



Methodology
Notes

Seniors in Transition

Exploring Pathways Across
the Care Continuum



Canadian Institute
for Health Information

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ISBN 978-1-77109-607-2 (PDF)

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How to cite this document:

Canadian Institute for Health Information. *Seniors in Transition: Exploring Pathways Across the Care Continuum — Methodology Notes*. Ottawa, ON: CIHI; 2017.

Cette publication est aussi disponible en français sous le titre *Aînés en transition : cheminements dans le continuum des soins — notes méthodologiques*.

ISBN 978-1-77109-608-9 (PDF)

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About this document

The purpose of this document is to provide additional information and context to support understanding and interpretation of the analyses presented in the report *Seniors in Transition: Exploring Pathways Across the Care Continuum*.

It is presented in 2 parts. The first part provides additional information and context related to continuing care systems and specific long-term care services available in jurisdictions included in the analyses in the report. The second part provides detailed information on all methodological components of the project, including descriptions of data sources, the creation of analytic cohorts and specific analyses.

Information for the first part was compiled using a mix of provincial and territorial web resources, facility websites and personal communication with key stakeholders, and has been validated with working group members and stakeholders. Information was current as of January 2017. Policy changes that influence care delivery after this date were not included.

Continuing care systems: Contextual information

Overview

Canada's continuing care systems are administered uniquely within each province and territory. This results in noteworthy differences in the type and range of services offered, the administrative systems used to deliver services, eligibility criteria, and the terminology used to describe available services (see Table 1).

This document supports the analyses presented in the report *Seniors in Transition: Exploring Pathways Across the Care Continuum*, and therefore provides context only for the continuing care systems in Ontario, Manitoba, Saskatchewan, Alberta, British Columbia and Yukon.

Table 1 Jurisdictional differences in terminology

Province/territory	Home care setting		Residential care setting
	Home care services	Supportive needs services	
Ontario	Home care/community support services	Retirement homes/ supportive housing	Long-term care homes/ nursing homes
Manitoba	Home care	Supportive housing	Personal care homes/ nursing homes
Saskatchewan	Home care	Assisted living services/ personal care homes	Special care homes/nursing homes
Alberta	Home care	Supportive living (designated and non-designated)	Long-term care facilities
British Columbia	Home care	Assisted living	Residential care
Yukon	Home care programs	Not applicable	Long-term/facility care

Ontario

Home care

- Home care services can be provided to people of any age in their homes and communities. Access to services is arranged through care coordinators at community care access centres (CCACs). Care coordinators are responsible for assessing client needs, determining eligibility, and developing a plan of service, with services delivered by health professionals and personal support workers who are contracted by the CCAC in the local community. CCAC services are 100% funded by the province of Ontario; there is no client co-payment or income testing.
- Home care provided by health professionals may include nursing care, physiotherapy and occupational therapy, speech–language therapy, social work, nutrition and the provision of home health care supplies. Personal support workers provide assistance with personal care and homemaking.
- End-of-life care at home is also available.
- Assessments for home care services are completed using the interRAI Resident Assessment Instrument–Home Care (RAI-HC) ©.

Community support services

- Community support services are accessible to seniors and to people with disabilities who require assistance to live independently at home. A referral through a CCAC is required only to determine eligibility for funding to assist with program fees, where applicable.
- A range of supportive services is available and may include adult day programs, respite, meals and housekeeping, dementia care, vision and hearing support, foot care, and social and recreational services. Specific services provided vary by location.

Retirement homes

- Retirement homes in Ontario do not receive government funding and residents pay the full cost of their accommodation and any care services they purchase. Residents may also receive care within the home from external providers, including publicly funded health services. Residents range in independence from highly independent to those requiring more complex care services. 24-hour nursing care may be available.
- There are no specific criteria to be eligible to live in a retirement home. Seniors who wish to reside in a retirement home enter into a tenancy relationship with the home of their choice and decide which care services to include.
- Retirement home operators choose which services they will offer to their residents. Commonly offered care services include provision of meals; assistance with bathing, personal hygiene, dressing or ambulation; dementia care; medication administration; incontinence care; and medical services (e.g., doctor, nurse, pharmacist).
- Accommodation is mostly private, in rooms, suites or apartments; some homes have semi-private units. Non-care services offered usually include housekeeping, social programs, shared living spaces and other specialized facilities and services.
- Facilities that meet the definition set out in the *Retirement Homes Act* are regulated through the Retirement Homes Regulatory Authority (RHRA). Generally, the *Residential Tenancies Act, 2006* also applies and regulates rent and some matters relating to care services and privacy.

Supportive housing

- Supportive housing is available for those who can live independently with minimal to moderate care needs, who do not need 24-hour nursing care and who can reside at home with support, but whose care requirements cannot be met solely on a scheduled visitation basis. Services are available around the clock, on a scheduled and as-needed basis.
- Services may include meal preparation, medication monitoring, housekeeping, laundry, and personal care and supportive services; however, individuals receiving care have the ability to customize the services they receive.

