inpatient hospital care for elderly patients, and for people who had had hip and knee replacements, and that costs were higher for COPD patients and persons who had had a hysterectomy.

The hospital at home option is also emerging in a range of other jurisdictions. Board, Brennan and Caplan (2000), in an Australian study, used a RCT design to compare costs for

people receiving hospital at home services compared to standard care in an acute care hospital. It was found that costs were lower for the hospital at home group (\$1,764 compared to \$3,614 for the standard care group), without any differences in clinical outcomes, and higher patient satisfaction. In a Spanish study Hernandez et al. (2003) analyzed a hospital at home option as an alternative to hospitalization for COPD patients admitted to a hospital emergency department. Patients were randomized into hospital at home and standard inpatient hospital care groups (i.e., people who presented at emergency and were subsequently hospitalized). The authors found that there were no differences in mortality or hospital readmissions, but that there was lower subsequent use of the emergency department and better quality of life. The costs for the hospital at home option were also 62% lower than for standard care. Finally, Baxter et al. (2005), in a retrospective, controlled Brazilian study looked at a new model of nutrition therapy for post-surgical patients compared to standard inpatient hospital care. They found that, while outcomes were the same, the costs were one third of inpatient hospital care, for an average per patient cost differential of \$3,100 (in US dollars).

There were also two papers on a pediatric hospital at home model. Bagust, Haycox, Sartain, Maxwell and Todd (2002) in a British prospective, RCT, cost-minimization study found no clear difference in costs between the hospital at home and standard inpatient care options for the National Health Service. They did, however, find that costs to families did not increase, and that patient and family caregiver satisfaction was higher, with the hospital at home option. Sartain et al (2002) in another British study, using a RCT design, found no differences in clinical outcomes, or costs between the hospital at home and standard inpatient hospital options.

7.3.3 Home Parental Nutrition

In a British study Puntis (1998) in a review of home parenteral nutrition, notes that the costs for home parenteral nutrition has been found to be some 25% to 50% of the costs of providing this care in a hospital. In another British study, using cost-utility analysis, Richards and Irving (1996) found that the average cost per QALY for home based care was £68,975 compared to £190,000 per QALY for hospital based care. Detsky, McLaughlin, Abrams, Whittaker, Whitwell, L'Abbé and Jeejeebhoy (1986) in a Canadian study, conducted an economic evaluation of a home parenteral nutritional (HPN) program in Toronto. They found that, over a 12 year time period from 1970 to 1982, HPN resulted in a net savings of \$19,232 per patient, over the 12 year period, compared to Total Parenteral Nutrition provided in the hospital.

7.3.4 Home IV Therapy

In an American study, Harjai, et al. (1997) conducted an analysis of the costs and outcomes of home IV inotropic therapy for patients with advanced heart failure. Based on a retrospective analysis of 24 patients treated at home and in hospital, they concluded that home IV inotropic therapy “reduces hospital admissions, length of stay, and the cost of care, and improves functional class in patients with advanced (NYHA class IV) heart failure.” Coyte, Dobrow and Broadfield (2001), compared the costs of receiving IV therapy in a hospital clinic (using bag and pole) versus initiating treatment in the clinic and returning home to complete treatment using a portable and disposable IV therapy device. The authors used a broad societal perspective in their

analysis and found that, considering all costs, the cost was \$4,636 for the home based alternative compared to \$20,477 for full care in the clinic.

7.3.5 Home Chemotherapy

There were two Australian studies on home based chemotherapy for cancer patients. Lowenthal, Piaszczyk, Arthur and O'Malley (1996) conducted a retrospective overview of home oncology nursing services, compared to hospital based day care. They found that (excluding drugs) the average daily cost for home care was \$49.91 compared to \$116.00 in the hospital. They also conducted a marginal cost analysis in which they found that home care cost \$5.09 more per patient than the marginal cost of care in the day hospital. Rischin et al. (2000) conducted a randomized crossover trial of chemotherapy in the home. They found that while patients preferred the home based option, and had similar outcomes, there was an increased cost of \$83 per treatment compared to receiving treatments in the hospital. However, costs to clients and families were not included in the analysis.

7.3.6 Home Ventilation

In an Israeli pre-post study, Guber, Morris, Chen and Israeli (2002) compared the costs of people receiving a home care management system for respiratory patients to the costs of providing respiratory care to the same people in hospital before their transfer to home care. The average length of stay in hospital of the people on the home care program was 181 days per patient and the average time on home care itself was 404 days. The comparative average monthly cost for home care patients was one third of the costs they had incurred in the hospital, that is \$3,547 and \$11,000 respectively. Tuggey, Plant & Elliott (2003) in a British study looked at home based ventilation treatment for COPD patients. They randomized patients who had frequent repeat admissions into usual care and a home ventilation option, to determine if the home care option reduced costs by decreasing the number of admissions to hospital. While the sample size for the home care group was fairly small (n=13), they found that home based ventilation did reduce hospital admissions and reduced costs by £8,254 per person per year.

Larson, Odegard and Brown (1992), in a Canadian study, conducted a comparative cost analysis of a Respiratory Home Care Program in Alberta for patients on ventilators who were cared for in the hospital (in a long stay unit) and at home. While the sample size was fairly modest, they found that by treating patients at home through the Respiratory Home Care Program, they were able to save some \$2.7 million per year as a result of the cost differential of treating 27 patients at home compared to the hospital.

7.4 Home Care to Prevent Hospital Admissions/Readmissions

7.4.1 General Findings

Mixed results were found by Stuck et al. (1995) in California 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% of surviving participants in the intervention group, compared to 22% 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.

In a British randomized controlled trial (RCT), Townsend et al (1998) analyzed the impact of a community support program using care attendants, for a two week period, compared to standard care. After 18 months, they found that hospital readmission rates were significantly higher for the control group resulting in 30.6 hospital days for the control group compared to 17.1 days for the treatment group. The authors indicate that if the results are extrapolated to all patients 75 years of age who live alone, an average sized health district could save some 23 hospital beds using this approach, at a net annual savings of 220,000 British pounds.

Rich, et al. (1995) conducted a study in St. Louis on the effects of a nurse-oriented, post-discharge multidisciplinary intervention to prevent the readmission to hospital of elderly patients with congestive heart failure, compared to conventional care. In this prospective, randomized trial, it was found that the treatment group had 56.2% fewer readmissions for heart failure and 28.5% fewer admissions for other causes within 90 days of hospital discharge compared to people receiving conventional care. For the treatment group, the overall costs of care was also \$460 less per patient than for the control group. In another American study of a seniors' health promotion program, Nuñez, Armbruster, Phillips and Gale (2003) found that in a community based, nurse-managed health promotion and chronic disease management program for community-residing older adults, such adults had better health and social functioning, and fewer doctor visits and hospital days per year, than a national comparison group.

In an Australian study, Lim, Lambert and Gray (2003) found that patients receiving post-acute care coordination used fewer hospital days in the six months post discharge than patients receiving usual care and that this resulted in an average net savings of \$1,545 per person for the treatment group. There were also two other Australian studies on home care services for people with congestive heart failure. Stewart, Marley & Horowitz (1999) in a randomized study found that a multi-disciplinary home-based intervention, consisting of a home visit by a cardiac nurse resulted in fewer unplanned readmissions and associated days in hospital compared to usual care. There were 100 patients in both the treatment group and the control group. The overall hospital costs for the treatment group, in Australian dollars, was \$490,300 compared to \$922,600 for the control group. In a more recent study, Stewart and Horowitz (2003) found in their own work, and in a broad literature review, that home based care for chronic heart failure patients is some 30% to 50% less costly than usual care.

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 services from a physician-led primary home care and home assistance team providing 24-hour services. 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 and outdoor walking. They also used less long term hospital services than controls. Unfortunately, the authors do not provide a comparative cost analysis for the two groups. In a Canadian/Finnish study, Robertson and Kayhko (2001) studied the cost-effectiveness of an intensive home follow-up program for first time post-myocardial infarction patients. They found that supportive home follow-up reduced in-patient hospitalizations by more than half.

