

# Are Chronically Ill Patients High Users of Homecare Services in Canada?

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**M**ost people have been diagnosed with at least 1 chronic disease by age 65.<sup>1-6</sup> Those with chronic disease often need healthcare and supportive services, and although much care of the chronically ill can be provided in the home by family members, formal homecare services are an important potential source of assistance for maintaining health and well-being.<sup>7-13</sup> Further, homecare services can also reduce hospital utilization and delay or prevent nursing home entry.<sup>14-19</sup>

For 3 decades, every Canadian province has provided publicly funded homecare services to maintain the health of chronically ill and frail elderly individuals, to attempt to prevent serious illnesses, which would require hospitalization.<sup>12</sup> Increasingly, homecare services in Canada are being provided to facilitate early discharge of hospital patients, to prevent or delay nursing home entry, and for home-based death and dying.<sup>12</sup> Despite having no length-of-care or care acuity restrictions, only a small proportion of total provincial healthcare system funding is devoted to homecare services (typically 5% or less in each province).<sup>12</sup> Canadian homecare managers are thus charged with careful client selection and efficient service provision.

With an increase in chronic illnesses anticipated with population aging,<sup>20</sup> planning ahead for homecare services expansion is important. This expansion should be evidence-based to ensure that the people most in need receive homecare services. Although individuals diagnosed with 1 or more chronic illnesses may be the most likely homecare clients and/or the highest users of homecare services, few studies have differentiated homecare services use among homecare clients.<sup>12</sup> A research study was done in the Canadian province of Alberta to determine if a relationship exists between chronic illness and homecare services utilization.

## ABSTRACT

**Objectives:** Chronically ill patients often need healthcare and supportive services, with formal homecare services an important source of community-based assistance. Although people diagnosed with 1 or more chronic diseases are thought to be the most common homecare clients, and perhaps the highest users of homecare services, few studies have analyzed homecare services utilization by specific clients. A study was done to determine if a relationship exists between chronic illness and homecare services utilization.

**Study Design:** Descriptive-comparative, secondary analysis of population homecare data.

**Methods:** Three years (2003-2004, 2004-2005, and 2005-2006) of complete homecare client and services utilization data for 1 Canadian province were obtained and tested using 5 definitions of chronic illness to determine which clients among all 149,378 were high users in terms of annual homecare hours and service visits or episodes.

**Results:** Two definitions revealed clients with a disproportionately large share of homecare hours and service episodes: a) clients classified by homecare case managers as "long-term" and b) clients with service spans of  $\geq 90$  days. Definitions involving medical diagnoses and *International Classification of Diseases, Ninth Revision, Clinical Modification* codes or chapters did not reveal high users. Age and gender also did not predict services utilization.

**Conclusions:** The comprehensive pre-service assessment completed by homecare case managers was the most successful at distinguishing people with substantial homecare service needs—people who could then be described as chronically ill. This assessment should be studied to develop a standardized minimum data tool for consistent and fair assessments.

*Am J Manag Care. 2015;21(10):e552-e559*

## STUDY DESIGN AND METHODS

Any health condition that lasts 3 months or more can be considered a chronic illness.<sup>20</sup> Chronic illnesses are incurable

or long term. The World Health Organization has named cardiovascular accident (stroke), cancer, chronic obstructive pulmonary disease (COPD), and diabetes as the most prevalent chronic illnesses worldwide.<sup>20</sup> Every disease is distinguished by an *International Classification of Diseases* diagnostic code, in keeping with the *Ninth Revision, Clinical Modification (ICD-9-CM)* or the current *Tenth Revision (ICD-10)*.<sup>21</sup> These codes can be grouped into disease chapters, such as all respiratory or cardiovascular diseases, and sub-codes distinguish disease states. Unfortunately, chronic states are rarely indicated.

