



Rapid



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# Review

## Care Closer to Home: Elements of High Performing Home and Community Healthcare Services

A Rapid Review Prepared for the Canadian  
Foundation for Healthcare Improvement

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# Executive Summary

In Canada, as in other countries, there is considerable interest in shifting care out of institutions into home and community settings to better meet the needs of a growing population of older adults living with complex conditions. The aim of this report is to summarize and assess the review literature (e.g., systematic reviews, scoping reviews, etc.) in order to identify key attributes that are associated with high-performing care provided closer to home.

The results of our rapid review suggest that improvements in functional capacity are more likely through long-term interventions and programs that offer a variety of support options (i.e., education and case management). Similarly, multi-component individualized care from a multi-disciplinary team of providers is associated with delayed need for institutional-based long-term care and reduced hospitalizations. Satisfaction as an outcome received mixed results. However, satisfaction appears to be improved with interventions offering a variety of support options that are tailored to individual needs. Whether or not interventions were able to achieve cost savings was unclear. In cases where costs were reduced compared to usual care, it seemed to be a result of reduced service utilization and increased reliance on lower-cost supports, such as unpaid caregivers and technology. The impact of programs on well-being and quality-of-life were also mixed.

We were able to identify seven core elements that appear to support the success of interventions that attempt to provide care closer to home. Next steps could involve assessing the extent to which care models offering such care incorporate the following seven elements:

1. **Long-term planning** (lasting several months) that includes frequent and/or regular visits with consistent care providers.
2. Incorporate **support for both paid and unpaid caregivers**. These supports include education on disease/condition management, and psychosocial supports (i.e., formal counselling or informal through online or in-person support forums).
3. Offer a **range of program options** and delivery methods. These elements should include **social supports**, e.g., transportation to group-based activities to reduce social isolation, and **self-management supports** that provide coaching and education in collaboration with a variety of other supports (i.e., a part of multi-component interventions).
4. Approach care planning and decision making in collaboration with the client and caregiver to be sure **supports are individualized** to meet each person's unique needs and goals.
5. **Standardized clinical guidelines and protocols** to support care coordination, to smooth care transitions, and to inform healthcare provider decision making.
6. Access to **24/7 support** through technology (e.g., virtual visits, telephone).
7. Inclusion of well-integrated **multi-disciplinary care teams**.

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# Introduction and Background

Efforts to improve and provide care that is closer to home have been on the political agenda for over two decades. This interest in strengthening care in the home and community reflects changing population needs as people are living longer with increasingly complex conditions [1-4]. These population changes coupled with a desire for people to remain actively engaged in society for as long as possible has accelerated this interest [5, 6] while the policy discourse has continued to emphasize the value of supporting care closer to home both from a “patients first” and value-for-money perspective [7, 8].

There is broad agreement among policy makers, care providers, administrators, and citizens that there is a need to improve access to and experiences with care closer to home. However, how to achieve these improvements is frequently debated, and rarely agreed upon [6]. The healthcare system is comprised of a number of diverse and interrelated subsectors (i.e., hospital/specialized care, primary care, and community care). In Canada, the home and community care subsector is unique given that it falls outside of medicare, and thus there is extensive variation across and within regions [4, 9-12]. Given the variability and diversity of services being increasingly offered within this subsector, this report highlights efforts to deliver care closer to home that include complex specialist interventions as well as community-based programs for residents (i.e., day programming, telehealth).

While there has been an increased reliance on community services and supports to meet the increasingly complex needs of Canadian residents, the features of high-performing home and community care are not well understood [12-14]. There remains a gap in our understanding of the specific design elements or characteristics that are critical for home and community care to meet the needs of Canadians and result in the desired system outcomes of provincial/territorial (PT) governments.

The aim of this report is to summarize and assess the review literature (e.g., systematic reviews, scoping reviews, etc.) in order to identify key attributes that are associated with high-performing care provided to people closer to home. Based on a preliminary review of the literature focusing on programs offering care closer to home, we define high-performing community programming as care that has achieved one or more of the following outcomes: maintained or improved functional capacity; avoided or delayed unnecessary institutional-based care (e.g., hospital, emergency, long-term care); reduced readmission rates; reduced or maintained the growth in costs; improved client well-being and satisfaction; and improved patient, unpaid caregiver, and provider experiences. Ultimately, we present an operational framework that identifies and summarizes the elements of high-performing home and community services.

## Methods

A comprehensive search strategy was developed in consultation with an experienced health sciences librarian at the University of Toronto. This strategy aimed to identify review articles published within the last five years that examined the characteristics and outcomes associated with a wide range of home and community care interventions. Given that this was not a systematic review, the authors relied on a similar, yet modified, approach to article inclusion exemplified by the preferred reporting items for systematic and meta-analysis (PRISMA) framework [15-17].

First, we established our research question: What are the key attributes associated with high-performing care provided to people closer to home?

Second, to identify the relevant literature, we relied on the British Medical Journal's Best Practice MEDLINE systematic review strategy. The MEDLINE database was searched to locate published review articles and meta-analyses<sup>1</sup> that focused on interventions offering care closer to home. A variety of search terms was used to identify publications discussing key features or elements of home or community care programs. Through this approach we sought to target the following five outcomes of interest: (1) hospital readmission; (2) cost savings; (3) functional capacity; (4) institutional placement; and (5) well-being and satisfaction. To see the full search strategy and key search terms, please refer to Appendix A.

The search strategy yielded 152 references that were then imported into Covidence software for screening. In attempting to select the literature, one reviewer (SC) independently screened all titles and abstracts for relevance to the review, which resulted in the removal of 54 articles. Inclusion criteria used for title and abstract screening was broad. Articles were kept for full-text review if they were review articles (i.e., a literature review, scoping review, or systematic review), they reported on home or community care interventions (i.e., support groups, specialist care, primary care, etc.) and they assessed the intervention's effectiveness based on one or more of the five outcomes of interest listed above.

Exclusion criteria:

1. Reviews with data from only low-income and middle-income countries
2. Reviews published prior to 2014
3. Reviews with a specific study population not commonly receiving home care services (e.g., maternal depression, dermatology, etc.)<sup>2</sup>

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<sup>1</sup> <https://bestpractice.bmj.com/info/toolkit/learn-ebm/study-design-search-filters/>

<sup>2</sup> These reviews were excluded primarily because the "intervention" was highly specialized and the outcomes of interest were not associated with the five identified above.

We next included the remaining 98 articles in a full-text review. At this stage, articles were excluded by the reviewer for the following reasons: intervention type that was not in-home or community (17 articles); patient population was specific (5 articles); non-English (3 articles); previous versions of a review (3 articles); full-text unavailable (2 articles); study protocol (2 articles); and commentary publications (1 article). For reasons of feasibility, only studies published between 2014 and 2019 were included. This led to the exclusion of a further 34 publications. A final set of 31 publications were included in this review; however, one publication had two embedded systematic reviews which were extracted independently, resulting in a final total of 32 reviews for inclusion.

The data was charted and is shown in Appendix B. We presented the results of our analysis in two stages. The first stage was to summarize programs that have achieved positive outcomes with respect to functional capacity, hospital or institutional placement, costs, well-being, quality of life, and satisfaction.

Following this descriptive analysis, the second stage aimed to describe the factors associated with positive outcomes. To do this, we conducted a thematic analysis of the findings from the 32 publications (see Appendix B). Using a data extraction form, one researcher (MP) identified the possible factors that were found or perceived to be associated with positive outcomes. Evidence effect (as noted in column 6 of Appendix B) was determined when the authors observed consistent (positive/negative/null) effects attributable to a certain intervention. For example, a “+” was assigned when Nurse Practitioner home care consistently improved physical function, and reduced fall rates and hospital admissions [32]. Once the data was extracted, two researchers (MP & AP) reviewed the findings inductively to identify key themes and factors associated with success. If three or more articles listed these factors as necessary components for success it was included.

In addition to this analysis, we consulted with experts across Canada to identify a range of promising programs focused on delivering care closer to home. This list, presented in Appendix C, is not meant to be exhaustive but does aim to highlight several programs in operation across the country.

## Limitations

These findings should be interpreted with caution and we do not intend them to be interpreted as causal. In particular, some of these findings are based on assumptions made by the authors of the included studies and could not be empirically validated. While some reviews (i.e., systematic reviews) included within this scan do include an appraisal of the quality of evidence, some do not (i.e., scoping reviews). Therefore the quality of evidence may be mixed. Additionally, we only include evidence of studies that have been published in the academic literature. Thus, while this is a transparent and comprehensive review, it may not fully reflect the entirety of the evidence of elements of effective models of care being provided closer to home.

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## Analytic Overview

Of the 32 articles included in the review, 2 were integrative reviews [18, 19], 6 were scoping reviews [20-25], and 24 were systematic reviews [26-44]. The reviews included results from between 7 [45] and 165 published studies [40].

The reviews focused on many different participant populations:

- older adults [18, 19, 32, 35, 36, 41, 46]
- chronic disease [21, 27, 29, 38, 40, 42],
- mental health or neurological [22, 33, 34, 37, 39],
- palliative [24, 25, 43, 44, 47],
- older adults with other conditions [30, 31, 48, 49],
- general [23, 28, 50],
- unpaid caregivers (family or friends) [45], and
- children [20].

The reviews we included in this study covered a wide range of interventions that we grouped within the following broad categories:

- general community-based interventions [18, 21, 25, 27, 33-35, 42-44, 47],
- provider-led interventions (i.e., specific to a healthcare professional like paramedicine, community mental health teams, nurse-led interventions) [23, 30-32, 36, 50],
- case management interventions [29, 39, 40, 45],
- technology-based interventions [19, 38, 49],
- physical therapy or exercise interventions [20, 22, 41],
- non-pharmacological or therapeutic interventions to support adults living with depression and comfort those in palliative care [24, 48],
- training for paid caregivers [46], and
- other interventions (medical homes, crisis intervention) [28, 37].

