

Designing Integrated Care for Older Adults Living with Complex and Chronic Health Needs: A Scoping Review

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Forward

The question of “how to design an integrated, person-centred care for older persons and their caregivers living with complex health needs” has never been more important in Ontario.

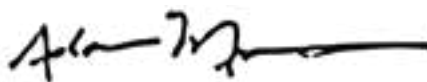
As older persons, their families and their health professionals reflect on tremendous losses experienced during the COVID-19 pandemic, and Ontario enters a phase of health system transformation, it is critical that the way forward be guided by new ways of thinking about health service design for older persons. Many Ontario Health Teams, a new way of organizing health services in Ontario, have prioritized older persons living with complex health needs in their planning. Thus, the time is right for evidence-informed, practical guidance that describes how to action integrated systems of care for older adults.

This scoping review, developed by the Provincial Geriatrics Leadership Office, examines the literature to highlight core design elements that can assist planners, policy makers, health leaders and clinicians in their health system design work. It is also relevant to older persons and family/friend caregivers who, with this information in hand, can contribute to design and evaluation of the services intended to support them.

Our report draws from the literature and leverages the considerable experience of the specialized geriatric services clinical community to establish 13 evidence-based design elements of integrated care. Along with prior work such as the provincial Senior Friendly Care Framework¹, this report also highlights the work that still needs to be done. We trust the findings from our work will offer valuable advice pertinent to overcoming current barriers and informing health system design that can truly result in integrated care for older persons in Ontario.



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Executive Summary

Transforming Care for Older Persons Living with Complex & Chronic Health Issues

The growing number of older persons living with complex and chronic health issues accessing Ontario's health system necessitates a new approach to the distribution of finite health resources and specific attention to issues of quality care. Integrated care is a collaborative approach to service delivery that establishes health partnerships across disciplines (e.g. nursing, medicine, physiotherapy, etc.) and sectors or types of care (e.g. primary, specialty, acute, community, long-term care, etc.). This approach represents an important next step in Ontario's health system transformation as it brings together resources from across the system of care that can effectively address the interrelated physical, mental and social health issues of older persons. An integrated care approach can produce holistic, comprehensive, seamless and accessible care across the health and social services spectrum. To deliver quality services for older persons living with complex and chronic health issues and responsibly contain healthcare costs, it will be important to define the role of specialized geriatric services within the broader integrated care landscape.

Scoping Review: Frameworks & Models of Integrated Care

The Provincial Geriatrics Leadership Office, an office established by the Ministry of Health to provide provincial infrastructure for clinical geriatric services, conducted a scoping review to examine the literature on integrated care. The purpose of the review was to a) identify the core design elements that guide integrated care for older persons, and b) examine how best-practice models operationalize these design elements in practice. The findings are intended to inform future policy and practice directions for specialised geriatric services and other services in the province of Ontario, Canada. Defined criteria were used to scope the literature for recent (i.e. 2017-2020) frameworks (i.e. papers containing concepts and theories related to integrated care) and practice models (i.e. papers that describe different ways of implementing integrated care in practice) relevant to integrated care for older persons living with complex and chronic health issues. The scoping review was based on the approach described by Arksey and O'Malley (2005).

Search Results

The review identified 10 frameworks and 19 practice models of integrated care for older persons with complex and chronic health issues. The models differed in terms of who provided care (e.g. disciplines/sector) and the specific health issues or combinations of health issues addressed (e.g. acute care, primary care, mental health issues). Most models employed either a randomised control trial, or a quasi-experimental method to analyze the effectiveness of practice on health and other associated outcomes. Others employed program evaluation methods.

Findings

The findings suggest a strong alignment between the design of integrated care practice (i.e. infrastructures, procedures) and the extent to which design elements become operationalised in practice.

Frameworks: The conceptual frameworks uncovered in this review describe the design elements that define integrated care for older persons living with complex and chronic health issues. An analysis of the frameworks identified 13 design elements.

Design elements of integrated care relevant to the care of older persons living with complex and chronic health issues

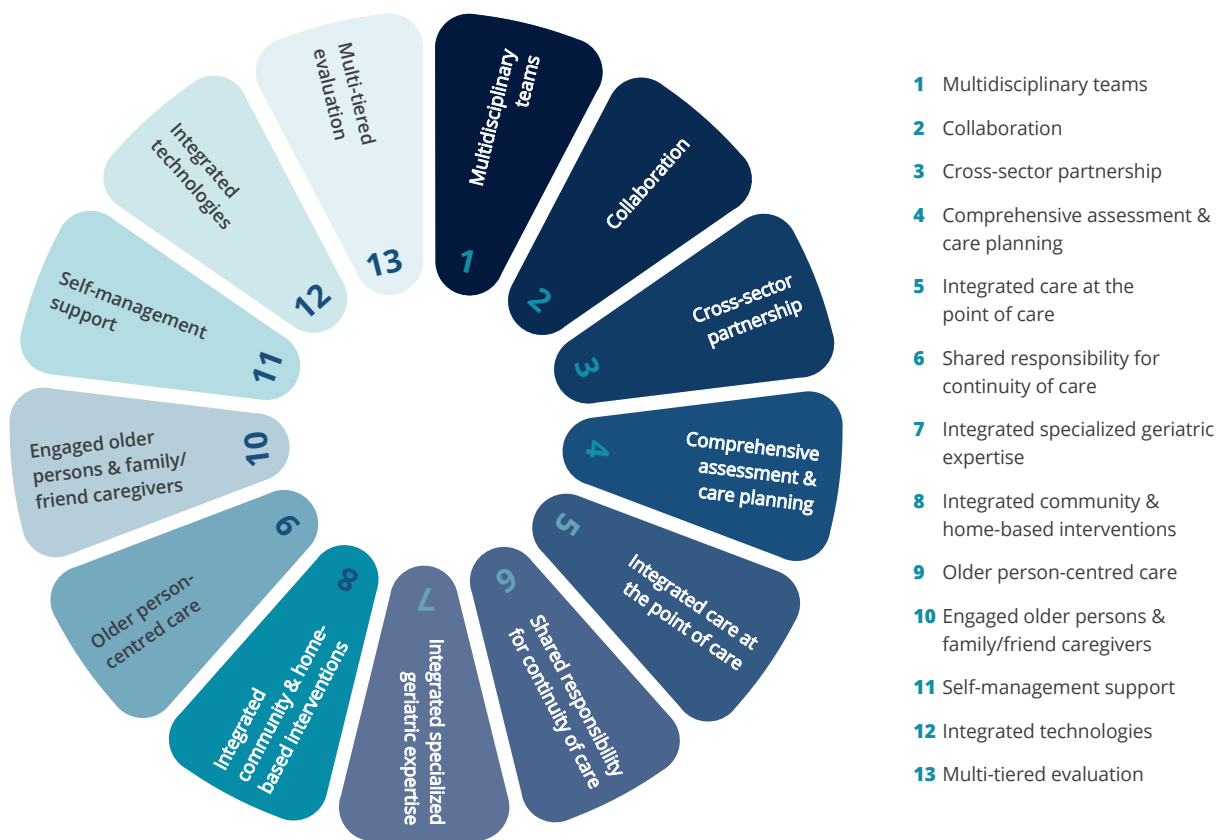


Figure 2

Practice Models: The models of practice identified in this review describe the key structures and processes used to operationalize design elements in practice. Our analysis revealed that most models of integrated care operationalize the design elements of integrated care at a basic level. However, models that displayed the greatest degree of alignment between the overall value of integrated care and practice (called value/practice alignment) operationalized the design elements of integrated care at advanced levels. Moreover, it was our observation that the models described in more recent publications (i.e. 2017-2020) were the most likely to reflect the broadest range of design elements and to have the strongest value/practice alignment.

Policy & Practice Implications

Much can be learned from best-practice models in the literature to inform policy and practice change in older persons' care. Specialized geriatric services, Ontario Health Teams, and other programs can use this information to plan and implement evidence-informed integrative care initiatives to suit local organizational and community contexts. Policies must be in place at program and system levels to support practice-level change. Our findings can be used to:

- create greater awareness of the full spectrum of design elements associated with current approaches to integrated care for older persons;
- inform the planning and implementation of integrated care interventions;
- ensure value/practice alignment; and
- inform the assessment of integrated care interventions at micro, meso and macro levels using quality improvement approaches.

Based on the findings of this review, the following recommendations are made to strengthen the integration of specialized geriatric services across the health and social service systems in Ontario. We recommend the implementation of:

- integrated service delivery solutions that go beyond multidisciplinary teams;
- initiatives that join-up knowledge, expertise and resources across the health and social services spectrum;
- broad-scale training initiatives in the basic care of older persons;
- enhanced opportunities for older persons and family/friend caregivers to play an active role in the care process;
- emerging technologies to support integrated care practice; and
- indicators that measure the impact of integrated care at micro, meso and macro levels.

Study Limitations

The models reviewed in this study were designed and tested under controlled and/or ideal settings. Actual practice may fall short of some of the process, structural and evaluation designs presented here. The findings from this review reflect the recommendations for change noted in recent guidelines established by the World Health Organization (WHO) on integrated care for older persons. These guidelines call attention to the need to advance health and social partnerships, collaborative learning, training in the care of older persons, community and home-based care, self-management support, and the engagement of older persons and family/friend caregivers. Our findings also align with recent research identifying the need for broader evaluation indicators to accurately assess the impact of integrated care and to support further advancement in integrated care practice.



Aim & Purpose

This report is a scoping review of the literature undertaken by the Ontario Provincial Geriatrics Leadership Office (PGLO). The report highlights the core design elements and implementation considerations that go into the development of models of integrated care. It also identifies key areas for improving the quality of integrated care and the care experiences of older persons living with complex and chronic health issues. Although integrated care across the health and social care services spectrum is an issue of global and national concern, the aim of this report is to inform near-future and longer-term policy and practice for older persons' care in Ontario.



Background

The promise of integrated care

By 2036, 25% of Canadians will be age 65 or over and the number of individuals over age 80 will have doubled (Stats Can, 2018). With age comes susceptibility to a growing number of health issues. Currently, 25% of Canadians aged 65-79, and 40% of those over age 80 live with four or more chronic health conditions (PHAC, 2010). Consequently, in the very near future, Canada will be faced with a significant increase in the number of older persons living with complex and chronic health issues accessing the health system (CMA, 2016). To effectively meet the health needs of an increasingly aged society, we must rethink how to deliver and distribute health resources. Integrated care is a service delivery approach that establishes pathways for collaborative practice across health disciplines (e.g. nursing, medicine, physiotherapy, etc.) and sectors or types of care (e.g. primary, specialty, acute, community, long-term care, etc.) to address interrelated physical, mental and social health issues (Baxter et al., 2018).

An integrated system of care holds tremendous promise for meeting the needs of older persons living with complex and chronic health issues (Flaherty & Bartels, 2019; WHO, 2016) and represents an important next step in Ontario's health system transformation strategy (MOH, 2019). It is essential that we define the role of specialized geriatric services (SGS), clinical services focused exclusively on older adults living with complex health concerns, within this broader landscape, and strive to optimize appropriate health and social services design, to ensure improved health outcomes and quality of care for older persons, while reducing healthcare costs (Ling & McGann, 2017).

A call for change

The global trend in population aging means that individuals over age 65 now make up the fastest growing portion of the population (WHO, 2016b). Despite this, older persons receive fewer health services, have poorer care outcomes, and are less satisfied with their healthcare than younger persons (Araujo de Carvalho et al., 2017). In response, the World Health Organization's (WHO) Global Strategy and Plan of Action on Aging and Health (2017) calls for global reforms in the organization, implementation and evaluation of health and social care services for older persons. This strategy proposes an approach to care that addresses the interrelated physical, mental and social health needs of older persons including broad determinants of health (e.g. function, autonomy, prevention, quality of life and quality of care). Health systems around the world must rethink how to deliver care to older persons in ways that align with these principles and priorities (Araujo de Carvalho et al., 2017; WHO 2016).

In Canada, efforts are underway to transform the current health system to better meet the interrelated physical, mental and social health needs of all Canadians. The Institute for Healthcare Improvement's (IHI) "triple-aim" framework (Berwick, 2008), and its "quadruple aim" successor (Bodenheimer & Sinsky, 2014) identify priorities that are foundational to the large-scale change needed to create an effective integrated health system across the continuum of care. Consistent with this framework, interprofessional teams that enhance patient experience, improve population health (in our case the health of older persons), reduce costs and enhance provider experience make good sense (Bodenheimer & Sinsky, 2014). In Ontario, the provincial Senior Friendly Care (sfCare) Framework is aligned with these guidelines and serves as a blueprint for operationalizing the design and delivery of senior friendly care across the healthcare system (RGPT, 2017). The sfCare Framework emphasizes holistic service delivery processes that optimize the physical, psychological, functional, and social needs of older persons. These guidelines are instrumental for guiding the design of an integrated system of care that is responsive to the needs of older Ontarians. The sfCare Framework also underpins the design of SGS in Ontario.

SGS are a critical component of an integrated approach to care for older persons and represent a range of health and social care services. These services provide

comprehensive, older-person centred care to optimize the management of complex and chronic conditions among older persons (HSO, 2012; 2017). In Ontario, roughly 2500 trained clinicians from a variety of health disciplines work in SGS providing hospital, long-term care and community-based health care services that assess, diagnose, treat and rehabilitate older persons living with complex medical, functional and psychosocial problems (RGPO, 2019). SGS are a cost-effective resource when applied intentionally in collaboration with partners across the spectrum of care (Ling & McGann, 2017). Addressing the complex health needs of older persons in Ontario requires an integrated system of care that aligns with the priorities and responsibilities set out by the WHO Plan of Action on Aging and Health; operationalizes the sfCare Strategy; and incorporates the integrated approach of SGS. To do this, barriers impeding change must be addressed and new possibilities explored.

Barriers to change

Currently, several barriers hinder the ability to effectively and efficiently address the complex and chronic health issues of older persons (Flaherty & Bartels, 2019; Therapleton et al., 2017).

Health service silos: The administration and organization of health care at a systems level includes significant barriers that stand in the way of providing quality care for older persons. The complex health needs of older persons do not fit neatly into the discrete illness or sector related categories around which our health system is currently designed and funded. Moreover, the health goals of older persons are often more in keeping with broader functional and quality of life goals and less tied to disease-specific outcomes (Flaherty & Bartels, 2019; RGPT, 2017). To appropriately detect and address the health issues of older persons and meet their care goals, we must organize and fund health and social care services in ways that enable multiple partners across the spectrum of care to work together.

Shortages in specialized care: While the number of health professionals is growing gradually, this growth is disproportionate to the rate of increase in the older population. The growing shortfall of health professionals and care workers, specifically those trained in the care of older persons living with complex and chronic health issues, is another instrumental barrier to meeting the needs of patients (Crisp & Chen, 2014). In Canada, it is anticipated that the number of specialists trained in the care of older persons will not grow at a pace necessary to meet the increasing demand for senior-specific care (McCleary, 2014). By 2025, the estimated deficit of specialists trained in geriatric medicine and geriatric psychiatry in Ontario will be 276.4 full-time equivalents (FTEs) and 258.6 FTEs respectively (Borrie et al., 2018). As such, there is a time-sensitive need to determine how to enhance access to specialized geriatric knowledge and expertise through collaborative efforts across the broader system of care (WHO, 2019).