7.4.2 Specific Prevention Initiatives

7.4.2.1 *Surveillance*

In an Israeli study, Kornowski et al. (1995) studied the impact of an intensive home care surveillance program for elderly patients with severe congestive heart failure. A pre-post design (one year before and one year after) was used. The intervention was weekly home examination by internists and a trained paramedical team. The authors found that there was a marked decrease in hospital use and improvements in functional status as a result of the home care surveillance program.

7.4.2.2 *Falls Prevention*

An important preventive and supportive 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.

7.4.2.3 *Assistive Technologies and Home Modifications*

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 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.

There were two Australian studies on home modification based fall prevention initiatives. Smith and Widiatmoko (1998) used simulation modeling to estimate the costs and outcomes of home based fall prevention initiatives. They note that the simulation indicated that home assessment and modifications could result in reduced morbidity, less hospital utilization and, possibly, improved quality of life. Salkeld et al. (2000) studied a home hazard reduction program (through home modifications). They randomized people who had a history of falls and who were to be discharged from hospital into a group which received the hazard reduction program and a group which did not receive the program. They concluded that the hazard reduction program was cost-effective for older people with a history of falls.

7.4.2.4 Wound Care

There were two seemingly contradictory studies on home based wound care. O'Brien, Gahtan, Wind and Kerstein (1999) in an American study found that home based wound care progressively reduced the number of home care visits and visits to physicians. They concluded that home care was more socially and financially acceptable than an inpatient facility. However, Morrell et al. (1998) conducted a RCT comparing the comparative cost-effectiveness of treating leg ulcers using home care compared to visits to a community clinic. They found that, while care in the clinic was slightly more expensive, the outcomes were better in regard to how quickly the ulcer healed in the group which went to the clinic for care.

7.4.2.5 Telemedicine

An interesting and, potentially useful model of care, particularly in more rural areas, is telemedicine. In a Cochrane review paper Currell, Urquhart, Wainwright and Lewis (2005) note that they were not able to find rigorous cost-effectiveness studies of telemedicine. They do note, however, that the technology seemed to be reliable and that the studies considered did not show any detrimental effects. Thus, they indicate that current data are inconclusive and further research is required. Dick et al. (2004), in a Canadian study, analyzed pediatric telehome care support after hospitalization. They found that parents had a strong preference for, and satisfaction with, telehome care. They also note that further research is required.

7.4.2.6 Quick Response Teams

Darby (1992), in a Canadian study, 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.

7.5 Discussion

It appears that the above findings are indicating that the whole issue of home care and its relationship to hospital care is much broader and more complex than seems to be currently understood. At a policy level there seems to currently be a notion that the main focus should be on short-term acute care replacement home care. This is certainly an important area. However, the literature noted above seems to indicate that it may also be useful to focus on approaches to prevent admissions and re-admissions to hospital. There are also a wide variety of new preventive initiatives which could be explored for their efficacy. Thus, while there appears to be a need to re-focus on long term and supportive home care, there is also reason to consider the potential benefits and impacts of enhanced professional and “high-tech” care alternatives. Thus, we may wish to consider expanding both high-tech, and high touch, when it comes to home care in Canada.

8. PALLIATIVE CARE

8.1 Overview of Palliative Care

There were a few overview articles on palliative care⁷ related to history, reviews of research and costs (Robinson and Pham, 1996; Smith, 1998; and Deans, 2004). The most thorough and extensive paper was by Rousseau (1995) from the Veterans Affairs Medical Centre in Phoenix, Arizona. For the interested reader, this is an excellent article which focuses on clients, family members, the approach to care, the importance of affirming life and the recognition of, and reconciliation with, the natural process of dying. The article provides overviews of: the philosophy of terminal care, the management of pain, the adverse effects of analgesic medications, the management of non-pain symptoms, the use of terminal sedation, and the stages of family bereavement.

8.2 Critiques of the Use of Cost-Effectiveness Analysis in Palliative Care Research

There is a growing literature on palliative care, however, there are still relative few good studies on the cost-effectiveness of palliative care. This may be, in part, due to the difficulties of conducting such studies and the current state of development of the methodologies for conducting economic evaluations in this area. A small number of critiques of the application of the methods of economic evaluation were found in regard to the field of palliative care. There were also a few articles on broader methodological issues.

Fowler, Coppola and Teno (1999) note that there are a range of methodological challenges in conducting research on palliative care. These include: the comparative merits and cost-effectiveness of prospective versus retrospective surveys; the use of proxies to provide information about the patient, particularly in the last week of life; and the cost-effectiveness and comparability of alternative data collection strategies.

Goodlin et al. (2004) present the results of a consensus conference on “gaps in knowledge and needed research” in regard to palliative care for persons with advanced heart failure. Topics requiring further research included: dealing with the burden of supportive care; determining which types of patients will benefit from which types of interventions; which interventions improve the quality of life; care coordination across sites of care; and communications about care and patient preferences for care. There were also articles regarding assessment tools and survey research tools. (Booker, 2002; Lecouturier, Jacoby, Bradshaw, Lovel and Eccles, 1999).

Pickett, Cooley, and Gordon (1998) raised a critical philosophical and methodological issue regarding what palliative care is and when it should start. They note that advocates are “suggesting that cost-effective holistic care strategies should be available to patients and families throughout the illness trajectory, not just reserved for end of life care,” that is, palliation should be provided to those in need, not just the dying.

⁷ This review focuses on palliative care *per se*. Palliative care can be seen as a sub-set of the broader topic of end-of-life care.

Chochinov and Kristjanson (1998) summarize some of the key methodological issues in conducting research on palliative care including: selection bias, the time frame used in the cost-effectiveness analysis, the type and/or range of costs to be evaluated, and difficulties in making generalizations from the findings of specific studies.

The main critiques related to using economic evaluations to assess the cost-effectiveness of palliative care focus on issues used in more sophisticated analyses, particularly cost-utility analysis which uses the concept of quality-adjusted life years or QALYs, i.e., comparing the cost of an intervention to the change in quality adjusted life years (compared to no intervention or another type of intervention). This is usually reported as a cost per QALY calculation. Thus, one calculates the time left to live (usually the average age of death) and multiplies it by quality of life scores, and discounts the results to the present day. However, if someone is in palliative care they will probably die in a short period of time. Cella (1995) provides an example of two people who receive similar interventions. He compares one person who has 10 years left to live and a person with 0.1 years (about 5 weeks). The cost per QALY for the first person in his example is \$1,000, while it is \$100,000 for the second person. Egan (2002) provides a similar critique, while Sogaard and Gyrd-Hansen (1998) note the differential cost impacts of different discounting models.

Madden, Lynn and Emanuel (1996) in an exchange of letters discuss the issues of: the point at which one calculates costs and outcomes (the month before death or sooner); whether or not costs related to family members should be included (i.e., a cost to government versus a societal costs perspective) and limitations by ethics boards on certain methodological approaches such as randomized clinical trials (RCTs). Bruera and Suarez-Alamazor (1998) also note the difficulties of using RCTs in palliative care research. The importance of having comparison groups against which one can measure the relative cost-effectiveness of palliative care is critical as one needs to measure the costs of an intervention against something such as: a gold standard; another similar, randomly selected group receiving another intervention; or some other form of comparison group. Thus, while studies of costs *per se*, such as those of Maltoni et al. (1997) in Italy and Uys and Hensher (2002) in South Africa are helpful, they provide little insight into the cost-effectiveness, or comparative value for money, of palliative care interventions.

Douglas, Halliday, et al. (2003) conducted a British study, using literature reviews of palliative care nursing for cancer patients by clinical nurse specialists. They found that while there was some evidence to indicate that interventions using clinical nurse specialists were less costly and more effective than alternative forms of care, the papers on the relative cost-effectiveness of clinical nurse specialists in palliative care were “not of good quality.” Fontaine and Rositani (2000) conducted a study of 373 patients enrolled in a Health Maintenance Organization (HMO) hospice program. They divided the patients into two groups, one receiving after hours care from nurses employed by the HMO and one receiving after hours care from contract nurses. They found that the comparative costs of hospital care were lower for patients served by the HMO’s nurses and that documentation was also better for this group.

