

Hospital downsizing and trends in health care use among elderly people in British Columbia

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Abstract

Background: There has been considerable downsizing of acute care services in British Columbia over the past 2 decades. In this population-based study we examined changes in the proportion of elderly people who used acute care, long-term care and home care services between 1986–1988 and 1993–1995 to explore whether the downsizing has influenced use. Changes in death rates were also examined.

Methods: The British Columbia Linked Health Database was used to select all British Columbia residents aged 65 years, 75–76 years, 85–87 years or 90–93 years as of Jan. 1, 1986 (cohort 1), and Jan. 1, 1993 (cohort 2). Each person was assigned to 1 of 6 mutually exclusive categories of health care use reflecting different intensities of use (i.e., hospital, long-term or home care). The proportions of people within each category were compared between the 2 periods, as were the age-standardized death rates.

Results: There were 79 175 people in cohort 1 and 92 320 in cohort 2. Overall, the relative proportion of people in each use category was similar between the 2 study periods. The most substantial changes were an increase of 2 percentage points in the proportion of people who received no facility or home care services and a decrease of 2 to 3 percentage points in the proportion who received some acute care but no facility-based continuing care. The age-adjusted all-cause death rates for the earlier and later cohorts were virtually identical (15.7% and 15.8% respectively), although the rate increased from 63.6% to 70.1% among those in the “full-time facility with acute care” group.

Interpretation: Overall changes in health care use were small, which suggests that the repercussions of the decline in acute care services for elderly people have been minimal. The higher age-adjusted death rates in the later cohort in full-time care suggests that long-term stays are becoming reserved for a sicker group of elderly people than in the past.

Use of health care facilities, particularly by elderly populations, has been of increasing concern to policy-makers, physicians, health planners and the public. As provinces struggle to contain health care costs, considerable rhetoric has been invoked about the ability of the health care system to provide adequate care to elderly people in the context of significant hospital downsizing.^{1,2} Between 1991/92 and 1996/97 in British Columbia, the number of “staffed” beds in “short-stay units,” the number of acute care days per 1000 population and the average length of stay declined by 30.0%, 28.8% and 12.9% respectively (H.K. and S.B.S., unpublished observations, 1999). For seniors, the number of acute and extended hospital days per 1000 population declined by 27.3% and 14.4% respectively.³ At the same time, the decrease in the number of long-term care beds, 6.3%, was the smallest in Canada.¹ These sharp declines were part of a trend since at least the early 1970s.^{3,4} Significant downsizing of acute care may result in increased use of facility-based long-term care or community-based home care. It also has the po-

Research

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tential to influence patient outcomes, including death.^{3,5-10}

In this population-based study we examined changes in the use of facilities (acute and long-term care) and home care by elderly people between 1986–1988 and 1993–1995. We asked 2 questions: Did the proportions of people using different levels of health care change between the 2 periods? Did the death rates within the different categories of use change between the 2 periods?

Methods

The study population was derived from the British Columbia Linked Health Database.¹¹ The population-based, person-specific linked data included acute care hospital separations, facility and home-based Continuing Care records, and death records from Vital Statistics files. We constructed 2 cohorts by selecting all British Columbia residents aged 65 years, 75–76 years, 85–87 years or 90–93 years as of Jan. 1, 1986 (cohort 1), and Jan. 1, 1993 (cohort 2). The age ranges increase from younger to older in order to balance the smaller populations at higher ages. The use of age-specific cohorts controls for the effect of population aging over this interval. We extracted records of health service use for a 3-year period. We used records of death to examine trends in mortality for either cohort.

Each person was assigned to 1 of 6 mutually exclusive categories of health care use (Appendix 1), ranked broadly by intensity of care, according to whether they used full-time or part-time hospital care, long-term care and publically funded home care over the 3-year period. For example, a person who received some home care and who spent at least 1 night in an acute care hospital would be assigned the “part-time facility, no continuing care” category. The categories include a broad range of service, but at the aggregate level reflect meaningful differences in service intensity. People who were admitted to an acute care hospital while

awaiting placement in continuing care were categorized as receiving continuing care services.

We did not examine the use of physician services or of pharmaceuticals.

Results

The 2 cohorts included 79 175 people in 1986–1988 and 92 320 people in 1993–1995, an increase of 16.6%. This increase occurred entirely among the 3 higher age groups, with the largest growth among those aged 85–87 (Table 1). In the 1986–1988 cohort, almost half (45.2%) of the subjects were in the “no facility or home care” group. A further third (34.4%) were in the “part-time facility, no continuing care” group, indicating some use of acute care but no use of facility-based continuing care services. Nearly 14% of the cohort were “part-time” users of continuing care, either in facilities (8.9%) or at home (4.9%). A minority of the cohort (6.6%) were in facilities for the full study period or until death. Only 2.5% of the total cohort were in facilities for the entire study period and required acute care services.

