

November 2012



## Analysis in Brief

# Seniors and Alternate Level of Care: Building on Our Knowledge

## Health System Performance

### Executive Summary

This study provides an in-depth look at transitions from acute care to the community. It showcases three Canadian Institute for Health Information (CIHI) data holdings that inform health system planning about the care needs of elderly Canadians who wait in hospitals for placement in the community. These individuals no longer require acute care services but wait in acute care beds for placement in a more appropriate setting such as home or residential care. This population, referred to as “alternate level of care (ALC),” is expected to grow substantially as the Canadian population ages. Evidence suggests that seniors in acute care awaiting discharge may experience decline in their overall health and well-being.

Key findings include the following:

- More than half (54%) of seniors who waited in acute care were discharged to a residential care facility. Persons discharged from acute care to residential care accounted for more than 5 million ALC days in total. Findings suggest that some of these patients may be able to be cared for at home, with the right supports in place.
- Persons with symptoms of dementia, including challenging behaviours, were more likely to have waited in acute care prior to residential care admission, suggesting that they were waiting for specialized services such as behavioural support.
- Persons with complex care needs without a strong support system were more likely to have waited in acute care before home care admission, suggesting that they were waiting for a caregiver to be available or services to be put in place.
- Initiatives such as Ontario’s Home First Program are helping to reduce the amount of time seniors wait in hospital. This program aims to identify individuals at risk for residential care admission in order to provide adequate supports to enable a successful transition home.

### Our Vision

Better data. Better decisions.  
Healthier Canadians.

### Our Mandate

To lead the development and maintenance of comprehensive and integrated health information that enables sound policy and effective health system management that improve health and health care.

### Our Values

Respect, Integrity, Collaboration,  
Excellence, Innovation

Federal Identity Program

Production of this report is made possible by financial contributions from Health Canada and provincial and territorial governments. The views expressed herein do not necessarily represent the views of Health Canada or any provincial or territorial government.

The availability of a standardized health information system, using data from CIHI's databases, provides a unique opportunity to gain insight into the needs of ALC patients and inform this growing health concern.

This analysis will help health planners and policy-makers to better understand the factors associated with ALC designation and discharge destination.

## Introduction

There is ongoing concern that acute care beds in Canada are occupied by seniors who are waiting to be discharged to a more appropriate level of care.<sup>1</sup> These individuals, who no longer require acute care services, are commonly designated as alternate level of care (ALC) patients.

Alternate level of care is an important challenge both for individuals and for the health system.<sup>2</sup> Traditionally, the ALC issue has been seen primarily as patients waiting for placement in residential care. Seniors awaiting placement may experience decline in their overall health and well-being.<sup>3-5</sup> As a result, there has been a recent shift in thinking to focus on increasing the capacity of the community care sector to meet the needs of these clients.<sup>6</sup>

Health planners and policy-makers are interested in understanding the transitions of persons between hospitals and other sectors of the health care system in order to explore the potential to divert demand from residential care to home care settings. The majority of seniors express the desire to remain at home, and there is evidence to suggest that providing care at home is a cost-effective alternative.<sup>7</sup> Projections show that the proportion of seniors in Canada's population will nearly double in the next few decades (from 15% in 2011 to 25% in 2036);<sup>8</sup> the number of ALC patients is therefore expected to increase as well. For example, in Ontario, the number of ALC patients—the majority of whom are above age 75—is expected to increase by 32% over the next 10 years.<sup>9</sup> This shifting demographic may increase the pressure on both acute care and residential care facilities unless demands can be shifted to other community-based settings to help address the ALC challenge.<sup>10</sup>

This analysis aims to

- Enhance clinicians' understanding of ALC populations that were discharged to home or residential care with a goal of enhanced care and discharge planning for these individuals;
- Provide planners and policy-makers with information on the characteristics and needs of the ALC population to enhance evidence-informed program and resource planning; and
- Build on previous ALC analyses at CIHI<sup>11, 12</sup> with the addition of post-acute discharge and clinical information from the Home Care Reporting and Continuing Care Reporting systems.

This study looks at more than 90,000 seniors recently admitted to home or residential care, having been recently discharged from acute care. It focuses on three key questions:

- What proportion of seniors recently discharged from acute care to home and residential care had ALC days?
- What are the individual and organizational factors associated with the presence/absence of ALC days?
- What are the factors associated with placement setting (that is, home or residential care)?

## Methods

The data for this analysis was obtained by linking three CIHI databases: the Home Care Reporting System (HCERS), Continuing Care Reporting System (CCRS) and Discharge Abstract Database (DAD).

## Discharge Abstract Database

The DAD holds data on hospital inpatient and day surgery events. More than 3 million records are submitted to the DAD annually.<sup>13</sup> Inpatient records submitted to the DAD represent all inpatient discharges in Canada outside of Quebec.<sup>i</sup> Each record captures a standard clinical, demographic and administrative data set on a patient-specific basis.

## Home and Continuing Care Reporting Systems

HCRS provides information on publicly funded home care programs, with data currently available from three provinces and territories. CCRS provides information on hospital-based continuing care and residential care facilities, with data currently available from seven provinces and territories. (Note that due to methodological challenges, this analysis used data from only five provinces and territories.) Both systems provide comparative reports that include standard clinical measures, quality indicators and information about resource utilization. Collaboration with interRAI supports the foundation data standards for these reporting systems.

## interRAI Assessment Instruments

The Resident Assessment Instrument—Home Care (RAI-HC)<sup>ii</sup> and Resident Assessment Instrument—Minimum Data Set (RAI-MDS) 2.0<sup>iii</sup> are comprehensive, standardized assessment instruments developed by interRAI for evaluating an individual's needs, preferences and strengths. The instruments have undergone reliability and validity testing in a number of countries worldwide, including Canada.<sup>14–26</sup>

The RAI-HC is used to assess long-term home care clients—those expected to require services for more than 60 days. The RAI-MDS 2.0 is completed upon admission to a residential care facility and every three months thereafter, or more frequently if the person experiences a significant change in clinical status. The assessments are captured electronically and provide real-time feedback for clinicians to support care planning and monitoring. They also provide organization- and jurisdiction-level data to support system management, quality improvement and policy-making.

## Framework and Measures

This analysis was guided by a conceptual framework developed from a literature review that revealed several factors associated with both ALC status and discharge destination among seniors. For the current analysis, these factors were grouped into the following categories: demographic, functional status, health status, quality of life, treatments and services, mood and behaviour, resource utilization and organizational factors. The distribution of variables under each of these categories, by ALC status and discharge destination, can be found in Appendix A. Descriptions of the interRAI clinical and functional scales used for this analysis can be found in Appendix B.

### *Defining Alternate Level of Care*

The term “alternate level of care” (ALC) is used in health care settings, including acute care, complex continuing care, mental health and rehabilitation, to describe persons who occupy a bed in a facility but no longer require the intensity of resources and services provided in that setting.<sup>13</sup>

In the context of this analysis, ALC identifies a person who has completed the acute care phase of his or her treatment but remained in an acute care bed.

- 
- i. Quebec inpatient records are included in the Hospital Morbidity Database maintained by CIHI.
  - ii. RAI-HC© interRAI Corporation, 2001. Modified with permission for Canadian use under licence to the Canadian Institute for Health Information. Canadianized items and their descriptions are protected by copyright: © 2002 Canadian Institute for Health Information.
  - iii. RAI-MDS 2.0© interRAI Corporation, Washington, D.C., 1997, 1999. Modified with permission for Canadian use under licence to the Canadian Institute for Health Information.

## The Data

The data for this report focuses on newly admitted long-stay home care clients (those expected to be on service for more than 60 days) and residential care clients, age 65 and older, who had been discharged from an acute care facility between April 2007 and September 2011.

The first RAI-HC or RAI-MDS 2.0 assessment completed within 30 days after discharge from acute care was used for the analysis. The rationale for this decision was that this particular assessment would most accurately reflect the first transition from acute care to home and continuing care. For example, if a person was discharged from acute care and received a RAI-HC assessment followed by a RAI-MDS 2.0 assessment, only the RAI-HC was used in the analysis.

In addition, persons residing in residential care who were admitted to acute care and then transitioned back to their residential care bed were excluded from the analysis in order to focus on new admissions to home or residential care.

The final sample includes 90,507 discharges from acute care to either home care (61,047 in Nova Scotia, Ontario and Yukon) or residential care facilities (29,460 in British Columbia, Winnipeg Regional Health Authority, Newfoundland and Labrador, Ontario and Yukon). The focus for this analysis was on transitions from acute care to home and continuing care settings; therefore, an individual may be counted more than once in the sample.

Guided by the conceptual framework, the analysis focused on the factors associated with both ALC status and discharge destination among seniors (see Appendix C). The combination of factors associated with ALC status was modelled separately for home care and residential care, using logistic regression analysis (see Appendix D).