Overall, a number of articles noted the lack of good cost-effectiveness studies related to palliative care (Higginson et al., 2003; Smith, 1998).

8.3 Topics Which Were Not Directly Related to the Cost-Effectiveness of Palliative Care

While the main focus of this review was on the cost-effectiveness of palliative care, citations were identified on a wide range of topics related to other areas of palliative care. This section presents a brief overview of these other topics. Interested readers are referred to the citations noted below on these non cost-effectiveness related topics.

There were several articles related to the roles of nurses and nursing practice in the citations reviewed. Clark, et. al. (2002) report on a British study which looked at clinical nurse specialists (“Macmillan Nurses”) in palliative care in hospital and community settings. The authors looked at 12 palliative care settings (7 hospital and 5 community based models) but did not describe them in detail. They found considerable differences in organizational aspects across the 12 settings. The authors found that hospital services used more of an organizational model while community nurses used a network model. It was also found that there was up to a three fold difference in costs across services. These differences could, at least in part, be ascribed to the composition of the palliative care team, particularly the amount of physician involvement. The authors do not provide a cost comparison of community teams versus hospital based teams.

Wilkes (1998), in an Australian study, conducted a literature review of palliative care nursing and reviewed some 180 articles. She found emerging trends related to nurses becoming more involved in service delivery and some aspects of patient and family care. She also found that nurses were conducting more quantitative research, particularly in areas where nursing can have an impact on care outcomes.

Two articles focused on challenges related to palliative care nursing. Sabatino (1999) notes that pressures to cut costs and the advancement of medical technologies may be factors which are causing the health care system to lose its sensitivity to the actual person who requires care. She notes that nurses are finding that they may not have enough time to offer the personal care which they believe they have a responsibility to provide. She also notes the importance of remembering the “meaning of care,” particularly in regard to persons who are approaching death. Schim, Jackson, Sedcy, Gronoward and Baker (2000) studied the knowledge and attitudes of home care nurses toward making referrals to hospice. The authors sent out surveys to 160 registered home care nurses in a mid-west American home care agency and received 75 responses. Consistent with their literature review, they found some degree of reluctance to “give up” patients. The home care nurses resisted making referrals to hospice as long as they felt adequate care could be provided through home care. They also wanted to maintain continuity with patients and had inconsistent knowledge about hospice referral criteria and relative costs.

Rashleigh (1996), in an Australian study noted that palliative care is often provided by doctors and nurses and discusses the role that physiotherapists can play in palliative oncology. Doolittle (2000), and Whitten, Doolittle and Mackert (2004), provide evidence that Telehospice is a cost-effective alternative to traditional palliative home care and that patients were satisfied with the service. However, they also note that some patients were “overwhelmed” about the requirements of telehospice and chose to decline this form of care. Douglas, Normand, et al. (2003) and Spencer and Daniels (1998) studied palliative daycare and day hospice approaches. They found that little research had been conducted in this area, that more research is needed,

particularly around costs and outcomes, and that there seemed to be somewhat different patterns of service use for patients who used these services.

Burge, Lawson, Critchley and Maxwell (2005), in a Canadian study, looked at the issue of transitions between types and sites of care for palliative patients. They note that such transitions are stressful and can take place even in a comprehensive palliative care program. They note that efforts should be made to develop models of palliative care which minimize transitions, and the attendant stresses on patients and family members.

There were also some studies on quite narrow and specific interventions, particularly around medications. Davies and McVicar (2000), in a British study looked at the use of opioid selection in the care of palliative patients. They note that patient preferences and choice should also be considered when making medical decisions about the use of opiates. Lycan, Grauer, Mihalyo, and Houchen (2002) in an American paper provide a discussion on individualized drug therapy.

Finally, there were two Australian papers related to family caregivers. Hudson (2003) notes that providing adequate support for family caregivers is, or should be, a core principle of palliative care, particularly given the often extensive role of family caregivers in the provision of care. He also notes that health professionals need to improve the standard of family-centred palliative care, and notes that more evidence-based approaches are required. Parker, Grbich and Maddocks (2001) point out that there is often a financial impact on family caregivers as they care for a loved one who is dying. They note that while some government support is available, family members may not be aware of existing programs and/or may not meet strict qualifying criteria for such assistance.

8.4 The Cost-Effectiveness of Palliative Home Care and Hospice

8.4.1 The American National Hospice Study

A number of writers have reported on the findings of the National Hospice Study in the United States. This study was conducted in the early 1980s and compared the costs of 833 home based patients, 624 hospital-based hospice patients and 297 patients in conventional care with cancer (Bosanquet, 2002). It was found that, on average, home based hospice costs were \$4,000 lower than conventional care and that hospital based hospice costs were \$1,300 lower than conventional care. However, most of the difference was found in the last month of life and, in fact, the costs for people with long hospice stays (over 3 – 4 months) were higher than the costs of conventional care. There were also differences in what care was provided. Hospice based patients had ten times more home care services than people receiving conventional care who, in turn, were seven times more likely to receive aggressive anti-tumor intervention near death (Robinson and Pham, 1996). The authors also note a study based on a subsequent re-analysis of the data which noted that the “quality of the death” was better in home and hospital based hospice settings.

8.4.2 Cost-Effectiveness Studies of Care Coordination in Palliative Care

In an American study, Aliotta and Andre (1997) provide an overview of the benefits of the integrated models of care delivery which includes palliative care. In another American study Cherin, et al. (2000) evaluated the cost-effectiveness of a community based continuum of care model, using multi-disciplinary staff (hospice trained nurses, social workers and case managers) in California. This model was compared to a traditional home nursing care model for the care of late stage HIV/AIDS patients. While there was a somewhat lower cost for professional services for the Transprofessional Model compared to the Standard Model (\$1,543.95 versus \$1,675.46 for the care episode), savings were significant once drug costs were included in the analysis (\$2,258 versus \$3,598 for the care episode).

In contrast to the above studies Salisbury et al. (1999) in a British review paper note that in their review they found that there was little evidence of better quality of life outcomes for coordinated care compared to conventional home care. However, they did not review comparative cost data.

Finally, Smith (1998) in a review article cites a British study which found that the addition of a nurse coordinator for terminally ill patients reduced costs from £8,814 to £4,414, for a cost savings of 41%. The actual British study (Raftery, et al., 1996) also mentions that in a more refined analysis (restricted to patients who actually died), the ratio of potential cost savings to the cost of service co-ordination service was between 4:1 and 8:1.

8.4.3 Other Cost-Effectiveness Studies

In a study which was somewhat similar to the American National Hospice Study, Deans (2004) provides an overview of hospice service costs in the United States for their government based health insurance systems. The author notes that for 2001, the per diem charge for hospital based hospice care was \$3,069. The comparable, daily costs for hospice in a long term care facility and at home were \$422 and \$125, respectively. The author does not provide comparative costs data on the full episode of care. Viciguerra, et al. (1986), in an American study, compared the costs of caring for terminal cancer patients in the hospital and at home. The authors found a per diem cost-benefit of \$256.00 for in-home treatment. Davis, Walsh, LeGrand, Lagman, Harrison, and Rybicki (2005) found that costs in the Cleveland Clinic's Inpatient Palliative Medicine unit were \$7,800 dollars less than in other peer institutions. They concluded that "...an inpatient palliative medicine unit operating within a comprehensive, integrated palliative medicine program is cost-effective in providing specialized care for people with advanced disease." Levin, Butten, Powell, Gibb, Rader, Mutch, and Herzog (2005), in another American study, found significant cost differences in hospital related costs for those enrolled in a hospice compared to people not enrolled in a hospice over the last 60 days of life, for similar individuals. The comparative costs were \$59,319 for the non-hospice group compared to \$15,164 for the hospice group. Major factors related to this cost differential were the number of hospital days and costs for radiology and laboratory services, drugs, and the costs of physician services.