On the whole, there were only minor changes in the distribution among use categories from 1986–1988 to 1993–1995. The most substantial changes were a reduction in the “part-time facility, no continuing care” group (34.4% v. 31.9%) and an increase in the “no facility or home care” group (45.2% v. 47.4%). There was a slight decrease among those who remained in facility care the entire time (6.6% v. 6.2%).

Changes in the “full-time facility” categories were relatively minor in the 2 lower age groups (less than 0.5 per-

Table 1: Distribution of elderly people of selected ages in British Columbia across categories of health care use, in 1986–1988 and 1993–1995

Period; use category	Age, yr; no. (and %) of people				
	65	75–76	85–87	90–93	Total
1986–1988					
Full-time facility with acute care	40 (0.1)	305 (1.0)	874 (6.2)	765 (9.8)	1 984 (2.5)
Full-time facility without acute care	112 (0.4)	431 (1.5)	1 268 (9.1)	1 428 (18.3)	3 239 (4.1)
Part-time facility with continuing care	297 (1.1)	1 769 (6.0)	2 981 (21.3)	2 021 (25.8)	7 068 (8.9)
Part-time facility without continuing care	8 768 (31.5)	12 351 (41.8)	4 530 (32.4)	1 551 (19.8)	27 200 (34.4)
Home care only	557 (2.0)	1 684 (5.7)	1 178 (8.4)	456 (5.8)	3 875 (4.9)
No facility or home care	18 095 (64.9)	12 975 (44.0)	3 140 (22.5)	1 599 (20.4)	35 809 (45.2)
All categories	27 869	29 515	13 971	7 820	79 175
1993–1995					
Full-time facility with acute care	22 (0.1)	255 (0.7)	788 (4.2)	609 (6.6)	1 674 (1.8)
Full-time facility without acute care	95 (0.3)	502 (1.4)	1 687 (8.9)	1 776 (19.4)	4 060 (4.4)
Part-time facility with continuing care	290 (1.0)	1 925 (5.3)	3 885 (20.5)	2 431 (26.5)	8 531 (9.2)
Part-time facility without continuing care	7 599 (27.2)	13 518 (37.3)	6 212 (32.8)	2 087 (22.8)	29 416 (31.9)
Home care only	436 (1.6)	2 052 (5.7)	1 742 (9.2)	676 (7.4)	4 906 (5.3)
No facility or home care	19 524 (69.8)	18 026 (49.7)	4 604 (24.3)	1 579 (17.2)	43 733 (47.4)
All categories	27 966	36 278	18 918	9 158	92 320

centage points) and were more substantial in the higher 2. For example, among those aged 90–93 years, the proportion decreased from 28.1% to 26.0%. The decrease for this age group was pronounced (3.2 percentage points) for the “full-time facility with acute care” category but was somewhat offset by growth in the “full-time facility without acute care” category. The proportion of people in the “part-time facility with continuing care” category remained relatively constant for all age groups. The shifts were larger for the “part-time facility without continuing care” category, including a decline of about 4 percentage points among the 2 lower age groups. In contrast, the proportion of people aged 90–93 who used this type of care increased from 19.8% to 22.8%. There were only minor changes in the “some home care” category, except for an increase from 5.8% to 7.4% for the highest age group. Finally, in the “no facility, no home care” category, the 3 lower age groups grew in proportion (increase of 1.8 to 5.7 percentage points), whereas the proportion of those aged 90–93 decreased (3.2 percentage points). Thus, there was a trend toward greater use of facility and home care services in the highest age group.

In 1986–1988 and 1993–1995, there were 12 034 (15.2%) and 15 004 (16.3%) deaths respectively. After direct age adjustment using the combined population as the standard, the rates were virtually identical (15.7% and 15.8% respectively). The largest number of deaths in both cohorts was among the “part-time facility without continuing care” group (Table 2).

Fig. 1 shows the age-adjusted death rates in the 2 cohorts by category of health care use. The highest rates occurred among people in the “full-time facility with acute

care” group, and the lowest were among those in the “no facility or home care” group.