Consequently, for this study, 5 definitions were tested for use in identifying people with a large share (individually and/or collectively) of publicly funded homecare services provided in Alberta, a Canadian province. Each definition was confirmed as viable for testing during a preliminary analysis of the complete provincewide homecare data obtained for this study: 1) Clients with *ICD-9-CM* codes for stroke, cancer, COPD, and/or diabetes.<sup>20</sup> Just over half of all clients were diagnosed with 1 or more conditions; 2) Clients with 40 or more *ICD-9-CM* diagnostic codes, as multiple comorbidities are said to have the greatest impact on healthcare systems.<sup>1</sup> Nearly half of the clients had 40 or more *ICD-9-CM* codes; 3) Clients with 4 or more *ICD-9-CM* chapters; diseases affecting multiple organs or body systems are more likely to result in chronic illness. Four was the median *ICD-9-CM* chapter number among the studied clients; 4) Clients who received homecare services for 90 days or more. Over half of all clients studied had service spans of this length (counted from the first to last date of services each fiscal year); and 5) Clients classified by homecare case managers as having long-term homecare service needs compared with those assessed with acute (<30 days) service needs; 60% were classified as long-term clients.

Two types of data analyses were conducted for each definition: one of total homecare hours provided per client each fiscal year (FY) and one for total service episodes per client each fiscal year. Both measures are important for planning homecare service delivery. After research ethics approval was obtained from a University of Alberta health research ethics board, the 3 most recent consecutive complete years of homecare data were requested from Alberta Health, the government department responsible for healthcare data. Complete data on all publicly funded homecare services and clients for FYs 2003-2004, 2004-2005, and 2005-2006 were provided, with each data set defined by fiscal year, April 1 through March 31. For each client, care hours and service visits or episode data were

### Take-Away Points

Chronically ill patients are thought to be high users of homecare services.

- Few studies have distinguished high users of homecare services.
- There is no standard definition of chronic illness.
- This study found that homecare clients classified with long-term service needs used the most homecare services, as did those who received homecare services for spans of 90 days or more.

provided, as well as matching individual-anonymous sociodemographic and *ICD-9-CM* data.

Data were received for 149,378 clients: 53,922 in FY 2003-2004; 60,597 in FY 2004-2005, and 34,859 in FY 2005-2006 (in that year, all data from 1 large city were missing). Because the FY 2005-2006 clients were similar in age, gender, and services utilization to those in the previous 2 years, FY 2005-2006 data was retained for some tests. A total of 8,438,520 diagnostic codes were recorded for these 149,378 clients (in total, over all 3 years combined); each code was classified as to whether it represented one of the 4 main chronic illnesses or not, and it was grouped into its respective *ICD-9-CM* chapter.

The data for each year were aggregated into a summary file containing a single record per homecare client that included total homecare hours and service episodes. The data were explored using the frequencies and summary functions of the SPSS version 20 data analysis program (IBM, Armonk, New York), including mean, median, mode, SD, and range. Similarities and differences across years were noted, and the data were further explored to compare mean scores and distribution probabilities and to assess for relationships between variables. The 5 definitions were tested to determine which definition identified clients (individually and/or collectively) with more homecare hours and/or substantial service episodes each year. Utilization shares by age and gender were also determined. The findings for the 2 years with complete data were compared for data quality assurance purposes. The FY 2003-2004 data set was then used for 2 multiple regression tests to examine the relationship between the independent sociodemographic variables and a single criterion variable (number of service episodes or number of care hours per client).

## RESULTS

**Table 1** shows the average age was consistent from year to year, with two-thirds of clients 65 years or older, although they ranged in age from 0 to 106 years. A stable client ratio of about 60 females to 40 males each year was

