

A Survey of Nursing Home Organizational Characteristics Associated with Potentially Avoidable Hospital Transfers and Care Quality in One Large British Columbia Health Region

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RÉSUMÉ:

L'hospitalisation des résidents en maisons de soins infirmiers peut être futile aussi bien que coûteux, et il y a maintenant des preuves qui indiquent que le traitement des résidents des maisons de soins infirmiers en place donne de meilleurs résultats pour certaines conditions. Nous avons examiné les caractéristiques organisationnelles des installations que des recherches précédentes ont montré sont associées à des transferts de l'hôpital potentiellement évitables et avec une meilleure qualité de soins. En conséquence, nous avons mené une enquête transversale de l'administration des maisons de soins infirmiers dans Vancouver Coastal Health, une grande région sanitaire en la Colombie-Britannique. Le sondage portait sur les niveaux de dotation de personnel et l'organisation, l'accès aux médecins, les soins au fin de vie, et les facteurs influençant transferts de l'installation à l'hôpital. Un bon nombre des caractéristiques organisationnelles modifiables, associés dans la littérature avec les transferts hospitaliers potentiellement évitables, et de meilleure qualité de soins, sont présents dans les maisons de soins infirmiers en la Colombie-Britannique. Cependant, leur présence n'est pas universelle, et certaines fonctionnalités sont particulièrement en défaut, en particulier l'organisation des soins médicaux et le planification et les services pour la fin de vie.

ABSTRACT

Hospitalization of nursing home residents can be futile as well as costly, and now evidence indicates that treating nursing home residents in place produces better outcomes for some conditions. We examined facility organizational characteristics that previous research showed are associated with potentially avoidable hospital transfers and with better care quality. Accordingly, we conducted a cross-sectional survey of nursing home directors of care in Vancouver Coastal Health, a large health region in British Columbia. The survey addressed staffing levels and organization, physician access, end-of-life care, and factors influencing facility-to-hospital transfers. Many of the modifiable organizational characteristics associated in the literature with potentially avoidable hospital transfers and better care quality are present in nursing homes in British Columbia. However, their presence is not universal, and some features, especially the organization of physician care and end-of-life planning and services, are particularly lacking.

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Introduction

Nursing homes, sometimes referred to as long-term care or residential care facilities, provide care to frail elders no longer able to care for themselves as a result of physical and cognitive disability. When nursing home residents are ill or injured, they are often transferred by ambulance to the nearest acute-care hospital for additional care and/or investigation. Many transfers result in hospital admissions, an outcome potentially leading to a resident's further decline in function and quality of life (Gillick, Serrell, & Gillick, 1982). A substantial number of hospitalizations may be futile and costly (Fried, Gillick, & Lipsitz, 1997; Gillick et al., 1982), and there is now some evidence that treating nursing home residents in place, for conditions like pneumonia, produces better outcomes (Dosa, 2005; Fried, Gillick, & Lipsitz, 1997).

Potentially avoidable hospitalizations have been defined as "acute conditions that can be prevented via better primary care in the nursing home and conditions that can be treated in the nursing home given sufficient resources" (Grabowski, O'Malley, & Barhydt, 2007, p. 1760). Predictors of potentially avoidable nursing home hospitalization have been amply described in the literature, both at the resident level (Finucane, Wundke, Whitehead, Williamson, & Baggoley, 2000; Jones, Dwyer, White, & Firman, 1997; Lee, Goh, & Chan, 2003) and at the facility level (Brooks, Warshaw, Hasse, & Kues, 1994; Grabowski, Stewart, Broderick, & Coats, 2008; Intrator, Zinn, & Mor, 2004; Zimmerman, Gruber-Baldini, Hebel, Sloane, & Magaziner, 2002). These predictors include the nature and severity of the problem (Bergman & Clarfield, 1991; Lee et al., 2003), resident and family expectations regarding curative treatment (Bottrell, O'Sullivan, Robbins, Mitty, & Mezey, 2001), facility capacity including staff training to diagnose and treat acute illness (Intrator, Castle, & Mor, 1999; Intrator, Zinn, & Mor, 2004), type of facility ownership (McGregor et al., 2006; Spector, Selden, & Cohen, 1998), and other factors such as bed hold policies (Intrator et al., 2007) and funding levels. There is also published literature on facility organizational characteristics associated with broader measures of care quality (Rantz et al., 2004). However, little Canadian research has thus far explored facility characteristics beyond ownership.