- Residents pay for accommodation and optional services and typically occupy rented units. Government subsidies may be available for rental costs, and subsidized spaces vary depending on the facility.
- Those who are eligible for CCAC home support services may also be eligible for supportive housing.
- Assessments for individuals in supportive housing are completed using either the RAI-HC or interRAI Community Health Assessment (interRAI CHA) standardized instruments.

Long-term care (LTC) homes/nursing homes

- In addition to accommodation, meals and supportive services, long-term care homes provide assistance with activities of daily living (ADLs) and access to 24-hour nursing and personal care in a secure setting.
- LTC homes are available for adults (age 18+) who have Ontario Health Insurance Program (OHIP) coverage and have care needs including
 - 24-hour nursing and personal care;
 - Frequent assistance with ADLs;
 - On-site supervision or monitoring to ensure safety and well-being;
 - Those that cannot be met safely in the community through publicly funded community-based services and other caregiving support; and
 - Those that can be met in a LTC home.
- Accommodation fees (including room and board) are paid by each resident; personal and nursing care services are funded publicly. Subsidies may be available to those with inadequate income to cover costs associated with the basic room only (subsidies are not available to people requesting semi-private or private rooms).
- LTC homes are licensed and regulated by the Ministry of Health and Long-Term Care (MOHLTC) and receive government funding from the local health integration networks (LHINs). Eligibility is confirmed by the placement co-ordinator, currently the CCAC. Bill 210, *Patients First Act, 2016* (under way at the time of publication) is proposing to transfer responsibility for the LTC placement process from CCACs to the LHINs.

- Respite care may also be provided in an LTC home in situations where the caregiver requires temporary relief for up to 60 continuous days (and 90 days in a calendar year).
- Assessments in LTC homes are completed using the interRAI Resident Assessment Instrument–Minimum Data Set (RAI-MDS 2.0) © and eligibility assessments for LTC home admissions are completed using the RAI-HC, along with other assessments, as needed.

For more information

www.ontario.ca/page/homecare-seniors

www.ontario.ca/page/find-retirement-home

www.ontario.ca/page/find-long-term-care-home

www.ocsa.on.ca/personal-support-services--assisted-living.html

www.rhra.ca/en/

Manitobaⁱ

Home care

- Home care services are available to all registered Manitobans based on assessed needs, existing supports and community resources. Administration of home care is through regional staff with assessments completed by case coordinators.
- Specific services may include
 - Personal care assistance;
 - Home support for assistance with meals and household tasks;
 - Health care provided by nurses, occupational therapists or physiotherapists;
 - Short-term respite care either in home or in an alternate setting;
 - Acquisition of some supplies and equipment;
 - Adult day programs (fee for service);
 - Volunteer coordination; and
 - Referrals to supportive housing, group living facilities and specialized supports.
- Home care needs may be determined to be short term (3 months or less) or long term (more than 3 months).
- The established service level for home care is set at 55 hours per week by a home care attendant, with the total cost not to exceed the average cost of a personal care home bed. Nursing hours are calculated as part of this total cost. Services may be provided for more than the set 55 hours, by exception, based on individual care requirements.

i. The information presented here represents service delivery for the province of Manitoba in general. The study includes data representing only the Winnipeg Regional Health Authority, where specific service delivery may vary.

Supportive housing

- Supportive housing is intended for frail/cognitively impaired individuals who can no longer manage independently in their homes with available resources but whose needs do not necessitate placement in a personal care home.
- Residents live in independent units within a congregate setting, with access to meals, common areas and housekeeping services. Personal care, support and supervision are also provided.
- Eligibility is established through an assessment by a home care case coordinator or LTC access coordinator. LTC access coordinators are available only in the Winnipeg Regional Health Authority (WRHA). Fees are assessed based on rent and service components. The health ministry provides funding to approved supportive housing sites for personal care and support functions. Additional health supports are provided via regional home care and are based on resident needs.

Personal care homes/nursing homes

- Also referred to as nursing homes, personal care homes (PCHs) are intended for those determined to be unable to remain at home safely with personal supports and home care services.
- PCHs provide 24-hour health care, personal care, basic medical supplies, meals, eligible medications, social and leisure activities, and housekeeping and laundry services.
- A range of health care professionals are available either as staff in the facility or for consultation, including nurses, health care aides, physicians, specialists and therapists.
- A daily residential charge is assessed for personal care home services and is based on income assessments.
- All PCHs must comply with the PCH Standards Regulation under *The Health Services Insurance Act* of 2015.