De-linked health and social sectors: The separation in administration and funding of health and social care services hinders efforts to address the interrelated health and social needs of older persons. Many social factors including stigmatizing attitudes, social isolation, and lack of access to public transportation can negatively impact the health, quality of life and quality of care of older persons (Beard et al., 2016). Hence, substantial changes are needed to health and social systems to create collaborative pathways to resolve interconnected social and health issues for older persons (Leichsenring, 2004).

Possibilities for change: Avenues for integrating (or joining-up) care

Integrated care is an evidence-based approach for meeting the interrelated physical, mental and social health needs of older persons, and for meeting targets in health quality and efficiency (Kirst et al., 2017; Kogan et al., 2015). By establishing an integrated system of health and social care for older persons in Ontario, we can create opportunities to eliminate healthcare silos, expand the reach of SGS, and strengthen health and social sector partnerships.

Integrated care is defined as

an approach to strengthen people-centred health systems through the promotion of the comprehensive delivery of quality services, designed according to the multidimensional needs of the population and the individual and delivered by a coordinated multidisciplinary team of providers working across settings and levels of care (WHO, 2016: p.4).

Put simply, integrated models of care offer an infrastructure that enables providers from one health area (e.g. health discipline or health sector) to join-up their knowledge and practice with providers from different health areas to coordinate and/or co-deliver care (NHS, 2013). When applied to the care of older persons, integrated care also draws on the values of longitudinal, preventative and community-based care espoused by the chronic care model (CCM) (Wagner, 1999). Models of integrated care for older persons are thus designed to provide a longitudinal, preventative, community-based and joined-up approach to care (WHO, 2016).

The concept of integrated care is not new. However, the operationalization of integrated (or joined-up) care in practice has evolved with new and emerging ideas about what it means to integrate care (Ling & McGann, 2017; Parker et al., 2017). Integrated care was primarily thought to involve the formation of multidisciplinary teams (i.e. practitioners from different disciplines working together, each drawing on and enacting their own disciplinary knowledge and skills) as a way of providing coordinated care within a specific health area (e.g. stroke care, cancer care). Although studies show that multidisciplinary teams are effective at improving the quality of care (Damery et al., 2016), research findings have evolved over time to correspond with an ever-changing healthcare

landscape (Flaherty & Bartels, 2019). There is now a growing interest in how providers from multiple disciplines work together and how they join-up with teams in other health and social service areas to produce synergistic approaches to care (Gougeon et al., 2017).

Another key area of development is the use of new technologies (e.g. assistive technologies, bio-technology, wearables) to better enable independence and improve self-management for community-dwelling older persons. For example, a tracking device for wandering that alerts family/friend caregivers and healthcare professionals may better enable a person living with dementia to reside in the community longer than they would without such technology. Likewise, technologies such as telemedicine and virtual wards are being used to enhance integrated service delivery processes (Alexandru & Ianculescu, 2017). For instance, videoconferencing via telemedicine or mobile applications enables timely collaboration between practitioners, older persons and family/friend caregivers around specific health issues (Guay et al., 2017). Similarly, integrated electronic health record (EHR) systems can enable coordinated and seamless communication across health and social programs and assist in the delivery of prevention-oriented healthcare.

Designing models of integrated (or joined-up) care

As the concepts surrounding integrated care have evolved, so too has the complexity in model design. For example, current models of integrated care vary in their approach, scope, level, and pathway of integration (WHO, 2016).

Variation in Approach: Integrated care teams vary in their approach to collaboration (MacAdam, 2015). When practitioners from different health and social service backgrounds draw on and practice their own discipline-specific knowledge and skills in coordinated ways, this is referred to as a multidisciplinary approach (D'Amour et al., 2005). An interdisciplinary approach refers to teams that include practitioners from different health backgrounds who draw on and practice their discipline-specific knowledge and skills in collaboration with other team members to devise a collective solution for problem resolution (D'Amour et al., 2005). Transdisciplinary teams refer to those teams in which practitioners from different health backgrounds intentionally seek to expand their knowledge and skills beyond their own discipline by integrating their knowledge and skills with those of other team members to create new and innovative approaches to resolve common problems (D'Amour et al., 2005).

Variations in Scope: Another area of variation involves scope. Integrated care can consist of a single team of practitioners from various disciplinary backgrounds. However, an integrated care team could also consist of practitioners from different disciplinary backgrounds that join-up with a team of multidisciplinary practitioners in another health

or social service area (WHO, 2016) (e.g. speciality geriatric mental health outreach team joined-up with a family health team).

Variations in Level of Integration: Integrated care practice can also vary at different levels of the system. Integrated care can be implemented at the point-of-care (micro-level). At this level, integrated care practice involves the co-delivery of assessments, care planning, and treatment and support interventions delivered to older persons. Integrated practice can also be implemented at the point-of-practice (meso-level). This involves establishing operational processes and procedures (i.e. infrastructure or organizational supports) that encourage and support practitioners to join-up their knowledge and practice with other practitioners either within their own team or with those on other teams (e.g. joint assessment and care planning meetings, interprofessional educational exchange sessions). Finally, integrated care can be implemented at the point-of-system. Integrated care at this level involves the establishment of systems-level policies and professional practice guidelines to support integrated practice across multiple health and social services (e.g. shared electronic medical record, accountability frameworks that measure collaborative practice).

Variations in Service Pathways: Integrated care varies as well according to service pathways (WHO, 2016). For example, vertical integration refers to two or more teams, each existing under one management unit, that join-up to coordinate services at different stages of the service delivery process (e.g. integrated stroke teams). Horizontal integration refers to two or more teams operating under different management units or organizations, that join-up to deliver same services (e.g. SGS coordinated access systems). Finally, population-based (or decentralised) integration occurs when a single, joint governing body is created to engage a flexible network of practitioners to address the unique needs of individual older persons (e.g. Ontario Health Teams, Regional Specialized Geriatric Services).

The evolution of integrated care and its varied application in different health and social settings and scenarios has resulted in a broad menu of design options from which to choose. Determining the most appropriate configurations from which to build viable health and social care partnerships will be important for informing future policy and practice directions for older persons.

The evidence behind integrated (or joined-up) care

Models of integrated care are not all designed in the same way and can serve different health user populations. It is, therefore, not feasible (or even desirable) to establish a uniform approach to implementation. This aspect of integrated care, however, creates significant challenges for evaluation (Araujo de Carvalho et al., 2017). Reviews of the literature show that there is considerable variation in the method (e.g. randomised control trials, mixed-method, program evaluation) and duration of assessments (e.g. 6 months, 1 year, 1-5 years) of models of integrated care (WHO, 2016). As a result, there is no current consensus regarding the overall impact and effectiveness of these models (Damery et al., 2016). Despite this, some common patterns can be found across studies of models of integrated care for older persons living with complex and chronic health issues. Most show, for instance, that integrated care can lead to decreased admission and readmission to hospital (Branch et al., 1995; Bielaszka-Duvernay et al. 2011; Ellis et al. 2017; di Pollina et al, 2017), reduce emergency department visits (Parker et al., 2017), improve quality of care (Blom et al., 2016; Bielaszka-Duvernay et al., 2011; Grouchy et al., 2017; Lewis et al., 2017), increase satisfaction with care for older persons and family/friend caregivers (Blom et al., 2016; MacAdam 2015; Smith-Carrier et al., 2017) and reduce health care costs (Muramatsu et al., 2018).

Araujo de Carvalho et al., 2017 suggest that where integrated models of care have not demonstrated significant outcomes, there has been a failure to put in place the appropriate processes and procedures to support practices that reflect the updated definitions of integrated care. The lack of evidence concerning the effectiveness of integrated care may also be tied to the nature and type of indicators used to assess the effectiveness of integrated care (WHO, 2016). Most studies of integrated care for instance, primarily incorporate disease-specific outcomes (e.g. mortality, cognition, frailty) (Araujo de Carvalho et al., 2017). Although these outcomes are a part of the overall picture of quality care, a reliance on this type of indicator neglects examination of the social, functional, quality of life and quality of care outcomes prioritized by older persons and family/friend caregivers (Molnar & Frank, 2019; WHO, 2016). The WHO Global Strategy and Plan of Action on Aging and Health (2017) advocates for the use of evaluation indicators that can track the progress made with respect to broader health and social determinants (Araujo de Carvalho et al. 2017; WHO 2017). A key mechanism for shifting care practices to benefit the health and care of older persons will be to change the relationship between professional practice behaviours and the indicators used to evaluate (and fund) healthcare programs (Molnar & Frank, 2019).



Method

We conducted a scoping review to identify the core design elements (i.e. characteristics that ought to be reflected in the design of integrated care practice) and infrastructures (i.e. operational processes and procedures that constitute everyday practice) that come together to form integrated care practice for older persons living with complex and chronic health issues. We used defined criteria to scope the literature for recent (i.e. 2017-2020) frameworks (i.e. papers containing concepts and theories related to integrated care) and practice models (i.e. papers that describe different ways of implementing integrated care in practice) relevant to older persons. We then analyzed these documents to identify common patterns in the conceptualization and implementation of integrated care relevant to older persons living with complex and chronic health issues.

Study aim

The dual purpose of the review was to examine the literature to a) identify the design elements that ought to guide integrated care for older persons, and b) examine how current best-evidence models are organized to operationalize these design elements in practice. We conducted this review to inform future policy and practice directions for SGS.

Study design – scoping review

Our approach for conducting the scoping review was based on the method described by Arksey and O'Malley (2005). This approach consists of the following five steps: (i) identifying the research question; (ii) searching for relevant studies; (iii) selecting studies; (iv) charting the data; and, (iv) analyzing and reporting the results. In keeping with this approach, an emphasis was placed on both identifying and analyzing literature related to our research question.

Identifying the research question: The research question guiding the scoping review was “What is known in the academic and grey literature about the core design and operational elements underlying integrated care for older persons living with complex and chronic health issues?”

Identifying relevant studies: We conducted a search of relevant electronic databases and websites (see Table 1) to locate publications that met our inclusion criteria. To identify relevant peer-reviewed studies we searched six electronic databases over the period of January to March 2020. The same key words and phrases as used in the database search were used to conduct a Google search of relevant websites. This was done to identify relevant frameworks as these types of publications are more likely to appear in the grey literature than peer-reviewed articles. Grey literature is defined as “material that is not published through regular book-publishing channels, is not subject to formal bibliographic control” (Alberani et al., 1990). This includes organizational reports and policy documents. The reference lists of key articles were also scanned for relevant references that could lead to any additional websites or peer reviewed articles that had been missed. As few studies of integrated care meet all the criteria for randomised clinical trials (Olson et al., 2015), we included a broad range of studies in our review. Studies that described randomised controlled trials, quasi-experimental methods and program evaluations were all eligible for inclusion. We also included a select number of publications that described promising experimental study protocols but that had not yet been fully tested. We determined that these studies met the criteria for inclusion because they represented recent and innovative ways of providing integrated care for older persons. No restrictions were placed on health or social service area or geographical location.

Table 1: Electronic Databases Searched

Databases Searched	Primary Key Words & Phrases	Secondary Key Words & Phrases
PubMed, CINAHL, Academic Search Complete, Cochrane, OvidSP (Medline), and PsycINFO.	'integrated care,' 'shared care,' 'cross-sector care,' 'inter-sectoral care.'	'older persons,' 'older adults,' 'elders,' 'care of the elderly,' 'complex health issues,' 'chronic health issues.'

Study selection: The selection process was divided into two stages. To be selected in the first stage, publications had to meet the following inclusion criteria:

- Descriptive of a practice model or framework
- Meet the definition of integrated or collaborative healthcare
- Relevant to the older person population living with complex and chronic health concerns
- Published within the study time frame (i.e. 2017-2020), unless otherwise based on expert stakeholder input
- Published in peer-reviewed journal or recognised provincial/national grey literature publication

Stage 1: When we did our search, we screened the titles and abstracts of each publication to determine if they met the above criteria. Articles that did not meet this criteria were excluded. The remaining publications were then read in their entirety to confirm their inclusion in the review. After reading the full text of the selected articles, a number of publications were identified as not meeting the inclusion criteria and were subsequently excluded.

Stage 2: After we identified publications meeting the criteria for Stage 1, we sought input from expert stakeholders working in SGS. We asked these experts to review the list of frameworks and practice models generated in Stage 1. This exercise revealed seven additional models and two frameworks that were considered foundational to the specialised geriatric service delivery landscape in Ontario, Canada. The primary reason why these publications had not been selected in our initial search was because they fell outside of the specified range of eligible publication dates (i.e. 2017-2020). These additional publications were subsequently included in our review.

Charting the data: Once we had a finalized list of publications that fit our inclusion criteria, we extracted the following data from each document: general citation information; study description; primary construct (frameworks only); practice model processes/structures (practice models only); study methodology; and key findings.

Analyzing and reporting the results: The documents were separated into two groups: i) frameworks and ii) practice models. Each group of documents was analysed separately and is reported on below. An interpretive thematic analysis was used to analyze the frameworks and identify common elements. A content analysis was used to analyse practice models to identify the common processes and procedures used to operationalize design elements of integrated care in practice.

IV

Search Results

The search resulted in the identification of an initial 56 publications. A total of 36 documents were eliminated from the review because they did not meet inclusion criteria. This left a total of 20 documents meeting inclusion criteria. Another 9 documents were subsequently included based on stakeholder consultation in Stage 2. This resulted in a final total of 29 documents eligible for review, including: 10 framework documents and 19 practice model documents (see Figure 1).

Figure 1: Scoping Review Search Results



Below we highlight the key observations that arose out of our analysis of integrated care frameworks and practice models.

Frameworks

Frameworks describe the design elements that ought to inform the design and implementation of service delivery practices (Nilsen, 2015). We identified 10 frameworks that describe current ways of thinking about integrated care that are relevant to the care for older persons living with chronic and complex health conditions (Alexandru & Ianculescu, 2017; Briggs et al., 2018; Flaherty & Bartels, 2019; Kim & Lee, 2017; Kirst,

et al., 2017; MacCourt, 2013; RGPT, 2017; WHO, 2016; WHO, 2017; WHO, 2019). Three are international frameworks, one is a national framework, and one is a provincial framework. Five frameworks were developed based on systematic or scoping reviews of the literature (see Table 1). Five of the ten frameworks included specific reference to the inclusion of SGS in integrated care initiatives.