In a Canadian review article Chochinov and Kristjanson (1998) review a number of articles on the cost-effectiveness of hospice. Among their conclusions they note that the cost

savings reported for home based palliative care may be a function of nearness to death, that family related costs for end-of-life care are substantial, and are often not factored into most cost analyses, and that there may be a two tiered system of palliative care in which families with higher incomes may be better able to afford the help required to support home deaths. In another Canadian study in Alberta, Fassbender, Fainsinger, Brenneis, Brown, Braun, and Jacobs (2005) found that a new community based palliative care program was, overall, revenue neutral and reduced time spent in hospitals. Thus, they found a substitution effect between palliative home care and residential hospice care, and care in hospitals.

In an Italian study, Maltoni, Nanni, Naldoni, Serra and Amadori (1998) noted that there are cost savings for home based palliative care in the last three months of life. They conclude that home care hospices are more satisfactory to patients than conventional home care and that the savings from such hospice care are mainly attributable to shorter stays in hospital. In an American study of Alzheimer's patients, Lane, Davis, Cornman, Macera and Sanderson (1998) found that the per day cost of hospital care was six times the cost of hospice/home care. However, they also found that of the people at home only 8% died at home and 51% still died in hospital.

In a British review article Higginson, et al. (2003) found that, while there were few rigorous cost-effectiveness studies, the evidence did seem to indicate that compared to other models, the benefit was strongest for home care. In a British study of the comparative costs of palliative care in hospitals, hospices and home care Coyle, et al. (1999) found that the average cost of hospital based palliative care was lower than the cost of residential hospice care. In both cases, however, costs were reduced once the patient was admitted to the hospice setting. They also found that the per day costs of hospital and residential hospice care, after admission to hospice, were higher than the per week cost of home based palliative care (£146.82 for hospital hospice per day, £207.23 for residential hospice per day and £121.06 per week for home based care).

9. ASSISTED LIVING AND SUPPORTIVE HOUSING

9.1 Definitions of Assisted Living⁸

Assisted living is a new and emerging component of the care continuum for seniors. While new, it has many antecedents, which have, in fact, been in place in various forms over time. What is new is a shift by policy makers to provide more of a focus on this sector and begin to promote and develop assisted living arrangements more formally into the care continuum. There is no current, agreed upon, definition of assisted living. *Assisted Living* is, in fact, an umbrella term which, at least currently, seems to incorporate a number of new, and previously existing, housing arrangements such as group homes, congregate living, room and board (to the extent some additional supportive services are included), group living situations, and supportive housing.

Nyman (1994) states that assisted living can be defined in relation to two dimensions: the nature of the commodity and the types of services provided; and the care needs of the person receiving the services. He cites Kane and Wilsons' 1993 definition of assisted living as being:

Any group residential program other than a licensed nursing home that provides personal care for persons with impairments in performance of activities of daily living . . . and has the capacity to meet unscheduled needs for assistance.

This definition would leave out nursing homes and most room and board and congregate housing alternatives. A less restrictive example, also cited by Nyman (1994), is that of the Assisted Living Facilities Association of America. They define assisted living as:

A special combination of housing and personalized health care designed to respond to the individual needs of those who need help with activities of daily living. Care is provided in a professionally managed group living environment, in a way that promotes maximum independence and dignity for each resident and involves the resident's family, neighbors, and friends.

Murer (1998) also provides definitions for assisted living for the US Health Care Financing Administration and the American Health Association. These definitions, respectively, state that:

“Assisted living may be defined as services such as homemaker, chore, attendant care, companion services, medication oversight (to the extent permitted under state law), and therapeutic, social and recreational programming, provided in a licensed community care facility, in conjunction with those individuals residing in the facility. This includes 24-hour on-site response staff to meet scheduled or unpredictable needs and to provide supervision of safety and security. Other individuals or agencies may also furnish care directly, or under arrangement with the community nursing facility, but the care provided by these other entities supplements the community care facility and does not supplant it.

⁸ The general literature on housing options for long term care clients refers to the term assisted living. Ontario uses the term supportive housing, and this is the term used in the Continuing Care Research Project.

Care is furnished to individuals who reside in their own living units (which may include dually occupied units when both occupants consent to the arrangement), which may or may not include kitchenette and/or living rooms, as well as bedrooms.

An assisted living setting is: 1) a residential setting that provides or coordinates personal care services, 24-hour supervision and assistance (scheduled and unscheduled), activities, and health-related services; 2) designed to minimize the need to move; 3) designed to accommodate the customer's changing needs; and 4) designed to encourage family and community involvement.”

9.2 The Emergence of Assisted Living

9.2.1 Historical Aspects

Pynoos (1992) provides an overview of the evaluation of assisted living in the United States. He notes that, historically, there has been a separation of housing and social and health services. However, there were early antecedents to assisted living and supportive housing. In the 1920s philanthropists established a number of model “tenements” which were managed by social workers. These residential settings provided assistance with areas related to nutrition and housework. However, during the depression of the 1930s public housing came to focus on “no frills” housing and the link to services was severed, at least in terms of government funding. However, by 1959 the American federal government instituted a “Section 202” program which included some amenities. There were some ongoing enhancements to public housing over time to incorporate more service aspects. President Kennedy provided an impetus to this movement in the 1960s. For a more extensive review the interested reader is referred to Pynoos (1992). The themes of the separation of housing and services seem to be consistent across jurisdictions. For example, Harrison and Heywood (2000) in a British study note the current, and historical, lack of linkage between health, housing and community care. They note that conventional, and current, concepts of housing focus on bricks and mortar and that health is still often conceptualized in terms of the medical model of care.

Another critical aspect of assisted living and supportive housing is the public/private dimension. In Canada, and other jurisdictions, there are numerous private pay options, and government subsidized options. Herd (2001) summarizes the distinctions in the United States, between more upscale, private-pay, assisted living, and “room and board” care. The assisted living sector is tied to the real estate, hotel and service industries. They are often seen as new lines of business for companies in these industries. While there is also private pay room and board, state governments often use these types of services as “housing of last resort” for poor, elderly low-income Americans with lighter care needs who do not need nursing home care. Nolan and Rimbach (1997) do, however, note that there are also some “affordable” assisted living alternatives for lower income individuals. These developments take advantage of existing housing subsidies and, through coordination, government funded home care programs.

9.2.2 Factors Related to the Emergence of Assisted Living/Supportive Housing

A number of factors have been noted in regard to the emergence of Assisted Living. In a comprehensive review of the expanding concept of home care, Kane (1995) discusses the move of home care from being “care in the home” to care for people living in the community, including assisted living arrangements. Some of the rationales which have been put forward for assisted living are:

- The ability to focus on individualized care, compared to nursing homes (i.e., residential long term care);
- Greater freedom around schedules, lifestyles, the choice of food and other “independence” factors, compared to nursing homes;
- The belief that assisted living can provide a cost-effective alternative to nursing homes;
- Positive examples of home care organizations with a short stay residential component such as the On Lok program in San Francisco’s Chinatown and a number of related programs referred to as Programs for All-Inclusive Care for the Elderly (PACE);
- The trend to delegation of professional nursing functions to home support staff or care aids, facilitating supportive care in a congregate environment; and,
- Advocates who have claimed that hospitals and nursing homes discriminate on the basis of health and disability through diagnosis and treatment, and case mix funding (e.g., more funding for higher care needs clients). Thus residential settings make distinctions based on disability while housing arrangements do not.

Kane (1995) also points out potential **negative** factors related to assisted living. The first is the interface between assisted living and licensed care facilities, and that at some point people may be forced to move out of assisted living arrangements into care facilities, by policy or legislation, against their will. Issues of legal liability are also a concern related to transfer of function arrangements in which professional functions are transferred to non-professionals. There are also potential liability issues related to health and safety considerations, particularly if a significant portion of the residents have aged in place and require significantly more care services than they did when they first came into the assisted living setting. Policy makers are also concerned that while advocates promote independence, they still wish to hold the state liable for accidents or other mishaps.