**Table 1. Homecare Clients: Sociodemographic and Homecare Service Classification Findings**

	FY 2003-2004	FY 2004-2005	FY 2005-2006	All Years Combined
Homecare clients	53,922 (100%)	60,597 (100%)	34,859 (100%)	149,378 (100%)
Long-term	28,370 (52.6%)	36,576 (60.3%)	17,564 (50.4%)	73,700 (49.3%)
Acute	16,887 (31.3%)	21,340 (35.2%)	11,744 (33.7%)	49,971 (33.5%)
Palliative	3026 (5.6%)	2681 (4.4%)	1430 (0.4%)	7137 (4.8%)
Other/missing	5639 (10.4%)	8,810 (14.5%)	4121 (11.8%)	18,570 (12.4%)
Gender				
Female	32,838 (60.1%)	36,658 (60.5%)	21,088 (60.5%)	90,584 (60.6%)
Male	21,084 (39.1%)	23,939 (39.5%)	13,771 (39.5%)	58,794 (39.4%)
Mean age, years	68.9	68.9	70.6	69.3
Marital Status				
Not married	25,940 (56.8%)	29,199 (63.4%)	14,571 (41.2%)	69,710 (56.6%)
Married	19,734 (43.2%)	22,416 (36.6%)	11,337 (32.5%)	53,487 (43.3%)
Lives				
Alone	16,957 (31.4%)	18,630 (30.1%)	11,518 (33.0%)	47,105 (31.5%)
With spouse	15,012 (27.8%)	17,042 (28.1%)	9874 (28.3%)	41,928 (28.0%)
With spouse and others	3818 (7.1%)	4338 (7.2%)	2656 (7.6%)	10,812 (7.2%)
Others only	11,556 (21.4%)	13,412 (22.1%)	7799 (22.4%)	32,767 (21.9%)
Missing	6579 (12.2%)	7175 (11.8%)	3012 (8.6%)	16,766 (11.2%)
Cohabitates	68.6%	69.3%	67.0%	68.5%
Lives alone	31.4%	30.7%	33.0%	31.5%
Insurance premium				
Subsidized	77.7%	77.2%	77.8%	77.5%
No subsidy	22.3%	22.8%	22.2%	22.5%

FY indicates fiscal year.

found. Over half were not married, two-thirds lived with another person, and three-fourths received a healthcare insurance premium subsidy (indicating low income).

**Table 2** outlines the most common ICD-9-CM codes. Few represented more than 5% of clients classified as acute, long-term, palliative, or all other. Some of the most common codes were nonspecific, indicating that the health problem was not yet diagnosed or that no disease could be diagnosed for the presenting health condition.

**Table 3** outlines summary findings for the 5 operational definitions. For 2 years, clients each year who were not diagnosed with any of the 4 main chronic illnesses, clients with 1 to 39 ICD-9-CM codes, and clients with fewer than 4 ICD-9-CM chapters had a greater share of total service hours and service episodes each year. Similarly, on an individual basis, these same clients had longer homecare visits and more service episodes (on average) each year, with one exception: individuals with 4 or more chapter headings had more service episodes (on average) each year.

**Table 3** also shows that long-span clients (those receiving services for 90 days or more) accounted for 95% of all care hours and service episodes each year compared with those receiving services over spans of 1 to 30 days (shown in **Table 3**), and 31 to 90 days (not shown in **Table 3**). Individual long-span clients also had longer homecare visits and more service episodes each year, on average, compared with short-span clients. Similarly, the clients classified by homecare nurses as needing long-term services accounted for 90% of all care hours and 85% of all service episodes each year, far more than clients classified as “acute” with <30-day service needs. Individual long-term clients also had longer homecare visits and more frequent service episodes each year, on average, than acute clients.

Once these 2 definitions identified clients with a large share of homecare services in 2 separate years, the definitions were further tested to describe clients. **Table 4** shows that long-span clients were often older and female, with significantly more diagnostic codes and chap-

■ **Table 2. Most Common Diagnostic Codes by Client Type Over All 3 Years Combined**