## Results

As shown in Table 1, the majority (86.5%) of acute care clients age 65 and older were discharged home or to a residential care facility. Of persons discharged with no ALC days, the majority were discharged home without support. Of persons who waited in an acute care bed beyond their acute episode, the majority were discharged to residential care.

## Considerations

- Persons discharged from acute care to the community may not appear in this cohort for several reasons, including the following:
  - They did not receive an assessment in the community.
  - They were admitted to a community setting more than 30 days after their acute care discharge.
  - Community-level data was not made available to CIHI from their jurisdiction.
- Data elements from the RAI-HC and RAI-MDS 2.0 were regrouped when necessary in order to have comparable categories.

**Table 1: Discharge Disposition for Seniors Discharged From Acute Care, by ALC Status, 2007 to 2011**

Discharge Disposition	All Discharges		Discharged With ALC Days		Discharged Without ALC Days	
	N	Percentage of All Patients	N	Percentage of All ALC Patients	N	Percentage of All Non-ALC Patients
<b>Long-Term Care</b>	486,266	9.7	183,051	53.5	303,215	6.5
<b>Home With Support</b>	639,753	12.8	62,738	18.3	577,015	12.4
<b>Home Without Support</b>	3,196,819	64.0	35,503	10.4	3,161,316	67.9
<b>Died</b>	308,743	6.2	38,352	11.2	270,391	5.8
<b>Rehabilitation Facility</b>	311,128	6.2	14,518	4.2	296,610	6.4
<b>Other</b>	55,396	1.1	7,957	2.3	47,439	1.0
<b>All</b>	4,998,105	100.0	342,119	100.0	4,655,986	100.0

**Source**

Discharge Abstract Database, 2007 to 2011, Canadian Institute for Health Information.

This report focused on the sub-population of seniors admitted to home or residential care who had been recently discharged from acute care and assessed with a RAI-HC or RAI-MDS 2.0 assessment. It is important to note the difference in the percentages when comparing patients with ALC days discharged from acute care to residential care (as captured in the DAD alone) with patients admitted and assessed in residential care within 30 days of that acute discharge (limiting the analysis). These differences are likely related to provincial differences in the data, which are amplified in the Home and Continuing Care (HCC) data due to the limited number of provinces/territories reporting.

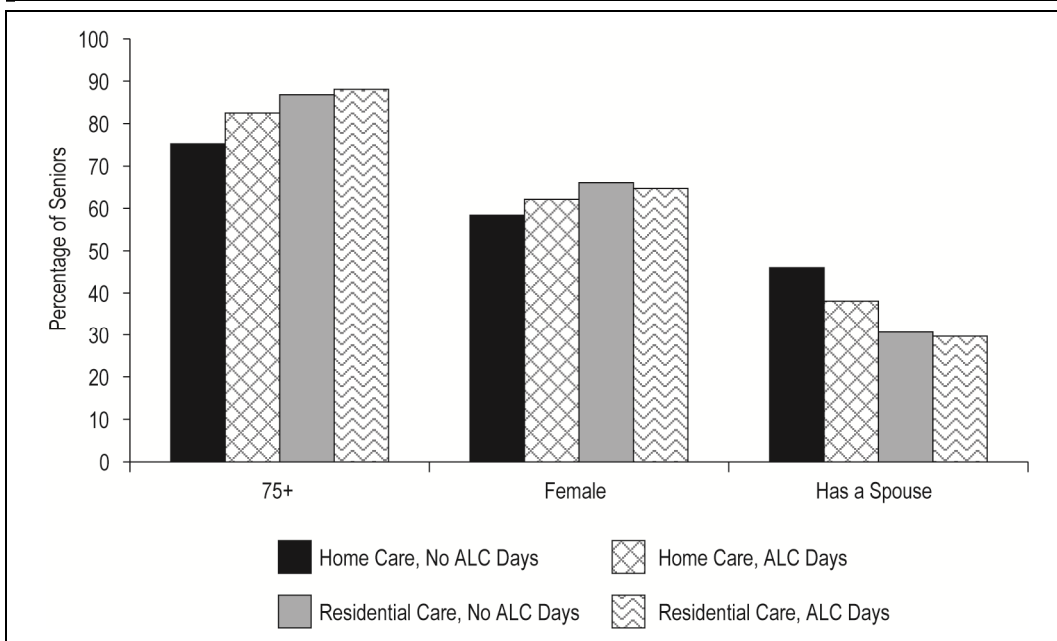
**Presence of ALC Days Among Seniors in HCC**

Following from the Canada-wide results on discharges from acute care (Table 1), the majority of transitions in this analysis were from acute care to home care. This is expected because most people coming from acute care are discharged home. However, ALC days were more common in transitions to residential care. A greater proportion of clients recently admitted and assessed in residential care (80%) had ALC days as compared with recently admitted and assessed home care clients discharged from hospital. Only one in six seniors discharged to home care with long-term home care services had ALC days. Seniors discharged to residential care waited a median of 26 days in the hospital; seniors discharged home waited a median of 7 days.

**Demographic Factors**

Figure 1 shows the distribution of demographic variables by care setting and ALC status. Residential care clients were slightly older than long-term home care clients. More than half of clients in both settings were female. Persons admitted to long-term home care were more likely to have a spouse than those admitted to residential care. In both settings, persons with ALC days were slightly older than persons with no ALC days.

**Figure 1: Demographic Characteristics by ALC Status and Care Setting**



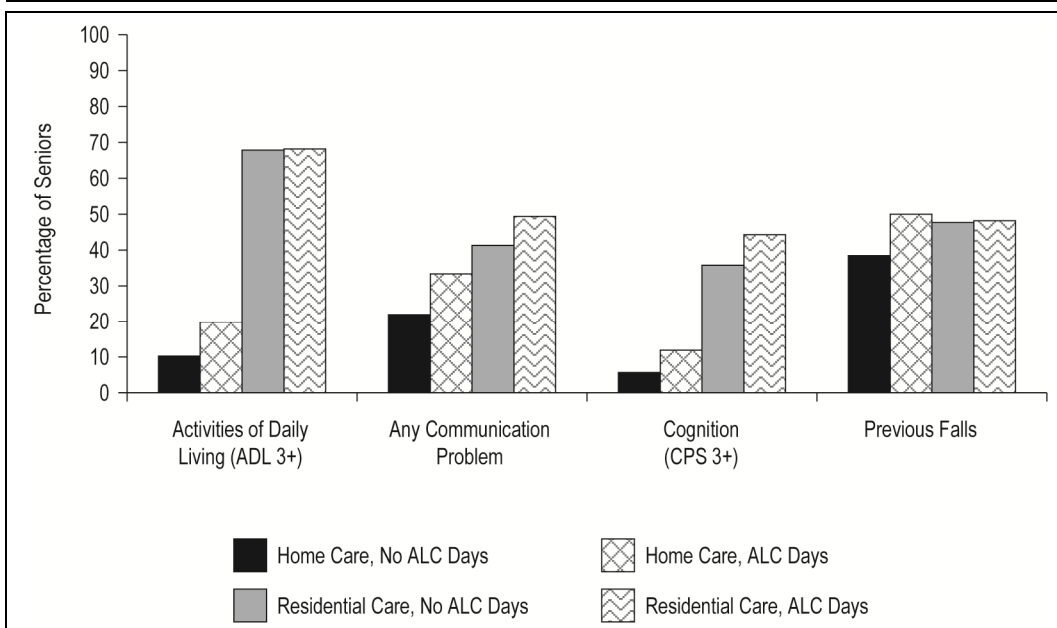
**Sources**

Discharge Abstract Database, Home Care Reporting System and Continuing Care Reporting System, 2007 to 2011, Canadian Institute for Health Information.

**Functional Status**

Figure 2 illustrates that residential care clients experienced more difficulty with both physical and cognitive functioning, compared with home care clients, as measured by the Activities of Daily Living Self-Performance Hierarchy Scale (ADL Self-Performance Hierarchy)<sup>24</sup> and the Cognitive Performance Scale (CPS)<sup>23</sup>; see Appendix B for details regarding the scales. Home care clients with ALC days had more difficulty in physical, cognitive and communication function than those with no ALC days. In residential care, physical function did not have the same impact on presence of ALC days.

**Figure 2: Functional Characteristics by ALC Status and Care Setting**



**Sources**

Discharge Abstract Database, Home Care Reporting System and Continuing Care Reporting System, 2007 to 2011, Canadian Institute for Health Information.