Table 2: Distribution of Frameworks of Integrated Care

Citation	International	National	Provincial	Review	SGS
MacCourt P., & Family Caregivers Advisory Committee, Mental Health Commission of Canada. (2013). <i>National guidelines for a comprehensive service system to support family/friend caregivers of adults with mental health problems and illnesses</i> . Calgary, AB: Mental Health Commission of Canada.		✓			✓
WHO (2016) <i>Integrated care models: An overview</i> .	✓				
Alexandru, A., & Ianculescu, M. (2017). enabling assistive technologies to shape the future of the intensive senior-centred care: A case study approach. <i>Studies in Informatics and Control</i> , 26(3).				✓	✓
Kim, B. Y., & Lee, J. (2017). Smart devices for older adults managing chronic disease: A scoping review. <i>JMIR MHealth and UHealth</i> , 5(5), e69.				✓	
Kirst, M., Im, J., Burns, T., Baker, G. R., Goldhar, J., Ocampo, P., ... Wodchis, W. P. (2017). What works in implementation of integrated care programs for older adults with complex needs? A realist review. <i>International Journal for Quality in Health Care</i> , 29(5), 612–624.				✓	✓
Regional Geriatric Program of Toronto (2017). <i>The senior friendly care framework</i> .			✓		✓
World Health Organization (2017). <i>Integrated care for older people: Guidelines on community-level interventions to manage declines in intrinsic capacity</i> .	✓				
Briggs, A. M., Valentijn, P. P., Thiyagarajan, J. A., & Araujo de Carvalho, I. A. D. (2018). Elements of integrated care approaches for older people: a review of reviews. <i>BMJ Open</i> , 8(4).				✓	
Flaherty, E., & Bartels, S. J. (2019). Addressing the community-based geriatric healthcare workforce shortage by leveraging the potential of interprofessional teams. <i>Journal of the American Geriatrics Society</i> , 67(S2), S400-S408.				✓	✓
World Health Organization (2019) <i>Integrated care for older people (ICOPE) implementation framework: guidance for systems and services</i> . Geneva.	✓				

Practice models

Our review initially identified 12 models of integrated care relevant to older persons living with complex and chronic health issues published since 2017 (Clubine, 2017; Ellis et al., 2017; Gilbody et al., 2017; Grouchy et al., 2017; Gutmanis & Hillier, 2018; Kim et al., 2017; Lewis et al., 2017; Muramatsu et al., 2018; Parker et al., 2017; di Pollina et al., 2017; Smith-Carrier et al., 2017; Vestjens et al., 2018). Another seven foundational models were incorporated into our review based on the recommendations of expert stakeholders (Bielaszka-Duvernay, 2011; Blom et al., 2016; Branch et al., 1995; Goldhar et al., 2014; MacAdam, 2015; Sinha et al., 2011; Goldhar et al., 2014; Uittenbroek et al., 2016) (see Appendix A).

The models included in this review differed in terms of who provided care (e.g. disciplines/sector) and the specific health issues or combination of health issues addressed (e.g. acute care, primary care, mental health issues). Six of these models employed randomised control trials (RCT) (Bielaszka-Duvernay et al., 2011; Blom et al., 2016; Parker et al., 2017; Ellis et al., 2017; Gilbody et al., 2017; Uittenbroek et al., 2016), six employed quasi-experimental methods (Branch et al., 1995; Di Pollina et al., 2017; Goldhar et al., 2014; Grouchy et al., 2017; MacAdam, 2015; Muramatsu et al., 2018) and four used program evaluation methods to analyze the effectiveness of practice on health and other associated outcomes (Gutmanis & Hillier, 2018; Lewis et al., 2017; Sinha et al., 2011; Smith-Carrier et al., 2017). Two models had not yet been tested but did include rigorous experimental protocols for future testing (Kim et al., 2017; Vestjens et al., 2018). Only one model protocol did not propose a specific method of evaluation but did provide a list of relevant evaluation indicators (Clubine, 2017).



Findings

Frameworks

Our analysis across the 10 frameworks revealed 13 core design elements (or characteristics) that are important to consider when designing models of integrated care for older persons living with complex and chronic health issues (see Figure 2). We outline and describe each of these elements:

Design elements of integrated care relevant to the care of older persons living with complex and chronic health issues

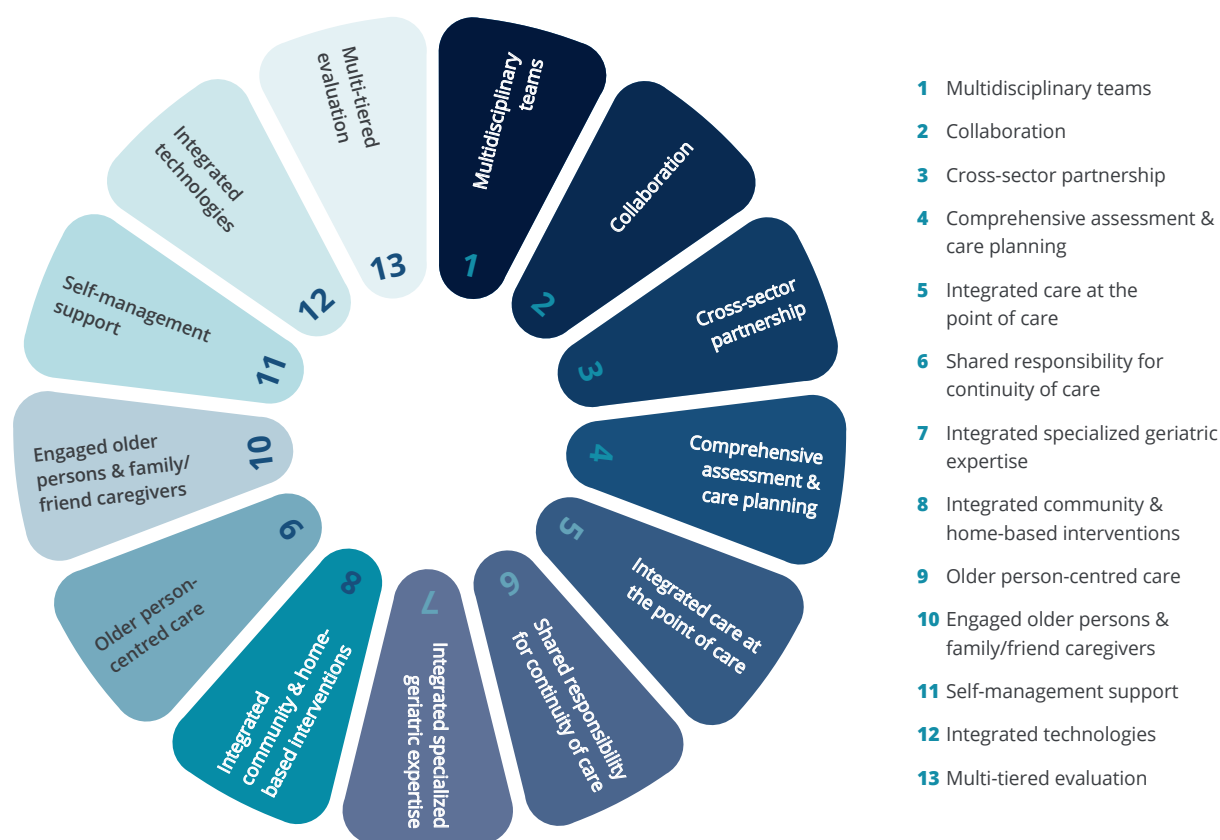


Figure 2

1. **Multidisciplinary teams:** Team members work jointly to create older person-centred practice innovations that move beyond discipline and sector-specific approaches to address a common problem for an individual client/patient or population.
2. **Collaboration:** Describes the organization of care processes that enable health professionals to work cooperatively and interdependently with each other and with older persons and family/friend caregivers toward the achievement of an individual's health goals.
3. **Cross-sector partnership:** Practitioners work together on integrated care teams that represent disciplines from both the health and social sectors.
4. **Comprehensive assessment & care planning:** Multifaceted assessment approaches that identify medical, functional, mental, social and environmental issues and goal-based plans for health optimization that build on the older person's intrinsic capacity and personal goals.

5. ***Integrated care at the point-of-care:*** Direct treatment and support interventions that are carried out jointly and seamlessly by practitioners from multiple disciplines who represent a variety of health and social sectors.
6. ***Shared responsibility for continuity of care:*** Responsibility for ongoing care that is coordinated and communicated across all members of the care team (in contrast to a traditional consultation model).
7. ***Integrated specialized geriatric expertise:*** Specialists with expertise in the care of older persons are included as essential collaborative partners on the care team. Roles of specialists can include direct care and training for practitioners without core expertise in geriatrics to ensure quality care for older persons living with complex and chronic health issues across the continuum of care.
8. ***Integrated community & home-based interventions:*** Delivery of identified interventions in collaboration with community service partners in community-based and home-based settings.
9. ***Older person-centred care:*** Plans of care are centred on the goals of older persons and enabled through shared decision-making with patients/clients and family/friend caregivers. Team membership is diverse and flexible based on the dynamic needs of older persons.
10. ***Engaged older persons & family/friend caregivers:*** Older persons and family/friend caregivers are included as part of the care team. Opportunities are actively identified to draw upon and expand their roles within the care context.
11. ***Self-management support:*** Information, skills and resources/tools are provided to older persons and caregivers to build their capacity to actively manage health conditions and prevent health complications. Self-management support is provided on a formal, ongoing basis.
12. ***Integrated technologies:*** Electronic or e-health technologies are built in to service delivery processes to support information sharing, communication and coordination across members of the care team (e.g. cloud-based electronic health record [EHR] systems, smartphone systems, data analytics, virtual wards). Mobile or m-health technologies (e.g. smartphone applications, GPS devices) are integrated into treatment/support processes to support older persons to maintain functional abilities and live independently in the community.
13. ***Multi-tiered evaluation:*** Protocols that collect, measure and analyze outcomes that are important to older people (e.g. intrinsic capacity, functional ability, and quality of life). These protocols also measure the presence and effectiveness of integrated care processes (e.g. team membership, collaborative care planning meetings) with, in some cases, novel indicators of integrated care.

Table 3: Distribution of design elements across frameworks of integrated care for older persons

Framework	1	2	3	4	5	6	7	8	9	10	11	12	13
MacCourt (2013)	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓
WHO (2016)	✓		✓	✓	✓		✓	✓	✓		✓	✓	
Alexandru and Ianculescu (2017)				✓				✓	✓	✓	✓	✓	
Kim and Lee (2017)				✓					✓		✓	✓	
Kirst et al. (2017)	✓	✓				✓	✓		✓				
RGPT (2017)	✓			✓			✓		✓	✓			
WHO (2017)	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Briggs et al. (2018)	✓		✓	✓			✓		✓		✓		✓
Flaherty and Bartels (2019)	✓	✓	✓				✓		✓	✓			✓
WHO (2019)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

1 Multidisciplinary teams**2** Collaboration**3** Cross-sector partnership**4** Comprehensive assessment & care planning**5** Integrated care at the point of care**6** Shared responsibility for continuity of care**7** Integrated specialized geriatric expertise**8** Integrated community & home-based interventions**9** Older person-centred care**10** Engaged older persons & family/friend caregivers**11** Self-management support**12** Integrated technologies**13** Multi-tiered evaluation

Practice models

Practice models were analyzed according to the 13 design elements identified in our analysis of frameworks of integrated care. We performed a content analysis on best-practice documents to determine the following:

- To what extent do best-practice models operationalise each of the 13 design elements?
- Which processes and procedures are used to operationalize these design elements in practice?
- Do different processes and procedures generate different strengths in terms of value/practice alignment?

Table 4: Distribution of design elements across models of integrated care

Model	Reference	1	2	3	4	5	6	7	8	9	10	11	12	13
PACE	Branch et al. (1995)	✓			✓	✓		✓		✓	✓		✓	
GRACE	Bielaszka-Duvernay (2011)	✓			✓	✓		✓		✓	✓		✓	
GEM	Sinha et al. (2011)	✓			✓	✓		✓	✓	✓	✓			✓
ICCP	Goldhar et al. (2014)	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
PRISMA	MacAdam (2015)	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	
IPCM	Blom et al. (2016)	✓			✓		✓	✓	✓	✓	✓			✓
EMBRACE	Uittenbroek et al. (2016)	✓		✓	✓	✓		✓		✓	✓			✓
CGA	Ellis et al. (2017)	✓		✓	✓	✓		✓		✓	✓			
CGA/ED	Parker et al. (2017)	✓		✓	✓	✓		✓		✓	✓			✓
CASPER	Gilbody et al. (2017)	✓		✓	✓	✓		✓		✓	✓			
CGU/HVNS	di Pollina et al. (2017)	✓		✓	✓	✓		✓	✓	✓	✓			
HBPS	Smith-Carrier et al. (2017)	✓			✓	✓		✓	✓	✓	✓			
SPEC	Kim, H., et al. (2017)	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
CCHubs	Clubine (2017)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓
BSO	Grouchy et al. (2017)	✓		✓	✓	✓		✓	✓	✓	✓			
Virtual Ward	Lewis et al. (2017)	✓		✓	✓	✓		✓		✓	✓			✓
HCA/PT	Muramatsu et al. (2018)	✓		✓	✓	✓			✓	✓	✓	✓		✓
FFF	Vestjens et al. (2018)	✓		✓	✓	✓		✓		✓	✓	✓		✓
Ger Coop	Gutmanis and Hillier (2017)	✓		✓	✓	✓	✓	✓	✓	✓	✓			✓

1 Multidisciplinary teams

2 Collaboration

3 Cross-sector partnership

4 Comprehensive assessment
& care planning

5 Integrated care at the
point of care

6 Shared responsibility for
continuity of care

7 Integrated specialized
geriatric expertise

8 Integrated community &
home-based interventions

9 Old person-centred care

10 Engaged older persons &
family/friend caregivers

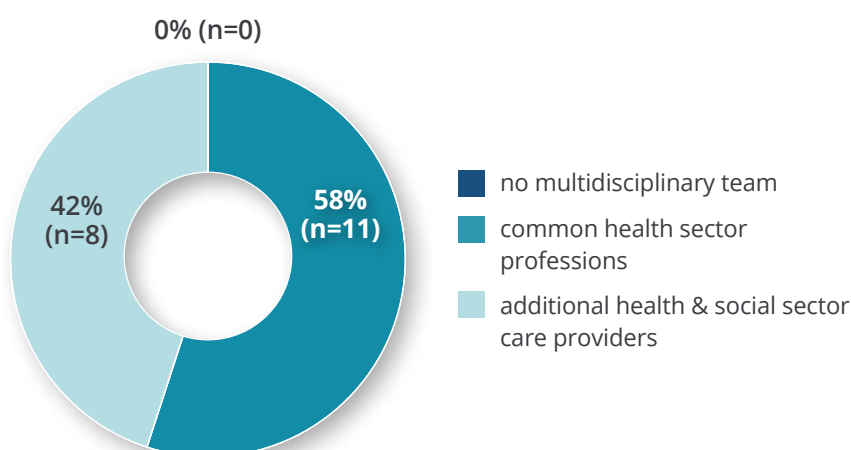
11 Self-management support

12 Integrated technologies

13 Multi-tiered evaluation

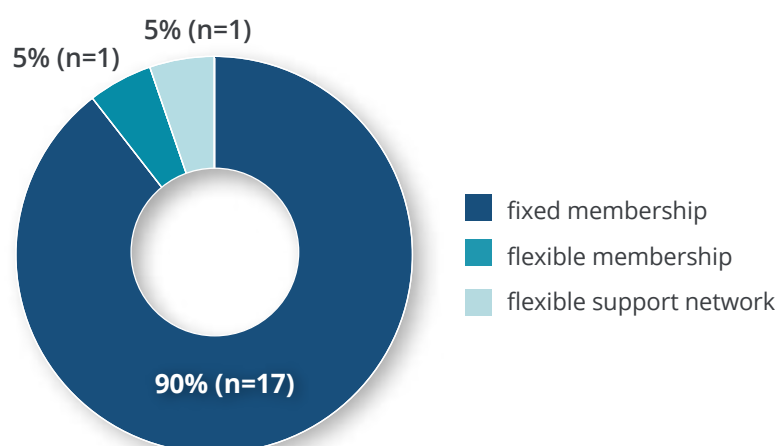
Multidisciplinary teams: All (n=19; 100%) of the models included a multidisciplinary care team(s). In most models the disciplinary complement consisted of common health professions such as: physicians, nurses, social workers, physiotherapists and occupational therapists. Fewer models included additional care providers, such as dietitians, chaplains, family/friend caregivers, pharmacists, behavioural specialists, and speech language pathologists.

