

Alternate Level of Care Patients in Hospitals: What Does Dementia Have To Do With This?



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ABSTRACT

Background

Patients in acute care hospitals no longer in need of acute care are called Alternate Level of Care (ALC) patients. This is growing and common all across Canada. A better understanding of this patient population would help to address this problem.

Methods

A chart review was conducted in two hospitals in New Brunswick. All patients designated as ALC on July 1, 2009 had their charts reviewed.

Results

Thirty-three per cent of the hospital beds were occupied with ALC patients; 63% had a diagnosis of dementia. The mean length of stay was 379.6 days. Eighty-six per cent were awaiting a long-term care bed in the community. Most patients experienced functional decline during their hospitalization. One year prior to admission, 61% had not been admitted to hospital and 59.2% had had at least one visit to the emergency room.

Conclusions

The majority of the ALC patients in hospital have a diagnosis of dementia and have been waiting in hospital for over one year for a long-term care bed in the community. Many participants were recipients of maximum home care in the community, suggesting home maker services alone may not be adequate for some community-dwelling older adults. Early diagnosis of dementia, coupled with appropriate care in the community, may help to curtail the number of patients with dementia who end up in hospital as ALC patients.

Key words: alternate level of care, dementia, long-term care, hospitalization of older adults, delayed discharge

INTRODUCTION

The designation of Alternate Level of Care (ALC) applies to people who occupy an acute care hospital bed and who can be cared for elsewhere^(1,2) but who, for some reason, remain in hospital. The utilization of hospital beds by ALC patients can contribute to a decrease in acute care capacity, emergency department overcrowding, increase wait times for elective surgical procedures, surgical cancellations, and patient flow inefficiencies throughout the entire health-care system.⁽³⁾ According to the Canadian Institute of Health Information (CIHI), ALC patients account for 14% of all hospital days, with 5,200 acute beds in Canadian hospitals being occupied by ALC patients on any given day. The median length of hospital stay for ALC patients was 26 days, which included both the acute and ALC portion of the hospitalization.⁽⁴⁾

While ALC patients can compromise an acute care hospital's ability to operate efficiently, little is known about who these patients are and the factors that contribute to their ALC designation. Although CIHI has provided a number of informative reports and briefs on ALC in recent years,^(1,4-5) these reports are limited to those ALC patients who have been discharged from hospital or have died.⁽⁴⁾ Information about the ALC patients who continue to wait in hospital is lacking. Data about a patient's functional, cognitive, and health status before and during their hospitalization are limited. In addition, information pertaining to their living arrangements and health-care utilization prior to hospital admission is lacking. A better understanding of these factors may help to identify strategies to support these patients to remain in the community and to avoid acute care hospitalization.

Dementia is reported as being a common diagnosis among ALC patients discharged from hospital.^(1,4) Given the projected increase in the prevalence and incidence of dementia across

Canada,⁽⁶⁾ there is a sense of urgency to better understand how dementia relates to ALC patients. Dementia is known to be a risk factor for institutionalization^(7,8) and it is expected that many of the ALC patients waiting in hospital have dementia. Costa and Hirdes⁽⁹⁾ reported that non-Alzheimer's dementia accounted for just over 30% of their ALC sample, and those with Alzheimer's disease comprised 10% of their sample.

Because little is known about the ALC population that continues to wait in hospital, the purpose of this study was to systematically identify select social and health characteristics of hospitalized patients who were designated as ALC.

METHODS

A retrospective design was used to obtain data on patients designated as ALC in two hospitals. All patients identified by discharge planners as being ALC in the hospitals on July 1, 2009 were included. One hospital was a 104-bed facility that offers specialized in-patient geriatric services, including a Geriatric Evaluation and Management Unit (21 beds), a Restorative Care Unit (21 beds), a Cognitive Assessment and Management Unit (20 beds), and two Transitional Care Units (42 beds). The second was a tertiary care facility with 444 acute care beds. Both hospitals are located within one city in New Brunswick, Canada. These facilities service a population of approximately 173,000, of whom 27,150 are over the age of 65.⁽¹⁰⁾

The charts were reviewed and data were extracted using a data collection tool designed specifically for this study. A group of content experts, including a geriatrician, a nurse specialized in geriatric care, and an academic nurse, participated in the development of the tool. Data collected included demographics, living arrangements and home supports prior to admission, instrumental and basic activities of daily living prior to and during hospitalization, hospital admissions and emergency room visits one year prior to admission, reasons for the hospitalization, diagnosis of dementia, past medical history, in-hospital falls, and in-hospital transfers.