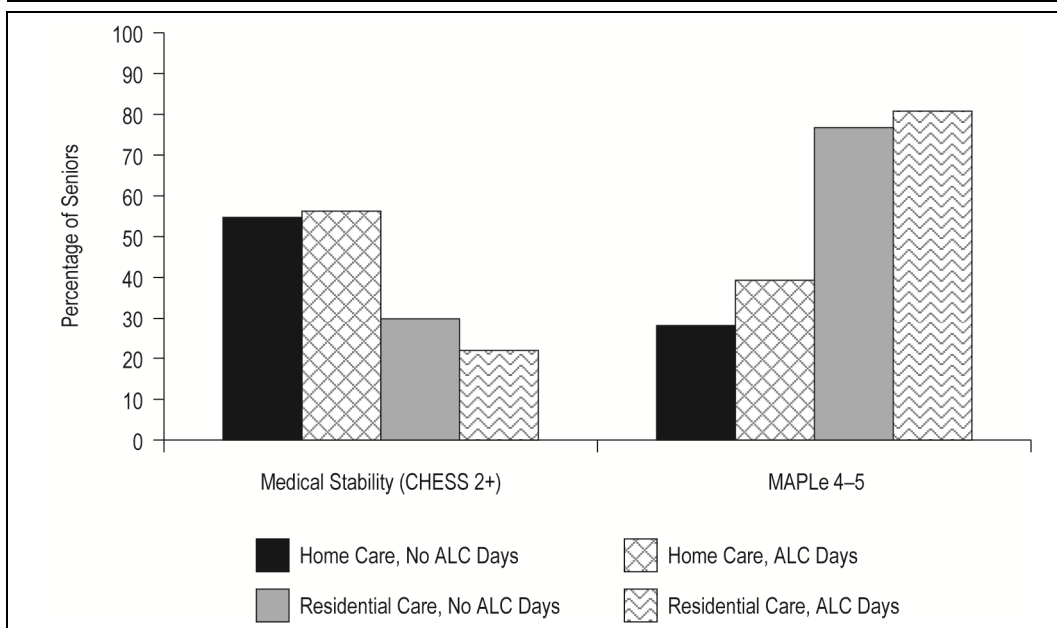
## Health Status

Figure 3 shows key factors associated with care setting and ALC status in the Health Status domain. Residential care clients were more medically stable than home care clients, as measured by the Changes in Health, End-Stage Disease, Signs and Symptoms (CHESS) Scale.<sup>18</sup>

The Method for Assigning Priority Levels (MAPLe) was designed for use in home care; however, an adapted version can be applied in residential care for the purposes of comparability and assessing placement decisions. Several domains of importance for home care clients, such as managing medications, meal preparation and shopping, are not relevant and therefore not available for residential care clients. These items are included in the calculation of a low or mild MAPLe score (1 or 2); therefore, they cannot be calculated in the adapted MAPLe.

Compared with home care clients, a higher proportion of residential care clients had a MAPLe score of 4 or 5, indicating higher need. This pattern held when comparing ALC clients with non-ALC clients within both home care and residential care.

**Figure 3: Health Characteristics by ALC Status and Care Setting**



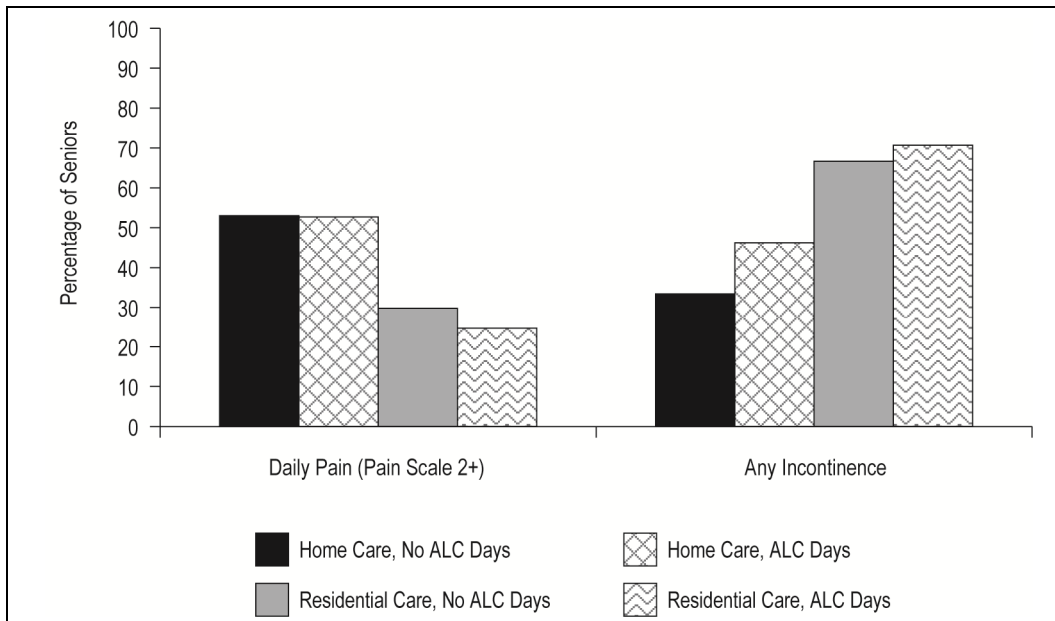
### Sources

Discharge Abstract Database, Home Care Reporting System and Continuing Care Reporting System, 2007 to 2011, Canadian Institute for Health Information.

## Quality of Life

Figure 4 shows that daily pain was twice as prevalent among home care clients as residential care clients. Incontinence was strongly associated with transitioning to residential care from acute care (as opposed to going home). Incontinence was also highly associated with having had ALC days among both home care and residential care clients.

**Figure 4: Quality of Life Characteristics by ALC Status and Care Setting**



### Sources

Discharge Abstract Database, Home Care Reporting System and Continuing Care Reporting System, 2007 to 2011, Canadian Institute for Health Information.

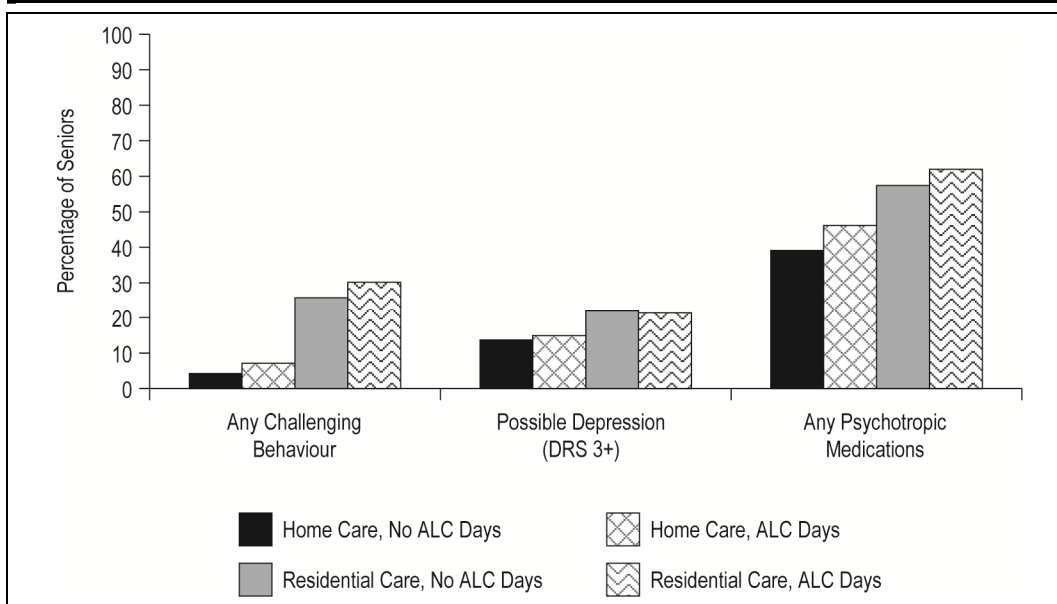
## Mood and Behaviour

Figure 5 illustrates the mood and behaviour factors associated with care setting and ALC status. The presence of challenging behaviours, including physical and verbal abuse, resisting care and being socially inappropriate, was six times higher among residential care clients as compared with home care clients. Persons discharged with ALC days were also more likely to exhibit these behaviours than persons with no ALC days.

Depressive symptoms, as measured by the Depression Rating Scale (DRS),<sup>14</sup> were more common among residential care clients than home care clients but did not vary substantially between persons discharged with or without ALC days. Psychotropic medications, including antidepressants, antipsychotics, hypnotics and anti-anxiety medications, were more prevalent among those admitted to residential care than home care and among persons discharged with ALC days.



**Figure 5: Mood and Behaviour Characteristics by ALC Status and Care Setting**



**Sources**

Discharge Abstract Database, Home Care Reporting System and Continuing Care Reporting System, 2007 to 2011, Canadian Institute for Health Information.