Multidisciplinary Team Complement



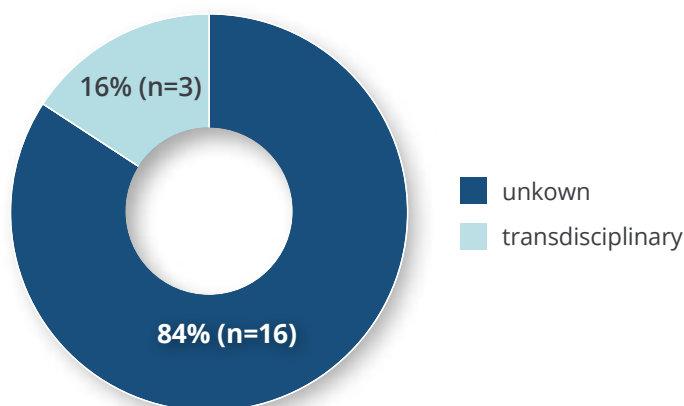
In almost all models, the team complement was fixed (e.g. same complement of providers across all patients/clients). However, select models (n=2; 10%) offered flexible team membership determined by each individual's specific needs, preferences and goals (e.g. circles of care).

Fixed vs. Flexible Team Membership



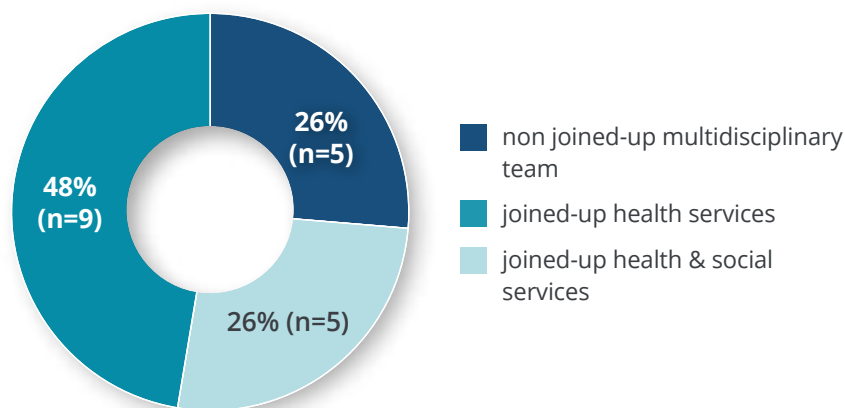
Collaboration: Most models in our review did not provide a description of the nature of the working relationship between team members. Consequently, it was not possible in most cases to identify the nature of collaboration (e.g. multidisciplinary, interdisciplinary, transdisciplinary). The few models that did describe the relationship between team members described these interactions as transdisciplinary (e.g. interactions between practitioners were guided by a clear set of integrated care priorities), although this label may not have been explicitly used.

Collaboration



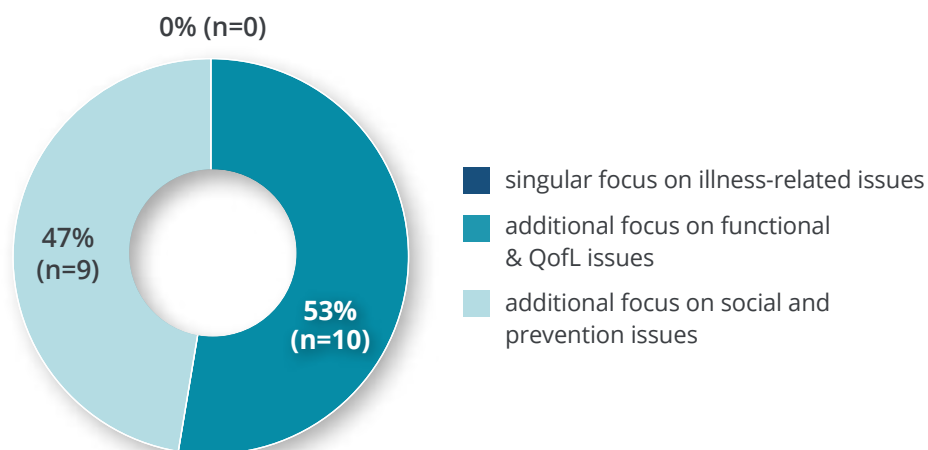
Cross-sector partnership: Some practice models used a consultation approach to access cross-sector knowledge and expertise (e.g. contract physicians, consult model psychiatry, care manager). Other models either embedded an individual practitioner with a background in a particular health area (e.g. SGS) or joined-up with a team operating in another health area (e.g. specialty geriatric nurse in acute care; Behavioural Supports Ontario [BSO] joined-up with LTC home) as a way of generating cross-sector knowledge and expertise. A few models joined-up health and social care services (e.g. community care hubs) to create innovative partnerships across the continuum of care.

Cross-sector partnership



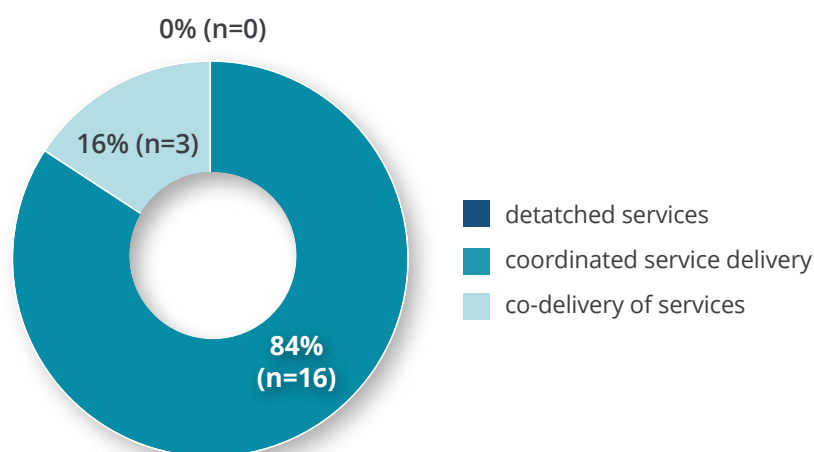
Comprehensive assessment & care planning: In most practice models, assessment and care planning focused on illness-related issues (e.g. symptom management) along with functional (e.g. mobility) and quality of life (e.g. pain) issues. Fewer models incorporated assessment and care planning in relation to social (e.g. socialization, independent living, self-care) and health related prevention (e.g. self-care) issues.

Comprehensive Assessment & Care Planning



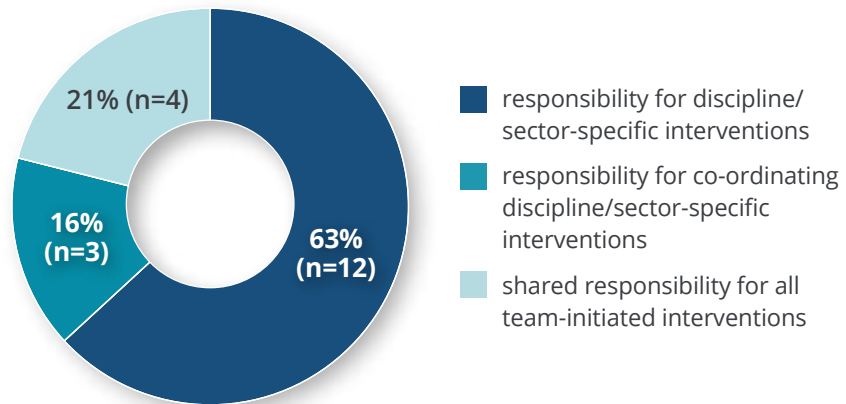
Integrated care at-the-point-of-care: In most practice models, practitioners carried out their own discipline and/or sector-specific assessments and interventions and shared this information with other team members. There was less evidence of practitioners from different health and social care backgrounds co-delivering assessments and care interventions to older persons at the point-of-care (e.g. joint assessment strategies, joint intervention strategies).

Integrated Care at the Point-of-Care



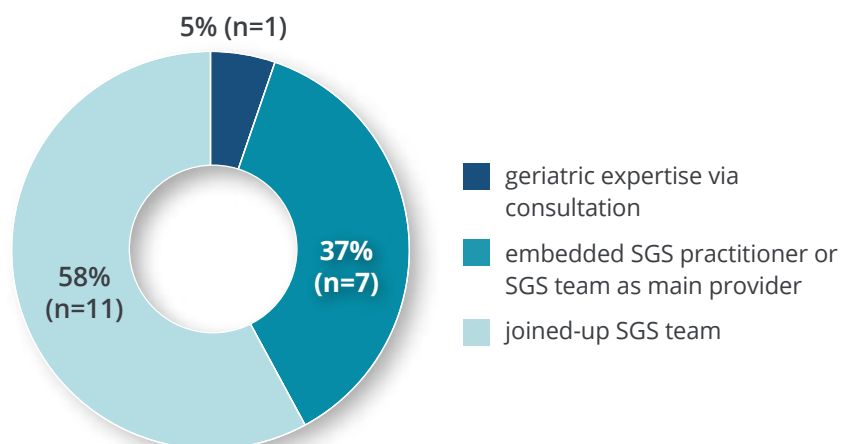
Shared responsibility for continuity of care: In most models, team members took responsibility for carrying out and reporting on their own discipline/sector-specific assessments and interventions. Several models included a care manager to oversee the coordination and management of a comprehensive care plan across a disconnected group of health and social care practitioners. Few models incorporated practice processes and procedures that enabled team members to share responsibility across all aspects of the care plan.

Shared Responsibility for Continuity of Care



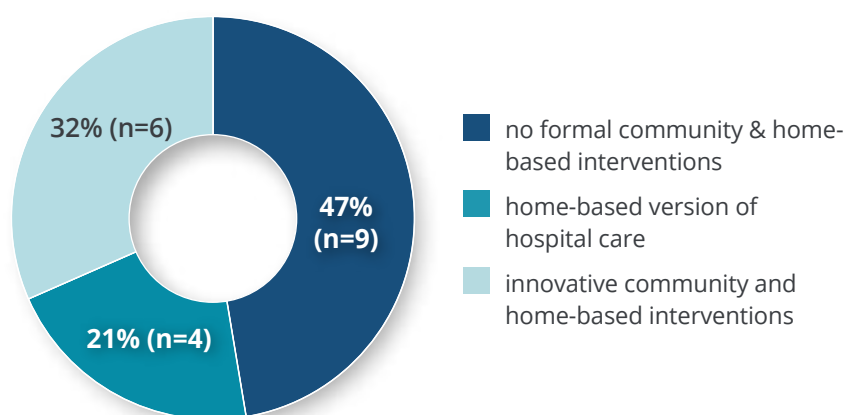
Integrated specialized geriatric expertise: All models drew upon the knowledge and expertise of practitioners with specialized geriatric training as members of the care team (e.g. family physician trained in the care of the elderly, geriatric specialist physician, geriatric nurse). In some models, an SGS program joined-up with a multidisciplinary team in another health area (e.g. specialty geriatric mental health outreach team and family health team [FHT]). Generalized training for clinicians and family/friend caregivers in the care of older persons for all team members was not apparent in the models reviewed.

Integrated Specialized Geriatric Expertise



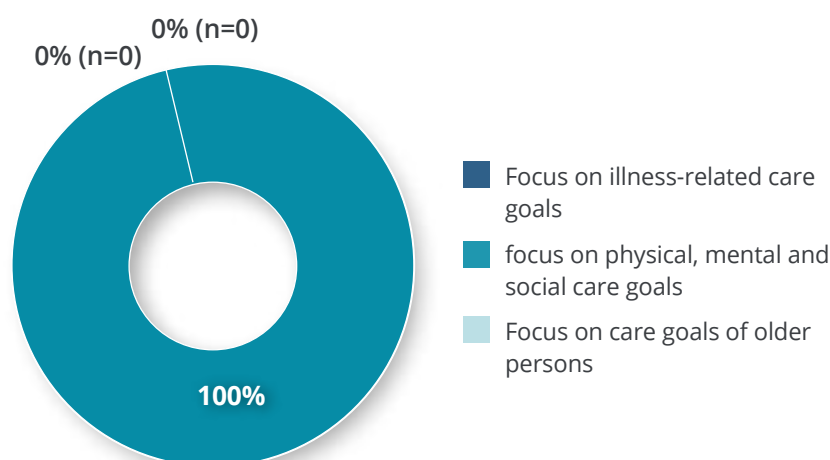
Integrated community & home-based interventions: Many practice models did not include community and/or home-based intervention. In several of the models that did include such interventions, care took the form of home-based versions of traditional care (e.g. home visits by primary care and other practitioners). Only in select models did health and social agencies join-up to develop combined community-based health and social interventions (e.g. centralized community care hubs, home and safety assessments).

Integrated Community & Home-based Interventions



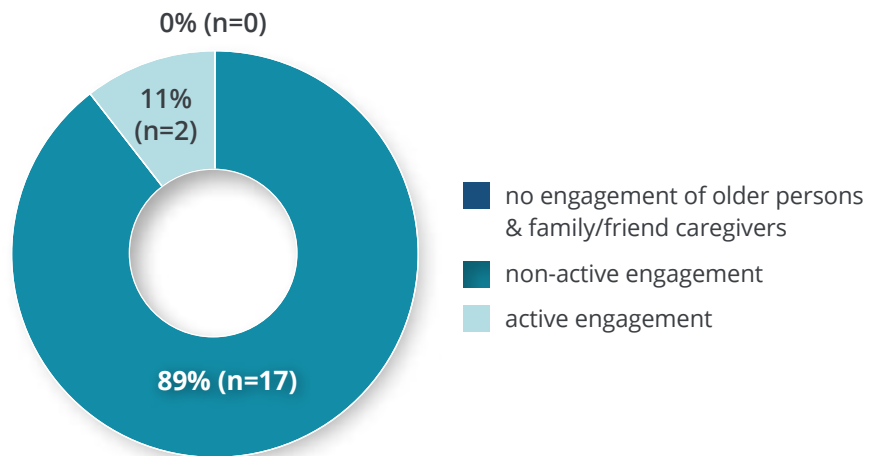
Older person-centred care: All practice models provided care specifically designed to meet the distinct needs of older persons, reflecting our search criteria. For instance, all models incorporated care planning practices that addressed integrated physical, mental and social health needs. Most models also recorded the care goals of older persons based on care conversations with older persons and/or with the aid of family/friend caregivers. No models formally described how the care goals of older persons impacted the primary care goals and interventions.