It is important to note that these elements of programs were not mutually exclusive and, in many cases, overlapped. For example, case management approaches were often used within community-based interventions.

## Outcomes of Interest

Most of the reviews discussed a variety of outcomes associated with their interventions, including changes in:

- self-management [18, 50],
- satisfaction [18, 19, 23, 32, 35, 37, 40, 45, 47, 50],

- health status [18, 23, 28, 31, 40, 41],
- function [18, 22, 32, 36, 40, 41, 45],
- quality of life [18, 22-25, 31, 32, 34-37, 39, 41, 45-47, 50],
- uptake of knowledge [18, 40],
- costs [18, 19, 21-23, 28, 29, 32, 33, 35, 37, 41, 43, 45, 47, 50],
- mental health and well-being [19, 22, 24, 30, 31, 36, 39, 43-46, 48],
- mortality [21, 27, 35, 37, 38],
- adherence to treatment [19, 27, 28, 31, 40],
- service or resource utilization [21, 23, 28, 32, 35-40, 50],
- institutional placement or hospital admission [19, 21, 30, 32, 35-38, 45],
- caregiver burden [22, 37, 39, 44, 45], and
- symptom management [24, 25, 47, 50].

These outcomes were then categorized based on the main outcomes of interest described above in the methods section (functional capacity, institutional placement or hospital admission, costs, well-being and satisfaction, and experiences).

## Functional Capacity

Seven reviews discussed outcomes related to physical functioning [18, 22, 32, 36, 40, 41, 45]. These included general function, fitness, and fall-related measures. Six of the reviews found a positive impact of the intervention(s) on function [18, 22, 32, 36, 40, 41], and one intervention had no effect [45]. Interventions with a positive impact included: clinician-led interventions [18, 32, 36], community exercise interventions [22, 36, 41], and chronic disease management [40].

Interventions that were clinician-led seemed to offer the most benefit when healthcare providers informed patients and/or caregivers about illness trajectory and how to identify signs and symptoms. Additionally, services that offered scheduled follow-up calls from surveillance nurses, for example, and that took an individualized approach to care were also associated with improved functional capacity [18, 32, 36].

More specifically, those interventions with an individualized approach [18], where nurse practitioners were incorporated [32], and basic exercises were performed during home visits [36], demonstrated the best results. Non-traditional exercise programs (e.g., boxing training, tango dance programs) may provide creative alternatives to improve balance among people living with Parkinson's Disease [22]. Programs that are sponsored by primary care providers or specialists may help with recruitment into exercise programs [41]. Chronic disease interventions that incorporated two Chronic Care Model<sup>3</sup> elements were more likely to result in significant

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<sup>3</sup> The Chronic Care Model is a multicomponent framework that details essential elements necessary to support high-quality and patient-centered approaches to chronic disease management <https://www.niddk.nih.gov/health->

improvements, and interventions that specifically combined delivery system design and decision support elements were most frequently associated with positive outcomes [40].

## Institutional Placement and Hospital Readmission

Nine reviews considered hospital or institutional admissions among their outcomes of interest [19, 21, 30, 32, 35-38, 45]. Interventions in six of the reviews successfully reduced institutionalization (or time to institutionalization) [19, 21, 32, 35, 36, 45]. The interventions included in these reviews were: case-management interventions [45], clinician-led interventions [32, 36], community-based interventions [30, 35], technology-based interventions (e.g., real-time video communication) [19], and multicomponent interventions [21]. Two reviews found that crisis and home telemonitoring interventions had no effect on institutionalization [37, 38], and one review of community mental health teams described an increase in hospital admissions as a result of the intervention [30]. This finding of increased hospital admissions could represent a positive effect where the community health teams may have been able to refer patients to hospital more quickly and prevent later complications.

Among the multicomponent interventions, those that incorporated discharge planning and timely post-discharge follow-up were the most successful in reducing readmission rates [21]. The case management interventions offered nurse case management support for a maximum of 24 months, goal-oriented support groups for caregivers, and individualized services [45]. One study highlighted that stroke survivors fared much worse with “Hospital at Home” interventions compared to treatment within a stroke unit. However, alternatives (e.g., Hospital at Home interventions) can be a safe option across a range of acute and chronic conditions. Although, whether or not patients prefer these options remains unclear [35]. Community paramedicine programs helped prevent visits to the emergency department and readmissions, through improved community engagement, multi-agency collaboration, and targeted prevention [23].

## Costs

Costs were the most frequently discussed outcome in the reviews [18, 19, 21-23, 28, 29, 32, 33, 35-37, 41, 43, 45, 47, 50]. Of the studies that measured costs, interventions generally had a positive or negligible effect; however, the quality of the evidence was low in many cases. Clinician-led interventions led to a reduction in costs in one review [18], and no effect in three others [32, 36, 50]. Nurse practitioner care (provided both within the home and other institutional settings) was equal or superior to physician-only or usual care in the home on all outcomes except for cost, although nurse practitioners were more effective in decreasing service utilization [32]. Moreover, cost reductions were frequently reported in home care settings (as opposed to acute or long-term care settings) [32]. Multicomponent interventions had a positive impact in one review [28], and mixed impact in another [21]. Case management interventions

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[information/communication-programs/ndep/health-professionals/practice-transformation-physicians-health-care-teams/team-based-care/chronic-care-model](https://www.naohsp.org/information/communication-programs/ndep/health-professionals/practice-transformation-physicians-health-care-teams/team-based-care/chronic-care-model)

had a positive impact on cost in one review [45]. Chronic disease management interventions had no clear effect on costs in one review [29]. Community-based interventions had a positive effect in three reviews [33, 35, 47], neutral effect in two reviews [23, 41], and mixed effect in two reviews [22, 43]. Technological interventions had an unclear impact on costs in one review [19]. Crisis interventions for people living with serious mental illness that included a multidisciplinary team, providing treatment for crises in and out of office hours and emergency care, was associated with lower costs than standard care. However, caution was advised with regard to interpreting these results as there were some concerns about the quality of the data [37].

### **Well-being, Quality of Life and Experiences**

Quality of life (QoL), including participant well-being and patient/caregiver experiences, was considered as an outcome in 17 reviews [18, 22-24, 31, 32, 34-37, 39, 41, 43, 45-47, 50]. According to four reviews, clinical-led interventions had the potential to positively impact QoL and overall well-being [18, 32, 36, 50]. Case management approaches had both negligible effect [39, 45], and a positive effect in two reviews on QoL [39, 45]. Case management interventions had no impact on patient satisfaction but did contribute to lower depression scores at six months, but not after 12 months [45]. There was some evidence to suggest that case management interventions for people with arthritis and chronic obstructive pulmonary disease (COPD) improved QoL [40]. Community-based interventions had a positive effect in six reviews [23, 31, 34, 41, 43, 47], no effect in one [35], and mixed effects in another [22]. Educational interventions [46], crisis interventions [37], and therapeutic interventions [24] all had the potential to positively impact QoL and well-being.

### **Satisfaction**

Satisfaction was an outcome of interest that was included in 10 reviews [18, 19, 23, 32, 35, 37, 40, 45, 47, 50] and at times it was incorporated in the broader concept of quality of life. Clinician-led interventions had a positive impact on satisfaction in three reviews [23, 32, 50]. One review on case-management interventions found no effect on satisfaction [45]. Community interventions had a positive impact in two reviews [18, 47] and mixed findings in one [35]. Technological interventions (e.g., service provision through virtual visits) [19], crisis interventions [37], and chronic disease interventions [40] each had a positive impact on satisfaction. Paramedicine interventions saw an increase in patient satisfaction [23]. Virtual visits in combination with home visits and nurses maintaining their traditional nursing style was associated with high levels of both patient and nurse satisfaction [19].

## **Common Factors Associated with High-Performing Interventions**

Our assessment of the literature identified nine common factors associated with high-performing care interventions (i.e., interventions aimed at providing care closer to home that achieve

positive outcomes in at least one of the five outcomes of interest outlined above). Appendix C highlights the review papers that identified one or more of the nine factors associated with high-performing interventions.

These factors are not mutually exclusive. In fact, the evidence suggests that incorporating all of these factors together is associated with optimal outcomes. One study [51] in particular highlighted the effectiveness of an intervention that attempted to incorporate many of the factors of success we identify here: “Educational interventions which delivered individualized content, used combined methods, and provided one-on-one education over multiple sessions were most likely to improve self-care knowledge and behaviour scores.”

### **Intensity of the Intervention**

Interventions that provided care that was longer in duration (several months rather than several weeks), with increased frequency of visits (or touchpoints) as well as offering consistency in care providers were associated with improved function as well as delay untimely admittance to facility-based long-term care [22, 25, 27, 34, 41, 43]. Duration of the intervention was particularly relevant for exercise programs aiming to improve physical functioning, where the longer the intervention the better the benefits [18, 22, 41]. Similarly, long-term interventions aimed at improving depression are known to be more effective than short term interventions [25]. Case-management interventions that engaged with clients and worked to reduce behaviour disturbances were more effective at 18 months than those of shorter duration [39]. However, findings also suggested that given the variance among the interventions assessed, it was not possible to confidently link outcomes to the duration of case management or ambulatory care interventions [21, 39].