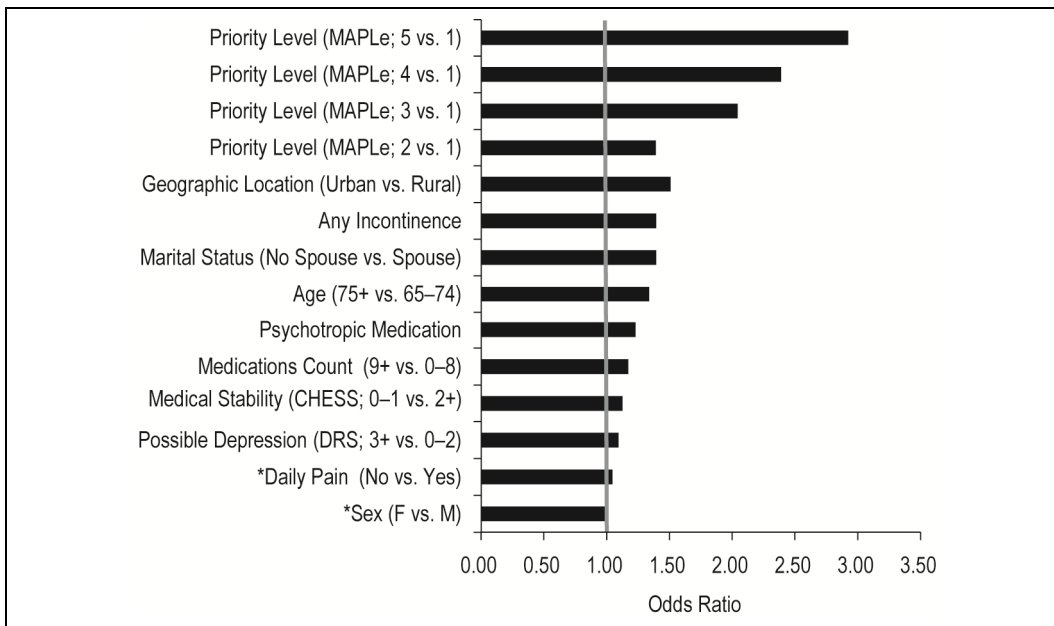
**Predicting ALC Days Among Persons Admitted to Home Care**

There are multiple factors associated with ALC status among persons discharged from acute care. A logistic regression model was developed to determine the combination of factors that best predicted presence of ALC days in this population. This model predicts the odds of having ALC days among seniors recently admitted to home care. The model controlled for several factors identified in the literature and listed in the conceptual framework (see Appendix A). The model excluded the CPS, the ADL Hierarchy and challenging behaviours because these factors are part of the MAPLe algorithm (see Appendix B). The results of the logistic regression are shown in Figure 6.

**Logistic Regression and Odds Ratios**

- Logistic regression is used when the dependent variable is dichotomous (for example, has ALC days and does not have ALC days). It determines the predicted probability of the outcome (having ALC days) based on the combination of predictor variables (for example, different clinical characteristics).
- An odds ratio is the ratio of the odds of an event (for example, ALC days) occurring in one group (for example, urban) to the odds of it occurring in another group (for example, rural). An odds ratio of 1 indicates that the odds of the outcomes are equally likely for both groups under comparison.

**Figure 6: Odds Ratios for Predicting Having ALC Days Among Seniors Receiving Home Care**



**Note**  
\* Not statistically significant.

**Sources**  
Discharge Abstract Database, Home Care Reporting System and Continuing Care Reporting System, 2007 to 2011, Canadian Institute for Health Information.

The MAPLe algorithm was the strongest predictor of having ALC days. After controlling for other factors, the odds of having ALC days were almost three times higher for persons with a very high MAPLe score than for persons with a low MAPLe score. This suggests that persons at higher risk of caregiver distress and institutionalization are more likely to have ALC days prior to admission to home care.

Compared with people residing in rural areas, persons in urban areas were more likely to have ALC days, suggesting that there are explanations for ALC status beyond clinical characteristics. Having either frequent bladder or bowel incontinence was also a strong predictor of ALC days. The odds of having ALC days were 1.5 times higher for persons without a spouse and 1.4 times higher for older clients.

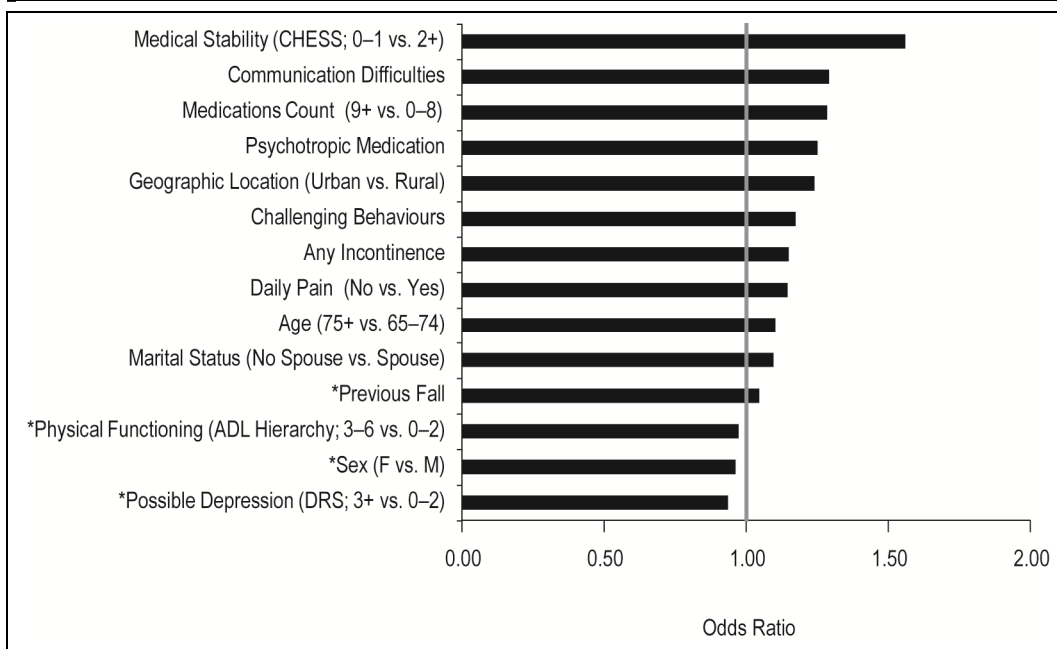
It is interesting to note that sex was not a significant predictor of ALC status, even though the majority of persons in home care are female.

## Predicting ALC Days Among Persons Admitted to Residential Care

The factors associated with ALC status among persons admitted to residential care are shown in Figure 7. A logistic regression model was developed to determine the combination of factors that best predicted presence of ALC days in this population. This model predicts the odds of having ALC days among seniors recently discharged from acute care.

The model controls for several factors identified in the literature and listed in the conceptual framework (see Appendix A). Dementia was shown in the literature to be a strong predictor of ALC days, as were dementia-type symptoms such as challenging behaviours and communication difficulties. For this analysis, ALC days were modelled based on symptoms, not diagnosis. This kept the focus on the individual's clinical characteristics rather than on the presence of a particular disease such as dementia.

**Figure 7: Odds Ratios for Predicting Having ALC Days Among Seniors in a Residential Care Setting**



**Note**  
\* Not statistically significant.

**Sources**  
Discharge Abstract Database, Home Care Reporting System and Continuing Care Reporting System, 2007 to 2011, Canadian Institute for Health Information.

Medical stability, as measured by the CHESS scale, was the strongest predictor of ALC days. After controlling for other factors, the odds of having ALC days in acute care (versus having no ALC days) were one and a half times higher for persons who were medically stable than for persons with moderate to severe medical instability.

The odds of having ALC days were 1.3 times higher both for persons with communication difficulties and for those taking more than nine medications. Taking one or more psychotropic medications, receiving care in an urban setting and exhibiting challenging behaviours were all associated with having ALC days. Mood, sex, physical functioning and previous falls were not significant predictors of ALC status in this population.

## Discussion

This study sheds light on the growing ALC challenge in Canada’s health care system using data from more than 60,000 home care clients and close to 30,000 residential care clients recently discharged from acute care facilities in six Canadian jurisdictions. The analysis will help health planners and policy-makers to better understand the factors associated with ALC designation and discharge destination.

The majority of seniors admitted to residential care, having been recently discharged from acute care, waited to be discharged after their acute stay needs had been met. Generally speaking, seniors admitted to residential care had more complex care needs than those admitted to home care; however, there were persons with complex care needs in both care settings. The key to supporting persons with complex care needs at home is to have a strong support system, both formal home care services and the support of family and friends. Persons with a strong support system were much less likely to wait before being admitted to home care.