Acute Clients		Long-Term Clients		Palliative Clients		All Other Clients	
n	%	n	%	n	%	n	%
Other physical activity (n = 121,493)	11.4	Extracorporeal dialysis (n = 108,547)	7.3	Malignancy of trachea, lung, bronchus (n = 19,842)	11.2	Other physical activity (n = 35,326)	12.6
Extracorporeal dialysis (n = 46,156)	4.3	Chronic renal failure, unspecified (n = 98,249)	6.6	Radiology examination, not specified (n = 11,411)	6.4	Essential hypertension (n = 14,572)	5.2
Chronic renal failure, unspecified (n = 45,603)	4.3	Other physical activity (n = 81,490)	5.5	Malignant neoplasm of female breast (n = 9332)	5.2	Depressive disorder, not specified (n = 11,995)	4.3
Essential hypertension (n = 40,343)	3.8	Chronic renal failure (n = 79,715)	5.4	Malignant neoplasm of prostate (n = 9041)	5.1	Diabetes (n = 11,860)	4.2
Other chemotherapy (n = 37,417)	3.8	Senile and pre-senile organic psychosis (n = 57,815)	3.9	Bronchus and lung, unspecified (n = 8790)	4.9	Radiology examination, not otherwise specified (n = 11,788)	4.2
Radiology examination, not specified elsewhere (n = 35,486)	3.3	Depressive disorder, not otherwise specified (n = 56,882)	3.8	Malignant neoplasm of colon (n = 6874)	3.9	Extracorporeal dialysis (n = 9826)	3.5
Chronic renal failure (n = 34,906)	3.3	General symptoms (n = 54,520)	3.7	Malignant neoplasm, no site specified (n = 5332)	3.2	Chronic renal failure, unspecified (n = 9470)	3.4
Diabetes (n = 34,030)	3.2	Diabetes (n = 52,692)	3.6	General symptoms (n = 5284)	3.0	General symptoms (n = 8859)	3.2
Other specified counseling (n = 33,801)	3.2	Essential hypertension (n = 51,771)	3.5	Malignant neoplasm, pancreas (n = 5250)	3.0	Osteoarthritis and other allied disorders (n = 8500)	3.0
Other specified orthopedic follow-up (n = 31,683)	3.0	Heart failure, unspecified (n = 44,049)	3.0	Breast, unspecified (n = 4858)	2.7	Occupational therapy and rehabilitation (n = 7416)	2.6
Depressive disorder, not otherwise specified (n = 31,238)	2.9	Other specified counseling (n = 43,736)	2.9	Palliative care (n = 4634)	2.6	Other chemotherapy (n = 6904)	2.5
Osteoarthritis and allied disorders (n = 31,044)	2.9	Heart failure, unspecified (n = 43,517)	2.9	Chronic renal failure, unspecified (n = 3749)	2.1	Chronic renal failure (n = 6672)	2.4

ters than short-span clients. **Table 5** shows that classified long-term clients were also often older and female, with significantly more *ICD-9-CM* chapters than acute clients. Acute clients had more diagnostic codes on average, however.

A multiple regression analysis performed to examine for relationships between the sociodemographic variables and the first dependent or criterion variable—the number of service episodes for individual clients in FY 2003-2004—revealed that no sociodemographic variable predicted service episodes, nor did these variables collectively predict homecare service episodes. The second multiple regression test performed to examine for rela-

tionships between the sociodemographic variables and the total hours of homecare provided to each individual client in the 2003-2004 year similarly revealed that no sociodemographic variable predicted homecare hours, nor did these variables collectively predict homecare hours.

## DISCUSSION

The findings of this study are surprising. Although older female homecare clients were found to be higher users of homecare services, age and gender did not predict total annual homecare hours or service episodes. This is a major finding, as old age and female gender have often been