Similar issues to those noted above, and cost estimates, are made by other authors (Becker, Stiles and Schonfeld, 2002; Bicknell and Pike, 1993; Bowe, 1993; Fahrenfort, 1995; Hatton, Emerson, Robertson, Henderson, and Cooper, 1995; Moore, 1991; Moore, 1995; Moore, 1996; Ruchlin and Morris, 1987; Sohng, 1996; Valins, 1995).

A complementary set of rationales to those proposed by Kane are noted by Regnier and Overton (1997). They note the following nine reasons for the growth of assisted living:

1. **Growth in the Number of the Older Old:** There is an ongoing growth in the numbers, and relative proportions, of people over 85 years of age who are frail and require a range of supportive services to help them maintain their independence.
2. **Continuing Increases in Long Term Care Costs:** Assisted living is seen as a lower cost alternative to long term residential care both by governments and individuals.
3. **Changing Preferences of Consumers and Their Advocates:** People prefer to age in place rather than go into a long term care facility.
4. **Questioning the Medical Care Model:** People who have lighter care needs may not require medical care to the same extent as is provided in a long term care facility.
5. **Growth of New Technologies and Care Systems:** Numerous, new technological innovations have been developed which can allow people to live more independently and to “age in place” in congregate housing settings.
6. **Lack of Family Based Care Opportunities:** With the increase in the proportion of middle aged women in the workforce, adult children are demanding more flexible housing alternatives which provide supportive care, thereby allowing adult children to stay involved with their parents while working, with a sense of security that assistance will be provided, as required, in their absence.
7. **Changing Attitudes Regarding Regulation:** More stringent regulations have been applied to long term care facilities to prevent abuses and/or poor care. This however, has resulted in less of a homelike environment. Assisted living options are seen as more cost-effective, humane and appealing environments.
8. **Awareness of Cross-Cultural Solutions:** We are now more attuned to learning from other countries and cultures about how to provide non-institutional supportive housing.
9. **Interests of Corporate America:** Business interests see the assisted living sector as a potential new line of business.

9.2.3 Models of Assisted Living/Supportive Housing

Given the continuing development of “housing plus services”, definitions and models continue to be in flux. Some people make distinctions between room and board options, congregate living, supportive housing, assisted living, campuses of care, and so on. Thus, there is

currently a growth in the variety of models, and the key dimensions on which these models are based.

Some sets of characteristics or components of assisted living/supportive housing have already been noted in the definitions presented above. Gorshe (2000) provides a definition of assisted living which incorporates the generally recognized components of this model of care. She states:

According to the Assisted Living Federation of America, assisted living is ‘a special combination of housing, personalized supportive services, and health care designed to respond to the individual needs of those who require help with activities of daily living. Assisted living care promotes maximum independence and dignity while encouraging the involvement of a resident’s family, neighbors, and friends.’ Basic services most often provided include:

- 24 hour a day staffing;
- personal care;
- meals and snacks;
- housekeeping, laundry, and maintenance services;
- a personalized care plan describing how health care needs may be addressed;
- and
- activities and transportation resources that are available.

She also noted that assisted living models may also have “universal workers” who provide a range of personal care and housekeeping services, and may also include nursing staff who assess residents, assign tasks to the universal workers and train and monitor these workers. The use of nurses in assisted living setting is also raised by Wagner and Vickery (1997).

Marosy (1997) distinguishes three types of partnership models between home care agencies and assisted living residences. They are:

- **The Informal Model:** In this model the assisted living provider hires its own staff for private-pay health monitoring. The home care agency simply provides one-to-one care for clients who live in the assisted living building. There are no written agreements or partnerships between the assisted living organization and home care. This is the most common model.
- **The Preferred Provider Model:** In this model the assisted living provider still hires its own staff but enters into a letter of agreement with one or more home care agencies to serve as “preferred providers” of home care services.
- **The Comprehensive Model:** In this model there is a formal contract between the assisted living provider and the home care provider to have the home care provider provide the full range of private-pay personal care and health monitoring for all residents, and government subsidized home care services.

Similar models are also described by Micheli (1999). Cinelli (1996) provides an overview of specific building design issues. A number of other alternatives are also noted in the literature. Adler (2000) provides an overview of an affordable retirement community model developed for middle class individuals. Joseph (2005) provides an example of how a seniors housing initiative, with health related supports was used as a major component in an urban renewal related initiative in Detroit. Finally, Lindquist and Golub (2004) present the innovative option of using cruise ships as assisted living residences.

9.3 The Cost-Effectiveness of Assisted Living

There is starting to be an emerging body of evidence on the cost-effectiveness of assisted living. Most of these studies compare the costs, or costs and outcomes, of assisted living with residential long term care. This literature is coming out of a number of countries.

In a Swedish study, Wimo et al (1995) conducted a cost utility analysis of a group living situation for dementia patients. The authors compared 46 patients in group living with 39 patients receiving home care and 23 institutionalized patients. Their overall finding was that the cost per gained quality-adjusted life year was most favourable for the group living alternative. This was quite a sophisticated study that looked at static and dynamic (change over time) models. The authors used Markovian analysis and had sound, validated scales of well being (the outcome measures). In the static model, home care was the most favourable outcome. However, in the dynamic model, which looked at changes over time, group living was the most favourable outcome for people with intermediate to high level dementia. The difference in outcomes between the static and dynamic models is, at least in part, attributable to the fact that patients in group living deteriorated at a slower rate than those receiving home care.

In a British study of different types of assisted living, Emerson, et al (2001) analyzed the comparative quality and costs of supported living residences and group homes in the United Kingdom. This study essentially compared different types of “assisted living” arrangements. The authors found that, once adjustments were made for client characteristics, there were no statistically significant differences in service costs. The sample consisted of 63 people in supported living residences, 55 in group homes of 1 to 3 people (small group homes) and 152 people in large group homes (4 to 6 co-residents). There were also relatively few differences in outcomes across the three groups.

There were three American studies on the cost-effectiveness of assisted living. Nyman (1994) conducted a review of studies of the costs of assisted living arrangements and concluded that, overall, the unit costs of assisted living are lower than the unit costs of residential long term care facilities.

Schinka, Francis, Hughes, LaLone and Flynn (1998) compared the costs and outcomes of inpatient care and supportive housing for substance-dependent veterans. Patients in both settings went through a three week substance abuse treatment program in a large, metropolitan Veterans Affairs medical centre. The clients in the residential program resided in the hospital while the other clients lived in assisted living apartments and walked four blocks to the hospital each day. The clients in both groups were similar at baseline. The treatment outcomes were also similar.

However, the cost for the inpatient group was \$9,524, compared to \$4,291 for the supportive housing group. Most of the differential in costs between the two groups was related to the cost of housing (i.e., hospital versus assisted living residence).

Leon and Moyer (1999) conducted an analysis of the comparative costs of assisted living versus nursing homes for patients with Alzheimer's disease. Costs of care were moderately lower in assisted living arrangements compared to nursing homes. Combining all levels of severity, the authors found that the annual costs of assisted living were 13.9% lower than the costs for nursing homes.

9.4 Supportive Housing in Canada

9.4.1 Overview of Supportive Housing in Canada

9.4.1.1 Context

Canada's six million citizens over the age of 55 will have grown to 10 million by 2021. By 2021, 29 percent of Canada's seniors will be in the 75-84 age bracket and another 13 percent will be over age 85. Older senior citizens are at greatest risk of incurring disabilities that hinder or completely prevent their ability to maintain an independent household. The rapid growth in Canada's elder population provides a number of opportunities to respond to the housing and service needs of older people.

One such innovation is assisted living/supportive housing, sometimes called supportive housing in Canada. Assisted living/supportive housing is usually defined as the provision of supportive services to elders in buildings designed to meet their needs. According to Golant (2002) "The best designed and operated assisted living [supportive housing] facilities can accommodate older persons with physical and cognitive deficits who require a protective environment, regular and unscheduled assistance with daily living activities and some nursing care." An assisted living/supportive housing complex typically consists of individual apartments, but sometimes individual rooms, and the opportunity to receive some or all meals, housekeeping, personal care and recreational services. Residents usually pay a fixed charge for their apartment rental and varying charges for services depending on the service plan they select.