The death rates within use categories differed over time. These differences were most pronounced in the full-time facility groups. The age-adjusted rates for full-time facility patients with acute care increased by 11% in the later cohort (95% confidence interval [CI] 5%–17%) and for those without acute care, by 16% in the later cohort (95% CI 11%–21%). The increase in mortality was shared across all age groups. Age-adjusted death rates among people in the “part-time facility with continuing care” category also increased, by about 14% (95% CI 10%–18%). Death rates in the 3 remaining use categories changed by less than 1%. Since mortality did not change overall, these findings imply that there were shifts in acuity among use groups, toward increasing acuity at more intensive levels of care.

Interpretation

The continuum of care provided through acute care facilities, long-term care institutions and home care services is interwoven such that decreases in one sector may be balanced by increases in another. This is particularly true for elderly people, who, on average, are heavy users across the continuum. In British Columbia, as in the rest of Canada, dramatic reductions have occurred in the capacity and use of acute care facilities in the last decade, accelerating a trend begun decades before.^{3,4} Concerns have been raised that system changes may affect patient outcomes, including death.⁵ Our study was intended to address these issues through examining trends in service use and mortality over time.

Table 2: Number of deaths and 3-year death rate by use category and age, in 1986–1988 and 1993–1995

Period; use category	Age, yr; no. (and %) of deaths			
	65	75–76	85–87	90–93
1986–1988				
Full-time facility with acute care	23 (57.5)	177 (58.0)	561 (64.2)	495 (64.7)
Full-time facility without acute care	22 (19.6)	154 (35.7)	609 (48.0)	838 (58.7)
Part-time facility with continuing care	48 (16.2)	430 (24.3)	966 (32.4)	788 (39.0)
Part-time facility without continuing care	978 (11.2)	2338 (18.9)	1596 (35.2)	740 (47.7)
Home care only	24 (4.3)	105 (6.2)	109 (9.2)	72 (15.8)
No facility or home care	197 (1.1)	355 (2.7)	230 (7.3)	179 (11.2)
All categories	1292 (4.6)	3559 (12.0)	4071 (29.1)	3112 (39.8)
1993–1995				
Full-time facility with acute care	11 (50.0)	168 (65.9)	556 (70.6)	444 (72.9)
Full-time facility without acute care	25 (26.3)	220 (43.8)	980 (58.1)	1149 (64.7)
Part-time facility with continuing care	82 (28.3)	569 (29.6)	1436 (37.0)	1026 (42.2)
Part-time facility without continuing care	876 (11.5)	2662 (19.7)	2253 (36.3)	1014 (48.6)
Home care only	29 (6.6)	131 (6.4)	189 (10.8)	110 (16.3)
No facility or home care	165 (0.8)	414 (2.3)	306 (6.6)	189 (12.0)
All categories	1188 (4.2)	4164 (11.5)	5720 (30.2)	3932 (42.9)

In general, there were only minor changes in the distribution of elderly people across categories of facility and home care use between 1986–1988 and 1993–1995. The most substantial changes were an increase of 2 percentage points in the proportion of people who received no facility or home care services, and a decrease of 2 to 3 percentage points in the proportion who received some acute care but no facility-based continuing care. Thus, to the extent that changes did occur, it appears that people were moving out of health care facilities. Furthermore, elderly people did not shift from institutions to publicly funded home care services. Other research suggests that there were concomitant changes in the use of physician services and pharmaceuticals by British Columbia residents.^{9,12}

The shift out of facilities may be a reasonable public policy goal given patient preferences for care provided “closer to home.”¹³ The question is whether people who are now in their homes rather than in facilities require home support services. The small increase in the “home care” group may reflect a constrained capacity in that sector. Alternatively, it may indicate a healthier “young old” population over time who do not require this type of care. The latter interpretation is consistent with the observed larger increases in the proportion of younger seniors who used neither facility care nor home care. Further research is required to determine the relative importance of each of these interpretations, to inform planning for the delivery of home-based health care services.

We found important differences in how elderly people of different ages shifted categories of health care use over time. For the “young old,” the main shifts were from part-time facility use (with no continuing care) to the use of

neither facilities nor home care. For the highest age group (90–93 years), however, this trend was inverted in the direction of more facility use. Taken together, these findings support clinical perceptions that institutional care is increasingly devoted to the “old old.”

In the face of significant hospital downsizing, we found no changes in age-adjusted death rates over time. Within categories of health care use, however, there were shifts in death rates. For patients residing full-time in facilities, the age-adjusted death rate increased by about 7–8 percentage points, and for those receiving both some acute and some continuing care, the rate increased by about 5 percentage points. The increases in death rates are perhaps the most important finding of our research. Increasing mortality could be construed in several ways. It could be taken as evidence of an increasing efficiency of use of hospital beds; that is, hospital downsizing decreased the provision of facility care to people at lower risk for death. However, the same facts could be construed in the opposite way, increasing mortality indicating a “cost” to squeezing patients out of care. Studies of case-mix, acuity and quality of care would clarify the validity of these interpretations.