### **Caregiver Support**

Interventions that include specific supports for both paid and unpaid caregivers were valued among caregivers, improved confidence, and reduced burden [22, 33, 34, 44, 46]. Case management for informal caregivers and other mental health supports showed strong evidence of decreased depression for caregivers and prolonged time outside an institution for care recipients [19, 43, 45]. Most often the review papers spoke to increasing both paid and unpaid caregivers’ understanding of a specific disease course through training, and education on how to manage conditions and behaviours [25, 33, 34, 46]. Caregivers tended to benefit more from prolonged professional support [24, 36, 37, 40].

### **Individualized (Personalized) Approach**

Interventions that were flexible and adapted to the needs and preferences of individual patients and caregivers were seen to improve health outcomes and satisfaction. Often such approaches involved a process of case management or meaningful goal setting to identify holistic needs and a corresponding individualized care plan [25, 29, 47]. Sharing of information

between care providers is key to facilitating individualized care, and has shown to improve healthcare outcomes [18]. According to Cooper (2017), this patient-centred approach differs from more traditional task-based care as it allows for greater role flexibility and tailoring of services around the client. Personalized home care was seen to increase the time outside facility-based institutionalization, improve satisfaction and improve sense of competence in delivering self and informal care [39, 43, 45]. Moving away from task-based care was also seen to empower healthcare providers to support a diverse set of needs for people of different ages, health status, and social circumstances [23, 32, 46].

### **Social-based Supports**

Interventions that offered social supports like transportation and visits to home or community care patients contributed to their ability to remain at home and practice self-care [12]. Isolation and loneliness presented as a barrier to effective self-management, and to adherence and medication compliance [20, 21, 39]. For Challis (2014), increasing supports that improve access to socialization is a key factor in individuals remaining at home [30].

### **Self-management Supports/Education**

Patient and caregiver coaching and educational interventions build confidence, empowerment, and improve self-care/self-management efforts [11, 32]. Education and educational tool-kits on self-management improved patient care knowledge of condition/disease [19, 33, 35, 43] and safety [15]. Improved self-management skills and practice behaviours were seen to improve health behaviours and increase time outside hospitalization or institutionalization [19, 29, 38], enabling patients to remain at home [12, 25]. In chronic care management, self-management supports were often seen as more effective when combined with multicomponent interventions [11, 14, 22, 33].

### **Standardized Approaches Improve Navigation between Providers and Services**

Having clear standardized approaches was particularly helpful during transition periods and when patients were required to switch between care providers. For example, when replacing physician-led interventions, resources such as guidelines and protocols, professional assessments and clear referral pathways allowed nurses and nurse practitioners to maintain quality of care [23, 43]. Established and effective ongoing transitional care was also seen as important to achieving positive outcomes [14]. Nurses serving in transitional roles stood out for both financial and patient-related outcomes [25]; well trained transitional carers, such as community paramedics, can also facilitate effective multi-agency collaboration, helping patients access the most appropriate healthcare services [16]. This points to the importance of strengthening care coordination resources available to primary carers, as a means to inform their decision-making. For example, when a healthcare provider must determine when to escalate care (to an emergency department or GP) or outsource care (to the community).

## Availability of Care

Interventions that incorporated access to around-the-clock services allowed people to die at home [25, 44], demonstrated cost savings [47], and prevented relapses [19]. Access to 24/7 support was facilitated through technology with around-the-clock call services [37, 47] and technology was seen to support the delivery of coordinated care [19]. The strength of the evidence for 24/7 availability was highest in enhancing feelings of security to patients and their caregivers [44]. Effects of 24/7 availability were not often isolated, however combined with increased care coordination the use of technology demonstrated consistent positive effects in prevention [19] and cost reduction [47], thus it is likely that these are mutually reinforcing components.

## Multicomponent Approaches

Interventions that involved multiple components or delivery methods were well represented in the reviewed studies [19, 21, 28, 34, 38, 39, 42, 46, 52]. Home care and community care patients often have a wide range of needs, and generally benefit from interventions that address multiple dimensions of need. For example, technological or telephone interventions were frequently combined with in-person visits to reduce costs of care and increase accessibility of care [18, 19]. Individual interventions that were combined with support groups were also frequently described as benefiting caregivers as a result of positive informational exchanges and gaining problem-solving strategies [18, 45]. Multicomponent approaches were also relevant for interventions that focused on counselling support. Here the review articles highlight the value of offering a variety of support or counselling options (i.e., online sharing, socio-emotional support groups, task-oriented support groups). This variation in supportive approaches was associated with improved self-care, problem solving, reduce social isolation and sustain adherence [18, 22, 41, 42, 44, 46].

## Multidisciplinary Teams

Several studies drew attention to the importance of offering services that address a range of health and social needs through multidisciplinary teams [18, 19, 21, 28, 29, 34, 36-39, 41-44, 46]. This theme relates to that of “standardized approaches” since having a standardized approach to referrals and information sharing were identified as critical to supporting multidisciplinary collaboration. For example, in an effective community intervention program for persons living with dementia, care teams were multi-disciplinary, well-integrated, and had a high degree of effective communication between care providers [39]. The importance of having multidisciplinary teams similarly speaks to the need for interventions to be sufficiently connected to and incorporate a variety of supports. As identified by Rasku (2019), multi-agency collaboration was described in terms of partnership, multidiscipline, collaboration and integrated care. A community-based paramedicine intervention was thought to be successful as a result of strong teamwork, clear communication and collaboration with allied healthcare workers.

Table 1 below provides examples of interventions that incorporate the identified factors of success as well as the perceived associated outcome(s).

Table 1. Examples of Factors of Success and Their Associated Outcomes

Factor	Examples	Associated outcomes
<b>Intensity of the intervention</b>	<ul style="list-style-type: none"> <li>- Long-term (8 months) or on-going interventions of exercise programming</li> <li>- Focused long-term input (i.e., reassessments and engagement)</li> <li>- Consistent care providers</li> <li>- Frequent visits from members of care team</li> </ul>	<ul style="list-style-type: none"> <li>- Improved quality of care</li> <li>- Improved function (e.g., reduced falls)</li> <li>- Reduced depressive symptoms</li> <li>- Delayed time to institutionalization</li> </ul>
<b>Caregiver support</b>	<ul style="list-style-type: none"> <li>- Training and education for both paid and unpaid caregivers</li> <li>- Paid staff require time to get to know clients (consistency in care, personalized and on-going engagement)</li> <li>- Education around behaviour management (generalized classes, personalized strategies)</li> <li>- Presence of care teams (providing respite and caregiving relief)</li> </ul>	<ul style="list-style-type: none"> <li>- Improved coping and decreased depressive symptoms</li> <li>- Improved confidence</li> <li>- Delayed time to institutionalization</li> <li>- Improved patient and caregiver satisfaction</li> <li>- Improved care planning</li> </ul>
<b>Individualized (personalized) approach</b>	<ul style="list-style-type: none"> <li>- On-going care coordination (consistency of relationship and regular engagement)</li> <li>- Collaborative process (between clients, family and providers) to identify interventions</li> <li>- Goal development and joint decision making resulting in flexible supports</li> <li>- Providing culturally sensitive information</li> </ul>	<ul style="list-style-type: none"> <li>- Delayed time to institutionalization</li> <li>- Improved satisfaction and sense of competence</li> <li>- Improved relationship between patient and caregiver</li> </ul>
<b>Social-based supports (intended to reduce social isolation)</b>	<ul style="list-style-type: none"> <li>- Transportation to and from activities and health care visits</li> <li>- Patient incentives to attend programming (meals, activities)</li> <li>- Virtual visits (using technology like skype)</li> <li>- Specialist day programming (i.e., for those living with dementia)</li> </ul>	<ul style="list-style-type: none"> <li>- Higher levels of adherence (e.g., to medications)</li> <li>- Encouraged participation</li> <li>- Delayed admission to facility-based long-term care</li> </ul>
<b>Self-management supports/education</b>	<ul style="list-style-type: none"> <li>- Education in a community setting</li> <li>- One-on-one education, patient coaching</li> <li>- Curriculum-based approach (courses based on specific topics i.e., diabetes management)</li> <li>- Offering an understanding of resources that are available</li> <li>- Tele-home care and self-management training</li> </ul>	<ul style="list-style-type: none"> <li>- Improved health outcomes</li> <li>- Reduced emergency room use and hospitalizations</li> <li>- Delayed admission to long-term care</li> <li>- Improved patient level outcomes (physiological measures, risk behaviour, knowledge, competence, empowerment)</li> </ul>
<b>Standardized approaches</b>	<ul style="list-style-type: none"> <li>- Evidence-based care pathways (through care transitions)</li> <li>- Open referral systems (transparency with referrals, knowing when referral was received)</li> <li>- Clearly defined clinical practice guidelines and treatment algorithms</li> <li>- Availability of test results (e.g., use of eHealth charts)</li> <li>- Standardized assessments and regular reassessment of needs</li> <li>- Information sharing between all providers of care (on clinical condition of patient)</li> </ul>	<ul style="list-style-type: none"> <li>- Reduced hospital readmissions</li> <li>- Improved access and coping</li> <li>- Improved care coordination</li> <li>- Improved health outcomes</li> <li>- Improved detection of comorbidities</li> <li>- Improved decision-making capacities</li> </ul>
<b>Availability of care</b>	<ul style="list-style-type: none"> <li>- 24/7 availability of palliative teams</li> <li>- Around-the-clock on-call service (to discuss medication adherence or a possible crisis)</li> <li>- Increased availability of healthcare providers</li> <li>- Technological symptom monitoring</li> </ul>	<ul style="list-style-type: none"> <li>- Increased deaths at home</li> <li>- Reduced costs</li> <li>- Offered symptom relief</li> <li>- Increased sense of security</li> </ul>
<b>Multicomponent approaches</b>	<ul style="list-style-type: none"> <li>- Exercise, nutritionist, curriculum, technology, educator, healthcare practitioners, one-on-one counselling, case manager, physical, mental, and psychosocial supports</li> <li>- Mix of components education/advice, behaviour management</li> <li>- Combining technology or phone calls with in-person visits</li> <li>- Group and individual support programs</li> <li>- Combining self-management with ongoing professional programming</li> </ul>	<ul style="list-style-type: none"> <li>- Reduced caregiver burden and improved well-being</li> <li>- Improved behaviours</li> <li>- Reduced adverse events and hospital admissions</li> <li>- Reduced facility-based long-term care home admission</li> <li>- Improved adherence to program guidelines</li> <li>- Prevented symptom exacerbation</li> </ul>

<b>Multidisciplinary teams</b>	<ul style="list-style-type: none"><li>- Multidisciplinary case management and assessments</li><li>- Effective communication between care providers</li><li>- Collaboration with allied healthcare providers</li><li>- Holistic care model (i.e., both medical and psychosocial)</li></ul>	<ul style="list-style-type: none"><li>- Improved effectiveness</li><li>- Mitigated iatrogenic complications</li><li>- Addressed unique needs of a variety of patients</li><li>- Reduced service silos (relational and bureaucratic barriers)</li></ul>
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## Conclusions

This report summarizes the review literature and identifies key attributes that are associated with high-performing care provided to people closer to home.