Assisted living/supportive housing in Canada emerged out of three interrelated trends:

- The improved understanding of the housing preferences of older people;
- The rapid increase in the numbers of older people in Canada requiring assistance with daily living activities and those living alone; and
- The improved financial status of older Canadians.

9.4.1.2 The Development of Assisted Living/Supportive Housing in Canada

The development of assisted living/supportive housing in Canada has been slower, mainly because the financial incentives are not the same. In Canada, every province subsidizes the cost of nursing home care, regardless of financial status (except in the Atlantic Provinces

where there are incentives to use assisted living/supportive housing) and home care services. However, because the budgets for home care services across the country has been pushed to serve the post-acute population, it is becoming more difficult for home care programs to meet the on-going needs of the frail elderly. Some provinces have shortages of nursing home beds, making it more difficult for elders to obtain a bed. As well, many provinces are actively working to limit nursing home placement to those most in need, a policy that has the effect of forcing moderately impaired elders to seek other alternatives.

The only comprehensive study of assisted living/supportive housing in Canada found that assisted living/supportive housing is developing in Canada because of the poor quality and short supply of nursing home beds and limited availability of home care (Golant, 2001). For-profit developers, usually larger companies with experienced housing management firms, have been leaders in the assisted living/supportive housing movement in Canada, as they have been in the U.S.

There are no reliable statistics on the numbers of assisted living/supportive housing units in Canada or the services they provide. Golant (2001) found that unlike facilities in the US, Canadian assisted living/supportive housing units were less likely to be free-standing and more likely to be associated with a nursing facility. They were also less likely to hire dedicated personal care staff and more likely to contract out for staff as they needed them. They served a less needy population than those in the U.S. Few had the capacity to care for individuals with Alzheimer Disease. At this point in time, assisted living/supportive housing facilities in Canada are less likely to cross over into providing nursing home levels of care and becoming as regulated as nursing homes are.

Golant (2001) found four trends in Canada's assisted living/supportive housing movement:

- Developers are producing shelter and care facilities similar to the US facilities;
- The shelter and care industry is consolidating with the smaller providers being bought up by larger companies;
- A small number of experienced management firms have emerged; and
- Several US-based assisted living/supportive housing companies are aggressively pursuing development opportunities in Canada.

9.4.1.3 Policy Related to Assisted Living/Supportive Housing

The role of government in the assisted living/supportive housing movement has focused on two areas: the extent to which government might subsidize the cost of assisted living/supportive housing for low income elders and the extent to which regulations should be developed for this area. Currently relatively few elders can afford to move to assisted living/supportive housing because the average annual cost is about \$3000 per month. Many elders do not have the monthly income to cover those costs, although if elders used their assets, especially the value of the primary home, assisted living/supportive housing can become very affordable. In some states in the US, public funds are being used to subsidize assisted

living/supportive housing for low income seniors because assisted living/supportive housing represents a popular and cost effective alternative to nursing home admission.

A second area of growing public concern has been the lack of regulation of the sector. Examples of fraud and poor service are emerging in the US raising the very real possibility that the sector will be regulated. While some regulation is necessary for consumer protection, if the sector becomes as regulated as the nursing home sector is, the opportunities for innovation will be limited.

There continues to be an evolution of a wide range of activities related to supportive housing in Canada. In regard to policy and legislation, the Canadian Mortgage and Housing Corporation (CMHC) published a report entitled *A Legal Framework For Supportive Housing for Seniors: Options for Canadian Policy Makers* (Hall, 2005). This report provides an overview of key issues which need to be considered from a policy and regulatory perspective in regard to further developing the supportive housing sector. The report provides a discussion of different models for regulating supportive housing. These models are: no special regulation; accreditation; consumer protection; and legislated minimum protection. The report notes that policy makers will need to consider six main policy areas. These are to: develop a comprehensive supportive housing statute; establish an “elder ombudsman”; create national “best practices” guidelines; establish a “centre of excellence” in supportive housing; establish a (non-legislated) system of accreditation; and establish a central information database for supportive housing.

It should be noted that steps have recently been taken to develop a database for supportive housing. Social Data Research (2005) conducted a project in which they prepared an inventory of social housing projects based on 244 supportive housing projects for seniors across Canada.

9.4.1.4 Discussion

In summary, the assisted living/supportive housing movement is underway in Canada, fuelled by consumer choice and private sector recognition of a gap in appropriate housing options for seniors. A key issue will continue to be affordability for many seniors. It is likely that Canadian policy makers will find that they will have to regulate assisted living/supportive housing to ensure the safety and quality of care of residents. As well, provinces may find that on its own merits and as a cost-effective alternative to nursing home care, subsidizing residents in assisted living/supportive housing is good policy.

9.4.2 Definitions and Models of Assisted Living/Supportive Housing in Canada

Social Data Research (2000) notes that the Canadian Mortgage and Housing Corporation definition of supportive housing is as follows:

Supportive housing is the type of housing that helps people in their daily living through the provision of a physical environment that is safe, secure, enabling and home-like and through the provision of support services such as meals, housekeeping, and social and

recreational activities. It is also the type of housing that allows people to maximize their independence, privacy, decision-making, and involvement, dignity and choices and preferences

The Royal Canadian Legion in a review of housing issues for veterans and seniors state that the five pillars of a supportive living environment are as follows:

- Residential;
- Supportive Physical Environment;
- Support Services;
- Progressive Management Philosophy; and
- Affordability and Accessibility .

In terms of residents of supportive housing, Social Data Research (2000) studied 10 supportive housing projects and noted that common characteristics of individuals living in the environment were as follows:

- The age of the residents in the ten projects was between 76 and 85 years although some were over 100 years of age;
- The majority of residents were women living alone;
- Residents were from all income groups including many who live on the basic government pensions;
- Supportive housing addresses the full range of health related needs and the majority of residents needed help with activities of daily living such as shopping, cooking, laundry, etc.;
- The majority of residents were mobile but many uses assistive devices such as canes or walkers; and
- Very few, if any, of the residents had any cognitive impairments.

In another study conducted by Veterans Affairs Canada, Gnaedinger (1998) describes a number of models of supportive housing. These options or models are summarized in Table 2.

Gnaedinger (1998) also provides an overview of what elements characterize successful housing options. These elements are as follows:

- The accommodation is accessible, well-built, comfortable, bright and attractive enough to make the resident(s) feel proud to live there;
- The design allows for privacy while facilitating social interaction;
- There is an attractive, central gathering place for social events and other recreation;
- The complex/home is part of a neighborhood, both aesthetically and socially;
- Residents have a choice of physical features, services, and amount of privacy/social interaction;
- There is a shared belief system, culture, or social stratum;
- The nature of the resident(s) suits the type of option (for example, small group homes are suitable for social people);
- Maintenance associated with home owning;

- There is reliability and flexibility in support services provided – services are increased or decreased to match the changing needs of residents, and are provided at the margin of need only, so as to maximize independence; and
- Staff/service providers are personable, friendly, approachable, respectful.

A similar, and more current, listing of the components of supportive housing is also presented in a recent study by Social Data Research (2005). They conducted an inventory of some 244 supportive housing settings across Canada. As part of this process they asked what services were available in these settings. The following are a list of common components or characteristics of supportive housing.

Almost all services provide:

- 24-hour security;
- unit repairs/maintenance;
- meals served in a common dining room;
- recreational activities;
- hospitality services such as personal laundry and housekeeping;
- help with medications; and
- assistance with daily living.

Some projects also offer:

- transportation assistance (such as a facility dedicated van);
- escorts to appointments;
- doctor visits;
- social services (such as counseling and referrals);
- mental health services;
- meals on wheels or wheels to meals; and
- palliative care.