For more information

www.gov.mb.ca/health/homecare/guide.pdf

www.wrha.mb.ca/ltc/housing.php

www.ltcam.mb.ca/

www.wrha.mb.ca/ltc/pch/index.php

www.gov.mb.ca/health/pcs

www.gov.mb.ca/health/mhsip

Saskatchewan

Home care

- Saskatchewan offers publicly funded home care services for those requiring acute, palliative and supportive care.
- Services are offered in the senior's home and include assessment, case management and care coordination, nursing, homemaking (personal care, respite and home management), meal services, home maintenance, volunteer visitation, security calls or transportation, and specialized therapies.
- Care is coordinated through regional health authorities, and seniors may be billed for some services depending upon income and services used. Nursing, care coordination and therapy services are not billable. Individuals may opt for individualized funding to arrange and manage personal care, home management and other supportive services. The level of funding is based on assessed need and is used for approved services only.

Assisted living services

- Assisted living services are provided to seniors living in specified social housing projects intended for those with low to moderate incomes. Both accommodation and supportive services are provided, with the specific services varying according to the facility. Services may include recreational, health and other specialized services (e.g., services related to tenancy) with costs covered by seniors and moderated through coordination, partnerships and large-scale delivery.
- Seniors may have access to a response system for emergencies, meals, laundry and housekeeping services.

Personal care homes

- In Saskatchewan, personal care homes are privately owned and operated, where seniors receive accommodation, meals, and guidance or assistance with personal care. These are licensed facilities complying with requirements under *The Personal Care Homes Act*. A monthly fee is assessed, and seniors may be eligible for financial assistance.
- Residents have access to physicians and nurses on an as-needed basis, and some conditions may exist in specific facilities limiting licensure to ensure that care is safe and appropriate. For example, some facilities are not permitted to house those with a history of wandering or, for those facilities where stairs have been identified as an issue, individuals must be able to climb up and down independently.

Special care homes/nursing homes

- These homes are intended for those who have long-term needs that exceed the capacity of community and home care. An assessment conducted by health region personnel is required to determine eligibility, and access is arranged through the Long-Term Care Intake Department within each region.
- Special care homes are operated either directly by the health region or through contract or affiliation.
- Monthly payment for services is assessed based on annual income, plus earned interest. Additional charges may apply for medications, incontinence supplies, and other medical and personal supplies and services.
- In addition, special care homes may offer planned or emergency respite, adult day programs, convalescence or palliative care.

For more information

www.saskatchewan.ca/residents/health/accessing-health-care-services/care-at-home-and-outside-the-hospital/individualized-funding-for-home-care#step-1

www.saskatchewan.ca/residents/health/accessing-health-care-services/care-at-home-and-outside-the-hospital/personal-care-homes

www.saskatchewan.ca/residents/health/accessing-health-care-services/care-at-home-and-outside-the-hospital/special-care-homes

Alberta

Home care

- Home care in Alberta includes publicly funded personal and health care services provided by a team of skilled professionals who support the client to continue living in the community in their own residence.ⁱⁱ Scheduled services include assistance with ADLs that the client cannot do him/herself or cannot get help with from another source.
- The majority of services are provided by Alberta Health Services (AHS) either directly or through contracted agencies to provide authorized services. The client and family are considered active partners of the care team.

ii. A residence may include a private home, condominium or apartment in the community. This category also includes care provided in a retirement community or independent housing for elderly persons or persons with disabilities.

- Adult day programs (ADPs) are also available and are designed for adults who have physical and/or memory challenges or who are living with a chronic illness. ADPs may also provide respite and education for caregivers. There are 2 types of ADPs:
 - Basic ADPs target medically stable individuals and focus primarily on socialization needs and the provision of caregiver respite.
 - Comprehensive ADPs target medically complex adults and, in addition to socialization and respite, they provide professional services including rehabilitation, social work, nursing and on-site access to physician services.

Non-designated supportive living

- Individuals who require additional support may opt to live in a non-designated supportive living setting. Care is provided in a home-like congregate setting, such as a senior's lodge, with a common dining area where services such as meals and housekeeping are offered by the operator.
- These are privately operated and privately paid settings. Clients can manage most daily tasks independently but some home care support/services may be provided to help maintain independence.
- Admission to this setting is managed by the operator.

Designated supportive living (DSL)

- Within DSL environments, AHS controls access to a specific number of spaces according to an agreement between AHS and the operator. Both accommodation and care services are provided for those living in a DSL site.
- Individuals must be assessed by an AHS home care case manager to determine health needs (RAI-HC). In addition to publicly funded health and personal care services through home care, Albertans can also access privately purchased services in their supportive living setting.
- Publicly funded health and personal care can be provided to individuals in supportive living settings through the AHS Home Care Program or in supportive living settings that have a contract with AHS to provide these additional services.
- Operators are required to identify when the accommodation can no longer meet the needs of a resident or when the site does not have staff with appropriate training to meet the needs of the resident and thus a higher level of care is required.