Older Person Centred Care



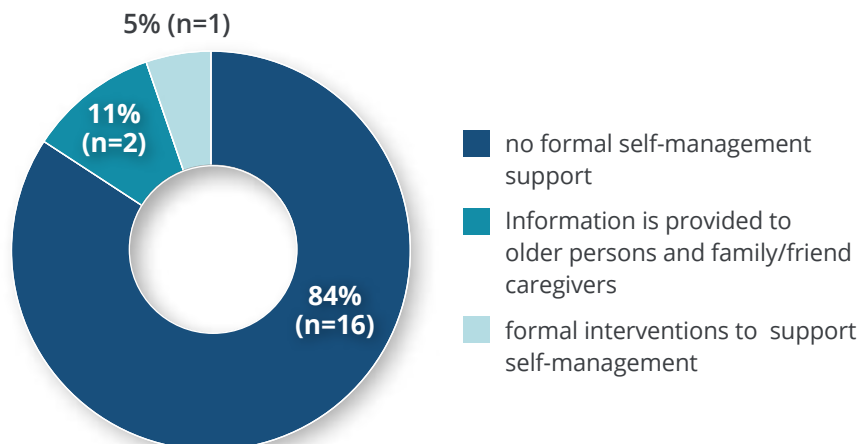
Engaged older persons & family/friend caregivers: Although most models invited older persons and family/friend caregivers to participate in care conversations, only select models invited older persons and family/friend caregivers to play an active role in designing and/or carrying out health interventions (e.g. mobility exercises).

Engaged Older Persons & Family Caregivers

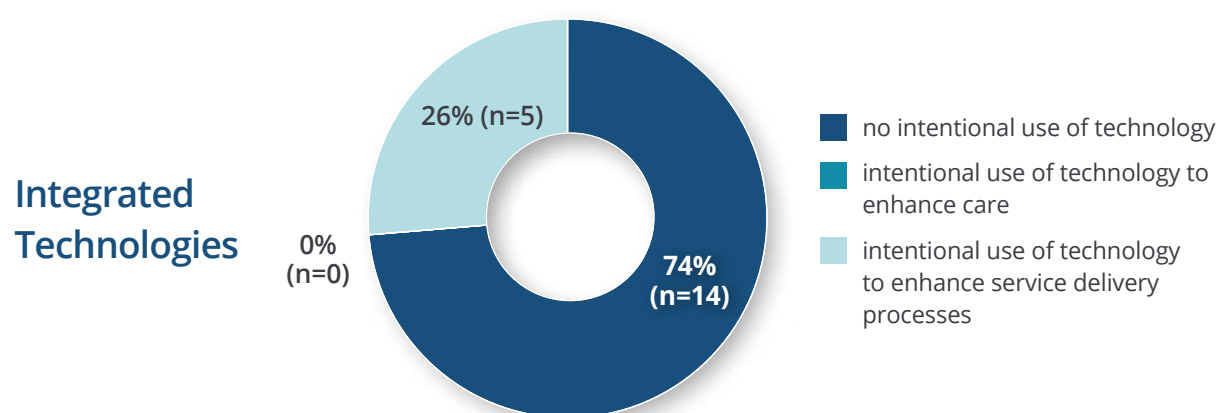


Self-management support: Few practice models incorporated formal self-management support interventions designed to build the capacity of older persons and family/friend caregivers to maintain independence and autonomy over everyday health concerns. Self-management support was usually passive (e.g. information brochures) versus active (e.g. mindfulness training).

Self-Management Support

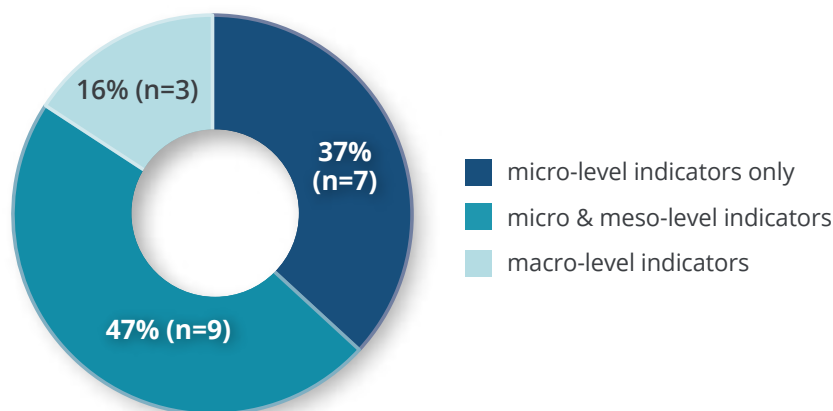


Integrated technologies: Very few models used technology to enhance the delivery of integrated care. Those practice models that did incorporate technology designed and/or implemented shared information and data systems that could be accessed by partner organizations. In some models, organizational and systems-level barriers prevented the authors from implementing these systems in practice. There was no evidence that any practice models incorporated technologies to manage self-care routines, maintain functional abilities or maximize independent living (e.g. smartphone applications, symptom monitoring devices, online chat forums).



Multi-tiered evaluation: Evaluation was the thirteenth design element we extracted from our earlier review of frameworks. We reviewed each of the models for protocols that collect, measure and analyze outcomes important to older people at the micro-level (e.g. intrinsic capacity, functional ability, and quality of life) and that provide information about the integration of health services (e.g. collaborative relationships between providers and organizations) at meso and macro levels (see Appendix B). Most practice models included some combination of individual-level (micro) and program-level (meso) indicators. More than half of the indicators measured micro-level outcomes such as disease-status (e.g. depression, anxiety, pain), functioning (e.g. activities of daily living; mobility), and quality of life (e.g. quality of life, resilience). Some models also used meso-level indicators to assess practice outcomes (e.g. communication and relationships amongst health care professionals) and prevention-related outcomes (e.g. avoidance of adverse drug interactions, self-management). However, few models used macro-level indicators to assess systems-level outcomes (e.g. cost-savings, health service utilization). For a full comparison of models and the level of evaluation indicators used, see Table 7.

Multi-tiered evaluation



A scan revealed 140 indicators across studies that were used to assess the impact of integrated care. Of these 140 indicators, 58% (n=81) were micro-level indicators. Thirty-five percent (n=28) of the micro-level indicators measured disease specific issues (e.g. depression, anxiety, pain), another 35% (n=28) measured rehabilitation and/or quality of life issues (e.g. activities of daily living; quality of life, resilience, fear of falling), 16% (n=13) measured health service use (e.g. number of emergency department visits, length of stay in hospital), and 11% (n=9) measured prevention issues (e.g. avoidance of adverse drug interactions, self-management). Of the 140 indicators uncovered in this review, 39% (n=54) were meso-level indicators. Examples of meso-level indicators included dimensions of communication and relationships among healthcare professionals, quality of integrated care, and home consultations. In 3% (n=5) of the 140 indicators cited across studies the only macro-level indicator cited was cost savings.

In summary, our analysis of framework documents uncovered 13 design elements that underpin integrated care for older persons living with complex and chronic health issues. Our analysis of best-practice models of integrated care identified a variety of ways that the above elements become operationalized in practice. We determined that the following six (6) design elements were implemented most consistently across the models reviewed: multi-disciplinarity; cross-sector partnerships; comprehensive assessment & care planning; integrated specialized geriatric expertise; older-person centred care; and engaged older persons & family/friend caregivers. No model fully operationalized all 13 design elements (see Figure 3).

The Six Most Commonly Implemented Design Elements

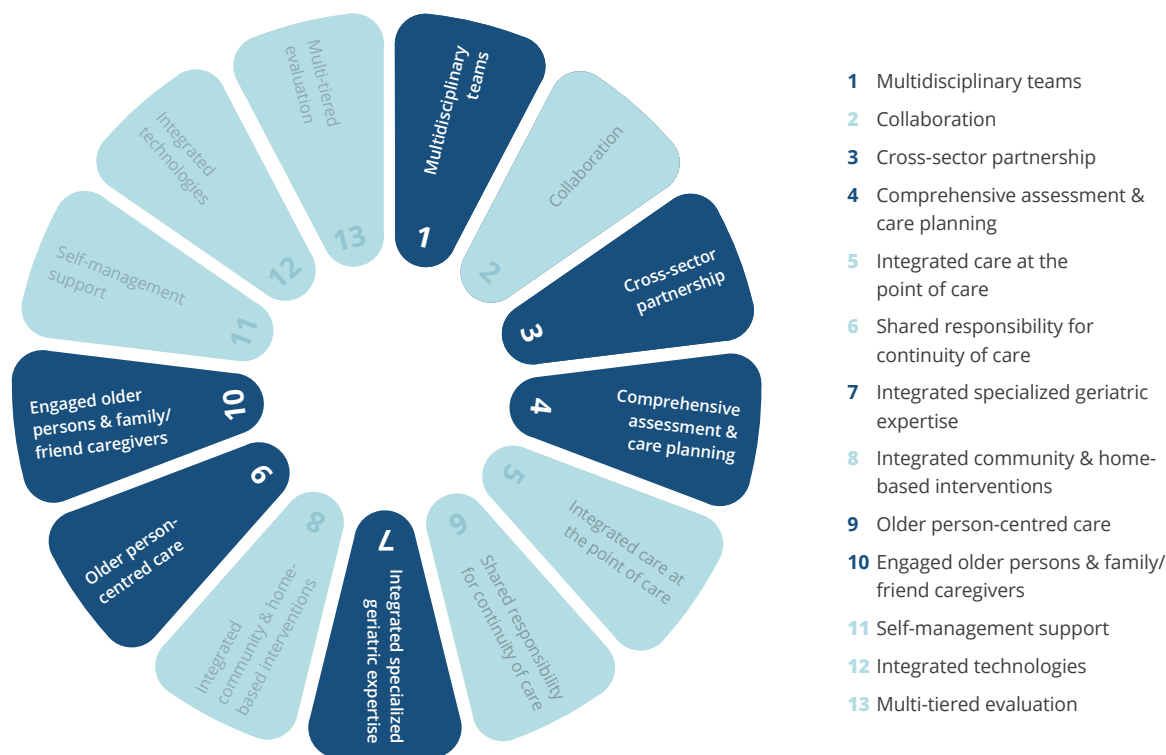


Figure 3

Furthermore, each model displayed different ways of translating design elements into practice. For example, some models designed multidisciplinary teams with representation from a variety of health care professions, while other models designed multidisciplinary teams with representation from a variety of health and social care professions. A further analysis of the different processes and procedures used to operationalize certain design elements showed that different practice designs produce different degrees of alignment of practices with the overall value of integrated care, something we have termed value/practice alignment. Moreover, our findings reveal that most of the models of integrated care we reviewed tended to operationalize design elements at their most basic level (i.e. meet basic implementation criteria) and that very few operationalized design elements at advanced levels (i.e. meet highest implementation criteria). Models that operationalized more design elements of integrated care at advanced levels displayed higher degrees of overall value/practice alignment. Finally, we observed that the practice model designs described in recent publications (i.e. 2017-2020) were the most likely to incorporate a broad range of design elements and to display strong overall value/practice alignment.

Table 5: Distribution of design element implementation across practice models

Practice Models	Design Elements													
	1. Multidisciplinary team	1. a) Fixed vs. flexible	2. Collaboration	3. Cross-sector paternship	4. Comprehensive assessment & care	5. Integrated care at point-of-care	6. Shared responsibility for continuity of care	7. Integrated specialized geriatric expertise	8. Integrated community & home based interventions	9. Older personcentred care	10. Engaged older persons & family/friend caregivers	11. Self-management support	12. Integrated technologies	13. Multi-tiered evaluation
Program of All-Inclusive Care for the Elderly (PACE) <i>Branch et al. (1995)</i>														
Geriatric Resources for Assessment and Care of Elders (GRACE) <i>Bielaszka-Duvernay (2011)</i>														
Specialized Geriatric Nursing Care in the ED <i>Sinha et al. (2011)</i>														
Integrated Client Care for Complex Populations (ICCP) <i>Goldhar et al. (2014)</i>														
Program of Research to Integrate the Services for the Management of Autonomy (PRISMA) <i>MacAdam (2015)</i>														
Integrated primary care <i>Blom et al. (2016)</i>														
Integrated Health and Social Services with Preventive Care and Supports (EMBRACE) <i>Uittenbroek (2016)</i>														
Comprehensive Geriatric Assessment (CGA) <i>Ellis et al. (2017)</i>														

■ High-level implementation
 ■ Mid-level implementation
 ■ Basic-level implementation

■ Models with strongest overall value/practice alignment
 ■ Design elements most commonly implemented at advanced levels

Practice Models	Design Elements													
	1. Multidisciplinary team	1. a) Fixed vs. flexible	2. Collaboration	3. Cross-sector partnership	4. Comprehensive assessment & care	5. Integrated care at point-of-care	6. Shared responsibility for continuity of care	7. Integrated specialized geriatric expertise	8. Integrated community & home based interventions	9. Older personcentred care	10. Engaged older persons & family/friend caregivers	11. Self-management support	12. Integrated technologies	13. Multi-tiered evaluation
Geriatric Assessment in Acute Hospital Settings (CGA) <i>Parker et al. (2017)</i>														
Collaborative Mental Health Care <i>Gilbody et al. (2017)</i>														
Mobile Community Nursing (primary care / specialized geriatrics) <i>di Pollina et al. (2017)</i>														
Home-based Primary Care (HBPC) <i>Smith-Carrier et al. (2017)</i>														
Technology-enhanced Integrated Care (SPEC) <i>Kim et al. (2017)</i>														
Community Care Hubs <i>Clubine (2017)</i>														
BSO (LTC / community) <i>Grouchy et al. (2017)</i>														
Virtual Ward <i>Lewis (2017)</i>														
Physical Activity Program with Home Care Aides <i>Muramatsu et al. (2018)</i>														
Integrated Primary Care <i>Vestjens et al. (2018)</i>														
Geriatric Cooperatives <i>Gutmanis and Hillier (2018)</i>														

Table 6: Design Element Implementation Continuum

Core Elements	Basic-level Implementation	Mid-level Implementation	High-level Implementation
<i>Multidisciplinary teams</i>	No multidisciplinary team	Traditional health sector professions	Extended non-traditional health and social sector professions
	Fixed team membership	Flexible team membership	Flexible support network
<i>Collaboration</i>	Multidisciplinary	Interdisciplinary	Transdisciplinary
<i>Cross-sector partnership</i>	Non joined-up multidisciplinary team	Joined-up health services	Joined-up health and social services
<i>Comprehensive assessment & care planning</i>	Focus on illness-related issues	Additional focus on functioning and quality of life issues	Additional focus on social and prevention issues
<i>Integrated care at-the-point-of-care</i>	Detached delivery of services at the point-of-care	Co-ordinated delivery of interprofessional care at the point-of-care	Co-delivery of interprofessional care at the point-of-care
<i>Shared responsibility for continuity of care</i>	Individual practitioners assume responsibility for delivering discipline/sector-specific interventions	Team members assume responsibility for co-ordinating discipline/sector-specific interventions	All team members assume shared responsibility for all interventions
<i>Integrated specialized geriatric expertise</i>	Geriatric expertise available via consultation	Geriatric expertise embedded into interprofessional team or SGS as primary provider	SGS team joined-up with one or more interprofessional health and/or social care services
<i>Integrated community & home-based interventions</i>	No formal community & home-based interventions	Community and home-based version of hospital-based care	Innovative community and home-based care interventions
<i>Older person-centred care</i>	Focus on illness-related care goals. Older persons & family/friend caregivers are not invited into care conversations.	Focus on physical, mental and social care goals. Older persons & family/friend caregivers are invited into care conversations	Focus on physical, mental and social care goals. Older persons & family/friend caregivers are invited to give input to planning care interventions
<i>Engaged older persons and family/friend caregivers</i>	Older persons & family/friend caregivers are not invited to play an active role in planning or carrying out interventions	Older persons & family/friend caregivers are invited to play an active role in planning interventions	Older persons & family/friend caregivers are invited to play an active role in carrying out interventions
<i>Self-management support</i>	No formal self-management support provided	Information is provided to older persons and family/friend caregivers	Interventions are designed to actively support older persons and family/friend caregivers to self-manage everyday health concerns
<i>Integrated technologies</i>	No intentional implementation of technology to enhance the integration of care of older persons or to enhance the integration of care processes across programs, organizations, sectors	Intentional implementation of technology to enhance the care of older persons (e.g. health-related smart-phone applications)	Intentional implementation of technology to enhance the care of older persons and to enhance the integration of care processes across programs, organizations, sectors (e.g. shared information data systems)
<i>Multi-tiered evaluation</i>	Micro-level (e.g. frailty, function, perceived sense of well-being) indicators only	Combination of micro and meso-level (e.g. appropriate prescription of medications, community linkages, self-management support) indicators	Combination of micro, meso and macro-level (e.g. healthcare utilization, cost-savings) indicators

VI

Discussion

We learned three things from our review and analysis of integrated care frameworks and practice models relevant to older persons living with complex and chronic health issues. First, we identified the 13 core design elements underpinning current thinking about integrated care. Second, demonstrated common ways of operationalizing integrated care design elements in practice. Third, highlighted where efforts could be made to improve the quality of integrated care and the care experiences of older persons living with complex and chronic health issues.