Functional capacity seems to be improved more frequently in programs that offer multicomponent long-term interventions. Similarly, delay of institutional-based long-term care and reduced hospitalizations were seen to be most prominently achieved in interventions that were individualized, offer multi-component elements and team-based care. Satisfaction, while an outcome receiving mixed results, appears to be improved with interventions offering multicomponent and targeted interventions. Whether or not interventions were able to achieve cost savings (much less longer-term bending of the cost growth curve) remained mixed. In cases where costs were reduced, the decrease was driven in part by reduced service utilization and increased reliance on lower-cost supports, such as unpaid caregivers and technology. Interventions that were effective were often multi-dimensional; offered a diversity of approaches; incorporated multiple delivery methods, team-based care, and support closer to home and outside of traditional office hours.

The nine factors presented above have been consolidated into the following seven criteria. Social supports and self-managed supports were merged within “multicomponent” approaches as these types of supports should be included within programs offering a variety of services.

1. **Long-term planning** (lasting several months), rather than short-term approaches, that include frequent and/or regular visits with consistent care providers.
2. Incorporate **support for both paid and unpaid caregivers**. These supports include education on disease/condition management and psychosocial supports (i.e., formal counselling or informal through online or in-person support forums).
3. Offer **a range of program options** and delivery methods. These elements should include **social supports** that go beyond medical-based approaches and encourage people to access additional supports (i.e., transportation to group-based activities to discourage social isolation), and **self-management supports** that provide coaching and education in collaboration with a variety of other supports (i.e., are part of multicomponent interventions).
4. Approach care planning and decision making in collaboration with the client and caregiver to be sure **supports are individualized** to meet their unique needs and goals.
5. **Standardized clinical guidelines and protocols** to support care coordination, smoothen transitional care, and to inform healthcare provider decision making.
6. Access to **24/7 support** through technology (i.e., virtual visits, telephone).
7. Inclusion of well-integrated **multidisciplinary care teams**.

The findings of this review would suggest that community-based interventions that incorporate these seven elements would be more likely to achieve outcomes of interest. These findings could be used to assess the extent to which programs offering care closer to home incorporate these seven elements, building on an assumption that the more elements included, the higher-performing the program. While the findings should be interpreted cautiously, future research could apply these elements as a framework to assess current care models that provide care closer to home, and identify gaps that could be addressed in order to improve performance.

# Appendix A: MEDLINE Search Strategy

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(home initiative\* or home program\* or home service\* or home strateg\* or home care\* or home intervention\* or home support\*).tw.

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(cost\* or saving\* or spend\*).tw.

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(function\* or functional capacity\* or motor function\* or movement\*).tw.

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## Appendix B Summary of Review Literature

Authors/ Year	Target Population	Methodology	Outcomes of Interest	Intervention Type/ Component Type	Evidence Effect	Summary of key findings	Factors impacting outcomes
Anuruang S, et al., (2014)	Older people with chronic illnesses	Integrative Review (13 articles)	Various health outcomes and Quality of Life (QoL)	Various Settings; Interventions at home	+	Providing a tool-kit for SM in individualist approach used family/ peer support to improve SM and reduce risks.	Effective intervention elements; provided culturally sensitive information, shared decision making and mutual goal setting, flexibility to adjust to patient need (most impactful).  Characteristics of leaders/staff also influential to successful implementation.
				Multi-Strategy (Group & Individual)	+(Y)	Higher statistical significance and improved satisfaction and health status outcomes.	
				APN led interventions	+(Y)	Increased positive SC/SM behaviours for chronic conditions.	
					+	Improved health status, physical fitness, QoL, well-being, satisfaction, attitude, knowledge, cost effectiveness, self-efficacy and practice measures.	
Apóstolo J, et al., (2015)	Older adults with depressive disorders	Systematic Review (23 studies)	Primary: Depressive symptomology  Secondary: Autonomy in activities of daily living, cognitive function, QoL, well-being  Self-esteem and socialization	Non pharmacological; Cognitive Behaviour Therapy (CBT)	-	Secondary outcome results were not effective. Effects of CBT on depression were maintained, but not improved.	Because of age-related structured and biochemical changes older adults may be a more vulnerable group for depression. Symptomology also presents differently, and depressive disorders are thought to be largely undiagnosed; symptoms may resemble dementia. Greater probability of drug interference, population tends to be medicated for comorbidities. Assumed that problem solving serves as a mediator in the relationship between stressful life events and well-being.
				Competitive Memory Training (COMET)	0	COMET improved depressive symptoms, unclear effect on rumination.	
				Reminiscence Group Therapy (REM)	+	REM more effective at reducing depressive symptomology than other intervention types.	
				Problem-adaptation therapy (PATH)	+	PATH proved more effective at reducing depression than supportive therapy delivered at home.	
				Problem Solving Therapy in Home Care (PST-HC)	+	PST-HC was effective in reducing negative emotions and increasing positive emotions.	
Aydede SM, et al., (2014)	Chronic Kidney Disease (CKD) Peritonitis Dialysis (PD) patients	Systematic Review (17 studies)	Primary: Peritonitis rate, technique and patient survival Secondary: mortality, patient satisfaction, health status and QoL, medication management, physical and psychological well-being	Various HC-assisted PD interventions; Home care assisted dialysis (nurses)	+/0	Technique, survival and peritonitis rates for HC-assisted PD patients were at least similar or better than those for self-care PD and family assisted PD patients.	Factors influencing the type of intervention: severity of illness, scope of HC provision, duration, and dialysis technique required. Availability of nurse-assisted PD increased eligibility for elderly patients and improved uptake. Family assistance for PD can be important even in regions where home care assisted dialysis is available.
				Home care teams Visits from other trained aids/home assistants	-	Higher probability of mortality persisted with HC patients.	
van den Berk-Clark C, et al., (2018)	Low-income patients of Patient- Centered Medical	Systematic Review and Meta-analysis (33 studies)	Clinical outcomes, utilization, follow up and adherence, cost	Interventions with (min. 4) PCMH recommended components: (1) team- based care, (2) care coordination, (3) patient	+	Better clinical outcomes: alcohol use, hypertension, diabetes, low cholesterol, low LDL, QoL and generally good health/mental health.	Certain socio-economic factors predispose individuals to utilization. Competing needs for housing, food, security, employment, etc., are major barriers to HC, and are associated with increased

	Homes (PCMHs)			centered orientation (4) enhanced access to care & quality improvement (5) electronic medical records (EMR) (6) self-management	+ + +	Improved utilization (negative ER visits, negative inpatient hospitalization, split on primary care).  Follow up and adherence was generally better. General improvements in cost (5/7 studies showed lower cost).	emergency department use, and associated with declining health and other associated costs. When health organizations offered “social home” type interventions, like transportation and patient incentives, there was significantly higher levels of follow-up/adherence.
Bethelsen CB, & Kristensson J (2015)	Informal caregivers of older adults	Systematic Review (7 studies)	Patient outcomes: QoL, time to institutionalization, ADL assistance, satisfaction, unmet needs, municipal costs Caregiver outcomes: sense of competence, quality of life, hours per week caregiving, assisting with ADL, and burden	Various case management interventions (including a wide range of interventions both patient and caregiver focused)	+ 0/+	Improved time to institutionalization .  Moderate effects on: improved patient satisfaction, informal caregivers’ competence and decreased municipal care costs.	Prolonged involvement with nurse case managers may influence outcomes. Informal caregiver presence may improve satisfaction & reduce municipal care costs. Positive effects may be influenced by nurse defined expectations of participation and need for specific/causal involvement. Not enough evidence to suggest impact on: quality of life, ADL, unmet needs, assistance with ADL, hours-per-week caregiving, performed ADL and depression.
Brand CA, Ackerman IN, & Tropea J (2014)	People with osteoarthritis	Systemic Review (13 studies)	Process outcomes: clinician process of care, patient behaviour change Health outcomes: clinical, psychological, hospital utilization, QoL, access, efficiency, and patient experience/satisfaction	Chronic Disease Management Models Organization of Health Care (HCO), Delivery system design (DSD), Self-management support (SMS), Decision support (DS), Clinical information systems (CIS), Community resources (CR)	0  0/+	No evidence for cost effectiveness and many barriers to effective implementation. DSD-clear focus in secondary care on prioritization of patients with severe osteoarthritis and standardization of surgical pathways.  In community & primary care settings DSD focused on allied health professionals and pharmacists for delivery and coordinating serves related to SMS in association with physical activity/medication management. Positive impacts were small to moderate, effect-results varied. SMS: no information from community studies in relation to efficiency outcomes.	Care setting altered impacts of CDM models–5/8 occurring outside of hospitals.  Several barriers to effective CDM models and delivery for osteoarthritis separated into health-professional related, health system related, patient related, and research translation.  No studies considered cost-effectiveness despite the population of interest being low income.
Challis D, et. al, Chapter 6 (2014)	Community mental health teams for older adults	Systematic Review (45 studies)	Process and user outcomes (not specified)	Various components of different team structures (intensive care management, initial assessments by MD/consultant, post-assessment decision making, different mechanisms of referrals, structured assessment tools, models of access)	+ + + +	Key elements: (1) Flexible support: Improved caregiver support and prolonged service user community tenure resulting from focused long-term input. (2) Open referral systems and SPA-improved access without loss of accuracy. (3) Common standardized assessment: Structured tool improved quality of recording and communication with GPs.	No evidence of the effectiveness of: multidisciplinary membership, single-management structure, colocation (of core members), regular multidisciplinary meetings, professional role flexibility, consultant fully integrated into team, control of resources/joint funding, multidisciplinary assessment, or outreach to non-specialist services.