**Table 3.** Comparisons of Each Operational Definition for Fiscal Years 2003-2004 and 2004-2005

2003-2004		Clients N (%)	Total Service Episodes	Total Service Hours	Service Episodes per Day <sup>a</sup>	Hours per Service Event	% of Service Episodes	% of Service Hours
1	Acute (1-30 days) <sup>b</sup>	16,887 (37.3)	181,858	205,227	0.18	1.1	6.2%	3.7%
	Long-term (90 or more days)	28,370 (62.7)	2,625,371	5,317,154	0.41	2.0	89.9%	96.3%
2	Short-span (<90 days)	24,969 (46.3)	164,010	265,660	0.26	1.6	5.6%	4.5%
	Long-span (90 or more days)	28,953 (53.7)	2,755,856	5,577,325	0.38	2.0	94.4%	95.5%
3	0-3 ICD-9-CM chapters	6169 (11.4)	379,079	1,125,202	0.35	3.0	13.0%	19.3%
	4-9 ICD-9-CM chapters	47,753 (88.6)	2,540,787	4,717,783	0.37	1.9	87.0%	80.7%
4	1-39 diagnoses	28,560 (53.0)	1,597,885	3,596,719	0.36	2.3	54.7%	61.6%
	40 or more diagnoses	25,362 (47.0)	1,321,981	2,246,266	0.38	1.7	45.3%	38.4%
5	Has cancer	11,515	426,615	831,127	0.30	1.9	14.7%	14.4%
	Has COPD	11,819	705,823	1,088,550	0.39	1.5	24.4%	18.8%
	Has diabetes	10,511	603,964	997,233	0.38	1.7	20.9%	17.3%
	Has had a stroke	4100	248,028	518,046	0.38	2.1	8.5%	9.0%
6	Has ≥1 chronic diseases	27,293 (50.6)	1,395,559	2,481,334	0.36	1.8	48.2%	43.0%
	None of above	26,629 (49.4)	1,524,307	3,361,651	0.39	2.2	51.8%	57.0%

  

2004-2005		Clients N (%)	Total Service Episodes	Total Service Hours	Service Episodes per Day <sup>a</sup>	Hours per Service Event	% of Service Episodes	% of Service Hours
1	Acute (1-30 days) <sup>b</sup>	21,340 (43.5)	415,267	541,471	0.22	1.3	12.4%	8.5%
	Long-term (90 or more days)	27,766 (56.5)	2,708,710	5,850,814	0.42	2.2	81.2%	91.5%
2	Short-span (<90 days)	27,987 (46.2)	155,889	252,652	0.22	1.6	4.7%	3.8%
	Long-span (90 or more days)	32,610 (53.8)	3,181,723	6,473,996	0.38	2.0	95.3%	96.2%
3	0-3 ICD-9-CM chapters	6852 (11.3)	462,846	1,222,382	0.38	2.6	13.9%	18.2%
	4-9 ICD-9-CM chapters	53,745 (88.7)	2,874,766	5,504,267	0.36	1.9	86.1%	81.8%
4	1-39 diagnoses	31,766 (52.4)	1,765,582	3,989,878	0.35	2.3	52.9%	59.3%
	40 or more diagnoses	28,831 (47.6)	1,572,030	2,736,771	0.38	1.7	47.1%	40.7%
5	Has cancer	12,878	461,450	963,470	0.30	1.9	13.9%	14.5%
	Has COPD	12,914	879,560	1,278,291	0.39	1.5	26.5%	19.3%
	Has diabetes	11,584	653,240	1,111,284	0.38	1.7	19.7%	16.7%
	Has had a stroke	4714	296,995	571,948	0.38	2.1	9.0%	8.6%
6	Has ≥1 chronic diseases	30,342 (50.1)	1,698,765	2,845,028	0.36	1.8	51.2%	42.9%
	None of above	30,255 (49.9)	1,638,847	3,881,620	0.39	2.2	48.8%	57.1%

COPD indicates chronic obstructive pulmonary disease; ICD-9-CM, International Classification of Diseases, Ninth Revision, Clinical Modification.  
<sup>a</sup>Total number of service episodes per client divided by the total of all days from their first to last service date that fiscal year.  
<sup>b</sup>Only the short-term (under 30 days) and long-term (90 days or more) spans are shown as 3.9% of services are used by people who were clients with 31 to 90 days of home care.

identified as major criteria for disability and healthcare services utilization.<sup>22-24</sup> Instead, the homecare pre-admission assessments conducted by homecare case managers, who are usually registered nurses, were identified as critical for determining each person’s need for homecare services. Clearly, this need varied. Previous research has also indicated considerable variability in supportive care needs among homecare clients.<sup>25,26</sup>

In Alberta, homecare client assessments are typically done by registered nurses who have considerable homecare services experience. These assessments result in client selection or a denial of services if homecare is not required or family members can provide them, and with selected clients having the type of services and amount of services predetermined for them. Homecare services are often short term but may be indefinitely provided, with suspension of

■ **Table 4.** Comparing Short-Span (1-89 days) and Long-Span (90 or more days) Homecare Clients