Our study suggests that there is an alignment between how integrated care is designed (i.e. practice processes and procedures) and the operationalization of design elements in practice. Research in this area suggests that stronger value/practice alignment can improve the quality and consistency of health and care outcomes (Boon, 2015; Flaherty & Bartels, 2019). By extension, our results suggest that careful and intentional consideration of the design of integrated care programs is needed to fully realize the

possibilities associated with integrated care for older persons living with complex and chronic health issues (e.g. transdisciplinary teams, flexible support networks, self-management support).

We can look to best-practice models of integrated care to inform how we think about and carry out integrated care for older persons in Ontario. However, there is still room for improvement with respect to how even current best-practice models implement the design elements of integrated care in practice. As we noted, the trend in more recent models (i.e. 2017-2020) to reflect more of the identified design elements is promising. Our findings also reflect the recommendations for practice change noted in the WHO Global Strategy and Plan of Action on Aging and Health (2017), which calls attention to the need to advance health and social care partnerships, collaborative learning, training in the care of older persons, community and home-based care, self-management support, engagement of older persons and family/friend caregivers in health interventions, technology, and evaluation.

Our findings suggest that new service delivery solutions are needed that go beyond the implementation of multidisciplinary teams. Although an essential component of an integrated care platform, evidence suggests that multidisciplinary teams do not, in and of themselves, constitute integrated solutions that stand to transform the system of care for older persons living with complex and chronic health issues. Our findings, or lack thereof, with respect to the nature of collaboration and its overt expression in integrated care, suggest there may be taken-for-granted assumptions about collaboration that may or may not be realized in practice. Likewise, there is significant need for more initiatives that join-up knowledge, expertise and resources across health and social care services. The formal integration of social services (e.g. transportation, home care, food banks, homeless shelters, etc.) into integrated care planning, for instance, stands to transform accessibility across the spectrum of care for older persons. There is also a need for initiatives that provide training for clinicians and family/friend caregivers in the basic care of older persons. Such training initiatives should include the contributions of older persons, family/friend caregivers, and specialized geriatric practitioners.

It will also be important to engage practitioners from various health and social services in formal learning arrangements. Such infrastructures will be instrumental in effectively joining-up knowledge, skills and resources across the continuum of care. Moreover, our findings show that how practitioners work with and learn from each other is not yet prioritized in the descriptions of integrated care contained in the literature. Greater detail

about how practitioners intentionally work together (i.e. collaborate) is needed to assess the impact of practitioner-to-practitioner and practitioner-to-older person interaction on the health and care experiences of older persons.

The results of our review additionally indicate that there is a need to build the capacity of older persons and family/friend caregivers to play a more active role in the care process. Health and social care partnerships, for instance, may offer opportunities to create innovative health and social care interventions to aid older persons and family/friend caregivers to self-manage day-to-day health concerns. More opportunities could also be established for older persons and family/friend caregivers to be actively engaged in health and social care interventions. Likewise, there is an opportunity to foster more partnerships with additional health and social sector partners to create reimagined and transformed options for care in the communities and homes of older persons.

The integration of emerging technologies also represents an important step in the advancement of integrated care. New technologies (e.g. mobile devices, mobile phones, patient monitoring devices, personal digital assistants, wearable technologies, in-home monitoring systems, mobile digital applications) can significantly enhance the capacity of older persons to maintain functional ability, live independently, and manage everyday health issues. Technologies can also be built into service delivery processes (e.g. cloud-based EHR systems, smartphone systems, EHR data analytics, mobile medical devices, telemedicine) to increase the efficiency and effectiveness of integrated service delivery processes including information and data sharing, communication and coordination. A particularly important area for advancement involves the evaluation of integrated care using indicators that are appropriate for measuring the impact of integrated care at multiple levels. The development of common indicators that can assess relevant micro, meso and macro outcomes will be important for achieving a holistic and ongoing evaluation of integrated care practice.

VII

Limitations

The results of this review must be viewed with some caution. One limitation was the vast array of models of integrated care pertaining to older persons in the literature and the selection of a timepoint from which to define contemporary models. Because we wished to identify the most current understanding of, and approaches to, integrated care, we based our initial search on articles published between 2017 and 2020. We relied on expert stakeholder input to identify any foundational models published prior to 2017. Due to the significant number of models of integrated care published prior to 2017 and because we conducted a scoping review (as opposed to a systematic review), it is possible that other models published prior to 2017 relevant to the research question may not have been included in this review.

Another limitation concerns the applicability of knowledge derived from research on best-practice models to applied settings. For the most part, the models reviewed in this study were designed and tested under controlled or ideal settings. Interventions operationalized in practice (even when based on these models) may fall short of the designs reported on in this review. Regardless, it is expected that SGS programs, OHTs and others can use this information to strategically incorporate evidence-informed elements (conceptual, operational, evaluative) into the design of initiatives to suit local, organizational and community contexts.

Finally, the comparison of outcomes associated with the different models of integrated care was outside of the scope of this review. Consequently, we cannot report on differences between models with respect to health outcomes for older persons. Despite these limitations, the findings of this review have important implications for designing programs and systems of integrated care for older persons living with complex and chronic health issues in Ontario.

Practice & Policy Implications

The process we undertook to conduct this review involved a series of steps. First, we scoped the literature to identify current and foundational frameworks and practice models relevant to integrated care for older persons living with complex and chronic health issues. Second, we performed an analysis on both sets of documents to identify key patterns that could inform how integrated care is conceptualized and implemented. Our analysis of the framework documents identified 13 design elements that underpin quality integrated care for older persons. From this, we were able to adapt our own framework of elements for older persons living with complex and chronic health issues (see Figure 2). Our analysis of best-practice models revealed common ways of operationalizing design elements in practice. Our analysis also identified empirical connections between certain practice processes and procedures and the degree of value/practice alignment. Based on this analysis we developed an implementation continuum (see Table 6) which can be used to assess the value/practice alignment for each design element.

The new understandings generated through this study can be applied by clinicians and administrators to guide decision-making regarding:

- who to involve in the care process;
- which forms of care to provide;
- the processes and procedures that practitioners should be held accountable for;
- the infrastructures that need to be put in place to support integration at program, organization and systems levels;
- what evaluation indicators are most relevant to assess the impact of integrated care; and
- which best-practice models of integrated care to consider when designing integrated care programs and initiatives.

Who is involved in providing integrated care?

All of the models we reviewed routinely put in place multidisciplinary teams. However, our analysis indicates that considerations beyond the simple establishment of multidisciplinary teams are needed to enhance the range and quality of integrated care. For instance, models that joined-up two or more multidisciplinary teams were better positioned to deliver comprehensive and seamless care across the continuum of care. Likewise, models that joined-up teams from health and social care services, provided a unique opportunity to combine knowledge, expertise and resources across the spectrum of care. In addition, models that allowed for flexibility in team membership made it possible to form care teams based on the specific needs and preferences of individual older persons rather than fixed care teams that cannot shift and change to meet changing needs.

How is integrated care operationalized in practice?

All models in our review brought practitioners from different disciplines/ sectors together to provide coordinated multidisciplinary care. This was typically accomplished through the establishment of multidisciplinary teams that coordinated the knowledge and skills of a wide range of health and social care practitioners. Models that established additional ways for health professionals to actively learn from and with each other (e.g. joint training sessions, formalized knowledge exchange opportunities) were better positioned to broaden the range of knowledge and practice of all practitioners and minimize care gaps. Similarly, models that provided opportunities for knowledge exchange across health and social services created the conditions to develop integrated health and social solutions. Importantly, models that devised ways of joining-up care at-the-point-of-care, paved the way for significant transformation in how services for older persons living with complex and chronic health issues were administered and received.

What processes and procedures are important to the healthcare experiences of older persons?

All of the models in our review focused on older-person centred care. This focus was achieved primarily by providing access to specialized geriatric knowledge and expertise and by engaging older persons and family/friend caregivers in certain aspects of care planning. However, models that implemented additional self-management support increased opportunities for older persons and family/friend caregivers to develop independence and autonomy. Likewise, models that actively engaged older persons and family/friend caregivers in implementing care interventions were better positioned to improve healthcare experiences. Finally, models that incorporated home and community-based options were in the best position to expand access to care.

How can we best support integrated care at program, organization and systems levels?

Most models in our review established program-level infrastructure (i.e. processes and procedures) to establish and maintain integrated care (e.g. multidisciplinary teams, consultation, coordinated care planning procedures). However, models that also incorporated organizational and systems-level infrastructures to support integrated care were able to draw on additional supports – both within and across organizations – (e.g. joint funding arrangements, joint practice guidelines, accountability standards for co-delivery of care, shared information and data systems) to operationalize design elements at advanced levels. Similarly, shared EHR systems created compatible communication pathways across organizations/sectors.

How do we assess the impact of integrated care practices?

All models in our review incorporated some element of evaluation. All models (with the exception of Gutmanis & Hillier, 2017 whose study was solely focused at a system level) included micro-level indicators to measure the impact of integrated care practice on older persons and family/friend caregivers (micro-level) (e.g. frailty, cognition, perceived sense of well-being). However, models that also evaluated service delivery process (meso-level) (e.g. appropriate prescription of medications, community linkages, self-management) were able to additionally assess the impact of service delivery processes on the healthcare experiences of older persons, family/friend caregivers and practitioners. Moreover, models that assessed micro, meso and macro-level (e.g. healthcare utilization, cost savings) elements were in the best position to identify the impact of organizational and system-level infrastructures in enabling integrated care practice.

Table 7: Evaluation Indicators

Practice Models	Micro- level	Meso-level	Macro-level
Program of All-Inclusive Care for the Elderly (PACE) <i>Branch et al. (1995)</i>	✓	✓	
Geriatric Resources for Assessment and Care of Elders (GRACE) <i>Bielaszka-Duvernay, C. (2011)</i>	✓		
Specialized Geriatric Nursing Care in the ED <i>Sinha et al. (2011)</i>	✓	✓	
Integrated Client Care for Complex Populations (ICCP) <i>Goldhar, et al. (2014)</i>	✓	✓	
Program of Research to Integrate the Services for the Management of Autonomy (PRISMA) <i>MacAdam, M. (2015)</i>	✓		
Integrated primary care <i>Blom et al. (2016)</i>	✓	✓	
Integrated Health and Social Services with Preventive Care and Supports (EMBRACE) <i>Uittenbroek et al. (2016)</i>	✓	✓	
Comprehensive Geriatric Assessment (CGA) <i>Ellis, et al. (2017)</i>	✓		
Geriatric Assessment in Acute Hospital Settings (CGA) <i>Parker et al. (2017)</i>	✓		
Collaborative Mental Health Care <i>Gilbody, et al. (2017)</i>	✓		
Mobile Community Nursing (primary care / specialized geriatrics) <i>Di Pollina et al. (2017)</i>	✓	✓	
Home-based Primary Care (HBPC) <i>Smith-Carrier, et al. (2017)</i>	✓		
Technology-enhanced Integrated Care (SPEC) <i>Kim et al. (2017)</i>	✓	✓	
Community Care Hubs <i>Clubine, C. (2017)</i>	✓	✓	✓
BSO (LTC / community) <i>Grouchy et al. (2017)</i>	✓	✓	
Virtual Ward <i>Lewis et al. (2017)</i>	✓		
Physical Activity Program with Home Care Aides <i>Muramatsu et al. (2018)</i>	✓	✓	
Integrated Primary Care <i>Vestjens et al. (2018)</i>	✓	✓	✓
Geriatric Cooperatives <i>Gutmanis & Hillier (2018)</i>			✓

Which best practice models should be considered when designing integrated care?

There was no one specific model or approach in our review that successfully operationalized all design elements. Rather, the patterns that we identified across all models can help inform future directions for integrated care. Although no one model stood out, we did find that newer models (i.e. 2017-2020) operationalized more design elements. Newer models were more likely to employ advanced processes and procedures to operationalize design elements in practice. In many cases, this resulted in greater value/practice alignment. For example, newer models of integrated care were more likely to include options such as joined-up teams, health and social partnerships, flexibility in team membership, joined-up care at-the-point-of-care, self-management support, and shared EHRs. This observation likely reflects our evolving thinking regarding integrated care and does not imply that models designed prior to 2017 are no longer relevant to the integrated care landscape. Indeed, some older models in our review operationalized a broad

range of design elements using advanced implementation techniques. However, the overall pattern that emerged from our analysis shows a stronger association between strengthened value/practice alignment and newer models. This lends credibility to the idea of including very recent models of integrated care in conceptual reviews of the literature despite incomplete testing in some cases.

In closing, the information from this review can be used by clinical services in SGS and other areas to identify the critical elements associated with current and foundational approaches to integrated care, to inform the planning, design and implementation of integrated care models and interventions, to align current practice with the elements associated with best evidence, and to inform the evaluation and quality improvement of SGS models and OHT services intended for older adults regarding their application of integrated care interventions at micro, meso and macro levels.