The models presented in this report were able to account for many of the clinical differences between seniors with and without ALC days. However, ALC status and care setting are not merely a matter of clinical differences but also reflect health system–level factors, particularly for those admitted to residential care. The availability of and admission policies to residential care beds, as well as the availability of alternative discharge settings such as supportive housing, vary widely within and between jurisdictions.<sup>27</sup>

More than half (54%) of seniors in acute care awaiting discharge to a more appropriate setting were discharged to a residential care facility. While this may be an appropriate path for some, findings suggest that others may be able to be cared for at home, with the right supports in place. The resources that have been allocated to home support services and the programs put in place to support informal caregivers vary widely and may have a significant effect on policies and decisions related to discharge planning. Many post-acute patients require placement in a residential care facility; with this demand for residential care beds, planners and policy-makers may have to consider alternative discharge destinations.<sup>9, 10</sup>

This analysis identified a sub-group of clients—those who were medically stable and had either a diagnosis of dementia or behavioural symptoms associated with dementia—who were more likely to wait before being admitted to residential care than those who were medically stable and didn't have a diagnosis of dementia or associated behavioural symptoms. These findings suggest that the availability of specialized care for this population may be a factor. The needs of these individuals may require further consideration in order to facilitate transition out of acute care, and have been noted in recent initiatives in a number of provinces to allocate resources to behavioural support.<sup>28</sup>

It is well documented in the literature that waiting in an acute care bed for placement may lead to a decline in the health of the individual.<sup>3–5</sup> In addition, waiting is very costly and resource-intensive for the health care system, since a bed is being occupied by a person who no longer requires acute services.<sup>10</sup> Facilitating a successful transition home, to another community setting such as supportive housing, or to residential care requires careful consideration of resource availability, costs, risks and benefits to the individual and the health system as a whole.

## *Reducing ALC: Early Success in Ontario's Home First Program<sup>6</sup>*

- Home First represents a cultural shift in the behaviour and thinking of health care providers and encourages a collaborative relationship across the continuum of care.
- The goal is to put in place adequate supports to enable a person's transition home from acute care, while reducing ALC days and transfers to residential care.
- Through this initiative, individuals and families are supported to make decisions about future health care—including residential care placement—while at home, rather than in the hospital setting.
- There are many examples of the Home First philosophy helping to reduce the burden of ALC days. In the Mississauga Halton LHIN in Ontario, the monthly average number of ALC patients was reduced by 56% over a three-year span, and the percentage of ALC patients deemed eligible for residential care was reduced by 76% in the same time period.<sup>10</sup>

## Future Directions

This analysis provides insight into the characteristics of ALC clients and the factors associated with discharge destination. These are important first steps in understanding this diverse and complex population. While the analysis addressed many key issues to help inform health system policy- and decision-making, many questions still remain.<sup>11</sup> The availability of a standardized health information system, using data from CIHI databases, provides a unique opportunity to gain insight into the needs of ALC patients and inform this growing health concern.

### *What We Have Learned*

- Clients who wait to be discharged to home care or residential care have diverse needs, strengths and preferences.
- Seniors admitted to residential care with ALC days waited an average of 26 days before being discharged, compared with an average of 7 days among those admitted to home care.
- Most seniors admitted to residential care following recent discharge from acute care had ALC days.
- About one in six seniors recently admitted to home care had ALC days.
- Among seniors admitted to home care, the MAPLe algorithm, a measure of institutionalization risk and caregiver distress, was the strongest predictor of having ALC days.
- Among seniors admitted to residential care, those who were medically stable with dementia or dementia-type symptoms such as challenging behaviours and communication difficulties were more likely to have had ALC days.
- There is preliminary evidence to suggest that new initiatives, including Home First, have helped reduce the burden of ALC days by diverting potential residential care clients home.<sup>10</sup>

### *What We Still Need to Learn*

- Does the health care system have the capacity to support ALC patients at home?
- What resources would help facilitate the transition of ALC patients home?
- Are there supports that can be put in place before admission to acute care, or early in the acute admission, that will reduce the likelihood of ALC days?
- Can supportive housing/assisted living reduce some of the burden of residential care wait lists for ALC clients?
- What are the provincial/territorial variations in the characteristics of ALC patients and in the resources available to support them?
- Will initiatives to discharge ALC patients home while they await residential care placement, such as the Home First Program, be successful in terms of long-term patient outcomes, caregiver stress and cost savings?

## Acknowledgements

CIHI wishes to acknowledge and thank the following individuals for their contribution to this report: Norma Jutan, Diana Craiovan, Lacey Langlois, Natalie Damiano, Douglas Yeo and Jean-Marie Berthelot.

We would also like to thank the following individual who participated in a peer review of this report: Andrew Costa, Research Associate, University of Waterloo.

# Appendix A: Conceptual Framework

Domain	Factors
<b>Demographic</b>	Age Sex Marital Status Living Arrangement Informal Support
<b>Functional Status</b>	Activities of Daily Living (ADL Hierarchy) Communication Memory Cognitive Functioning (CPS) Falls
<b>Health Status</b>	Medical Stability (CHESS) MAPLe Algorithm Comorbid Conditions Medications
<b>Quality of Life</b>	Incontinence Pain
<b>Mood and Behaviour</b>	Depression Symptoms (DRS) Challenging Behaviours Psychotropic Medication
<b>Organizational Factors</b>	Geographic Location
<b>Resource Utilization</b>	ED Visits
<b>Treatments and Services</b>	Home Health Services Home Support Services Therapies

# Appendix B: Outcome Scales and Algorithms

Outcome Scale	Description	Assessment Items	Score Range
<b>ADL Self-Performance Hierarchy Scale</b> <sup>24</sup>	This scale reflects the disablement process by grouping ADL performance levels into discrete stages of loss (that is, early loss: personal hygiene; middle loss: toileting and locomotion; late loss: eating).	Four ADL Self-Performance Hierarchy Scale items: <ul style="list-style-type: none"> <li>• Personal hygiene</li> <li>• Toilet use</li> <li>• Locomotion</li> <li>• Eating</li> </ul>	0–6 Higher scores indicate greater decline (progressive loss) in ADL performance.
<b>CHESS Changes in Health, End-Stage Disease, Signs and Symptoms Scale</b> <sup>18</sup>	This scale detects frailty and health instability and was designed to identify individuals at risk of serious decline.	Nine CHESS items: <ul style="list-style-type: none"> <li>• Worsening of decision-making</li> <li>• Decline in ADL</li> <li>• Vomiting</li> <li>• Edema</li> <li>• Shortness of breath</li> <li>• End-stage disease</li> <li>• Weight loss</li> <li>• Dehydration</li> <li>• Leaving food uneaten</li> </ul>	0–5 Higher scores indicate higher levels of medical complexity and are associated with adverse outcomes such as mortality, hospitalization, pain, caregiver stress and poor self-rated health.
<b>CPS Cognitive Performance Scale</b> <sup>16, 23</sup>	This scale describes the cognitive status of an individual.  Validated against the Mini-Mental State Examination (MMSE) and the Test for Severe Impairment (TSI).	Four Cognitive Performance Scale items: <ul style="list-style-type: none"> <li>• Short-term memory recall</li> <li>• Cognitive skills for daily decision-making</li> <li>• Expressive communication—making self understood</li> <li>• Eating impairment</li> </ul> <p>In the RAI-MDS 2.0 an additional item is used: comatose. People who are comatose receive a score of 6 on the CPS.</p>	0–6 Higher scores indicate more severe cognitive impairment.
<b>DRS Depression Rating Scale</b> <sup>14</sup>	This scale can be used as a clinical screen for depression. Validated against the Hamilton Depression Rating Scale (HDRS), the Cornell Scale for Depression in Dementia (CSDD) and the Calgary Depression Scale (CDS).	Seven Depression Rating Scale items: <ul style="list-style-type: none"> <li>• Feeling of sadness or being depressed</li> <li>• Persistent anger</li> <li>• Expressions of unrealistic fears</li> <li>• Repetitive health complaints</li> <li>• Repetitive anxious complaints</li> <li>• Sad or worried facial expression</li> <li>• Tearfulness</li> </ul>	0–14 A score of 3 or more may indicate a potential or actual problem with depression.
<b>Pain Scale</b> <sup>15</sup>	This scale summarizes the presence and intensity of pain. Validates well against the Visual Analogue Scale.	Two Pain Scale items: <ul style="list-style-type: none"> <li>• Pain frequency</li> <li>• Pain intensity</li> </ul>	0–3 Higher scores indicate a more severe pain experience.