- Under the *Supportive Living Accommodation Licensing Act*, all supportive living accommodations must be licensed when the operator provides permanent accommodation to 4 or more adults. The operator is also required to provide or arrange for services related to safety and security of the residents, and provides at least one meal a day or housekeeping services. More information can be found in the *Supportive Living Framework*.ⁱⁱⁱ The following DSL options are available:
 - DSL3 — Settings reflect community-based living options where 24-hour on-site (scheduled and unscheduled) personal care and support services are provided by health care aides. Depending on the needs of the individual, scheduled professional care (nursing, rehabilitation therapy, etc.) will be provided through home care and coordinated by a case manager.
 - DSL4 — Refers to care provided in a living option where AHS controls access to a specific number of beds according to an agreement between AHS and the operator. 24-hour on-site scheduled and unscheduled professional and personal care and support services are provided by licensed practical nurses and health care aides. Professional health services, including registered nurse services with 24-hour on-call availability, case management and other consultative services, are provided through AHS.
 - DSL4D (Dementia) — Refers to specialized dementia care provided in a living option where AHS controls access to a specific number of beds according to an agreement between AHS and the operator. This option provides a purposeful home-like design with small groupings of private bedrooms and associated spaces in a secured therapeutic environment. 24-hour on-site scheduled and unscheduled professional and personal care and support is provided by licensed practical nurses and health care aides. Professional health services, including registered nurses with 24-hour on-call availability, case management and other consultative services, are provided through AHS.

Long-term care facility

- LTC facilities (which are either auxiliary hospitals or nursing homes) are intended for individuals with complex, unpredictable medical needs who cannot remain at home (e.g., there's no one to care for them, it's not safe for them there), or whose needs exceed those available in supportive living environments.
- Access to this level of care must be arranged by contacting the respective AHS zone's Community Care Access office.
- On-site staff provide scheduled and unscheduled health and personal care services. A registered nurse is available 24 hours a day with all consultations, including physician care, provided on site. Support workers, licensed practical nurses and other health professionals may be involved in the care of residents. Full meals are provided and some social and leisure activities may be available.

iii. Government of Alberta. [Supportive Living Framework](#). 2007.

- The individual is responsible for paying the daily accommodation fee as well as additional care that may fall outside the care plan as established by the care manager at the LTC facility.
- Eligibility for DSL and LTC is established following an assessment completed by a continuing care placement coordinator through AHS.

For more information

www.albertahealthservices.ca/cc/page13336.aspx

www.health.alberta.ca/documents/CC-Supportive-Living-Guide-2014.pdf

British Columbia

Home care

- Subsidized home care services are provided to British Columbians who meet eligibility requirements. These services include the following:
 - Community nursing — Licensed nursing professionals provide services to those who require acute, chronic, palliative or rehabilitative support. Typically, these are short-term supportive services that may be provided in either the home or another setting, including assisted living facilities.
 - Community rehabilitation — Similar to community nursing, these services are provided by licensed physical or occupational therapists and are typically intended for short-term rehabilitation.
 - Adult day services — These programs offer care, and social and recreational activities to seniors who may need additional support during the day away from their homes, and also serve as respite for caregivers.
 - Home support — Provided by community health workers, these services represent a range of supportive care with the intention of ensuring that an individual is able to remain in his or her home. Care typically includes assistance with ADLs, such as bathing and nutrition. Home support services are only available for 24-hour care on a short-term basis.

Assisted living

- Assisted living facilities provide services for individuals who are still independent but who require additional support and for whom remaining in their previous environment represents considerable risk.
- Residents live in a private unit with a lockable door within a supportive environment.

- Services include support for ADLs, rehabilitative therapy, housekeeping, meals, recreational and social activities, medication, behavioural and financial management, and 24-hour emergency response.
- To be eligible, individuals must be able to make decisions on their own behalf or have a spouse available to make decisions.

Residential care

- Residential care incorporates facility-based care for individuals who require 24-hour professional care.
- Services may be offered short term — as is the case with convalescent, caregiver respite or palliative care — or long term.
- Long-term care is intended for those with complex care needs who are no longer eligible for home care and assisted living services. Individuals in residential care may also have severe ongoing behavioural issues, moderate to severe cognitive impairment, a high level of physical dependence, and/or a high level of clinical complexity with needs that require professional nursing care, monitoring or specialized care.

Access to home and community care services in British Columbia is coordinated through the health authorities. Needs assessments are conducted to determine eligibility and appropriate care placement. Assessments for clients in home care services are completed using the RAI-HC. Clients receiving residential care services are assessed using the RAI-MDS 2.0.

For more information

www2.gov.bc.ca/gov/content/health/accessing-health-care/home-community-care/care-options-and-cost

Yukon

Community day program

- A facility is available to provide daily (Monday to Friday, full or part time) activities and programs designed to offer engagement, therapy and independence for community-dwelling seniors. Meals and additional services are provided. There is a daily fee associated with this program.