						(4) All professionals conduct initial assessments, high quality-assessment and decision making retained.	
Challis D, et al, <i>Chapter 12</i> (2014)	Specialist mental health outreach, older residents of care homes	Systematic Review (15 studies)	Depression scores, drug use, appropriate use of medication, clinical outcomes, QoL, behavioural problems	Mental health outreach interventions including: specialist nurse assessment and case management, training programs for staff, medication review by pharmacist, psychiatrist-supported multidisciplinary care teams	+  +(Y) 0  0  +(Y)	(12 outreach studies) reported reduction in depression scores, reduction in drug use, more appropriate use of medications, improvements in clinical outcomes, behavioural problems & QoL. Clear positive impact of staff training. General studies (3): mixed results of behavioural improvements affecting mental health outcomes. Dementia studies (6): mixed results and mixed outcomes. Depression studies (3): all reported positive results for residents; staff training (2/3), and education for care teams and activity programs for residents (1/3) (sig. greater reduction in depression scores).	Cultural differences may have influenced how outreach is undertaken.  Little occupational therapy input, mainly psychiatric nurses.
Chan RJ, et al., (2018)	Nurse-led services	Systematic Review (25 studies)	Process and economic; Primary outcomes: Health related QoL (HRQoL) Secondary outcomes: symptom burden, patient self-management/behaviour, condition related clinical indicators	Various nurse-led service interventions in primary care, community, outpatient, ambulatory, clinic settings	=/+  +  0 -	Equal (13) or better (3) than physician-led services in: HRQoL, symptom burden, self-management and behavioural outcomes, disease-specific indicators, satisfaction and perception of QoL, and health service use. (1) Clinic-based nurse-led interventions were more effective at shifting inpatient care to outpatient nurse-led care, thus reducing hospital length of stay, hospital admission, and emergency presentations. Cost-effectiveness and cost savings uncertain. Reduced neo-natal outcomes.	Key factors for successful outcomes are nurse education and qualification, self-management support, resources available to the nurse, prescribing capabilities.  Explicitly defined clinical practice guidelines, protocols or treatment algorithms, clear referral pathway to a physician may also impact intervention.  Cost effectiveness is still unclear.
Chavez KS, et al., (2018)	Nurse Practitioner (NP) care to older people	Scoping Review (56 primary research, 23 systematic reviews)	Two broad categories of outcomes: financial related and patient related	Various NP interventions in geriatric care: case management, GEM interdisciplinary clinic, collaborative care & consultation, annual home visits, urgent home visits, etc.	+  +(Y)  +(Y)  =/ +	NP home care improved physical function and reduced falls and hospital admission. Improved patient satisfaction and comfort (67%). Superior positive outcomes: decreased service utilization (89%), length of stay, health indices (85%), QoL (majority of studies). Equal (2) or inferior (2) outcomes in cost. NP model: enhanced patient-related outcomes; functional status, symptom screening (73%), medication review, advanced directives, and clinical outcomes (5).	NP commitment to preventative care, health promotion and patient advocacy might impact improved health indices. In the home care setting might be reflective of advanced access to care, maintained functional status and in-home safety assessment. NP substantive outcomes were non-inferior to physicians. NP supplementary roles had superior outcomes (except for cost). NP developed transitional role stood out for both financial and patient-related outcomes.
Clarkson P, et al., (2017)	People with dementia	Systematic Review (14 studies)	Mainly cost effectiveness and quality of care	Various dementia related interventions: nurse counselling, intensive care	+(Y)	Occupational Therapy, home-based exercise, carers coping interventions were all deemed cost-effective interventions (strong evidence).	Key factors contributing to successful outcomes: (1) environmental modifications, (2) behaviour management

	home supports			management, caregiver support programs, group living, community-based occupational therapy, exercise, specialist dementia daycare, individualized service plan	+	Positive results in specialist day care, social service intervention, care management (weaker evidence).	(education/advice), (3) physical activity, and (4) emotional support. Care coordination also beneficial: connecting and bringing together different services, advising or negotiating on service delivery from multiple providers
Clarkson P, et al., (2018)	People with dementia - home supports	Systematic Reviews (70 studies)	Primary Outcome: Carer QoL  Secondary Outcome: Carer burden	Interventions primary to carers involving a combination of: behaviour management, education and/or advice, emotional support, social support, respite	+  +  +	Interventions containing education, social support and behaviour management emerged as most effective.  Two component interventions involving education/advice and behaviour management were most frequent, effectively reduced carer burden and problem behaviour and improved well-being.  Compared to individuals admitted in a general ward, care coordinated home hospitalization was effective in alleviating care burden and reducing problem behaviours.	2 studies pointed to the need to support carers in their understanding of dementia as a condition, and that management of feelings and behaviours impacts their own well-being and the behaviours of the person with dementia. Environmental modifications made a difference on outcomes; assumption that removing stressors in the environment can reduce problem behaviour, and improve daily functioning of people with dementia.
Cooper C, et al., (2017)	Older home care clients	Systematic Review (10 studies)	Primary outcomes: health or QoL  Secondary outcomes: health outcomes, burden, knowledge, job satisfaction, or retention of home care workers	Staff training (restoring and maintaining physical function), compulsory group supervision, psychological carer and HC agency interventions, case management, goal setting for ADL with nurse	+  I  +  +	Improved relative controls over HRQoL, improved mental subscale scores, reduced staff turnover, improved job satisfaction.  Only one high quality RCT where goal-setting care plans and worker training and supervision had positive effects on HRQoL (without cognitive impairment).  Only interventions that improved client outcomes included training with additional implementation (regular supervision, appointing champions, buddy visits, ongoing support).  Case management interventions, potentially increased time and opportunities for staff to build relationships were effective.	Additional elements that allowed for greater relationship building with client were: reducing travel time, matching staff-clients on language (where possible), careful rostering.  Interventions improving outcomes involved training with additional implementation (regular supervision, and promoted care focused on client needs and goals).  Carer-valued elements were greater flexibility to work to a needs-based model, learning more about clients, getting to know them, and improved communication with management and other workers, opportunities to share.
Gorgon EJR (2018)	Children who experience or are at risk of motor delay	Scoping Review (24 studies representing 17 trials)	International Classification of Functioning, Disability and Health dimensions under activities and participation; Mobility (changing/maintaining position, moving/handling	Range of caregiver provided Physical Therapy Home Programs (PTHPs)–mainly family interventions; TM training + standard physical therapy, kicking exercises, cycling training, movement training, step up exercises, etc.	+  +	Caregivers can safely administer PTHP to pediatric patients.  Interventions provided by individuals without formal/professional training can be cost effective, may result in improved health outcomes.  Lack of attention given to clinical trials describing a caregiver component.  Caregivers can have active role in program planning/delivery, deliver increased amount of therapy when needed.	For any intervention to be successful caregivers must adhere to expected implementation, be confident and equipped with the required knowledge to carry out intervention and share in decision making.  Caregivers are often not treated as active and central participants in their child's motor intervention.