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World Health Organization (WHO). (2018). *Mobile Health for Ageing (mAging): A handbook on how to implement mAging*. Geneva: Geneva

World Health Organization (WHO). (2019). *Integrated care for older people (ICOPE) implementation framework: guidance for systems and services*. Geneva

Appendices

Appendix A - Citations and Descriptions of Practice Models of Integrated Care

Citation	Model Name	Location	Health Sector(s)	Model Description	Model Structures/ Functions	Evaluation	Findings
Ellis et al. (2017). Comprehensive geriatric assessment for older adults admitted to hospital. <i>Cochrane Database of Systematic Reviews</i> , 9, No.: CD006211	CGA	North America, Europe	Acute Care (multidisciplinary health practitioners)	Multidimensional diagnostic and therapeutic process to determine medical, functional, mental and social capabilities and limitations of older persons with multi-morbidity. Goal: properly identify, quantify and manage complex/ inter-related conditions.	Specialty geriatric team Multi-dimensional assessment & problem identification (plan of care, delivery of care, review of progress). Co-ordinated multidisciplinary meetings Patient-centred goals Delivered on CGA ward or across wards (consult model)	Systematic review of individual participant and cluster-randomised trials. Compared CGA to routine care (total of 29 RTs / 9 countries)	Older persons who receive CGA care more likely to be living at home. Less likely to be admitted to nursing home up to 1 year after admission. No evidence of reduction in levels of mortality or dependence. Cost effectiveness is uncertain.

Citation	Model Name	Location	Health Sector(s)	Model Description	Model Structures/ Functions	Evaluation	Findings
Gilbody et al. (2017). Effect of collaborative care vs usual care on depressive symptoms in older adults with subthreshold depression: The CASPER randomised clinical trial. <i>Journal of the American Medical Association</i> , 317(7), 728-737	CASPER	U.K.	Primary Care / Specialty Geriatric Mental Health Care	Collaborative Care for Screen Positive Elders (CASPER). Designed specifically for community dwelling older persons with threshold depression & chronic physical health conditions. Delivered by case manager with mental health training.	Specialty expertise, Uni-dimensional (MHP only) assessment & problem identification (plan of care, delivery of care, review of progress). Provides assessment, treatment and follow-up. Communication with PCP.	Randomised control trial comparing collaborative care intervention to usual primary care. 8-week intervention study (329 patients randomised to each group)	Control group reported statistically significant decrease in depression scores at 4 and 12 month follow-up. No differences were found re: mortality
Smith-Carrier et al. (2017). It 'makes you feel more like a person than a patient': patient's experiences receiving home-based primary care (HBPC). <i>Health and Social Care in the Community</i> , 25(2), 723-733.	HBPC	Canada	Primary Care (community dwelling frail older adults)	HBPC delivered by interdisciplinary primary care team. Ongoing home-care services and primary medical care.	Regular communication among team members to create care plans (based on multidimensional geriatric assessments at intake).	Program eval. qualitative / grounded theory (lived experience). Interviews conducted with 26 patients (7 program sites). Understand experiences of older persons receiving HBPC in comparison to office-based care.	Perspectives of patients: Fundamental service (vs. luxury service). Preferred over standard office-based care; promotes patient-centred care; improved satisfaction with service; improved self-reported Quality of Life. Recommend as a standard component of primary care service delivery.
Kim, H. et al. (2017) Evaluation of a technology-enhanced integrated care model for frail older persons: protocol of the SPEC study, a stepped-wedge cluster randomized trial in nursing homes. <i>BMC Geriatrics</i> , 17, 88.	SPEC	South Korea	Community (LTC)	Technology enhanced, multidisciplinary, integrated care management model (SPEC). Guided by chronic care model. SPEC coordinator team (geriatric trained nurse, social worker) works with interdisciplinary team within each nursing home with input from resident/family/friend caregiver-sand contract physician to initiate and oversee care planning, care coordination.	Specialty expertise Multi-dimensional assessment & problem identification, integrated technologies,	Clustered randomised control trial to test whether SPEC is effective for improving quality of care compared to current nursing home practice. Economic and process evaluations also conducted. 10 participating LTC homes received 6-month intervention (after 3-month control period)	Results not yet reported (current paper – study protocol only)

Citation	Model Name	Location	Health Sector(s)	Model Description	Model Structures/ Functions	Evaluation	Findings
Blom et al. (2016). Effectiveness and cost-effectiveness of a proactive, goal-oriented, integrated care model in general practice for older people. A cluster randomised controlled trial: Integrated Systematic Care for Older People – the ISCOPE study. <i>Age and Aging</i> , 45(1), 30-41.	IPCM	Netherlands	Primary care	Structural screening and monitoring system (ISCOPE screening questionnaire) to detect the deterioration in somatic, functional, mental or social health of individuals age 75 or over. Followed up with execution of care plan for people with a combination of somatic, functional, mental and social problems.	Comprehensive geriatric assessment; Individualized need-based care planning; Interdisciplinary case conferencing; Care coordination; Information and communication technology; care plan focused on function; care planning by GP/ practice nurse/ older person combo. Other care practitioners involved as needed (multidisciplinary consultation). GPs and nurses trained by a GP specialised in geriatric care.	Observer-blinded cluster randomised controlled trial with randomisation at the level of the general practice. 288 older persons and their GPs were randomly selected to intervention group. 542 participants in control group. Descriptive stats to compare baseline characteristics with 1 year follow-up data.	No differences with respect to ADL or Quality of Life scores after 1 year; increased satisfaction with care as compared to controls. GPs reported significant improvement in overview of care needs, and increased stability in care situation. Most prevalent actions by patient and caregiver were engaging in social activities, referral to another physician, further diagnostic interventions, frequent check-up by GP, optimizing medication.
di Pollina et al. (2017). Integrated care at home reduces unnecessary hospitalizations of community-dwelling frail older adults: a prospective controlled trial. <i>BMC Geriatrics</i> , 17, 53.	CGU/ HVNS	Switzerland	Primary care / CGU / mobile community nursing	Cross-sector collaboration (PC, CGU/HVSN) 24/7 access to, multi-disc geriatric team Comprehensive geriatric assessment (functioning, cognition, mobility, medication, pain, adherence) Recommendations to PCP and NT from geriatrics team. Also – direct follow-up by multi-disc geriatric team.	Multidisciplinary consultation & care planning. Older persons involved in care planning process Linkages to community-based health and social supports; prevention and functional outcomes; cross-sector education (from specialized geriatric practitioners)	Prospective controlled trial. Intervention group (n=122) Control group (n=179) – usual PCP/HVNS care.	Reduced the rate of hospitalizations after the first year, decreased unnecessary hospitalizations, lowered rate of emergency room visits after first year, and increased proportion of patients dying at home. No differences in the number of total hospitalizations or rates of institutionalization or mortality.

Citation	Model Name	Location	Health Sector(s)	Model Description	Model Structures/ Functions	Evaluation	Findings
Muramatsu et al. (2018). Promoting seniors' health with home care aides: A pilot. <i>Gerontologist</i> , 58(4), 779-788.	HCA/PT	U.S.	Home care / Rehab	HCAs were trained to deliver a brief motivational enhancement and three chair-bound movements to motivate older clients to do PA daily and help maintain independence in the community. Goal: widely disseminating activities normally performed by physio therapists in rehab. facilities).	Linkages to community-based health and social supports; prevention and functional outcomes; cross-sector education. Regular reminders to increase and sustain motivation to stay "active" and prevent functional decline and dependence.	Pilot, feasibility study. Mixed methods evaluate clients' function and health before and after 4-month intervention. Preliminary data for developing a randomized controlled trial. Model pilot-tested with 54 older home care clients and their aides (N = 46) in a single group pre-post design.	Clients' daily activity function and health outcomes (physical fitness, self-rated health, pain interference, and fear of falling) improved significantly. Fidelity checks indicated intervention's core components were delivered and received as intended. Relevant cost elements (e.g., intervention materials, time spent on HM) were identified.
Vestjens et al. (2018). Evaluating an integrated primary care approach to improve well-being among frail community-living older people: A theory-guided study protocol. <i>BMC Geriatrics</i> , 18, 173.	FFF	Netherlands	Integrated primary care approach	Case management – community case manager supports the provision of proactive integrated care through a collaborative process of assessment, planning, facilitation, care coordination, evaluation, and advocacy for options and services to meet frail older patients' needs. home visits by case managers.	Proactive case finding, case management, self- management support, working in multidisciplinary care teams. Elderly care physician (expertise)	Longitudinal evaluation study; matched quasi-experimental design. Mixed methods evaluate effectiveness, processes, and cost-effectiveness. 250 frail older persons of 11 GP (FFF approach) compared with 250 frail older patients of 4 GP practices providing care as usual.	Study protocol – longitudinal eval not yet complete. Matched quasi-experimental design with one pretest and one post-test measurement. Aim to investigate well-being among frail community-dwelling older people (effect evaluation); implementation and context of the FFF approach (process evaluation); and cost-effectiveness (economic evaluation).

Citation	Model Name	Location	Health Sector(s)	Model Description	Model Structures/ Functions	Evaluation	Findings
Parker et al. (2017). New horizons in comprehensive geriatric assessment. <i>Age and Aging</i> , 46(5), 713-721.	CGA/ED	U.K.	CGA services in ED	ED-based acute care. Place specially trained nursing staff in the ED to identify and assess older people; embedding a CGA service.	Multidisciplinary team in the ED, with or without the creation of a dedicated physical environment for patients requiring CGA in the ED setting.	Umbrella review (of 15 existing systematic reviews and component RCT's) on how best to deliver CGA on a hospital wide basis. Compared various models of CGA.	ED-based acute care: may reduce admission to acute wards and to ICU, increase referrals to Palliative and hospice care, increase patient satisfaction and slow the decrease in functional status.
Gutmanis and Hillier (2018). Geriatric cooperatives in southwestern Ontario: A novel way of increasing inter-sectoral partnerships in the care of older adults with responsive behaviours. <i>Health and Social Care in the Community</i> , 26(1), e111-e121.	Geriatric Cooperatives	Canada	Members representing cross-sectoral services (support the evolving Behavioural Supports Ontario (BSO))	Partnership model to co-ordinate cross-sectoral services aimed at supporting individuals with responsive behaviours.	Identify local system gaps and develop work plans for the provision of services to address identified gaps; build on local capacity; co-ordinate, leverage, and improve linkages between existing geriatric mental health and addiction services, crisis services, day programmes, hospitals, and community partners within each community.	Evaluates the partnerships formed over time within Cooperatives to inform ongoing development and sustainability. Geriatric Cooperative members were invited to complete the Partnership Self-Assessment Tool (PSAT), tool for evaluating collaborative processes and identifying areas in need of improvement.	Both PSAT and PSAT-S mean dimension scores across both years reflected that more effort is needed to maximize collaborative potential. Knowledge of where more work is required along with effective strategies to overcome weak areas and gaps in functioning

Citation	Model Name	Location	Health Sector(s)	Model Description	Model Structures/ Functions	Evaluation	Findings
Clubine (2017). Ontario Long Term Care Homes – Can they become Community Care Hubs. Leadership Project for Canadian College of Health Leaders Fellowship Program.	Community Care Hubs (CCH)	Canada,	Community / LTC	Community Care Hub – joint task force formed around LTC home that has the infrastructure needed to support service delivery, in a location central to the community to be served. Agencies form integrated model of social and healthcare services, work together in a new form of collaboration.	Enhanced scope of practice; joint/equitable leadership; Nursing (teaching& practice), personal care, pharmacy, behavioural specialist, medicine, RPN, geriatric, psychogeriatric, respite personal companion, PT, OT, SW, chaplain, hair, speech pathologist, case management	No evaluative proposal	Relevant outcome indicators: Joint success goal that allows the right amount of service at the lowest intervention level (and lowest cost) would be shared between care and service partners and the elder client; return home with a consistent service provider (and familiar caregivers); decreased emergency department visits; decreased Long-term Care placements; community client acuity; decreased mental health and addictions prevalence; decreased chronic disease and palliation; increased quality of life; financial and comparative costing .
Grouchy et al. (2017). Implementation of Behavioural Supports Ontario (BSO): An evaluation of three models of care. <i>Healthcare Quarterly</i> , 19(4), 69-73.	BSO	Canada	BSO (LTC / community)	BSO provides services to improve the situations of individuals living in long-term care (LTC) homes, independent living settings and acute care environments. <i>In-home BSO team model:</i> a team of one or two BSO staff, typically a registered nurse (RN) or registered practical nurse (RPN) and a personal support worker (PSW), work on-site and are dedicated to the residents of one LTC home.	Enabled point-of-care education; supported staff to assess and determine individualized interventions to manage resident behaviours.	Survey conducted in 2015 to identify differences) among the three BSO models. The Ontario Long-Term Care Association Quality Committee members, composed of senior quality leaders in LTC organizations, reviewed questions for ease of understanding (clarity) and comprehensiveness.	3 LHINs where in-home BSO programs were implemented and 5 LHINs where mobile BSO programs were implemented. Three years post implementation, LTC staff strongly indicated that the “in-home” model outperforms the mobile teams in care planning and provision, collaboration and team building and home-level resident outcomes.

Citation	Model Name	Location	Health Sector(s)	Model Description	Model Structures/ Functions	Evaluation	Findings
Bielaszka-Duvernay (2011). The 'GRACE' Model: In-home assessments lead to better care for dual eligibles. <i>Health Affairs</i> , 30(3), 431–434.	GRACE	U.S.	Population-based model	Geriatric Resources for Assessment and Care of Elders.	Interdisciplinary team, regular team meetings, geriatric assessment, home safety evaluation, care planning, care coordination, home visits, follow-ups and IT system.	Randomised control trial	Improved perceived health status and quality of life; lower ED admissions; no difference between groups on hospitalizations; no impact on ADL over 2 years.
Branch et al. (1995). The PACE evaluation: initial findings. <i>Gerontologist</i> , 35, 349–359.	PACE	U.S.	Population-based model	Program of All-Inclusive Care for the Elderly	Multidisciplinary team, case management, care planning, housing, transportation, day program and IT system.	Quasi-experimental N = 5875	Reduced nursing home utilization and hospitalizations; increased use of ambulatory services; improved perceived health status and quality of life; increased ADL independence.
MacAdam (2015). PRISMA: Program of research to integrate the services for the maintenance of autonomy. A system-level integration model in Quebec. <i>International Journal of Integrated Care</i> , 15(6).	PRISMA	Canada	Population-based model	Program of Research to Integrate the Services for the Management of Autonomy	Multidisciplinary team, single assessment, single entry point, care coordination, case management and service planning	Experimental N = 920	Lower prevalence and incidence of functional decline; improved care satisfaction and patient empowerment; reduced unmet needs over time; stabilized ED use.
Sinha et al. (2011). A systematic review and qualitative analysis to inform the development of a new emergency department-based geriatric case management model. <i>Annals of Emergency Medicine</i> , 57(6), 672–682.	GEM	Canada	Acute care	Provides specialized geriatric nursing care in the ED and helping to build the overall capacity to care for older adults in the ED		Systematic Review.	Qualitative analyses identified 28 measures and 8 distinct model characteristics: evidence-based practice model, nursing clinical involvement or leadership, high-risk screening processes, focused geriatric assessments, initiation of care and disposition planning in ED, interprofessional and capacity-building work, post-ED discharge follow-up and evaluation & monitoring.