Our study has 2 main limitations. First, the categories of health care use contain within-group variations in service intensity. The “part-time facility” categories, for example, reflect a range of use from 1 day to just less than the full 3 years. We created these categories to capture meaningful differences in service intensity across several types of service use. They are successful in accomplishing that objective, as shown by the observed differences in death rates among groups. Second, we did not examine the use of community-based physician care, a vital component along the full continuum of care.

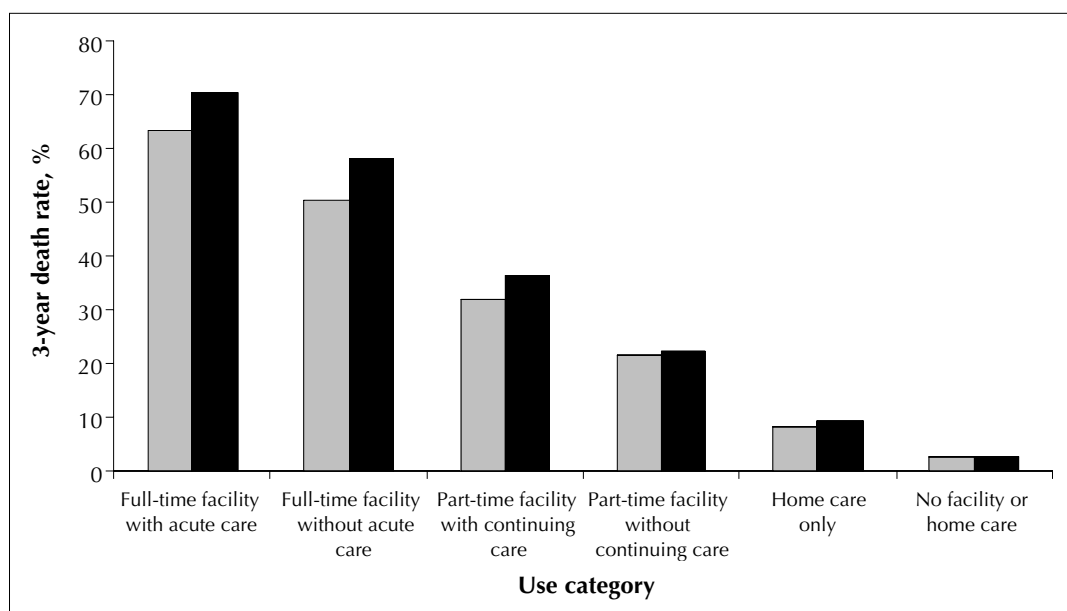


Fig. 1: Age-adjusted proportionate 3-year death rates among elderly people in British Columbia by category of health care use, in 1986–1988 (grey bars) and 1993–1995 (black bars).

Conclusion

The large decreases in bed capacity during the 1980s and 1990s in British Columbia hospitals were not reflected in major shifts in the proportion of elderly people using different types of facility and home care services. This implies that the changes in capacity were absorbed by decreasing the amount of care received by each individual. In other words, the differences were not in getting through the hospital door but, rather, in the length of stay once through it. Some 40 years ago, White and colleagues¹⁴ made the observation that most people in the general population make no contact with the formal health care system. For elderly people, we observed the parallel finding that a substantial proportion have no contact with acute, long-term or home-based care. We also found no overall change in age-adjusted death rates between 1986–1988 and 1993–1995. There were, however, increases in death rates in the most intensive care categories. This finding raises the prospect that long-term stays are becoming reserved for a sicker group of elderly people than in the past.

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Competing interests: None declared.

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Appendix 1: Definitions of categories of health care use

Hierarchy	Definition
Full-time facility	
With acute care	Includes people who spent the entire 3 years under study (or all days before death) in either facility-based continuing care or an acute care bed
Without acute care	Includes people who spent the entire 3 years under study (or all days before death) in facility-based continuing care. These people had no acute care use
Part-time facility	
With continuing care	Includes people who spent at least 1 night in a continuing care facility, but who were not in a facility for the entire 3 years (or for the entire period before death). These people may or may not have had acute care use
Without continuing care	Includes people who spent at least 1 night in an acute care bed, but who were not there for the entire 3 years (or the entire period before death). These people did not use continuing care facilities
Home care only	Includes people who did not use facility care during the study period, but who did receive home-based care through the continuing care program (either homemaker services or home nursing care)
No facility or home care	Includes people who did not use either facility care or home care during the study period