One of the authors (PN) and a research assistant extracted the data from the charts. Data were entered directly into an electronic version of the data collection sheet. Twenty-two charts were randomly selected by one of the authors (RM) for determination of inter-rater reliability. Complete agreement was found in the data obtained from the two different data collectors. Data were analyzed using SPSS 18, Minitab 16 and R 2.15.1. Means of quantitative variables were compared through a one-way ANOVA, while categorical variables were analyzed using chi-square methods. This study was approved by the Research Ethics Boards of Horizon Health Network and the University of New Brunswick Saint John.

RESULTS

There were 181 patients identified as being ALC, which comprised 33.0% of all hospital beds within the two facilities. Of these, 57 were in the specialized geriatric hospital (104 beds)

occupying 54.8% of the beds, and 124 patients were in acute care beds in the tertiary care hospital (444 beds), occupying 27.9% of these hospital beds. Charts were unavailable for two patients in the tertiary hospital. The final sample consisted of 179 patients.

There were 116 (64.8%) females in the sample, and the average age of all patients was 79.3 (SD 12.7) years. The tertiary care hospital had more ALC patients who were older than 94 years and younger than 65 years, compared to the specialized geriatric facility. A total of 162 (90.5%) patients in the sample were admitted from home and 42.4% (n=76) were living alone (Table 1). A total of 75 (41.9%) had a notation in their chart indicating that they were receiving formal supports (paid) in their home prior to admission (Table 2). Of those who received formal supports prior to admission, 43 (57.3%) had support seven days a week and 20 (26.7%) had 24-hour care. There was documentation in 61 (37.7%) of the charts indicating that the patient and/or family did not believe the supports in place prior to admission were adequate to meet the needs of the patient. There was no significant difference between the patients in the two hospitals with respect to the number of home supports in place prior to the admission (Table 2).

The majority, or 148 (83.7%) of the sample, were admitted to hospital through the emergency department. The most common reason for admission was related to a general medical illness such as weakness, diarrhea, and infections. The next most common reasons for admission were falls and dementia (Figure 1). While 18 (10.1%) were admitted with a diagnosis of acute confusion, 123 (68.7%) had documentation of increased confusion or delirium at the time of the admission.

Of the total sample, 81 (45.3%) had a diagnosis of dementia prior to admission and 33 (18.4%) were diagnosed during their hospitalization. Only 28 (34.6%) of those with a diagnosis of dementia prior to admission were taking a cholinesterase inhibitor. A diagnosis of dementia was common, affecting 114 (63.6%) of the sample. When the sample was stratified into three groups (diagnosis of dementia prior to admission, diagnosis of dementia during hospitalization, and no dementia), there was a significant difference in the mean ages ($p \leq .0001$) and the average number of medications taken ($p = .003$) among the three groups (Table 3).

Within the total sample, the patients had a mean of 4.6 (SD 2.1) (range 0–10) chronic health conditions. Hypertension was the most common (55.3%), followed by ischemic heart disease (41.0%), diabetes (25.7%), chronic obstructive pulmonary disease (20.7%), and stroke (26.2%) (Table 3). Patients were on a mean of 6.9 (SD = 4.2) scheduled medications at home prior to admission. Only 11 (6%) of the patients were on no medications, 30 (17%) were taking 1–3 medications, 32 (18%) were taking 4–5 medications, 61 (34%) were taking 6–9 medications, and 45 (25%) were taking 10 or more medications. Information on home medications was unavailable for one patient.

The mean length of stay in hospital, from the date of admission until July 1, 2009, was 379.6 days (SD = 687.7).

The median length of stay was 182 days, with a minimum of 5 days and maximum of 6,856 days. Less than 2% of the sample had a length of stay less than 1 month and 5% had a length of stay greater than 10 years (Figure 2).

During their hospitalization, 75 (41.8%) of the participants fell at least once. Of those who fell, 25 (33.3%) fell once, 34 (45.3%) fell 2–4 times, 12 (16.0%) fell 5–8 times, and 4 (5.3%) fell more than 10 times. During their hospital stay, only four participants remained on the same nursing

unit where they were originally admitted to. Participants were transferred on average 4.2 times (range 1–22) between nursing units.

At the time of admission to hospital, 138 (77.1%) were independent ambulators with or without a walking aid. More than half (59.2%) used either a cane or walker prior to admission. With respect to activities of daily living, 115 (64.2%) were independent for toileting, 83 (46.3%) independent for bathing, and 125 (69.8%) were independent for feeding.