Table 2: Models of Supportive Housing in Canada

Homesharing	Works for seniors who want to remain in their own house in the community, and who need security and companionship, and a little help with home maintenance. Many seniors make this arrangement on an informal basis (finding a tenant and negotiating help around the house) rather than through homesharing agencies.
Accessory Apartments	Works for those adult children and their parents (typically a widowed mother) who get along and who are able to negotiate an arrangement openly and realistically. Occupants of accessory apartments are typically elderly persons who are quite independent (e.g., mobile) but who need the security that “someone is there just in case).
Granny Flats/Garden Suites	Like accessory apartments, require that occupants get along, are able to communicate, and that adult children are available and willing to provide support services to the parent(s). Residents of granny flats need to be reasonably independent – to be able to get out on their own – or they can become very isolated, especially if their children/in-laws work outside the home all day.
Abbeyfield Houses	Were initially designed in Great Britain for the elderly, unattached people and those who were socially isolated and at risk of self-neglect. This group situation is for seniors who need more supervision and support than those relying on family or tenants for assistance, but is not suitable for seniors who need extensive personal care or whose behaviors are socially unacceptable in a small group setting.
Satellite Homes	Common in Ontario’s southwest region, are suitable for seniors who can live in a small group setting and whose needs are for personal care to intermediate care.
Congregate Supportive Housing	Is suitable for a wide range of seniors, since it usually provides a mix of private and publicly funded support services. A large enough complex can accommodate more diverse personalities and needs than a small place like an Abbeyfield House, because of a dilution of personalities and the likelihood that there are more experienced staff on site. Ideally, congregate supportive housing has flexible services that can be augmented or diminished as the resident’s needs change.
Campus Models	Can accommodate seniors with no need for assistance, to those who just need to be provided with meals, to those who need nursing care – that is the main feature of this model. Another important feature is that spouses at different levels of independence can live within a few metres of each other, each one in surroundings suitable to their needs.
Other Models	Includes creative renovations, which often allow seniors to remain in their familiar communities; co-operative housing, which offers the important social component of neighbourliness; mobile home parks, which can be very supportive, small communities; and seasonal supportive housing in hotels and motels.

As a final note, an interesting housing model has also been developed in Edmonton, Alberta. This can be best described as a “careaminium”. It is a setting in which people purchase, on a life lease, a condominium, which can be one or two bedrooms, but the facility owner provides all services available in a long term care facility. This allows spouses to live together even if one has high care needs (something which may not be possible in a regular long term care

facility), and provides a much higher level of care than would be found in a regular supportive housing setting.

9.4.3 Supportive Housing in Ontario and Toronto

9.4.3.1 *Supportive Housing in Ontario*

The Ontario Ministry of Health has been funding supportive housing services since the middle of the 1993/94 fiscal year when these programs were transferred to the Ministry of Health from the Ministry of Community and Social Services. There are a number of legislative Acts which form the legal basis for supportive housing in Ontario. These Acts are as follows:

- The Residents' Rights Act;
- The Landlord and Tenant Act;
- The Rent Control Act; and
- The Residential Tenancies Act.

There are also additional Acts which prescribe the delivery of home care and other related services to individuals living in supportive housing settings.

The Ontario Ministry of Health (Long Term Care Division, 1994) defines supportive housing in the following manner:

Long-Term Care supportive housing provides personal support services and essential homemaking in permanent, preferably not-for-profit, community residential settings, for frail and/or cognitively impaired elderly persons, people with physical disabilities or acquired brain injuries and those living with HIV/AIDS, when their service requirements justify the need for the availability of a 24-hour, on-site assistance.

Long-Term Care supportive housing policy reflects the principle of individualization, flexibility, integration, independence, stability, safety, and self-help.

There are two major types of services provided in supportive house settings. Robinson (2001) provides the following overview of these services:

- *Personal support services* refer to functions that assist an individual with personal hygiene needs and activities of daily living, such as: walking, dressing, eating, taking pre-measured medications or supervision of these activities.
- *Essential homemaking services* may include activities like: light house cleaning, shopping, planning or preparing meals, and supervision.

Professional services such as nursing and rehabilitation therapies (physio, occupational and speech therapies) are provided to supportive housing clients through the local Community Care Access Centre (CACC).

The key elements of policy related to supportive housing are noted in the Ontario Ministry of Health Policy and Procedures Manual for Long-Term Care Community Services (2001/2002). These elements are summarized in Table 3.

Table 3: Key Elements of Supportive Housing Policy in Ontario

A Supportive Housing program must provide homemaking/personal support/attendant services with the personal support/attendant component of the service available 24 hours a day.

Generally, a landlord tenant relationship exists for the housing component of the service and the resident is expected to pay the cost of his/her accommodation as well as other usual costs (food, clothing, furniture, entertainment, etc.) of living in the community. In group home/congregate settings with central meal preparation, the accommodation (meals and shelter) cost is covered by room and board payments from the residents. The homemaking/personal support/attendant service is provided at no cost to eligible clients.

The CCAC provides professional services to supportive housing programs on an outreach/visitation basis. In some exceptional cases, supportive housing programs that provided professional services such as nursing, occupational therapy, and physiotherapy prior to 1994, either directly or through purchase of service may continue to do so for the near future. The one exception is the Acquired Brain Injury Program, which may either purchase or provide the Behavior Management Service directly.

A supportive housing program will only be funded where eligible clients cannot be supported cost-effectively by the homemaking/personal support/attendant service on a visitation basis. In addition, there must be a sufficient number of individuals who require enough care to justify 24 hour-a-day personal support services at a cost-effective unit cost.

In some circumstances, supportive housing programs rather than the CCAC provide the homemaking component to residents who may not require the full availability of service 24 hours a day. If this is to occur, clients must meet CCAC eligibility for service and the provision of service through supportive housing is more cost-effective.

Supportive housing programs and CCACs must work together to ensure that eligible clients receive the services they require in the most cost-effective manner. A protocol for referrals and joint care planning between the CCAC and the supportive housing program is required and must be reflected in the annual service plans of both organizations.

Clients receiving services through a supportive housing program may also access community support services for which they are eligible. The client pays any fees that may be charged to the community support service provider.

Supportive housing programs budget only for the services they provide directly. For example, the professional services provided by the CCAC should not appear on the budget or in the quarterly status reports of the supportive housing provider. They will be reported by the CCAC. Similarly, long-term care community services utilized by clients (e.g., adult day service) should be budgeted and reported by the providers of the services.

9.4.3.2 Supportive Housing in Toronto

In 2001 some 34 organizations provided supportive housing services in the Toronto area. Robinson (2001) notes that services can be provided in three ways in Toronto, as follows:

- By an independent agency that comes into the residence (e.g., CANES delivers services in Highway Terraces Apartments as well as other apartments);
- By an agency related to the housing provider (e.g., Woodgreen Community Centre provides services to Woodgreen Housing Inc.); or
- Directly by the housing provider (e.g., Copernicus Lodge delivers services in Copernicus Lodge).

She also notes that supportive housing programs can be organized differently, such as:

- Selected units in a mixed housing building;
- Segregated housing for special populations; or
- Group homes, other alternatives.

In terms of benefits provided by supportive housing, Robinson (2002) notes the following positive impacts on seniors, their families, the health care system and the greater community through:

- Encouraging trust, security, social interaction and the development of a 'community' within the residential building;
- Supporting choice to remain in their homes;
- Reducing stress for family and caregivers;
- Providing a planning, coordination and referral function for clients, professionals, other services and the health care system;
- Providing a flexible delivery system based on client needs;
- Being able to address the needs of those who are more vulnerable (e.g., mental health, addictions, low income, frail);
- Operating within different types of housing;
- Encouraging the appropriate use of health care resources (e.g., prevents placement in nursing homes, supports earlier hospital discharge);
- Providing respite and support during recovery from illness; and
- Providing savings in health care expenditures.

As noted above, there are many models of supportive housing. Table 4 presents an overview (Robinson, 2002) of the different models in Toronto on a continuum of independence from the Low Support High-Rise Model (greatest independence) to the High Support Specialized Model (least independence).

Robinson (2002) also presents a summary of best practices in regard to supportive housing for seniors. While developed in the Toronto context, these best practices can have applicability to the supportive housing sector more generally. These best practices are presented in Table 5.