Home care program

- A range of home-based services are available for those with mobility or health challenges. These may include medical and non-medical services (home care nursing, social work, occupational therapy, physical therapy and home support services).
- Care coordination is directed by registered staff in Whitehorse (registered nurses, occupational therapists, physical therapists and social workers) and by either home care nurses or community liaison coordinators in communities outside of Whitehorse.
- Regional therapy services teams, including occupational and physiotherapy, travel to smaller communities outside of Whitehorse to provide services on an itinerant basis.

Palliative care program

- For those with a life-limiting illness, the palliative care program provides medical and community supportive services in a variety of settings (home, community, hospital and care facility). Services may include assessments, pain management, complex care, discharge planning, training and education for care professionals, and grief and bereavement support. These services are intended to support direct care providers who are providing palliative care in all settings in Yukon.

Long-term/facility care

- Long-term care is offered through 5 facilities in Yukon with varying services and levels of care.
- Facilities may offer respite, personal, intermediate, extended, complex extended care, or special care:
 - Respite care services are available on a short-term basis (usually 2 to 4 weeks) to allow a brief period of rest and respite for caregivers providing care in the community. Services are available at 4 of the 5 care facilities.
 - Personal care is provided for people with light to moderate care needs, meaning they need minimal assistance with personal care and ADLs.
 - Intermediate care is intended for those who have moderate needs requiring personal assistance and monitoring on an intermittent basis.
 - Extended care is aimed at those who require extensive assistance and 24-hour support.
 - Complex extended care is available for those who also require extensive assistance and 24-hour support.
 - Special care is intended for those whose individualized care plan indicates the need for a secure environment, including those with dementia.

For more information

www.hss.gov.yk.ca/continuing.php

www.hss.gov.yk.ca/homecare.php

Methods

Working group

CIHI established a working group of representatives from health regions and ministries of health in Ontario, Manitoba, Saskatchewan, Alberta, British Columbia and Yukon. These jurisdictions were selected as they provide CIHI with data that enabled this work. The goal of the working group was to identify opportunities to develop actionable analyses to inform service delivery in the future.

Based on feedback from working group members, we identified a series of analyses to help us investigate how the effective use of publicly funded long-term care services could allow seniors to remain living independently longer in the community. This analysis linked data about individuals across care settings and over time, providing a unique view of the continuing care system that may help highlight opportunities to reduce reliance on more costly forms of care.

Data sources

5 sources of information were used to analyze seniors' access to the publicly funded continuing care systems across 35 health regions in Ontario, Manitoba (WRHA only), Saskatchewan (excluding Mamawetan Churchill River and Keewatin Yatthé), Alberta, British Columbia (excluding Northern Health Region) and Yukon:

- Canadian Institute for Health Information:
 - Home Care Reporting System (HCRS), 2012–2013 to 2015–2016
 - Separate files containing home care data from WRHA and Saskatchewan (2012–2013 to 2014–2015) were requested directly, as home care information from these jurisdictions was not part of the HCRS collection system at that time.
 - Continuing Care Reporting System (CCRS), 2012–2013 to 2015–2016
 - Separate files containing residential care data from Saskatchewan (2012–2013 to 2013–2014) were requested directly, as information from this jurisdiction was not part of the CCRS collection system at that time.
 - Discharge Abstract Database (DAD), 2011–2012 to 2015–2016
 - Ontario Mental Health Reporting System (OMHRS), 2011–2012 to 2015–2016
- Statistics Canada
 - Postal Code Conversion File (PCCF+) version 6C

The analysis was restricted to only those health regions for which HCRS and CCRS data was available for the full duration of the study period (2012–2013 to 2014–2015).

Limitations

Included in this analysis are seniors for whom RAI-HC or RAI-MDS 2.0 assessments had been completed. People receiving only informal or private care and those receiving short-term care (usually defined as less than 60 days) were not included. Seniors in assisted living or supportive housing facilities in Ontario who are assessed using the interRAI CHA instrument (which is not submitted to CIHI) have not been included in this study. WRHA data on initial assessments conducted in the hospital is unavailable, in part because seniors admitted to residential care from hospital do not receive an initial assessment. In Alberta, a portion of RAI-HC assessments are not submitted to CIHI due to data validation issues and are therefore not included in the analysis.

There are also known under-coverage issues among submitting jurisdictions:

- All RAI-HC assessments may not have been submitted;
- Some assessments may have been rejected from the validated data set because of data errors and inconsistencies; and
- Recommended assessment schedules may not have been followed, resulting in home care clients not being assessed.