TABLE 1.
Demographic information and residence prior to admission

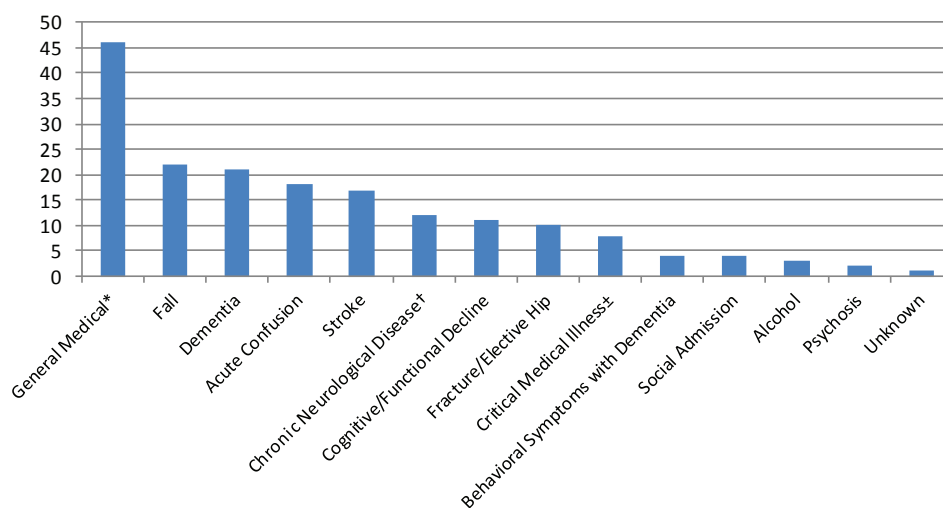
	<i>Specialized Geriatric Hospital</i> n=57	<i>Tertiary Hospital</i> n=122	<i>Total Sample</i> n=179
Mean Age	82.2 (SD 7.9)	77.9 (SD 14.2)	79.3 (SD 12.7)
Number < 65 years (%)	2 (3.5)	21 (17.2)	23 (12.8)
Number > 94 years (%)	2 (3.5)	7 (5.7)	9 (5.0)
Number Female (%)	41 (71.9)	75 (61.5)	116 (64.8)
Living Alone (%)	25 (43.9)	51 (41.8)	76 (42.4)
Living with Others (%)	27 (47.4)	59 (48.4)	86 (48.0)
Special Care Home ^a (%)	4 (7.0)	11 (9.0)	15 (8.4)
Nursing Home ^b (%)	1 (1.8)	1(0.8)	2 (0.6)

^aSpecial Care Homes are licensed facilities that provide supervision and assistance with daily living for people with limitations who can no longer remain in their own home. People living in Special Care homes are unable to live independently, but do not require 24-hour nursing care.^(2,3)

^bNursing Homes are licensed long-term care facilities for people who are medically stable, but who need full-time nursing services 24 hours a day.^(2,3)

TABLE 2.
Home supports prior to admission

	<i>Specialized Geriatric Hospital</i> <i>Participants admitted</i> <i>from home</i> n=52	<i>Tertiary Hospital</i> <i>Participants admitted</i> <i>from home</i> n=110	<i>Total Sample</i> <i>admitted</i> <i>from home</i> n=162	P-value
Formal Supports at home prior to admission	25 (48.1%)	50 (45.4%)	75(46.2%)	.89
7 days a week	10 (40.0%)	33 (66.0%)	43 (57.3%)	.07
5 or 6 days/week	3 (12%)	6 (12.0%)	9 (12.0%)	
3 or 4 days/week	4 (16%)	3 (6.0%)	7 (9.3%)	
1 or 2 days/week	7 (28%)	5 (10.0%)	12 (16.0%)	
Unknown	1 (4%)	3 (6%)	4 (5.3%)	
24 hours/day	6 (24%)	14 (24%)	20 (26.7%)	.12
9-15 hours/day	2 (8%)	6 (12%)	8 (10.7%)	
5 – 8 hours/day	2 (8%)	11 (22%)	13 (17.3%)	
Up to 4 hours/day	14 (56%)	13 (26.0%)	27 (36.0%)	
Unknown	1 (4%)	6 (12%)	7 (9.3%)	
Supports Adequate				.39
Yes	23 (44.2%)	43 (39.1%)	66 (40.7%)	
No	16 (30.8%)	45 (40.9%)	61 (37.7%)	
Unknown	13 (25.0%)	22 (20.0%)	35 (21.6%)	



* Includes diagnoses such as pneumonia, infections, pain, syncope, weakness.