Citation	Model Name	Location	Health Sector(s)	Model Description	Model Structures/ Functions	Evaluation	Findings
Lewis et al. (2017). A community virtual ward model to support older persons with complex health care and social care needs. <i>Clinical Interventions in Aging</i> , 12, 985–993.	Virtual Ward	Ireland	Population-based	Hub-and-spoke approach to care connecting services involved in the care of the patient and family/friend, which includes service interventions and monitoring. Patients were monitored with a combination of home visits and telephone consultations.	Framework of care to assist HCPs in determining main risks and informs decision making with regard to prioritization of care, timely mobilization of services, and monitoring to support patients to remain at home.	Quantitative observational study. Examined hospital admissions and ED presentations 6 months prior to admission to CVW and on discharge. A total of 54 patients were included in the study.	Reduced the number of ED presentations and unplanned hospital admissions. number of bed days pre- and post-CVW admission.
Uittenbroek et al. (2016). Integrated care for older adults improves perceived quality of care: Results of a randomised controlled trial of EMBRACE. <i>Journal of General Medicine</i> , 32(5), 516–523.	EM-BRACE	Netherlands	Integrated primary care / population-based model	Integrate health and social services with preventive care and supports. Designed for all community-living older adults. Participating older adults are stratified based on self-reported levels of complexity and frailty.	Multidisciplinary Elderly Care Team, with intensity determined by individual risk profiles.	Randomized controlled trial with stratified randomization and blinding. Invited all adults aged 75 years and over from 15 GP practices. Total n = 1456 older adult patients	Improved the quality of care as perceived by community-living older adults and participating professionals. Advantages in perceived quality of integrated care were most evident for older adults receiving case management and were most prominent for older adults in the risk profile with high-level frailty.
Goldhar et al. (2014). Integrated client care for frail older adults in the community: preliminary report on a system-wide approach. <i>Healthcare Quarterly</i> , 17(3), 61–69.	ICCP	Canada	Population-based model	Based on a circle of care that features a clear set of integrated care priorities and reinforces the importance of system-wide collaboration and commitment. Simple, flexible and client-focused, it leverages the use of tools and drives a functional redesign of the ways providers and sector practice ensuring integration at the point of care.	Medical support/ self-care; medication management; smooth transitions; navigation/ coordination; rapid response; activation/socialization; independent living	Retrospective cohort analysis. Pre and post interviews, focus groups, surveys and 1:1 interviews with sector providers, clients and caregivers. Data measured thematically against the standards outlined in the seven areas of focus.	Statistically significant increase for ICCP population in care coordinator touch points with clients/families, care coordinator home visits with clients/ families, community case consults and conferences with providers related to client/family/friend caregivers goals, hospital case consults and conferences related to client/family/friend caregivers goals, linkages with community support services and documented medication list in client's charts.

Appendix B - Evaluation indicators to assess models of integrated care

A scan revealed 140 indicators across studies that were used to assess the impact of integrated care. Of these 140 indicators, 58% (81) were micro-level indicators. Thirty-five percent (n=28) of the micro-level indicators measured disease specific issues (e.g. depression, anxiety, pain), another 35% (n=28) measured rehabilitation and/or quality of life issues (e.g. activities of daily living; quality of life, resilience, fear of falling), 16% (n=13) measured health service use (e.g. number of emergency department visits, length of stay in hospital), and 11% (n=9) measured prevention issues (e.g. avoidance of adverse drug interactions, self-management). Of the 140 indicators uncovered in this review, 39% (n=54) were meso-level indicators. Examples of meso-level indicators included dimensions of communication and relationships among healthcare professionals, quality of integrated care, and home consultations. Three percent (n=5) of the 140 indicators cited across studies measured cost-savings, the only macro-level indicator included across studies.

Citation	Model Name	Health Sector(s)	Primary Indicators	Secondary Indicators
Ellis et al. (2017). Comprehensive geriatric assessment for older adults admitted to hospital. <i>Cochrane Database of Systematic Reviews</i> , 9, No.: CD006211	Comprehensive Geriatric Assessment	Acute Care	Living at home;	Mortality; Admission to nursing home; Dependence; Activities of daily living (ADL); Cognitive functioning; Length of stay (LOS); Re-admission to hospital; Cost / cost effectiveness
Kim, H. et al. (2017) Evaluation of a technology-enhanced integrated care model for frail older persons: protocol of the SPEC study, a stepped-wedge cluster randomized trial in nursing homes. <i>BMC Geriatrics</i> , 17, 88.	Technology-enhanced integrated care model	Community (LTC)	Quality of care (composite score of QI in interRAI LTCF)	Extent of care needs (CAPS interRAI LTCF) Functional Health Modified Bathel index; Mini-Mental Status Exam, Patient Health Questionnaire) Cognitive impairment (MMSE) Depression (PHQ-9) Quality of Life (ED-5D-5 L) Patient satisfaction (K-CSQ) Health care utilization (health care utilization data)

Citation	Model Name	Health Sector(s)	Primary Indicators	Secondary Indicators
Blom et al. (2016). Effectiveness and cost-effectiveness of a proactive, goal-oriented, integrated care model in general practice for older people. A cluster randomised controlled trial: Integrated Systematic Care for Older People – the ISCOPE study. <i>Age and Aging</i> , 45(1), 30-41.	Integrated primary care model for older adults with complex health issues.	Primary care	ADL (GARS); Quality of life (QoL) (Cantril's ladder)	Satisfaction of older persons with delivery of care (5-pt. likert scale – not published); Satisfaction of older persons with delivery of care (5-pt. likert scale – not published) & focus groups; Satisfaction of older persons with delivery of care (5-pt. likert scale – not published); Informal caregivers – amount of time spent on care of older person; Cognitive functioning (MMSE); Depressive symptoms (GDS-15); Self-rated health (GDS-15 – selected items), self-rated loneliness (DJG); Complexity (combined scores on ISCOPE screening tool, GARS, GDS and DJG); Mortality Process indicators: Analysed content of the care plan; Categorised the problems, type of goals and types of actions. Number of home visits Number of referrals
di Pollina et al. (2017). Integrated care at home reduces unnecessary hospitalizations of community dwelling frail older adults: a prospective controlled trial. <i>BMC Geriatrics</i> , 17, 53.	Integrated care model supporting collaboration between home visiting nursing service (HVNS) and community geriatric unit (CGU).	Primary care / specialized geriatrics / mobile community nursing	Hospitalization; unnecessary hospitalizations for social reasons; emergency room visit	Institutionalization; mortality Process indicators: home consultations for an acute medical problem
Muramatsu et al. (2018). promoting seniors' health with home care aides: A pilot. <i>Gerontologist</i> , 58(4), 779-788.	Physical activity program delivered by homecare aids to community-dwelling frail older adults.	Home care	Daily activity difficulties; dependency (disability continuum in frail older adults) Measures: HM (HM6), (b) Basic Activities of Daily Living (BADL) Instrumental Activities of Daily Living (IADL)	Performance of three HM movements (Short Physical Performance Battery (SPPB)) Other self-reported outcomes included levels of difficulty with ankle point and flex; self-rated health pain; interference with daily activities due to pain; pain medication usage; fear of falling; and history of falls (frequency and injuries) Process outcomes: exercise-related social support from HCAs and family/friend caregivers adapted.

Citation	Model Name	Health Sector(s)	Primary Indicators	Secondary Indicators
Vestjens et al. (2018). Evaluating an integrated primary care approach to improve well-being among frail community-living older people: A theory-guided study protocol. <i>BMC Geriatrics</i> , 18, 173.	Integrated primary care approach for frail community-dwelling older people	Integrated primary care	Well-being (15-item Social Production Function Instrument for the Level of well-being (SPF-IL)	Productive patient-professional interactions, (validated relational coproduction instrument); cognitive and behavioral self-management (Self-Management Ability Scale (SMAS-S); dimensions of communication and relationships among healthcare professionals (validated relational coproduction instrument); quality of integrated care (Patient Assessment of Chronic Illness Care (PACIC-S); quality of integrated care as perceived by healthcare professionals Assessment of Chronic Illness Care (ACIC-S). Process indicators: process evaluation: thorough description of the FFF approach, assess the implementation and the context, factors and conditions that are critical for success. Economic evaluation: assess the costs and effects of the FFF integrated primary care approach and care as usual, performed from the societal perspective which implies that, in principle, all relevant costs and effects are incorporated in the analysis.
Parker et al. (2017). New horizons in comprehensive geriatric assessment. <i>Age and Aging</i> , 46(5), 713-721	Models of	Acute care	Reduced length of stay; decreased mortality; functional status; reduced delirium; reduced cognitive decline; reduced falls, reduced pressure sores ICU admission rates from ED; time in ED; rates of D/C directly from ED.	Readmission rates; cost savings; increased patient satisfaction; compliance with all hospital safety standards; number of palliative care and hospice referrals; number of unplanned re-admissions; reduced caregiver burden
Gutmanis and Hillier (2018). Geriatric cooperatives in southwestern Ontario: A novel way of increasing inter-sectoral partnerships in the care of older adults with responsive behaviours. <i>Health and Social Care in the Community</i> , 26(1), e111-e121.	Geriatric Cooperatives support the evolving Behavioural Supports Ontario (BSO)	Cross-sector planning group	Partnership Self-Assessment Tool (PSAT), tool for evaluating collaborative processes and identifying areas in need of improvement.	Partners' perspectives about the partnership's decision-making process and overall satisfaction with the partnership.

Citation	Model Name	Health Sector(s)	Primary Indicators	Secondary Indicators
Gilbody et al. (2017). Effect of collaborative care vs usual care on depressive symptoms in older adults with subthreshold depression: The CASPER randomised clinical trial. <i>Journal of the American Medical Association</i> , 317(7), 728-737.	Collaborative Care for Screen Positive Elders (CASPER).	Primary Care / Specialty Geriatric Mental Health Care	Self-reported severity and symptoms of depression assessed by the 9-item Patient Health Questionnaire (PHQ-9)	Depression severity (PHQ-9); health-related quality of life (12-item Short Form survey (SF-12); anxiety (Generalized Anxiety Disorder Assessment (GAD-7); self-reported prescribed mental health medication (Psychological resilience 2-item Connor-Davidson Resilience Scale (CD-RISC2)
Smith-Carrier et al. (2017). It 'makes you feel more like a person than a patient': patient's experiences receiving home-based primary care (HBPC). <i>Health and Social Care in the Community</i> , 25(2), 723-733.	Home-based primary care	Primary Care/ community dwelling frail older adults	Improved satisfaction; perceived quality of life among HBPC patients and providers (qualitative in-depth interviews)	
Grouchy et al. (2017). Implementation of Behavioural Supports Ontario (BSO): An evaluation of three models of care. <i>Healthcare Quarterly</i> , 19(4), 69-73.	Behavioural Supports Ontario (BSO)	Community/LTC	Agreement/disagreement with statements related to aspects of care, and yes/no responses to impact statements related to admission and management of responsive and chronic mental health behaviours. (survey, using a 5-point Likert scale)	Appropriate use of antipsychotics; use of physical restraints (administrative databases). Aggression (weighted averages of resident scores for the InterRAI Aggressive Behaviours Scale (ABS).
Bielaszka-Duvernay (2011). The 'GRACE' model: In-home assessments lead to better care for dual eligibles. <i>Health Affairs</i> , 30(3), 431-434.	Geriatric Resources for Assessment and Care of Elders.	Population-based	Depression severity (Patient Health Questionnaire-9); medical outcomes (36-Item Short- Form (SF-36) scale); number of ED visits; number of hospitalizations; number of days in bed due to illness or injury; patient health-related quality of life (8 SF-36 scale); ADL status (Assets and Health Dynamics of the Oldest-Old (AHEAD) survey)	Quality of medical care (Assessing Care of Vulnerable Elders (ACOVE); patients' overall satisfaction with care (excellent, very good, good, fair, poor); emergency department visits, hospital admissions, and hospital days (health utilization database).

Citation	Model Name	Health Sector(s)	Primary Indicators	Secondary Indicators
Branch et al. (1995). The PACE evaluation: initial findings. <i>Gerontologist</i> , 35, 349–359.	Program of All-Inclusive Care for the Elderly	Population-based	Reduced utilization of institutional care; number of hospital days; nursing home days; physician visits; hours of home care personal services; nursing visits/month in the clinic	Appropriate prescription of medications; avoidance of polypharmacy; no increased mortality; cost effectiveness
Clubine (2017), Ontario long term care homes – can they become Community Care Hubs. Leadership Project for Canadian College of Health Leaders Fellowship Program.	Community Care Hubs (CCH)	Community/LTC	Wait times for integrated services; emergency department visits; Long-term Care placements; community client acuity; mental health and addictions prevalence; chronic disease and palliation; quality of life; financial and comparative costing.	
MacAdam (2015). PRISMA: program of research to integrate the services for the maintenance of autonomy. A system-level integration model in Quebec. <i>International Journal of Integrated Care</i> , 15(6).	Program of Research to Integrate the Services for the Management of Autonomy	Population-based	Functional decline; hospital utilization (emergency room [ER] and hospitalization)	Disability; unmet needs; satisfaction with services received; patient empowerment; caregiver burden; utilization of health services and social services
Sinha et al. (2011). A systematic review and qualitative analysis to inform the development of a new emergency department-based geriatric case management model. <i>Annals of Emergency Medicine</i> , 57(6), 672-682.	Geriatric Case Management (Nurse)	Acute Care	Re-admission to ED; length of inpatient stay; nursing home admission; patient satisfaction; functional decline; care provider satisfaction; health and social care utilization costs	Home care-giver satisfaction; perceived sense of well-being; perceived quality of life

Citation	Model Name	Health Sector(s)	Primary Indicators	Secondary Indicators
Lewis et al. (2017). A community virtual ward model to support older persons with complex health care and social care needs. <i>Clinical Interventions in Aging</i> , 12, 985–993.	Virtual Ward	Population-based	Comorbidities, social supports (baseline demographics); level of frailty (Rockwood Clinical Frailty Index Scale); function (Barthel Index); cognition (MMSE)	Risk of a hospital admission at the time of admission (ISAR tool); number of bed days; ED presentations; unplanned hospital admissions; number of admission avoidances; number of falls; number of older persons transferring from the community
Uittenbroek et al. (2016). Integrated care for older adults improves perceived quality of care: Results of a randomised controlled trial of EMBRACE. <i>Journal of General Medicine</i> , 32(5), 516–523.	Integrate health and social services with preventive care and supports.	Integrated primary care / population-based	Community linkages, self-management support (Patient Assessment of Integrated Elderly Care (PAIEC) scale)	Level of implementation of integrated elderly care (Assessment of Integrated Elderly Care (AIEC) scale); *scale consists of 7 subscales: healthcare organization, community linkages, self-management support, delivery system design, decision support, clinical information systems, and integration of CCM elements.
Goldhar et al. (2014). Integrated client care for frail older adults in the community: Preliminary report on a system-wide approach. <i>Healthcare Quarterly</i> , 17(3), 61–69.	Integrated Client Care for Frail Older Adults in the Community	Population-based	Communication and effectiveness (process evaluation)	Process data measured thematically against the standards outlined in seven areas of focus (qualitative pre and post interviews)

The background of the entire page is a dark blue field filled with a repeating pattern of white line-art icons. These icons represent various aspects of health and medicine, including human figures, brains, hearts, lungs, a lightning bolt, a pill bottle, a microscope, a stethoscope, a heart rate line, and a group of people. The icons are arranged in a dense, overlapping manner.

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