Defining the study population

The use of RAI instruments varies across the country. There are, for example, different eligibility criteria for services, different degrees of instrument implementation and different ways of using the instruments that are implemented. Below is a general description of the assessment timeline and RAI data collection for individuals in the continuing care system.

A case manager conducts an initial RAI-HC assessment to determine a senior's health service needs and whether the senior is eligible for publicly funded services. This initial RAI-HC assessment is part of the intake process, in accordance with eligibility policies and practices for each jurisdiction. A referral for the initial assessment may be triggered by a sudden change in health status or a gradual decline that has resulted in increased care needs or needs that are no longer manageable with current resources. The referral can come from a physician, social worker, family, friend or the individual, and may be initiated while the individual is living at home (with or without short-term home care services) or during a hospital stay.

Once someone is receiving services in the continuing care system (home care or residential care), periodic reassessments are conducted to monitor changes in condition and function; these help with care planning and resource allocation. People receiving long-term home care services are reassessed using the RAI-HC, either periodically according to local policy or when needs or health status have changed significantly. Those admitted to residential care are reassessed using the RAI-MDS 2.0. An admission assessment is conducted within 14 days of entry into residential care, and reassessments occur at 3-month intervals (or sooner if there is a significant clinical change).

Not everyone who receives an initial assessment is eligible for publicly funded services, and some of those who are eligible may opt for private care instead. Some people are offered services and don't accept them or choose not to continue with the long-term services provided. Individuals who are not eligible for publicly funded services at the time of their initial assessment may eventually be assessed again or may choose to purchase services privately.

All seniors who received an initial assessment in 2012–2013 and were later assessed while receiving publicly funded long-term services, either in the community or in residential care, were identified. We then constructed care trajectories for these 61,029 seniors by following each individual over a 2-year (730-day) period as he or she transitioned between care settings.

Due to under-coverage issues for home care (discussed in the Limitations section above), the analysis focused primarily on seniors entering residential care. Seniors who entered residential care did so either after a period of receiving home care or as their first care setting following an initial assessment. These 2 key transitions were analyzed separately.

Defining the subpopulations

The 4 subpopulations are defined as follows:

1. MAPLe low–moderate — These seniors have a Method for Assigning Priority Levels (MAPLe) score less than or equal to 3. Seniors with low to moderate (1 to 3) MAPLe scores are more likely to remain in the community, supported with home care services, while those with high (4) and very high (5) scores are often prioritized for placement in residential care facilities.
2. Physical needs — This group of seniors could potentially be supported at home or in an assisted living type setting. This subpopulation consists of seniors with an Activities of Daily Living (ADL) Hierarchy Scale score greater than 0, no responsive behaviours, a Cognitive Performance Scale (CPS) score of 2 or less, no swallowing or eating problems and less than 2 recent falls (i.e., in the 90-day period prior to the assessment).

3. Lighter care needs — These are seniors with lighter care needs who potentially could be supported in a home setting. This subpopulation consists of seniors with a CPS score of 0 or 1, an ADL score of 0 or 1, and a Changes in Health, End-Stage Disease and Signs and Symptoms (CHESS) score of 0 to 2, and who do not exhibit wandering behaviours.
4. Dementia and light care needs — These seniors have dementia but otherwise have low cognitive and functional impairment. They tend to have high or very high MAPLe scores but can, with appropriate support, remain in the community. Some jurisdictions have implemented dwellings with specialized levels of care and supports designed to make it easier for this population to remain in the community. This subpopulation is defined as seniors with dementia (either Alzheimer or other type of dementia), an ADL score of 0 to 2 and a CPS score of 0 to 2.

Overall, 43% (25,623) of the study population was in the MAPLe low–moderate subpopulation at the time of initial assessment. Although the subpopulations were uniquely defined, there were varying degrees of overlap among them. The lighter care needs and physical needs subpopulations were relatively distinct (overlapping by less than 10%), yet collectively they comprised 93% of the MAPLe low–moderate group. The group of seniors with dementia and light care needs was relatively unique (73% of seniors in this subpopulation did not overlap with any other subpopulation). A table depicting frequency counts (i.e., number of seniors) within each possible subpopulation and combination has been provided in Appendix A (tables A.1 and A.2).

Technical notes

Study population and analyses

We identified seniors who received an initial assessment in 2012–2013 and were subsequently assessed while receiving publicly funded long-term home care or residential care. We linked all records from HCRS, CCRS, DAD and OMHRS that took place within 2 years (730 days) following the initial assessment. To identify whether an individual was in hospital at the time of the initial assessment, we also linked all DAD and OMHRS records for 1 year prior to the date of the initial assessment.