† Includes diagnoses such as parkinson's, huntington's, multiple sclerosis.

‡ Includes diagnoses such as myocardial infarction, GI bleed, subdural, head injury.

FIGURE 1. Reasons for admission to hospital

TABLE 3.
Sample stratified according to diagnosis of dementia

	<i>Diagnosis of Dementia Prior to Admission</i> n=81	<i>Diagnosis of Dementia During Admission</i> n=33	<i>No Dementia</i> n=65	<i>P-value</i>
Age	81.9 (SD=8.9)	84.0 SD=11.3)	73.7 (SD=15.3)	p<.0001*
Sex (female)	61 (75.3%)	21 (63.6%)	34 (52.3%)	p=.015*
Number of Chronic Diseases	4.63 (SD=1.71)	4.15 (SD=2.29)	4.69 (SD=2.38)	p=.447
ISHD	29 (36.3%) ¹	18 (54.5%)	26 (40.0%)	p=.194
Diabetes	23 (28.4%)	9 (27.3%)	14 (21.5%)	p=.620
CVA	20 (24.7%)	7 (21.2%)	20 (30.8%)	p=.544
COPD	14 (17.3%)	4 (12.1%)	19 (29.2%)	p=.085
Hypertension	45 (55.6%)	19 (57.5%)	35 (53.8%)	p=.938
Number of Medications on Admission	6.84 (SD=3.76)	4.85 (SD=3.05)	7.91 (SD=4.83) ²	p=.003*
Number on Cholinesterase Inhibitor	28 (34.6%)			
Falls Prior to Admission	49 (66.2%) ³	20 (70.0%) ⁴	41 (71.9%) ⁵	p=.783

* Significant relationship

¹ n=80

² n=63

³ n=74

⁴ n=29

⁵ n=57

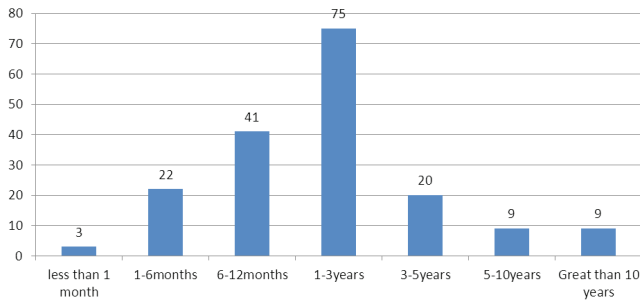
Overall, there were declines in mobility and activities of daily living within the sample (Figure 3).

A total of 111 (62%) of the sample had not been hospitalized (Figure 4) and 73 (40.8%) had not been in the emergency room in the year prior to their current ALC hospitalization (Figure 5). The majority of the sample 154 (86.0%) were approved and waiting for a nursing home bed, 7 (3.9%) were waiting for a special care home, and 6 (3.4%) were waiting

for home services. Data were not available about discharge plans on 12 (6.7%) of the patients (Table 1).

DISCUSSION

ALC patients occupied 27.5% of acute care beds in the tertiary care hospital and 54.8% of the hospital with specialized geriatric services on the particular day that this study was



Mean length of stay = 379.6 days (SD 687.7); median length of stay = 182 days (range 5 to 6856 days).