			objects, walking/ body function, Neuromusculo- skeletal functions, other movement functions)				
Huntley AL, et al., (2017)	Older adults at risk of hospital admission	Systematic Review (19 studies, 7 systematic reviews)	Reduction in secondary care use, patient- related outcomes, safety and costs.	Community-based intervention as an alternative to acute hospital admission, interventions of para/emergency care practitioners (3), emergency department (ED) based interventions (3), community hospitals (CH) (2), and hospital-at- home (HaH) services (11)	+	Alternatives to AH care can be safe with comparable mortality and clinical outcomes across a range of acute and chronic conditions. Potential to reduce health care spending, secondary care and time receiving care (Except with strokes). ED: reduced time at hospital at the index and less likely to be admitted to hospital. No difference in secondary outcomes (satisfaction or QoL), reduction of cost reported. CH: (1) RCT found fewer readmissions at 26 weeks for CH group vs AH group, total cost of treatment less in CH group. HaH: Fewer hospital readmission than AH, stat. sig. reduction in cost (COPD). Cost reduction for HaH treatment for patients with uncomplicated diverticulitis and stroke (stat sig).	Dementia assessments are difficult to make in the acute care context and might influence the findings. Decision making capacities in acute care context are often influenced by inadequate knowledge of the patient or condition, communication difficulties between primary and secondary care, presence of comorbidities, availability of test results, perceived benefits of inpatient care and patient preferences. Decision making capacities may also be influenced by broader factors like individual/family/carer coping, in addition to care preferences.
Husebø AML & Storm M (2014)	Older Adults receiving home health care	Integrative review (12 studies)	Prevention of social isolation, increase in social activities	Tele-health nursing, dominant themes 1) psychosocial/ educational to reduce loneliness and boost activity levels, (2) observation/support enhance medication compliance, (3) CDM support/monitoring, (4) follow-up service/ monitoring self- administration of medication to reduce readmissions to hospitals or long-term facilities	+	Virtual visits enhanced potential for social inclusion (reduced isolation) and medication compliance. Virtual visit recipients were more satisfied with access and flexibility than traditional HC; confident that nurses' assessment was providing them a good quality of care. Service users and nurses found virtual visits satisfactory and suitable for HC delivery. No evidence for cost benefits. Mixed results were shown in terms of hospital (re)admissions. Increased concern of reduced quality of care when in-person visits were replaced with virtual visits.	Found in most studies, virtual visits are delivered on a daily basis in combination with in-person visits. Ability choose their topic and receiving quick response was of great value to elders living at home. Experience and acceptance of technology might vary amongst the elderly; several barriers to lack of interest: worries about cost, being too infirm to use technology. Successful implementation and use of technology depend on a design that is usable and useful for elderly. Findings warn against eliminating home visits (full replacement).
Jensen L, et al., (2017)	Heart failure (HF) patients in ambulatory care settings	Scoping Review (52 studies and systematic reviews)	Four distinct outcomes: (1) HF admissions (2) All-cause admissions (3) HF readmissions	Organizational interventions; multi- component, self- management support and eHealth interventions	+	Multicomponent interventions could reduce hospitalizations, readmissions, mortality and costs and improve QoL. Multicomponent with SMS and home visits/ telephone reduced all-cause and HF-specific readmission except mortality. SMS appeared more effective when included in multicomponent interventions, mixed outcomes alone.	Effectiveness of multicomponent interventions depends on specific design characteristics, fidelity of implementation, and quality of care received by comparison group. Models of coordinated care with disease specific elements may be more effective.



			outcomes included a range of satisfaction outcomes, clinical outcomes, social outcomes, and cost. (Measured in the short, medium, and long term)	delivered care. Six of the studies had staff on call 24h per day to provide support	+	Families of patients in the crisis intervention group generally reported less burden. There was no clear impact on community burden. Overall patients in the crisis intervention group and their families were more satisfied with their treatment and levels of support. 2/2 found crisis intervention for those in crisis was significantly less expensive than standard care.	Crisis intervention may be more effective than standard care when it is employed alone or in an ongoing homecare package.
Pekmezaris et al., (2018)	Heart failure patients	Systematic Review and Meta-Analysis (26 studies)	Primary outcomes: All-cause mortality and heart failure related mortality, hospital use.	Home Telemonitoring interventions (HTM) (only interventions that specifically used vital signs monitoring and transmission for heart failure interventions were included); presence of home visits, health care professional communicating with the patient, etc.	+ 0 0 - 0	At 180 days, home telemonitoring was associated with a 40% decrease in all-cause mortality, this decrease was not significant at 365 days (12). Six studies showed that home telemonitoring interventions were not associated with a significant decrease in all-cause mortality. The intervention did not have an impact on the odds of all-cause hospitalization at 180 days (7), or heart failure-related hospitalization (5). The intervention significantly increased all-cause emergency department visits at 180 days (3). Home care provision was not a significant moderator of all-cause hospitalization from 60 to 180 days.	Duration: waning effect of HTM on mortality might be impacted by illness progression and adherence decline. Timing of intervention might also impact results, i.e., might be the right intervention delivered at the wrong time. Technology might be an early identifier of exacerbation in patients, pre-exacerbation symptoms treated at home. Patients with delayed symptom recognition requiring more intensive therapeutic measures can receive needed support in an ED setting. Discharged homebound hospital patients (HF) are entitled to at least one 60-day episode of home care; this has proven to reduce readmission and cost of care.
Rasku T, et al., (2019)	Community paramedicine (CP)	Scoping Review (21 studies)	No outcomes defined; aim was to describe components of community paramedicine	Community paramedicine (services may encompass simple procedures, home visits, telephone support and education among others)	+ + +	Reduced visits to the emergency department and the need for subsequent referrals. Improved patient experiences, health, and satisfaction, physiological outcomes (e.g., reduced blood pressure). CP helped to reduce hospital attendance, enhance access to primary care and offered a better use of resources. Might be useful as a cost avoidance strategy. Community paramedicine could provide longer periods of coordinated care, telephone advice, and referral to other providers.	Four core components identified: (1) Community engagement (assessing local needs, bridging gaps and collaboration with other providers); wellness assessments, preventative health promotion, home safe checking, first aid training, care for the chronically ill, and connections with other healthcare resources. (2) Multi-agency collaboration (strong teamwork, clear communication, and collaboration with allied health workers). Tensions between the CP program and other providers were lower when the team included a delegate from other services. (3) Patient-centered prevention. Home visits and telemedicine were used to support patients in nonurgent situations. (4) Two program outcomes: cost-effectiveness and patient experiences.
Reilly S, et al., (2015)	People with dementia	Systematic Review (13 studies)	Time to institutionalization, Hospital	Case management. All studies included carer education, and most had	+(Y)	Case management group was significantly less likely to be institutionalized at 6 months and 18	The authors categorized and compared the case management programs by their component but were not able to identify

			admission, Mortality, QoL, caregiver burden, cognition, behaviour, depression/mood, functional ability, carer wellbeing/distress, satisfaction, health, costs, etc.	participant education. Case managers were involved in many studies and often provided emotional/therapeutic support. Other components: participant advocacy, pharmacy/medication review, legal insurance and benefits advice, and counselling.	+ (N) + (Y)	months; however, effects at 10-12 months and 24 months were uncertain. Some evidence of benefits in carer burden at 6 months but the effects at 12 and 18 months were uncertain. The case management group had a small improvement in carer depression at 18 months, and improvement in carer well-being at 6 months.	components of the interventions that might be the most important.
Reynolds R, et al., (2018)	Adults with physical health problems	Systematic Review and narrative synthesis (157 studies)	Professional level and patient level outcomes	Looked at multiple components of chronic disease management interventions. The elements commonly included: self-management support, decision support, delivery system design, clinical information systems, health care organization, and community resources	+ (Y) + + + (0) +	SMS most frequently displayed improvements in patient outcomes (Majority: physiological measures of disease, risk behaviour, satisfaction and knowledge). SMS improved physiological measures of disease, most often in cases of TD2M and hypertension, improved patient knowledge in TD2M and COPD. DSD: demonstrated benefits in patient-level and professional outcomes, for a narrower range of conditions (T2DM diabetes and hypertension). DS interventions had limited effect on outcomes, mainly professional level and in the use of medication. CIS: improvement in both patient-level and professional level (mainly in adherence to guidelines) outcomes; small # of studies but positive effect in TD2M and hypertension specifically.	Majority of studies addressed one or two CCM elements. Combination of SMS and DSD had the most effective impact on outcomes.  Reduced effects of DS interventions on health professional's adherence to guidelines may be due to increasing sophistication of CIS where DS interventions are increasingly embedded.
Shier V, et al., (2016)	Older Adults	Systematic Review and Descriptive Analysis (7 systematic reviews describing 128 studies)	Outcomes not defined; aim was to determine how fall prevention interventions were implemented.	Individual and group, home, community, or clinic exercise programs. The programs included a range of different exercises, for example: functional training, strength training, general physical activity, flexibility training, endurance training, and other activities (Tai Chi, dance, etc).	+ + +	Reducing rate of fall injuries. Improved QoL, participation in activities. Costs generally lower for class-based exercise (rather than individual). Frail patients may benefit the most from exercise therapy. Programs sponsored by primary care providers may help with recruitment for exercise programs. Home based and group-based activities have demonstrated effectiveness at reducing falls.	Successful programs typically had multiple different types of training. More frequent and longer duration exercises have a larger impact on fall rates but may reduce adherence and participation. Regular phone calls, refresher sessions and home visits can improve adherence. Most successful studies prescribed exercise 3 or more times per week. Group exercises, with a convenient and comfortable location, and transportation can improve adherence. Social support, encouragement and supervision may also improve adherence. Manuals with instructions for home-based programs may help improve participation.