Building the study population

The trajectory cohort was constructed using the following steps:

1. Select all initial assessments that took place between April 1, 2012, and March 31, 2013, that met the following inclusion/exclusion criteria:

Inclusion criteria

- Reason for assessment equal to initial assessment
- Assessment did not take place within a residential care (CCRS) episode
- Age at assessment 65 years and older (potential data quality issues may exist where age was indicated as greater than 115 years; therefore, those individuals were excluded)
- Province/territory code for Ontario, Manitoba, Saskatchewan, Alberta, British Columbia or Yukon

Exclusion criteria

- Encrypted Health Card Numbers (HCNs) that were in one of the standard linkage exclusion files (e.g., invalid HCNs, children sharing HCN with their mother as identified in DAD and NACRS data, other HCNs identified as being used by more than one person)
 - Invalid HCNs
 - Health Card Province Code that was missing or had a value of -70 or -90
 - Episode IDs with more than one HCN (this was primarily a Saskatchewan-specific data quality issue)
2. Create a patient ID that can be used for all linkages. The patient ID is a combination of the HCN and the HCN-issuing province.
 3. Sort all initial assessments based on patient ID and assessment date. Keep the last assessment. This was the initial assessment used in the trajectory cohort analyses. The date of this assessment represented the initial assessment date.
 4. Link all HCRS and CCRS patient records that were within 730 days of the initial assessment date that met the following inclusion/exclusion criteria:

Inclusion criteria

- Province/territory code for Ontario, Manitoba, Saskatchewan, Alberta, British Columbia or Yukon
- HCRS assessments with a reason for assessment **not** equal to initial assessment
- CCRS records that were residential care–based continuing care (Sector Code equal to 4)

Exclusion criteria

- Encrypted HCNs in one of the standard linkage exclusion files (e.g., invalid HCNs, children sharing HCN with their mother as identified in DAD and NACRS data, other HCNs identified as being used by more than one person)
 - Invalid HCNs
 - Health Card Province Code that was missing or had a value of -70 or -90
 - Episode IDs with more than one HCN (this was primarily a Saskatchewan-specific data quality issue)
 - CCRS records:
 - Episodes or assessments where the CCRS-generated data quality flag indicated that there was an issue
5. The unit of analysis for the DAD and OMHRS was hospitalizations based on episode of care. An episode of care referred to all contiguous acute care hospitalizations. To construct an episode of care, transfers within and between facilities were linked. A transfer was assumed to have occurred if the following condition was met:
- An acute care hospitalization occurred within 6 hours of discharge from a previous acute care hospitalization, regardless of whether a transfer was coded
6. Link all DAD and OMHRS episodes of care that were within 730 days of the initial assessment date, as well as episodes of care that ended within the year prior (365 days) to the initial assessment, that met the following exclusion criteria:

Exclusion criteria

- DAD records:
 - Potential duplicate records
 - Newborns, stillbirths and cadaveric donors
7. Keep only the individuals who had at least one non-initial HCRS assessment or CCRS assessment in the 730-day (2-year) period following the initial assessment.
8. Remove individuals who did not follow 1 of these 3 care trajectory patterns:
- *Home care only*: Only non-initial HCRS assessment(s) following the initial assessment
 - *Home care to residential care*: Non-initial HCRS assessment(s) following the initial assessment and then only CCRS assessment(s)
 - *Residential care only*: Only CCRS assessment(s) following the initial assessment

Note: Subsequent initial HCRS assessments were excluded when deriving care trajectories.

Subpopulation analysis

The subpopulation analysis was conducted to identify seniors entering residential care who may be able to be cared for in the community with the appropriate supports. It was conducted as follows:

1. Select all from the trajectory cohort defined above who met the following inclusion criteria:

Inclusion criteria

- Individuals who followed 1 of these 2 care trajectory patterns:
 - *Home care to residential care*: Non-initial HCRS assessment(s) following the initial assessment and then only CCRS assessment(s)
 - *Residential care only*: Only CCRS assessment(s) following the initial assessment

Membership in the subpopulations was determined based on information either from the last HCRS assessment prior to residential care entry (home care to residential care) or from the initial HCRS assessment (residential care only).

Factors that influence entering residential care following an initial assessment

To identify factors that influenced admission to residential care, we used a multivariate logistic regression model. The model compared those in the residential care only trajectory (CCRS assessment following initial assessment: residential care as initial setting) with those in the home care only and home care to residential care trajectories (HCRS assessment following the initial assessment: home care as initial setting). The factors included in the model were based on information in the initial assessment. A total of 33 factors were analyzed to identify which ones were associated with an increased likelihood of residential care as an initial care setting (see Appendix B for a list of the factors and their definitions).

Factors that influence entering residential care after receiving home care

We used a multivariate logistic regression model to identify the factors influencing transition from home care to residential care. The model compared those in the trajectory of home care to residential care with those in the home care only trajectory. 31 factors^{iv} were analyzed to identify which were associated with an increased likelihood of transitioning into residential care. The factors were based on the last HCRS assessment within the 2-year study period. Only individuals who met the following inclusion/exclusion criteria were included:

iv. All factors listed in Appendix B except the first 2: Hospitalization and High user.