FIGURE 2. Length of stay

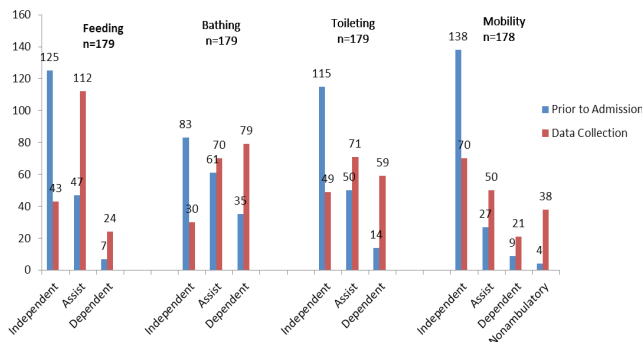


FIGURE 3. Mobility and activities of daily living

conducted. While not completely comparable, these rates appear to be higher than what CIHI reports as 14% of all hospital bed days being occupied by ALC patients.⁽⁴⁾ This may be explained by the fact that CIHI reports only on patients who are discharged from hospital or who have died in hospital. Our study focuses on the ALC patients who remain in hospital. It is also possible that ALC patients in New Brunswick wait longer in hospital before being transferred to an appropriate level of care in the community. Comparing the number and availability of long-term care beds across Canada is difficult because there are variations across provinces with respect to what long-term/supportive care options are available in the community, and there are also differences in the terminology and admission criteria used in the various facilities/services available in each province.⁽¹¹⁾ The Canadian Health Services Research Foundation⁽¹²⁾ did report in 2010 that the national average number of long-term care beds available in Canada was 93.6 per 1,000 population 75 years and older, compared to 80.9 in New Brunswick. Our study showed that 86% of the patients who were ALC were waiting for a long-term care facility, which exceeds the 46% reported in the paper by Costa *et al.*⁽¹³⁾ This suggests that the supply of long-term care beds in New Brunswick is not meeting demand and likely contributes to the large number of ALC patients waiting in hospital.

The majority of ALC patients admitted from home had paid home care seven days a week with many having 24-hour paid care. Even with these supports in place, over one-third

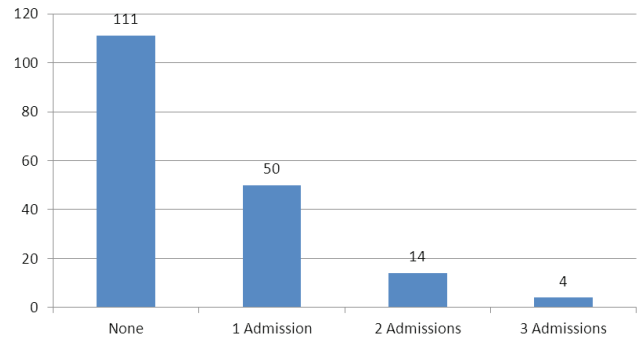


FIGURE 4. Hospitalizations one year prior to ALC admission (n = 179)

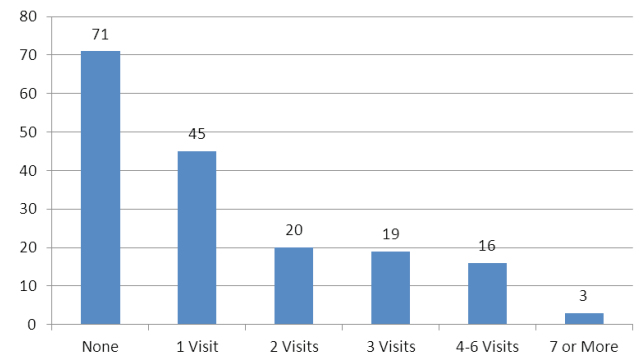


FIGURE 5. Emergency room visits one year prior to ALC admission (n = 174)

had documentation in their charts indicating that the patient and/or family were aware that the home support was inadequate prior to admission. What is not clear from the data is whether or not these patients/families sought assistance to increase their home care prior to the hospitalization. Coleman and colleagues⁽¹⁴⁾ previously reported that older patients and their families do not always seek additional supports even when they recognize changing or unmet needs. The use of community-based interdisciplinary teams to provide integrated health and social care to frail older have been shown to reduce the number of ALC admissions by 50%. The intervention tested by Beland and colleagues⁽¹⁵⁾ was based on a collaborative model where a team of interdisciplinary professionals monitored frail older adults in the community and promptly mobilized resources in response to any changes in medical or social needs. A more recent study by Markle-Reid *et al.*⁽¹⁶⁾ also demonstrated the benefits of using collaborative interdisciplinary teams in the community to support frail older adults living at home.

Our study showed that 63.6% of the ALC population had a diagnosis of dementia. This percentage is higher than the 36.3% reported by Costa *et al.*⁽¹³⁾ and the 25% reported by CIHI.⁽⁴⁾ Our findings show that 33.7% of the ALC patients did not receive a diagnosis of dementia until after they were admitted to hospital, and this number is considerably less than the estimated 64% of people living in the community with an undiagnosed dementia.⁽¹⁷⁾ A systematic review by

Aminzadeh *et al.*⁽¹⁸⁾ identified the many challenges with recognizing and diagnosing dementia in primary care settings. However, early detection and treatment of dementia is important at both an individual and system level. At the individual level, initiation of treatment, engaging in home supports, and planning for future care can begin once a diagnosis of dementia has been made. At the system level, awareness of the prevalence of dementia in the community can assist policymakers in planning for adequate care in the community. Early diagnosis of dementia, coupled with appropriate care in the community, may help to curtail the number of patients with dementia who end up in hospital as ALC patients.