The purpose of this study was to describe the extent to which nursing home organizational attributes, previously associated in the literature with lower rates of potentially avoidable hospitalization and/or improved care quality, were present in one large health region in Vancouver, British Columbia, Canada. We directed our survey to facilities in the Vancouver Coastal Health region – one large health region where the study team had the greatest understanding of context based on the team's clinical and research experience. The survey is the first part of a larger study examining facility-to-hospital transfer rates in the region.

Methods

Study Setting

The Vancouver Coastal Health region is a geographic catchment area covering 1.05 million people. As in the rest of the province, the vast majority of nursing home care in the region is accessed through a publicly administered assessment process. All admitted residents have similar resource requirements for complex care, and thus facilities have a relatively similar resident case mix. With the exception of a small number of privately financed user-pay beds, over 95 per cent of beds in the region are publicly subsidized with an income-tested user-pay portion.

Facilities are staffed with a mix of registered nurses (RNs), licensed practical nurses (LPNs), nursing care aides, and non-nursing professional and support staff. Most nursing staff are directly employed by the facility; however, in the past decade some facilities have contracted out nursing and support services to private companies. In contrast, most paraprofessional occupational therapy, physiotherapy, and palliative-care services are employed by the regional health authority to provide services to specific geographic catchments, including to residents of facilities.

Physician services may be provided by the resident's usual physician, if that physician chooses to continue visiting the resident after their admission to long-term care, or by a family physician (or "house" physician) already providing care to a larger number of residents in that facility. All facilities in the region receive some funding to pay a medical director to do administrative

work on a part-time basis, and most physicians are paid for clinical work through a fee-for-service arrangement billed to the public health plan (i.e., British Columbia Medical Services Plan).

Study Population and Data Analysis

Our population-wide survey included all facilities within a defined geographic catchment. We invited directors of care, or an equivalent position, in all licensed residential care facilities providing care to frail elders in the region to complete the survey. Eligible facilities were identified from previous research, supplemented with the Canadian Healthcare Facilities Guide (Canadian Healthcare Association, 2010). We excluded facilities where the focus of care was on younger adults or specialized populations such as those with HIV/AIDS, chronic mental illness, or palliative care. Respondents were given a choice to complete surveys via self-administration or telephone interview by a research assistant with prior experience as a nursing home director of care. Follow-up phone calls were made to facilities in a few cases where the information entered was ambiguous.

Descriptive data were tabulated, and tables of output were organized by survey themes. With the exception of several questions relating to the professional experience of survey responders, the unit of analysis was the facility. Ethics approval was obtained from the University of British Columbia (UBC) Behavioural Research Ethics Board and the relevant ethics review boards within the Vancouver Coastal Health Authority region.

Survey Development

Survey questions were developed by literature review and through discussions with facility managers and nursing experts. While there was no formal process to validate the survey, it was piloted with a convenience sample of facility directors of care. Pilot respondents were asked to comment on the clarity and comprehensiveness of the questions, which were then modified and re-tested based on the participants' responses. The survey contained questions related to four themes (described next).

Theme 1: Staffing Mix, Levels, and Organization

Lower rates of hospital admissions have been found to be associated with the presence of nurse practitioners (Grabowski et al., 2008; Konetzka, Spector, & Limcangco, 2008), other specialized non-physician clinical staff (Ackermann, & Kemle, 1998; Carter & Porell, 2005), and RN staffing levels (Decker, 2008; Horn, Buerhaus, Bergstrom, & Smout, 2005). Better care quality has been associated with higher levels of total direct care – RNs, LPNs, and care aides – staffing (Bates-Jensen, Schnelle,

Alessi, Al-Samarrai, & Levy-Storms, 2004; Schnelle et al., 2004). We therefore asked questions about the number and types of full-time equivalent (FTE) nursing staff employed by the facility. We converted FTEs into hours per resident day (hprd), a standard measure used to examine nursing staff levels (Centers for Medicare and Medicaid Services, 2001; Harrington, & Swan, 2003). This was calculated by multiplying the total weekly FTEs for all shifts by 7.2 (the average hours per day) divided by the number of beds in the facility.