<b>FY 2003-2004</b>	<b>Short-Span</b>	<b>Long-Span</b>	<b>Significance Test</b>
Clients, N (%)	24,969 (46.3)	28,953 (53.7)	–
Gender			
Female, n (%)	14,074 (56.7)	18,764 (64.8)	$\chi^2 = 4.013$ ; df = 1; $P = .000$
Male, n (%)	7384 (43.7)	9851 (34.7)	
Mean age	64.5 years	72.6 years	$t = 48.411$ ; df = 53920; $P = .000$
Diagnostic code count, mean/person	52.6	58.1	$t = 8.956$ ; df = 53920; $P = .000$
ICD-9-CM chapters, mean/person	8.7	9.5	$t = 15.089$ ; df = 13912; $P = .000$
Care hours, mean/person	10.6	192.6	$t = 62.245$ ; df = 53920; $P = .000$
Share of care hours/client group	4.5%	95.5%	–
Service episodes, mean/person	6.6	95.2	$t = 27.284$ ; df = 53920; $P = .000$
Share of episodes/client group	5.6%	94.4%	–
<b>FY 2004-2005</b>			
Clients, N (%)	27,987 (46.2)	32,610 (53.8)	–
Gender			
Female, n (%)	15,629 (55.8)	21,029 (64.5)	$\chi^2 = 4.707$ ; df = 1; $P = .000$
Male, n (%)	12,358 (44.2)	11,581 (35.5)	
Mean age, years	64.2	72.9	$t = 54.579$ ; df = 60595; $P = .000$
Diagnostic code count, mean/person	51.9	52.6	$t = 10.544$ ; df = 60595; $P = .000$
ICD-9-CM chapters, mean/person	8.72	9.4	$t = 14.653$ ; df = 15513; $P = .000$
Care hours, mean/person	9.0	210.7	$t = 66.087$ ; df = 60595; $P = .000$
Share of care hours/client group	3.8%	96.2%	–
Service episodes, mean/person	5.6	97.6	$t = 24.43$ ; df = 60595; $P = .000$
Share of episodes/client group	4.7%	95.3%	–
df indicates degrees of freedom; FY, fiscal year; ICD-9-CM, International Classification of Diseases, Ninth Revision, Clinical Modification.			

services occurring when the client is hospitalized, admitted to a nursing home, or dies. Services are most often basic supportive care, such as assistance with bathing and daily medication monitoring, with these services usually provided by nursing care aides.<sup>12</sup> Other more technical services, such as dressing changes and oxygen therapy monitoring, require a licensed care provider (eg, respiratory therapist, licensed practical nurse).<sup>12</sup> If care needs change over time, the case manager conducts another assessment. As such, clients in need and healthcare system needs for efficient and effective service provision are both addressed.

This study also found that 3 common definitions of chronic illness—all of those based on medical diagnoses and related ICD-9-CM codes or chapters—did not successfully identify clients with substantial homecare services utilization shares. This is not the first time that medical diagnoses have been found unrelated to homecare service needs. A US study of chronically ill older individuals, for example, revealed that their ability to function inde-

pendently was more important than disease labels for explaining their homecare service needs.<sup>27</sup>

This Alberta study found that clients who had been classified as long-term clients and clients with service spans of 90 or more days were the highest users of homecare services both collectively and individually. As such, both sets of clients could be considered chronically ill. However, the definition based on the homecare case manager assessment is a more practical and useful way to identify individuals with substantial ongoing homecare service needs. This definition relies on an assessment of each client—one that takes a wide range of health, sociodemographic, and other information into consideration. The client's self-care capacity, functional limitations, and formal homecare needs in the absence of informal support are likely prime considerations. Another study found self-care incapacity was critical for defining chronic illness.<sup>23</sup>

Given the conclusion that the homecare pre-admission assessments were the most critical for identifying