Smalls BL, et al., (2015)	African Americans with Type 2 Diabetes	Systematic Review (13 studies)	Differences in measured glycemic control (measured by hemoglobin A1C (HbA1C) a known indicator of Type 2 Diabetes (T2DM) severity.	Variety of community interventions: Nurse case managers, telemedicine, culturally tailored interventions, mobile device software, nurse educators, nutritional educators, diabetes educators, clinician-based interventions, one-on-one counselling, group counselling, physician involvement, supervised exercise, and community health workers	0 +(Y) +(Y) +(Y)	Community interventions help with the management of Type 2 Diabetes in African Americans; however, no specific component is superior. Most common intervention delivery method with significant differences was group counselling, then supervised exercise. Three elements of community interventions had significant change in glycemic control: mobile device software, nutritionist educator, and curriculum-based approach. Diabetes self-management in a community setting is effective at lowering HbA1C and improving other T2DM related outcomes.	Community health workers should not be the sole delivery mechanism for intervention. Better glycemic control is linked to improved T2DM outcomes, improved QoL, and decreased complications.
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**Palliative Care Interventions**

Moraitou M, et al., (2016)	Elders and chronic disease patients	Systematic Review		Smart health caring home technology (residences equipped with technology that monitors or senses individuals and/or promotes independence and improves QoL	0	The use of these technologies poses technological, psychosocial and ethical, and economic challenges.	Clinical, vocabulary, workflow, and technical standards must be established to reduce technological challenges. Challenges related to infrastructure (e.g., internet quality in the users home), privacy concerns about sharing information, time required to learn how to use or maintain the technology, the measurement quality provided by the technology, and reducing fear associated with reduced in-person contact should be addressed. This technology has potential to increase access to care but may also be very costly to both the health care system and individual.
Bainbridge D, et al., (2016)	In-home end of life (EOL) patients	Review of Systematic Review (19 reviews of 40 studies)	Outcomes not specifically defined; broad range of outcomes, 6 outcome domains; QoL, satisfaction with care, performance status, pain management, non-pain symptom management, supporting home deaths, and reductions in	30 unique components (avg. 11 per study) 6 most common; linkage with acute care, multidisciplinary nature, EOL expertise and training, holistic care, pain and symptom management, and professional psycho social support	+ + + +	9 interventions for which a significant cost reduction was reported most common components were; linkage, around-the-clock availability, and customized care planning Significant improvements in 6 outcome domains. All 12 most common components for efficacious EOL in-home programs showed evidence of improved outcomes in all 6 outcome domains. Three components had the most consistent positive benefits on multiple outcomes; linkage between community services on satisfaction, pain management, and place of death. 4 RCTS and 5 nonRCTS out of 17 studies reported significantly lower costs than usual care.	Programs were multifaceted, complex with multiple components (30); divided into 5 categories: type of services offered, availability, characteristics of care model, linkages to other resources, and process interventions. Strongest evidence on improved outcomes converged on individual and caregiver satisfaction, pain and non-pain symptom management, supporting home deaths and reductions of healthcare use and costs. Likely that the main components identified work together to improve QoL, satisfaction, and symptom management- and avoid unnecessary late-life hospital use, encourage death at home.

			healthcare use or costs				
Coelho A, et al., (2017)	Patients in palliative care	Scoping Review (18 studies)	General comfort as the main outcome of interest—components of comfort; (e.g., pain, anxiety, depression, stress, fatigue, and well-being)	Non-pharmacological interventions 10: (1) aromatherapy, reiki and therapeutic touch, (2) aromatherapy, foot soak and reflexology, (3) aromatherapy, (4) aromatherapy massage, (5) massage therapy, (6) noncontact therapeutic touch, (7) music therapy, (8) hypnotherapy, (9) art therapy, and (10) electromyography biofeedback-assisted relaxation	0  + + +/0	Mixed results on the effectiveness of music therapy in aiding anxiety and depression, general positive results for increasing comfort/relaxation.  General positive effect of aromatherapy on anxiety, depression, pain, and discomfort.  Massage and therapeutic touch generally positive effect on comfort.  Positive significant effects on pain reduction (although minimal results) from noncontact therapeutic touch, art therapy, hypnotherapy, and electromyography biofeedback assisted relaxation.	Impacts of specific components of the interventions were not discussed. Majority of studies in palliative care units.
Hofmeister M, et al., (2018)	Palliative care patients in home	Scoping Review and thematic analysis (53 studies)	Primary outcomes of experience with services offered, resource use, cost, symptom burden, QoL, satisfaction, caregiver distress, and place of death	Various home interventions (5 themes): accessibility of healthcare, family and caregiver support, individualized patient centered care, multidisciplinary care provision, and quality improvement	0  0/+	Theme of individualized patient-centered care was found in 66% of studies, but positive outcomes could not be drawn.  Prevalence of other interventions; accessibility of healthcare (50.9%), caregiver support (22.6%), multidisciplinary care provision (45.3%), quality improvement (11.3%).  Although mixed, all interventions reported positive outcomes.	Maybe location of care preceding death is more appropriate outcome than place of death.  Need to expand outcome measurement beyond routinely collected data to measure outcomes that are more directly linked to at-home palliative care objective.
Singer AE, et al., (2016)	Palliative care patients and caregivers	Systematic Review (124 RCTs)	Patient & Caregiver QoL—relevant outcomes; pain, dyspnea, depressive/other symptoms, existential/spiritual concerns, experience/satisfaction, HRQoL, functional status, communication or care planning; Economic outcomes; Healthcare use, and healthcare costs	Various interventions; Nurses (palliative case management, education in symptom management/monitoring, and or counselling and therapy), social workers (as part of multidisciplinary teams with clinically trained individuals), home-based components, and focus on communication, psychosocial support, supporting technology, and the patient or caregiver experience	+  +/0 + +(Y) +  +	Improved patient and caregiver QoL communication and care planning (strongest), psychosocial health, patient and caregiver experiences (moderate).  Weak evidence in pain, HRQoL, functional status outcomes.  Many reduced hospital use, other economic outcomes were poorly characterized (costs).  Nurse-only interventions particularly effective at reducing pain.  83% involving a home care component had sig. effect on caregiver depressive symptoms (often not multidisciplinary teams, were long-term and included skill training or counselling or therapy).  In interventions that reduced costs, nurses and social workers were well represented, palliative care teams had little impact on reducing costs.	Majority of interventions addressing pain were with cancer patients, interventions that addressed pain and depressive symptoms in cancer patients were much more effective than patients with other conditions.  Intervention with sig. effect on communication or care planning outcomes often involved decision support, advance directive completion, education/training.  Interventions with a hospital component were generally less effective.  Longer interventions were more effective at improving patient depressive symptoms, and patient and caregiver QoL than in lowering costs.  Economic evidence more likely to reflect a lack of evidence than a lack of effect.

Sarmiento VP, et al., (2017)	Patients in palliative and family caregivers	Meta-ethnography (19 studies)	Change in status of health and welfare of individuals or populations confidently attributable to the antecedent care	Complex family caregiver delivered interventions—2 key overarching components; presence (24/7 care and home visits), and competence (effective symptom control and skillful communication) were seen to contribute to the core need of security and trust	+	Palliative care teams had a positive impact on caregivers’ feelings of accomplishment, yielded a sense of security—professional help was easily accessed and service users were visited at home.	Competent teams were effective at physical and psychological symptom control and skillful communication, able to prevent, manage and relieve suffering. Supportive teams were able to listen to disease history non-judgmentally, acknowledge their roles in disease process and family. Skillful (two-way) communication enabled provision of individualized care—tailored to normal family life, preserved normality. Informing and providing anticipatory guidance allowed patients and caregivers to participate in decision making, enhanced opportunities to individualize care.
					+	Availability decreased uncertainty in stressful situations and facilitated trust in team’s competency and resources to meet needs. Helped reduce hospital visits, home visits provided relief (some form of respite)	
					+	opportunity to hear experiences, provide advice/information and discuss advanced care planning.	
					+	Patients; Relief from suffering, patients reported enhanced feeling of security, opportunity to pursue other goals—living other family life with normality and planning for death.	

**Legend:** Commonly used acronyms QoL (quality of life), HRQoL (Health Related Quality of Life), HC (home care), RCT (randomized control trial), nRCT (non-randomized control trial), ADL (activities of daily living), SM (self-management), SC(self-care), CDM (chronic disease management), all other acronyms should be defined in table

**Evidence Effect:** +(positive effect), -(negative effect), 0(null or uncertain effect), =(equal effect), blank(outcome observation); Statistical significance noted in brackets (Y)[effect is statistically significant], (N)[effect is not statistically significant]

**Summary of Findings:** (#) number of studies with same finding, (%) percent of studies with same finding

## Appendix C: Promising Models of Care Closer to Home in Canada

#	Program Name	Description
1	Nova Scotia PATH clinic (NS)	<p>Identified by: Kimberlyn McGrail and Margaret McGregor</p> <ul style="list-style-type: none"> <li>• <b>Purpose:</b> The PATH clinic was established to help older people and their families understand their health status and to guide them through the process of making health care decisions that will protect their best interests and quality of life. Providing comprehensive assessments and future planning decisions.</li> <li>• <b>Outcomes:</b> Improved population health; reducing per capita cost of health care; optimizing the use of resources (value for healthcare dollars).</li> <li>• <b>More information:</b></li> <li>• <a href="https://www.cdha.nshealth.ca/geriatric-medicine/palliative-therapeutic-harmonization-clinic">https://www.cdha.nshealth.ca/geriatric-medicine/palliative-therapeutic-harmonization-clinic</a></li> <li>• <a href="https://pathclinic.ca/implementation/outcomes/">https://pathclinic.ca/implementation/outcomes/</a></li> </ul>
2	Oasis (BC)	<p>Identified by: Kimberlyn McGrail</p> <ul style="list-style-type: none"> <li>• <b>Background:</b> The first OASIS (osteoarthritis service integration system) clinic opened in 2006 and has since grown to 3 locations in Vancouver, Richmond and North Shore.</li> <li>• <b>Purpose:</b> To enable individuals with all stages of osteoarthritis to achieve optimal health outcomes, by providing multi-disciplinary assessment of needs, personalized plans, and timely, relevant education.</li> <li>• <b>More information:</b></li> <li>• <a href="http://oasis.vch.ca/en/">http://oasis.vch.ca/en/</a></li> <li>• <a href="http://oasis.vch.ca/about-us/mission-vision-and-values/">http://oasis.vch.ca/about-us/mission-vision-and-values/</a></li> </ul>
3	Direct Funding Ontario (ON)	<p>Identified by: Sarah Carbone</p> <ul style="list-style-type: none"> <li>• <b>Background:</b> In 1994-95 the Ontario Ministry of Health approved pilot funding for the program and allocated \$4.4 million. The pilot program became permanent in 1998 and the budget was increased to \$18.7 million. Approximately 700 Ontario residents are funded.</li> <li>• <b>Purpose:</b> The program enables adults with physical disabilities to become employers of their own attendants, they are given a budget and are fully responsible for managing their attendant care.</li> <li>• <b>Outcomes:</b> Improved participant satisfaction and control over their care; potential reduced health system costs.</li> <li>• <b>More information:</b></li> <li>• <a href="https://www.dfontario.ca">https://www.dfontario.ca</a></li> </ul>
4	Home is Best, Model of Primary and community care integration (BC)	<p>Identified by: Canadian Home Care Association, Home is Best [article]</p> <ul style="list-style-type: none"> <li>• <b>Background:</b> Home is Best is a bundle of system enablers, such as proactive discharge planning, expanded community support services, and telephone outreach. The Model of Primary and Community Care Integration was implemented and tested in one BC community.</li> <li>• <b>Purpose:</b> Home is Best is a philosophy and system-wide approach to health care, involving a strengthened and structured partnership between home and community care services, acute care, and primary care to improve a senior's journey within the healthcare system. The goal of the Model of Primary and community care integration is to improve the outcomes of clients who have long-term health conditions that impact their function and well-being.</li> </ul>