Outcome Scale	Description	RAI-HC Assessment Items	Score Range
<b>MAPLe Method for Assigning Priority Levels<sup>19</sup></b>	This algorithm assigns a client to a priority level. Found to be predictive of caregiver distress and risk of institutionalization.	<ul style="list-style-type: none"> <li>• ADL Hierarchy Scale</li> <li>• Cognitive Performance Scale</li> <li>• Behaviours</li> <li>• Decline in decision-making</li> <li>• Managing medications</li> <li>• Ulcers</li> <li>• Self-Reliance Index/geriatric screener</li> <li>• Wandering</li> <li>• Risk of institutionalization</li> <li>• Meals</li> <li>• Swallowing</li> <li>• Falls</li> </ul>	1–5 Higher scores indicate higher priority level



# Appendix C: Characteristics of Seniors, by Care Setting and ALC Status

Characteristic	Home Care (61,047)						Residential Care (29,460)					
	No ALC Days (50,440)		ALC Days (10,607)		Overall (61,047)		No ALC Days (6,037)		ALC Days (23,423)		Overall (29,460)	
	N	%	N	%	N	%	N	%	N	%	N	%
<b>Demographic</b>												
<b>Age</b>												
65–74	12,539	24.9	1,863	17.6	14,402	23.6	796	13.2	2,786	11.9	3,582	12.2
75–84	23,255	46.1	4,769	45.0	28,024	45.9	2,459	40.7	9,042	38.6	11,501	39.0
85–94	13,702	27.2	3,665	34.6	17,367	28.4	2,492	41.3	10,280	43.9	12,772	43.4
95+	944	1.9	310	2.9	1,254	2.1	290	4.8	1,315	5.6	1,605	5.4
<b>Sex</b>												
Female	29,473	58.4	6,584	62.1	36,057	59.1	3,990	66.1	15,151	64.7	19,141	65.0
Male	20,967	41.6	4,023	37.9	24,990	40.9	2,043	33.8	8,259	35.3	10,302	35.0
<b>Married</b>												
No	27,238	54.0	6,565	61.9	33,803	55.4	4,190	69.4	16,477	70.3	20,667	70.2
Yes	23,202	46.0	4,042	38.1	27,244	44.6	1,847	30.6	6,946	29.7	8,793	29.8
<b>Has a Primary Caregiver</b>												
No	815	1.6	146	1.4	961	1.6	—	—	—	—	—	—
Yes	49,625	98.4	10,461	98.6	60,086	98.4	—	—	—	—	—	—
<b>Primary Caregiver Lives With Client</b>												
Yes	28,721	56.9	5,528	52.1	34,249	56.1	—	—	—	—	—	—
No	20,904	41.4	4,933	46.5	25,837	42.3	—	—	—	—	—	—
No Primary Caregiver	815	1.6	146	1.4	961	1.6	—	—	—	—	—	—
<b>Relationship to Client (Primary Caregiver)</b>												
Child or Child-in-Law (0)	24,180	47.9	5,624	53.0	29,804	48.8	—	—	—	—	—	—
Spouse (1)	18,900	37.5	3,227	30.4	22,127	36.2	—	—	—	—	—	—
Other Relative (2)	3,686	7.3	930	8.8	4,616	7.6	—	—	—	—	—	—
Friend/Neighbour (3)	2,912	5.8	683	6.4	3,595	5.9	—	—	—	—	—	—
<b>Areas of Help (Primary Caregiver)</b>												
Advice or Emotional Support	48,697	96.5	10,246	96.6	58,943	96.6	—	—	—	—	—	—
IADL Care	46,012	91.2	9,648	91.0	55,660	91.2	—	—	—	—	—	—
ADL Care	45,993	91.2	9,648	91.0	55,641	91.1	—	—	—	—	—	—
<b>Caregiver Distress*</b>												
Yes	8,948	17.7	2,172	20.5	11,120	18.2	—	—	—	—	—	—
<b>Health Status</b>												
<b>Comorbidities</b>												
Diabetes	13,964	27.7	2,890	27.2	16,854	27.6	1,650	27.3	5,956	25.4	7,606	25.8
Stroke	7,800	15.5	2,306	21.7	10,106	16.6	1,117	18.5	5,046	21.5	6,163	20.9
Cancer	10,973	21.8	1,489	14.0	12,462	20.4	742	12.3	2,878	12.3	3,620	12.3
Congestive Heart Failure	9,206	18.3	1,880	17.7	11,086	18.2	1,185	19.6	4,144	17.7	5,329	18.1
Hypertension	30,334	60.1	6,635	62.6	36,969	60.6	3,698	61.3	14,131	60.3	17,829	60.5

Characteristic	Home Care (61,047)						Residential Care (29,460)					
	No ALC Days (50,440)		ALC Days (10,607)		Overall (61,047)		No ALC Days (6,037)		ALC Days (23,423)		Overall (29,460)	
	N	%	N	%	N	%	N	%	N	%	N	%
<b>Arthritis</b>	22,789	45.2	4,993	47.1	27,782	45.5	2,266	37.5	7,959	34.0	10,225	34.7
<b>Hip Fracture</b>	1,968	3.9	1,000	9.4	2,968	4.9	743	12.3	2,288	9.8	3,031	10.3
<b>Osteoporosis</b>	9,159	18.2	2,414	22.8	11,573	19.0	1,525	25.3	5,227	22.3	6,752	22.9
<b>Dementia</b>	5,954	11.8	2,189	20.6	8,143	13.3	2,448	40.5	12,019	51.3	14,467	49.1
<b>End-Stage Disease</b>	1,379	2.7	238	2.2	1,617	2.6	143	2.4	418	1.8	561	1.9
<b>CHES</b>												
<b>No Instability (0)</b>	6,430	12.7	1,194	11.3	7,624	12.5	2,372	39.3	10,957	46.8	13,329	45.2
<b>1</b>	16,224	32.2	3,431	32.3	19,655	32.2	1,854	30.7	7,314	31.2	9,168	31.1
<b>2</b>	15,689	31.1	3,428	32.3	19,117	31.3	1,131	18.7	3,613	15.4	4,744	16.1
<b>3</b>	9,673	19.2	1,995	18.8	11,668	19.1	482	8.0	1,159	4.9	1,641	5.6
<b>4</b>	2,093	4.1	506	4.8	2,599	4.3	166	2.7	338	1.4	504	1.7
<b>High Instability (5)</b>	176	0.3	47	0.4	223	0.4	32	0.5	42	0.2	74	0.3
<b>MAPLe</b>												
<b>1</b>	10,449	20.7	1,089	10.3	11,538	18.9	0	0.0	0	0.0	0	0.0
<b>2</b>	6,684	13.3	1,046	9.9	7,730	12.7	0	0.0	0	0.0	0	0.0
<b>3</b>	19,153	38.0	4,301	40.5	23,454	38.4	1,405	23.3	4,496	19.2	5,901	20.0
<b>4</b>	10,712	21.2	2,926	27.6	13,638	22.3	2,531	41.9	9,200	39.3	11,731	39.8
<b>5</b>	3,438	6.8	1,242	11.7	4,680	7.7	2,101	34.8	9,727	41.5	11,828	40.1
<b>Number of Medications</b>												
<b>0-8</b>	24,409	48.4	4,563	43.0	28,972	47.5	1,874	31.0	8,790	37.5	10,664	36.2
<b>9+</b>	26,031	51.6	6,044	57.0	32,075	52.5	4,161	68.9	14,615	62.4	18,776	63.7
<b>Treatments and Services</b>												
<b>Home Health Aides</b>	24,460	48.5	7,211	68.0	31,671	51.9	—	—	—	—	—	—
<b>Visiting Nurses</b>	21,995	43.6	4,302	40.6	26,297	43.1	—	—	—	—	—	—
<b>Homemaking Services</b>	12,793	25.4	3,640	34.3	16,433	26.9	—	—	—	—	—	—
<b>Meals</b>	4,854	9.6	1,656	15.6	6,510	10.7	—	—	—	—	—	—
<b>Occupational Therapy</b>	11,598	23.0	3,348	31.6	14,946	24.5	344	5.7	1,588	6.8	1,932	6.6
<b>Physical Therapy</b>	10,128	20.1	3,066	28.9	13,194	21.6	3,727	61.7	12,466	53.2	16,193	55.0
<b>Respiratory Therapy</b>	6,832	13.5	1,202	11.3	8,034	13.2	65	1.1	166	0.7	231	0.8
<b>Functional Status</b>												
<b>Activities of Daily Living Hierarchy</b>												
<b>Independent (0)</b>	32,646	64.7	5,242	49.4	37,888	62.1	434	7.2	1,492	6.4	1,926	6.5
<b>Supervision (1)</b>	5,484	10.9	1,324	12.5	6,808	11.2	500	8.3	1,826	7.8	2,326	7.9
<b>Limited (2)</b>	7,200	14.3	1,957	18.5	9,157	15.0	1,014	16.8	4,160	17.8	5,174	17.6
<b>Extensive 1 (3)</b>	2,247	4.5	713	6.7	2,960	4.8	1,344	22.3	5,618	24.0	6,962	23.6
<b>Extensive 2 (4)</b>	1,728	3.4	700	6.6	2,428	4.0	994	16.5	3,470	14.8	4,464	15.2
<b>Dependent (5)</b>	885	1.8	517	4.9	1,402	2.3	1,367	22.6	5,565	23.8	6,932	23.5
<b>Total Dependence (6)</b>	250	0.5	154	1.5	404	0.7	384	6.4	1,292	5.5	1,676	5.7
<b>Cognitive Performance Scale (CPS)</b>												
<b>Intact (0)</b>	28,013	55.5	4,186	39.5	32,199	52.7	1,842	30.5	4,776	20.4	6,618	22.5
<b>Borderline Intact (1)</b>	8,709	17.3	1,935	18.2	10,644	17.4	888	14.7	3,501	14.9	4,389	14.9
<b>Mild Impairment (2)</b>	10,914	21.6	3,234	30.5	14,148	23.2	1,159	19.2	4,784	20.4	5,943	20.2