Inclusion criteria

- Individuals who followed 1 of these 2 care trajectory patterns:
 - *Home care only*: Only non-initial HCRS assessment(s) following the initial assessment
 - *Home care to residential care*: Non-initial HCRS assessment(s) following the initial assessment and then only CCRS assessment(s)
- Individuals who had at least one non-initial HCRS assessment 90 days or more following the initial assessment

Exclusion criteria

- Individuals whose last HCRS assessment took place more than 14 days after entry to residential care

3 cohort years

To identify the probability of entering residential care following initial assessments completed while in hospital, the methodology for building the cohorts was the same, except instead of linking forward 2 years (730 days), we linked forward only 1 year (365 days).

Appendix A

Table A.1 Study population, by subpopulation membership

Membership in subpopulation	Frequency*	Percentage of total
MAPLe low–moderate	25,623	43%
Physical needs	11,540	20%
Lighter care needs	14,704	25%
Dementia and light care needs	10,495	18%
Any subpopulation	34,429	58%
No subpopulation	24,742	42%
Total study population	59,171	100%

Note

* Number of seniors in that group.

Table A.2 Subpopulations and combinations, by frequency and percentage of total

Subpopulation	Frequency*	Percentage of total
A	1,703	3%
A and B	8,274	14%
A, B and C	1,149	2%
A, B, C and D	62	0%
A, B and D	2,055	3%
A and C	11,834	20%
A, C and D	520	1%
A and D	26	0%
C	974	2%
C and D	165	0%
D	7,667	13%
Total	34,429	58%

Notes

* Number of seniors in that group.

A: MAPLe low–moderate.

B: Physical needs.

C: Lighter care needs.

D: Dementia and light care needs.

Appendix B

Table B.1 Factors included in the logistic regression models

Factor	Definition
Patient factors	
Hospitalization*	In hospital at time of initial assessment
High user*	High user of hospital services in the 365 days prior to initial assessment; defined as 3 or more acute episodes of care and cumulative minimum 30 days in hospital
Age	Age in completed years as of assessment date
Male	Client is male
Income quintile	Neighbourhood income quintile (from Statistics Canada)
Urban	Urban location of residence at the time of the initial assessment; urban is defined as Statistical Area Classification types (SAC type) 1 through 3
Living alone	Client lives alone: Client does not live with a primary caregiver. RAI-HC assessment indicates that the client <ul style="list-style-type: none"> • Has a primary caregiver who does not live with him or her; or • Does not have a primary caregiver.
Symptoms of caregiver distress	Symptoms of caregiver distress, anger or depression
Caregiver unable to continue	Caregiver is unable to continue providing care, where 0 = no and 1 = yes
Behaviours and impairments	
Requires physical assistance	Measured with the Activities of Daily Living (ADL) Hierarchy Scale, where 0 = no functional impairment and 6 = total dependence
Cognitive impairment	Cognitive impairment measured with Cognitive Performance Scale (CPS), where 0 = intact and 6 = very severe impairment
Responsive behaviours	Responsive behaviours, including a minimum of one of verbally abusive, physically abusive, socially inappropriate or disruptive or resisting care where the behaviour did not occur in the last 3 days
Wandering	Wandering in the last 3 days

Factor	Definition
Behaviours and impairments (cont'd)	
Any health instability (CHESS 1+)	Medical instability measured using CHESS (Changes in Health, End-Stage Disease and Signs and Symptoms), with instability indicated with a CHESS score greater than or equal to 1
Falls	Falls frequency with 1 or more falls recorded in the last 90 days
Bladder incontinence	Bladder incontinence measured as occasionally or more frequently incontinent
Bowel incontinence	Bowel incontinence measured as occasionally or more frequently incontinent
Oxygen	Oxygen scheduled as part of care plan
Daily pain	Any indication of daily pain
Diseases and disorders	
Dementia	Alzheimer or other dementia present
Signs of depression	Signs of depression measured using the Depression Rating Scale (DRS), with a value greater than 2 indicating the client has more numerous and/or frequent symptoms
Any psychiatric diagnosis	Any psychiatric diagnosis present
Diabetes	Diabetes present
Heart disease	Heart disease present
Congestive heart failure	Congestive heart failure present
Emphysema/COPD/asthma	Emphysema, chronic obstructive pulmonary disease (COPD) or asthma present
Hypertension	Hypertension present
Stroke	Cerebrovascular accident (stroke) present
Parkinson disease	Parkinsonism present
Cancer	Cancer, not including skin cancer, present
Arthritis	Arthritis present
Hip fracture	Hip fracture present
Osteoporosis	Osteoporosis present

Note

* Not included in the 31 factors analyzed to identify which were associated with an increased likelihood of transitioning into residential care.



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