**Table 5. Comparing Acute and Long-Term Classified Homecare Clients<sup>a</sup>**

FY 2003-2004	Acute	Long-Term	Significance Test
Clients, N (%)	16,887 (37.3)	28,370 (62.7)	–
Gender			
Female, n (%)	9503 (56.7)	18,519 (65.3)	$\chi^2 = 3.639$ ; df = 1; $P = .000$
Male, n (%)	7384 (43.7)	9851 (34.7)	
Mean age, years	62.2	74.5	$t = 67.071$ ; df = 45255; $P = .000$
Diagnostic code count, mean/person	60.2	54.0	$t = 8.723$ ; df = 1; $P = .000$
ICD-9-CM chapters, mean/person	9.2	9.5	$t = 5.136$ ; df = 9921; $P = .000$
Care hours, mean/person	12.2	187.4	$t = 49.072$ ; df = 45255; $P = .000$
Share of care hours/client group	3.7%	96.3%	–
Service episodes, mean/person	10.8	92.5	$t = 20.626$ ; df = 45255; $P = .000$
Share of episodes/client group	6.5%	93.5%	–
FY 2004-2005	Acute	Long-Term	Significance Test
Clients, N (%)	21,340 (43.5)	27,766 (56.5)	–
Gender			
Female, n (%)	12,078 (56.7)	18,187 (65.5)	$\chi^2 = 4.045$ ; df = 1; $P = .000$
Male, n (%)	7384 (43.7)	9851 (34.7)	
Mean age, years	63.5	74.9	$t = 67.071$ ; df = 45255; $P = .000$
Diagnostic code count, mean/person	60.9	52.6	$t = 8.723$ ; df = 1; $P = .000$
ICD-9-CM chapters, mean/person	9.31	9.4	$t = 5.136$ ; df = 9921; $P = .000$
Care hours, mean/person	25.4	210.7	$t = 49.072$ ; df = 45255; $P = .000$
Share of care hours/client group	8.5%	91.5%	–
Service episodes, mean/person	19.5	97.6	$t = 20.626$ ; df = 45255; $P = .000$
Share of episodes/client group	13.3%	86.7%	–
df indicates degrees of freedom; FY, fiscal year; ICD-9-CM, International Classification of Diseases, Ninth Revision, Clinical Modification.			
<sup>a</sup> Includes clients classified as long-term or acute; does not include palliative or all other clients.			

individuals who were chronically ill—those who would have ongoing homecare service needs and thus subsequent utilization—we believe research is now needed to standardize this assessment. There could be considerable assessment variability across homecare case managers, so standardization is important to assure access equity when homecare services are publicly funded and for access equity and other financial or risk management purposes when homecare services are not. This research should also identify the minimal data that need to be collected to ensure that this assessment is as brief as possible, but also accurate for identifying clients with substantial homecare service needs.

## CONCLUSIONS

Chronic illnesses are not easily or simply defined by medical diagnoses, ICD-9-CM codes or chapters, old age, or female gender. Instead, this study revealed that homecare case

manager assessments of self-care capacity, and of numerous other measures, are the most valuable in identifying those who could be described as chronically ill. These patients proved to be higher users, individually and collectively, of homecare services. With homecare services expansion already occurring in some countries,<sup>28</sup> we must be vigilant to ensure that the right people get homecare services and that these services are enough to maintain them at home.<sup>29</sup>

### Acknowledgments

This research was supported by a Health Canada project grant. The authors also thank Alberta Health for supplying the homecare data, Mike Hewitt for preparing the data for analysis, and the Integrated Centre for Care Advancement through Research for statistical advice.

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**Source of Funding:** Health Canada provided the funding for this study. The views expressed herein do not represent those of Health Canada, the Government of Alberta, nor Alberta Health.

**Author Disclosures:** The authors report no relationship or financial interest with any entity that would pose a conflict of interest with the subject matter of this article.

**Authorship Information:** Concept and design (DMW, CDT, JAH); acquisition of data (DMW, CDT); analysis and interpretation of data (DMW, CDT, JAH); drafting of the manuscript (DMW, CE, JAH); critical revision of the manuscript for important intellectual content (DMW, CDT, CE, JAH); statistical analysis (DMW, CDT); provision of patients or study materials (DMW, CDT); obtaining funding (DMW); administrative, technical, or logistic support (DMW); and supervision (DMW, CE).

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