Characteristic	Home Care (61,047)						Residential Care (29,460)					
	No ALC Days (50,440)		ALC Days (10,607)		Overall (61,047)		No ALC Days (6,037)		ALC Days (23,423)		Overall (29,460)	
	N	%	N	%	N	%	N	%	N	%	N	%
<b>Moderate Impairment (3)</b>	1,768	3.5	758	7.1	2,526	4.1	1,359	22.5	6,687	28.5	8,046	27.3
<b>Moderate/Severe Impairment (4)</b>	230	0.5	104	1.0	334	0.5	263	4.4	1,264	5.4	1,527	5.2
<b>Severe Impairment (5)</b>	631	1.3	271	2.6	902	1.5	299	5.0	1,658	7.1	1,957	6.6
<b>Very Severe Impairment (6)</b>	171	0.3	116	1.1	287	0.5	227	3.8	753	3.2	980	3.3
<b>Communication</b>												
<b>No Problem</b>	39,403	78.1	7,075	66.7	46,478	76.1	3,537	58.6	11,860	50.6	15,397	52.3
<b>Any Problem</b>	11,031	21.9	3,528	33.3	14,559	23.8	2,494	41.3	11,557	49.3	14,051	47.7
<b>Falls</b>												
<b>Falls<sup>†</sup></b>	19,351	38.4	5,305	50.0	24,656	40.4	2,879	47.7	11,259	48.1	14,138	48.0
<b>Quality of Life</b>												
<b>Pain Scale</b>												
<b>No Pain (0)</b>	18,230	36.1	3,850	36.3	22,080	36.2	2,595	43.0	11,594	49.5	14,189	48.2
<b>Less Than Daily Pain (1)</b>	5,498	10.9	1,167	11.0	6,665	10.9	1,644	27.2	6,055	25.9	7,699	26.1
<b>Daily Pain but Not Severe (2)</b>	21,035	41.7	4,455	42.0	25,490	41.8	1,472	24.4	4,923	21.0	6,395	21.7
<b>Severe Daily Pain (3)</b>	5,676	11.3	1,135	10.7	6,811	11.2	326	5.4	851	3.6	1,177	4.0
<b>Bladder Incontinence</b>												
<b>Continent<sup>‡</sup></b>	35,541	70.5	6,199	58.4	41,740	68.4	2,358	39.1	8,247	35.2	10,605	36.0
<b>Usually Continent</b>	4,930	9.8	1,227	11.6	6,157	10.1	629	10.4	2,426	10.4	3,055	10.4
<b>Occasionally Incontinent</b>	4,179	8.3	1,086	10.2	5,265	8.6	613	10.2	2,413	10.3	3,026	10.3
<b>Frequently Incontinent</b>	4,110	8.1	1,331	12.5	5,441	8.9	1,061	17.6	4,300	18.4	5,361	18.2
<b>Incontinent</b>	1,680	3.3	764	7.2	2,444	4.0	1,376	22.8	6,037	25.8	7,413	25.2
<b>Bowel Incontinence</b>												
<b>Continent<sup>§</sup></b>	44,705	88.6	8,586	80.9	53,291	87.3	3,440	57.0	12,308	52.5	15,748	53.5
<b>Usually Continent</b>	2,124	4.2	612	5.8	2,736	4.5	611	10.1	2,472	10.6	3,083	10.5
<b>Occasionally Incontinent</b>	1,271	2.5	387	3.6	1,658	2.7	399	6.6	1,907	8.1	2,306	7.8
<b>Frequently Incontinent</b>	1,262	2.5	417	3.9	1,679	2.8	573	9.5	2,398	10.2	2,971	10.1
<b>Incontinent</b>	1,078	2.1	605	5.7	1,683	2.8	1,014	16.8	4,338	18.5	5,352	18.2
<b>Bladder or Bowel Incontinence</b>												
<b>Any</b>	16,848	33.4	4,903	46.2	21,751	35.6	4,026	66.7	16,553	70.7	20,579	69.9
<b>Mood and Behaviour</b>												
<b>Aggressive Behaviour Scale (ABS)</b>												
<b>0</b>	—	—	—	—	—	—	4,476	74.1	16,350	69.8	20,826	70.7
<b>1+</b>	—	—	—	—	—	—	1,555	25.8	7,067	30.2	8,622	29.3
<b>Challenging Behaviours**</b>												
<b>Wandering</b>	553	1.1	173	1.6	726	1.2	707	11.7	3,550	15.2	4,257	14.5
<b>Verbal Abuse</b>	935	1.9	289	2.7	1,224	2.0	557	9.2	2,718	11.6	3,275	11.1
<b>Physical Abuse</b>	165	0.3	71	0.7	236	0.4	325	5.4	1,558	6.7	1,883	6.4
<b>Socially Inappropriate/Disruptive</b>	339	0.7	114	1.1	453	0.7	532	8.8	2,380	10.2	2,912	9.9
<b>Resists Care</b>	1,417	2.8	543	5.1	1,960	3.2	1,235	20.5	5,617	24.0	6,852	23.3
<b>Any</b>	2,121	4.2	754	7.1	2,875	4.7	1,555	25.8	7,067	30.2	8,622	29.3

Characteristic	Home Care (61,047)						Residential Care (29,460)					
	No ALC Days (50,440)		ALC Days (10,607)		Overall (61,047)		No ALC Days (6,037)		ALC Days (23,423)		Overall (29,460)	
	N	%	N	%	N	%	N	%	N	%	N	%
<b>Depression Rating Scale (DRS)</b>												
<b>0 (No Depression)</b>	31,995	63.4	6,602	62.2	38,597	63.2	2,926	48.5	11,371	48.5	14,297	48.5
<b>1</b>	6,478	12.8	1,353	12.8	7,831	12.8	937	15.5	3,680	15.7	4,617	15.7
<b>2</b>	5,040	10.0	1,070	10.1	6,110	10.0	847	14.0	3,375	14.4	4,222	14.3
<b>3+ (Signs of Possible Depression)</b>	6,927	13.7	1,582	14.9	8,509	13.9	1,321	21.9	4,991	21.3	6,312	21.4
<b>Psychotropic Medication</b>												
<b>Antipsychotic</b>	2,604	5.2	959	9.0	3,563	5.8	1,278	21.2	6,357	27.1	7,635	25.9
<b>Anti-Anxiety</b>	7,515	14.9	1,753	16.5	9,268	15.2	959	15.9	3,424	14.6	4,383	14.9
<b>Antidepressant</b>	9,067	18.0	2,385	22.5	11,452	18.8	2,176	36.0	8,937	38.2	11,113	37.7
<b>Hypnotic</b>	8,089	16.0	1,851	17.5	9,940	16.3	541	9.0	2,403	10.3	2,944	10.0
<b>Any</b>	19,732	39.1	4,898	46.2	24,630	40.3	3,466	57.4	14,520	62.0	17,986	61.1
<b>Resource Utilization</b>												
<b>ED Visits in Last 90 Days<sup>††</sup></b>												
<b>0</b>	37,168	73.7	8,400	79.2	45,568	74.6	3,769	62.4	16,519	70.5	20,288	68.9
<b>1+</b>	13,272	26.3	2,207	20.8	15,479	25.4	2,268	37.6	6,904	29.5	9,172	31.1
<b>Organizational Factors</b>												
<b>Urban/Rural</b>												
<b>Urban</b>	39,368	78	8,975	84.6	48,343	79.2	5,093	84.4	20,426	87.2	25,519	86.6
<b>Rural</b>	6,809	13.5	1,039	9.8	7,848	12.9	916	15.2	2,962	12.6	3,878	13.2

#### Notes

\* A client had a distressed caregiver if either of the following was true: caregiver is unable to continue in caring activities and/or primary caregiver expresses distress, anger or depression.

† The look-back period for falls was 90 days in home care and 180 days in residential care.