		<ul style="list-style-type: none"> <li>• <b>Outcomes:</b> Improved confidence among providers; increase in individuals discharged to their homes who would have otherwise been headed for residential care.</li> </ul>
5	Telehome care (ON)	<p>Identified by: Canadian Home Care Association, Telehomecare in Ontario [article]</p> <ul style="list-style-type: none"> <li>• <b>Background:</b> The current provincial Telehomecare program evolved from a 2007 pilot program co-funded by the Ontario Ministry of Health and Long-term Care and the Canada Health Infoway. To date, 11 Local Health Integration Networks (LHINs) and their partners host Telehomecare across the province.</li> <li>• <b>Purpose:</b> The Ontario Telemedicine Network's Telehomecare initiative is a chronic disease self-management intervention that engages patients as partners in their home care plan, enabled by the use of technology.</li> <li>• <b>Outcomes:</b> Patients satisfied with the service; reduced need to visit the ED and primary care provider; reduced ED visits post-enrolment; reduced acute in-patient re-admission rates.</li> </ul>
6	Choice in Supports for Independent Living (CSIL) (BC)	<p>Identified by: Sarah Carbone</p> <ul style="list-style-type: none"> <li>• <b>Background:</b> The program has existed for 20 years and has two phases: (1) for individuals who are mentally capable of self-managing their care; (2) for those who are not mentally capable of self-managing their care.</li> <li>• <b>Purpose:</b> CSIL is a self-directed funding option for eligible home support clients. It was developed to give British Columbians with disabilities and high-intensity care needs more flexibility in managing their home-support services.</li> <li>• <b>More information:</b>  <a href="https://www.interiorhealth.ca/YourCare/HomeCommunityCare/ChoiceInSupportsForIndependentLiving/Pages/default.aspx">https://www.interiorhealth.ca/YourCare/HomeCommunityCare/ChoiceInSupportsForIndependentLiving/Pages/default.aspx</a></li> <li>• <a href="https://www.canada.ca/en/health-canada/services/publications/health-system-services/self-managed-care-programs-canada-report-to-health-canada.html#a5_2">https://www.canada.ca/en/health-canada/services/publications/health-system-services/self-managed-care-programs-canada-report-to-health-canada.html#a5_2</a></li> </ul>
7	Provincial Home Support Services Program Paid Family Caregiving Option	<p>Identified by: Stephen Bornstein (Newfoundland and Labrador)</p> <ul style="list-style-type: none"> <li>• <b>Background:</b> Effective October 22, 2015, the Paid Family Care Giving Option, under the Provincial Home Support Program, is available to new and current home support clients and will assist clients to remain in their homes and communities.</li> <li>• This option provides up to 250 subsidies for seniors and adults with disabilities to pay a family member for approved home support. The subsidies are provided through a direct individualized funding model, which provides more flexibility for clients and reduces the administrative burden.</li> <li>• <b>More information:</b>  <a href="https://www.health.gov.nl.ca/health/long_term_care/family_caregiving.html">https://www.health.gov.nl.ca/health/long_term_care/family_caregiving.html</a></li> </ul>
8	Seniors Managing Independent Life Easily (SMILE) Ontario	<p>Identified by: Allie Peckham</p> <ul style="list-style-type: none"> <li>• <b>Background:</b> Developed in 2008 as part of the Aging at Home Strategy.</li> <li>• Seniors Managing Independent Life Easily (SMILE) is a home and community support program managed by Victorian Order of Nurses (VON) with community partners. The program provides support for daily living to seniors who are at risk of losing their independence due to increasing frailty.</li> <li>• Services may include traditional community support service providers, a recognized business providing services related to community support services (cleaning or laundry), or non-traditional providers, individuals or other groups. Members of the household or family may not provide services funded through SMILE.</li> <li>• More information: <a href="http://www.von.ca/en/hastings/service/seniors-managing-independent-life-easily-smile">http://www.von.ca/en/hastings/service/seniors-managing-independent-life-easily-smile</a></li> </ul>
9	Seniors Community Hubs (Alberta)	<p>Identified by: Émilie Dionne</p> <ul style="list-style-type: none"> <li>• <b>Background:</b> Initiative that brings together family physicians, Primary Care Network (PCN) resources, specialists, and social and community supports to promote healthy ageing</li> </ul>

		<ul style="list-style-type: none"> <li>• <b>Objectives:</b> Maintain and enhance seniors' health and wellness; build integrated primary health care that is centred on the goals and priorities of older adults</li> <li>• More information: <a href="https://www.eopcn.ca/services/seniors-community-hub/">https://www.eopcn.ca/services/seniors-community-hub/</a></li> </ul>
10	Seniors House Calls Program (Saskatchewan)	<p>Identified by: Émilie Dionne</p> <ul style="list-style-type: none"> <li>• The Seniors House Calls program was created within the former Regina Qu'Appelle Health Region to support seniors wellness in the comfort of their homes. The team includes nurse practitioners, paramedics, and pharmacists.</li> <li>• More information can be found: <a href="http://www.rqhealth.ca/department/primary-health-care/seniors-house-call-program">http://www.rqhealth.ca/department/primary-health-care/seniors-house-call-program</a></li> </ul>
11	House Calls (Ontario)	<p>Identified by: Allie Peckham</p> <ul style="list-style-type: none"> <li>• Primary health care program for home-bound seniors. Provides primary medical care as well as OT, PT, social work and connections to community support services.</li> <li>• More information: <a href="http://www.seniorshousecalls.ca/about-us.html">http://www.seniorshousecalls.ca/about-us.html</a></li> </ul>
12	Implementation of the Quebec Alzheimer's plan in family medicine groups and family medicine units	<p>Identified by: Émilie Dionne</p> <ul style="list-style-type: none"> <li>• Improve and simplify access to a process for assessing cognitive function and diagnosing Alzheimer's.</li> <li>• Innovate through effective, flexible coordination of necessary services for people with Alzheimer's and their families.</li> <li>• Adapt the proposed service structure and approach to local and regional circumstances.</li> <li>• Provide access to integrated case management as soon as Alzheimer's is diagnosed.</li> <li>• More information: <a href="https://www.alz.co.uk/plans/quebec">https://www.alz.co.uk/plans/quebec</a></li> <li>• <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6184262/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6184262/</a></li> </ul>
13	COACH (PEI)	<p>Identified by: Émilie Dionne</p> <ul style="list-style-type: none"> <li>• To improve access to care for the frail elderly with complex needs by 1) supporting seniors to remain at home longer or return home sooner by collaborating with partner programs, 2) reduce duplication of services and supports.</li> <li>• More information: <a href="https://www.princeedwardisland.ca/en/information/health-pei/coach-program">https://www.princeedwardisland.ca/en/information/health-pei/coach-program</a></li> </ul>

## Appendix D: Articles and Identified Factors

Author	Intensity		Caregiver Support	Personalized Approach to Care	Social Home	Self-Care/ Management Supports/ Education	Standardization of Referrals/ Protocol Transitional Care	24/7 Availability of Care Team	Multi-Discipline Care Teams	Multi-delivery Methods / Combinations		
	Duration	Freq.								Technology & In Person	Group & Individual	Other
Anuruang (2014)		√		√		√					√	
Apostolo (2015)						√	√					
Aydede (2014)	√	√			√							
Van Den Berk-Clark (2018)					√	√				√		√
Berthelson (2015)	√		√	√			√	√		√	√	
Brand (2014)				√		√	√		√			√
Challis 6 (2014)	√	√	√	√	√		√		X			
Challis 12 (2014)			√	√			√				√	
Chan (2018)				√		√	√					
Chavez (2018)				√		√	√					
Clarkson (2017)			√	√			√				√	
Clarkson (2018)	√	√	√						√	√	√	√
Cooper (2017)			√	√					√		√	
Gorgon (2018)				√								√
Huntley (2017)												
Husebo (2014)			√		√	√				√		
Jensen (2017)						√			√	√		√
Johnson (2018)			√			√			√			
Merali (2016)			√	√		√					√	
Murphy (2015)								√				
Pekmezaris (2018)										√	√	

Rasku (2019)				√					√	√		
Reilly (2015)	√	U	√	√		√	X/U		√	√	√	
Reynolds (2018)						√						√
Shier (2016)	√	√			√					√		
Smalls (2015)						√			√	√	√	
Moraitou (2016)										X		
Bainbridge (2016)			√	√			√	√	√			√
Coelho (2016)												
Hofmeister (2018)	√		√	√				√				
Singer (2017)	√		√	√					√			
Sarmento (2017)			√				√	√				

√= Identified as a factor of success

U= Undetermined, usually mixed results

X= Identified as not contributing to successful outcomes

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