Table 4: Models of Supportive Housing

Low Support High-Rise Model	A senior living in an apartment building with Supportive Housing Services (SHS) has access to other Community Support Services (CSS) by virtue of accessibility to the service provider staff, other on-site services (e.g., congregate dining), case finding and referral linkages. A senior in a building without the SHS will likely have more difficulty knowing about or accessing services, and is far more dependent upon his/her personal, informal network for support.
Low+ Support Congregate Model	In this case, proximity to support is similar to the Low Support High-Rise Model. However, since the seniors do not live in totally self-contained units, have common dining and other programs, then this increases the level of support. Several providers have identified this model as successful with vulnerable seniors who also have significant mental health problems (e.g., LOFT/John Gibson House).
Medium Support Multi-Service Model	A senior living in a housing complex that is very close or attached to a multi-service agency, has easy access to other services that are operated on the larger site (e.g., elderly person's centre, medical clinics, restaurant, etc.). Whether receiving SHS or not, the proximity to both SHS staff and other community support service agency (CSSA) program staff minimizes isolation and increases opportunities for well-being and security. Because of the multitude of services available within this type of organizational design, some seniors may be able to age in place longer than in less supportive models.
Medium+ Support Horizontal and Vertical Campus Models	In the <i>horizontal campus model</i> seniors live in a separate complex as part of a larger site along with the long-term care [facility], CSS and other services (e.g., Villa Colombo). This is geographically different to the <i>vertical campus model</i> whereby seniors live within the same building as long-term care [facility], CSS and other services (e.g., Copernicus Lodge). In both cases, the senior has enhanced access to a comprehensive range of services (which in the Baycrest Centre example includes a hospital specializing in geriatric care). The advantage to these models is that a senior has a smoother move into different service modalities (e.g., long term care facility) on the campus when his/her needs can no longer be met through supportive housing and/or other CSS. The major disadvantage to the horizontal campus is that the senior must leave all friends and supports to go into the long-term care facility, whereas un the vertical model the senior is not leaving the building or friends, and is familiar with the people and services
High Support Specialized Supported Model	This model provides a closely monitored, specifically designed physical environment for seniors with special needs. SHS are often enhanced special programming and close linkages to the parent CSSA for special services.

Table 5: Summary of Key Best Practices in Supportive Housing Services for Seniors

<p><i>Philosophy and Policy</i></p> <ul style="list-style-type: none"> • Fostering independent living • Client-centred approach • Assessment and coordination of care and service • Community development • Client access to 24-hour support • Emergency response • Security checks • Integration within health care system • Responsiveness to health care system needs (e.g., in discharge capacity with hospitals) 	<p><i>Administrative</i></p> <ul style="list-style-type: none"> • Leadership through common vision, commitment, and an understanding of seniors' needs and informed decisions • Providing specialized environments for special needs (e.g., Alzheimer's) • Funding for all tenants under one envelope or buildings in close proximity to maximize flexibility • Creating efficiencies through critical mass • Use of client information management software • Using an internal waitlist for seniors in need of services
<p><i>Service Delivery</i></p> <ul style="list-style-type: none"> • Flexibility in delivery in a variety of housing models • 'Case management' functions of case finding, care/service coordination, referrals and community development • Providing programs for all tenants (e.g., congregate dining) to promote awareness and create community • Addresses multiple client needs (i.e., frail, Alzheimer's, mental health, cultural) • Flexible, consistent staffing • Sensitivity to multicultural and other client needs in recruiting, hiring, programs and education • Accessible communication tool for frontline staff (e.g., pager, cell phone) 	<p><i>Linkages and Relationships</i></p> <ul style="list-style-type: none"> • With all tenants • With all housing providers for assessments, admission, ongoing reviews, and other issues • Access and linkages to a larger range of services, including health and long-term care • With hospitals and other formal health care service providers (e.g., physicians, clinics, outreach), other community service groups, volunteers, local business, cultural organizations and networks • Developing alliances with other health care agencies providing related services in the same building (e.g., in mental health)

Lum, Ruff, and Williams (2005) recently completed a study of seniors and social housing in Toronto. They note that the findings from their study are of relevance to policy makers and others. Specifically, they note that their findings:

- Emphasize the important role played by community support services in maintaining the health, well-being, independence and quality of life of seniors;
- Indicate that community support services are most effective when integrated and managed around the needs of the individual. While the political fear is always that given access to services, people will maximize use and costs, thus creating new cost pressures, under intensive case management the incentive is the reverse: to use the minimum level of services necessary to maintain the individual at the highest possible functional status;
- Suggest that community support services make important contributions to the sustainability of the health care system as a whole by moderating demand for more costly acute and institutional care, and particularly, by reducing utilization of emergency (911) services. Rather than being viewed as an “add-on” to the hospital and doctor mainstream of Canadian Medicare, the findings suggest that community services in effect subsidize the Medicare mainstream; and
- Demonstrate that the provision of client-centred and integrated support services through intensive case management is facilitated in supportive housing as compared to social housing. This is also true for seniors with cultural and language barriers, who without case management, could face significant barriers to accessing needed services.

10. DISCUSSION AND CONCLUSIONS

This literature review points to some key findings. There seems to be some evidence to indicate that it may be possible to obtain greater efficiencies if services are organized into more comprehensive and integrated service delivery systems. Unfortunately, there are few, if any, studies which provide head to head comparisons of different systems of care delivery. Nevertheless, one can, based on the current evidence, make an argument that by having a single, or coordinated, administrative structure, and a single funding envelope (either through capitation or a budget process), one has the administrative, fiscal, policy and program levers to obtain greater efficiencies through the planned substitution of less costly home care services for more costly long term residential services, while still maintaining service quality.

A key finding was that there also seems to be a small, but reasonable, body of evidence to indicate that it may, in fact, be cost-effective to provide more basic home support services as a means of delaying institutionalization. In addition, there seems to be some evidence to indicate that well planned and executed preventive initiatives can actually have a positive impact in delaying institutionalization. There is also an emerging literature to indicate that home care can be a cost-effective alternative to residential long term care.

Another relevant finding was that there is some evidence to indicate that home care can indeed perform a substitution effect for hospital services, through early discharge, with well designed programs. In addition, there is a growing body of evidence to indicate that there are a wide range of programs which can be put into place to reduce future hospital admissions and/or readmissions. Thus, it appears that it may be possible to think of home care not only as an important program in its own right, but also, as a key vehicle for increasing the efficiency and effectiveness of the broader health care system. A corollary of the above is that there are a number of more “medical” preventive interventions or programs which may also be able to bring about greater program efficiencies. Thus, from a program development perspective, it may be useful to increase both the “high tech” and “high touch” aspects of home care, to the extent that such services can increase the overall efficiency of the health care system.

It was also clear that assisted living/supportive housing is beginning to emerge as a major component of the continuing care system. However, this process is still evolving and there is currently relatively little literature on the cost-effectiveness of this model of care.

As always, one must be aware that investments in greater efficiencies can only achieve positive results if there are real and tangible substitutions or trade-offs which can actually occur at the front lines, or if blockages in the efficient flow of services can be relieved (e.g., reduction in waiting lists/waiting times, and/or in Alternative Level Care (ALC) hospital patients). For example, one may be able to, in theory, reduce hospital stays by 20 beds per year, at one-third of the cost of such days, using a new home care service. However, unless one recognizes that such a trade-off has occurred, it may simply appear that there is an add-on cost for the new home care program. Unless the efficiencies gained are recognized: by valuing outcomes such as reduced ALC bed days, or waiting lists, because 20 beds have been “freed up” during the year; or by reducing current bed allocations, and/or future bed growth, actual increases in efficiencies for the overall health care system may not be adequately recognized.

Thus, in summary, it appears that it may be possible to obtain increased efficiencies in continuing care, and the overall health care system, with well developed strategic plans that focus on: the cost-effective substitution of services; targeted preventive care initiatives; a focus on supportive services; and a focus on expanding both the caring and technological aspects of continuing care. The challenge is to move from findings such as those noted in this report to the active development and testing of new, and potentially more effective, models of care delivery.

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