‡ Includes those who are continent with catheter.

§ Includes those who are continent with ostomy.

\*\* The look-back period for behaviours was 3 days in home care and 7 days in long-term care.

†† Emergency department visits and hospital admissions are available only on full RAI-MDS 2.0 assessments. For these two categories, quarterly RAI-MDS 2.0 assessments were excluded.

— Data not collected.

Some Characteristics sub-categories do not sum to 100% as some variables had missing values.

#### Sources

Discharge Abstract Database, Home Care Reporting System and Continuing Care Reporting System, 2007 to 2011, Canadian Institute for Health Information.

# Appendix D: Logistic Regression Results

## Multivariate Logistic Regression Predicting Odds of Having ALC Days (Versus Not Having ALC Days) Among Seniors Receiving Home Care

Variable	Odds Ratio	Confidence Limits	
Priority Level (MAPLe; 5 vs. 1)	2.92	2.65	3.23
Priority Level (MAPLe; 4 vs. 1)	2.39	2.21	2.59
Priority Level (MAPLe; 3 vs. 1)	2.04	1.90	2.20
Priority Level (MAPLe; 2 vs. 1)	1.39	1.27	1.53
Geographic Location (Urban vs. Rural)	1.51	1.41	1.62
Marital Status (No Spouse vs. Spouse)	1.40	1.33	1.46
Any Incontinence	1.40	1.33	1.46
Age (75+ vs. 65–74)	1.34	1.27	1.42
Psychotropic Medication	1.23	1.18	1.29
Medications Count (9+ vs. 0–8)	1.17	1.12	1.23
Medical Stability (CHESS; 0–1 vs. 2+)	1.13	1.08	1.18
Possible Depression (DRS; 3+ vs. 0–2)	1.10	1.03	1.17
*Daily Pain (No vs. Yes)	1.05	1.00	1.09
*Sex (F vs. M)	1.00	0.95	1.05

### Notes

\* Not statistically significant.

c = 0.637.

### Sources

Discharge Abstract Database, Home Care Reporting System and Continuing Care Reporting System, 2007 to 2011, Canadian Institute for Health Information.

## Multivariate Logistic Regression Predicting Odds of Having ALC Days (Versus Not Having ALC Days) Among Seniors in a Residential Care Setting

Variable	Odds Ratio	Confidence Limits	
Medical Stability (CHESS; 0–1 vs. 2+)	1.56	1.46	1.67
Communication Difficulties	1.29	1.21	1.38
Medications Count (9+ vs. 0–8)	1.29	1.21	1.37
Psychotropic Medication	1.25	1.18	1.33
Geographic Location (Urban vs. Rural)	1.24	1.14	1.35
Challenging Behaviours	1.17	1.09	1.26
Any Incontinence	1.15	1.07	1.23
Daily Pain (No vs. Yes)	1.15	1.07	1.22
Age (75+ vs. 65–74)	1.10	1.01	1.20
Marital Status (No Spouse vs. Spouse)	1.10	1.03	1.17
*Previous Fall	1.05	0.99	1.11
*Physical Functioning (ADL Hierarchy; 3–6 vs. 0–2)	0.97	0.91	1.04
*Sex (F vs. M)	0.96	0.90	1.03
*Possible Depression (DRS; 3+ vs. 0–2)	0.94	0.87	1.01

### Notes

\* Not statistically significant.

c = 0.597.

### Sources

Discharge Abstract Database, Home Care Reporting System and Continuing Care Reporting System, 2007 to 2011, Canadian Institute for Health Information.

# References

1. ALC expert panel. *Appropriate Level of Care: a Patient Flow, System Integration and Capacity Solution*. 2006.
2. Ontario Association of Community Care Access Centres (OACCAC) Ontario Association of Non-Profit Homes and Services for Seniors Ontario Hospital Association Ontario Long-Term Care Association. *Alternate Level of Care — Challenges and Opportunities*. 2006.
3. Covinsky KE, R.M.Palmer RH, Fortinsky SR, Counsell AL, Stewart D, Kresevic. Loss of Independence in Activities of Daily Living in Older Adults Hospitalized with Medical Illnesses: Increased Vulnerability with Age. *Journal of the American Geriatrics Society*. 2003;54(4):451-458.
4. Creditor MC. Hazards of Hospitalization of the Elderly. *Annals of Internal Medicine*. 1993;118(3):219-223.
5. Graf C. Functional Decline in Hospitalized Older Adults. *American Journal of Nursing*. 2006;106(1):58-67.
6. LHIN Collaborative (LHINC). *Home First: Implementation Guide & Toolkit*. 2011.
7. Weissert W, Chernew M, Hirth R. Titrating versus targeting home care services to frail elderly clients: An application of agency theory and cost-benefit analysis to home care policy. *Journal of Aging and Health*. 2003;15(1):99-123.
8. Statistics Canada. *Population Projections for Canada, Provinces and Territories, Catalogue No. 91-520-XWE*. 2010.
9. *Population Projections LHIN [Ministry of Finance], 2010-2036*. MOHTLC, Intellihealth Ontario; 2011.
10. Walker D. *Caring for Our Aging Population and Addressing Alternate Level of Care*. 2011. <http://www.oanhss.org/AM/AMTemplate.cfm?Section=Home&CONTENTID=9090&TEMPLATE=/CM/ContentDisplay.cfm>.
11. Canadian Institute for Health Information. *Alternate Level of Care in Canada*. January 14, 2009.
12. Canadian Institute for Health Information. *Alternate Level of Care in Atlantic Canada, 2009-2010*. 2010.
13. Canadian Institute for Health Information. DAD Abstracting Manual 2011-2012 Edition (Ottawa, Ont.:CIHI, 2012). 1-7 (Ch.10).
14. Burrows AB, Morris JN, Simon SE, et al. Development of a minimum data set-based depression rating scale for use in nursing homes. *Age & Ageing*. March, 2000;29(2):165-172.
15. Fries BE, Simon SE, Morris JN, et al. Pain in U.S. nursing homes: validating a pain scale for the minimum data set. *Gerontologist*. April, 2001;41(2):173-179.
16. Hartmaier S, Sloane P, Guess H, Koch G. Validation of the Minimum Data Set Cognitive Performance Scale: Agreement With the Mini-Mental State Examination. *Journal of Gerontology: Medical Sciences*. 1995;50A:M128-M133.
17. Hawes C, Morris J, Phillips C, Mor V, Fries B, Nonemaker S. Reliability Estimates for the Minimum Data Set for Nursing Home Resident Assessment and Care Screening (MDS). *The Gerontologist*. 1995;35:172-178.
18. Hirdes JP, Frijters DH, Teare GF. The MDS-CHESS scale: a new measure to predict mortality in institutionalized older people. *Journal of the American Geriatrics Society*. January, 2003;51(1):96-100.
19. Hirdes J, Poss J, Curtin-Telegdi N. The Method for Assigning Priority Levels (MAPLe): A new decision-support system for allocating home care resources. *BMC Medicine*. 2008;6(1):9. <http://www.biomedcentral.com/1741-7015/6/9>.

20. Lawton MP, Casten R, Parmelee PA, Haysma KV, Corn J, Kleban MH. Psychometric Characteristics of the Minimum Data Set II: Validity. *Journal of the American Geriatric Society*. 1998;46:736-744.
21. Mor V, Branco K, Fleishman J, et al. The Structure of Social Engagement Among Nursing Home Residents. *The Gerontologist*. 1995;50B:1-8.
22. Morris J, Nonemaker S, Murphy K, et al. A Commitment to Change: Revision of HCFA's RAI. *Journal of the American Geriatric Society*. 1997;45:1011-1016.
23. Morris JN, Fries BE, Mehr DR, et al. MDS Cognitive Performance Scale. *Journal of Gerontology*. July, 1994;49(4):M174-M182.
24. Morris JN, Fries BE, Morris SA, Morris JN, Fries BE, Morris SA. Scaling ADLs within the MDS. *Journals of Gerontology Series A-Biological Sciences & Medical Sciences*. November, 1999;54(11):M546-M553.
25. Schroll M, Jonsson PV, Mor V, et al. An international study of social engagement among nursing home residents. *Age & Ageing*. September, 1997;26 Suppl 2:55-59.
26. Snowden M, McCormick W, Russo J, et al. Validity and Responsiveness of the Minimum Data Set. *Journal of the American Geriatric Society*. 1999;47:1000-1004.
27. Canadian Union of Public Employees. Residential Long-Term Care in Canada Our Vision for Better Senior's Care. <http://cupe.ca/updir/CUPE-long-term-care-seniors-care-vision.pdf>. Updated 2009.
28. Ontario Local Health Integration Network. Behavioural Supports Ontario. <http://www.akeresourcecentre.org/BSO>. Updated 2012.