Even though this study does not report on the total length of stay in hospital, it did report on the length of stays up to the time of data collection. The mean length of stay for these ALC patients was just over one year, with a median length of stay of 182 days. This median length of stay is more than 7 times the median length of stay of 26 days as reported by CIHI.⁽⁴⁾ The differences in the mean and median length of stays indicate that the length of stay is positively skewed, with some patients having excessively long hospital stays. This suggests that limiting data collection to only those who have left hospital may not be adequate to fully understand the magnitude of the problem of ALC patients within acute care hospitals. Capturing ALC patient data, based on current occupancy in hospitals, may provide more accurate information about how ALC patients are impacting the health-care system.

It has been long known that hospitalization can be harmful for older patients⁽¹⁹⁻²¹⁾ and this was also demonstrated in our study. Overall, the patients in the study showed a decline in their mobility and activities of daily living during their hospitalization. It is possible that the functional abilities of these patients were over-reported at the time of admission; however, it is equally plausible that their functional decline was secondary to their hospitalization. This highlights the inconvenient truth that the use of hospitals for waiting areas for supportive living arrangements in the community may be counterproductive. Hospitals may actually be contributing to the functional decline experienced by these patients as they wait, leading to an increase in the level of care needed by patients when they return to the community. This underscores the fact that ALC is not just a hospital-based issue, but it is also an issue for community-based services, including long-term care facilities. Hospitals and long-term care services must come together to explore the issue of ALC and identify ways to ensure that those patients requiring supportive services in the community can access them in a timely manner. In addition, hospitals with ALC patients should adopt better strategies to focus on the care of these patients, paying particular attention to enhancing or maintaining functional abilities such as mobility and other activities of daily living.

When the reason for admission to hospital is considered, most of the patients in this study were admitted with a medical illness, or because the patient and/or family could no longer

manage in the community. The rate of emergency department visits and the acute care hospital admissions in the year prior their ALC admission appears low. This suggests that targeting interventions to the older population that have frequent hospitalizations and/or emergency department visits may not be an effective strategy in reducing the number of ALC patients.

Since this study was conducted, attempts have been made across Canada, including the Atlantic provinces, to respond to the impact that ALC patients have on hospitals and the entire health-care system. These include the introduction of in-patient ALC units, expansion of home care/community services, and the construction of new long-term care facilities.^(12,22-23) Despite these efforts, the number of people designated as ALC remains on the rise,^(1,24) and national and regional media reports continue to highlight the negative impact ALC has on hospitals, patients, and the entire health-care system.⁽²⁵⁻²⁶⁾ These facts strongly suggest that the results of this study remain relevant today and underscore the need to continue to work towards finding a solution to this problem.

Although this study does provide important information about ALC patients in two New Brunswick hospitals, it is not without its limitations. Data in this study were obtained from retrospective chart reviews; therefore, the information is limited to that which was available on the hospital chart. The two hospitals used in the study were located within the same city and within the same health region which may limit generalizability. Significant differences may exist in the availability/accessibility of community services and in the characteristics of ALC patients in other regions within the province and across the country. This data was collected in 2009, thus raising question as to whether this remains true today. Since this study was conducted, there has not been a significant increase in the number of long-term care beds available in this city, and there have been no fundamental changes in the community services offered.

CONCLUSION

This study suggests that the number of ALC patients in acute care hospitals is a much larger issue within the Canadian health-care system than reported by CIHI. Findings point to the need for community-based strategies that appropriately target those at risk. In addition, an adequate supply of community-based services, including an adequate supply of long-term care beds, needs to be considered as part of the solution. Better hospital-based care for frail adults may also limit the amount of functional decline experienced by these patients while they wait in hospital. In the short term, hospitals and community-based services must work together to identify more effective ways of identifying people at risk in the community; those at risk may require additional supports. Interventions are needed to ensure people are able to transition to higher levels of care within the community. The high rates of dementia seen in this study suggest the issue of ALC is closely connected to a diagnosis of dementia. Improved

comprehensive care of dementia in primary care settings is needed and may help to mitigate the need for hospital admission for some people.

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CONFLICT OF INTEREST DISCLOSURES

The authors declare that no conflicts of interest exist.

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