Direct care staff involvement in decision making, and good communication between clinical leadership and front line staff, have been positively associated with care quality (Barry, Brannon, & Mor, 2005; Rantz et al., 2004). We explored this by asking whether care aides participated in annual resident care conferences, a regularly scheduled conference of the care team with the resident and/or family members, mandated to take place in all licensed facilities in the region. We focused on care aides because this group traditionally has the most direct contact with residents and yet the group is least likely to be included in a team's decision making. To further explore communication between managers and staff, we also asked whether directors of care held routine meetings with nursing staff and, if so, which nursing staff groups were involved.

Finally, the contracting out of care staff has been associated with inferior quality (Bourbonniere et al., 2006). We therefore asked whether facilities contracted out their care staff and which staff categories were affected.

Theme 2: Organization of Physician Care

There is some literature suggesting a positive association between physician continuity of care and the resident or family decision to not be hospitalized (McGregor, Pare, Wong, Cox, & Brasher, 2010). We calculated the number of physicians per resident in the facility as a surrogate marker for physician continuity. This was based on the assumption that the more residents cared for by one physician at a given site, the greater the likelihood of that physician regularly visiting the facility, thereby increasing physician familiarity with the residents and their families.

Increased access to physicians has been associated in the literature with both lower (Intrator et al., 1999) and higher rates of hospital admissions (Intrator, Zinn, & Mor, 2004). We asked questions about staff access to physicians by phone and on-site, including physician participation in resident care conferences and after-hours access. We asked respondents how often they felt a hospital transfer could be deferred by telephone access to a physician.

We asked about respondents' perceptions of improved access to physicians over time. Increased physician

remuneration has been used as a means of encouraging greater access to physician services. In 2006, increases to billing rates were implemented for nursing home care throughout the province, so we asked respondents if they perceived an improvement in access as a result of this change. Finally, as a surrogate measure of physician access and oversight, we asked whether facilities fully utilized their funding for the medical director role.

Theme 3: Organization and Staff Training in End-of-Life Care

Facility capacity to provide palliative care has been associated with lower rates of hospital admissions (Casarett et al., 2005) and is regarded by some as an important measure of care quality (Engle, 1998). As a surrogate marker for palliative care readiness, we asked whether a facility had palliative-care standing orders in place. Palliative-care standing orders are a series of pre-defined physician orders for comfort care designed to be activated when it is recognized that a patient is actively dying. These orders include standard prescribing of narcotic analgesics and other medications for the management of pain, respiratory distress, delirium, and mouth care. Once signed off by the physician in charge, palliative-care orders enable the initiation of comfort care at any time of day. Moreover, the existence of standing orders in a given facility implies both that the nursing staff have some degree of training as to their use, and that the facility has a contingency supply of available medications to implement the orders after hours when pharmacy services may not be available.

Degrees of intervention are an indication on a resident's chart as to how aggressively they wish to be treated if they become acutely ill. Less individualized than advanced directives, degrees of intervention are a series of pre-defined choices, ranging from on-site treatment or palliation to transfer to hospital and/or full cardiopulmonary resuscitation. We asked how often degrees of intervention were updated.

Finally, we asked questions about the type and extent to which staff received training in end-of-life care, including whether facilities accessed specialized programs in end-of-life care staff training offered by the health authority. The latter programs were free of charge and provided remuneration to facilities to cover the cost of replacement staff for those attending.

Theme 4: Facility Resources to Manage Acute Illness On-site and Directors of Care Opinion Regarding Factors that Influence Hospital Transfers

Finally, we asked respondents to give *their* opinions on the non-clinical factors that affect potentially avoidable hospital transfers.

Results

Surveys were completed between June and December 2009. Of the 58 facilities invited to complete the survey, 45 (78%) responded. As summarized in Table 1, the mean size of responding facilities was slightly larger than the mean facility size for the region as a whole ($M = 118.8, SD = 58.4$ vs. $M = 112.5, SD = 58.4$ beds). For-profit facilities were slightly under-represented in the survey representing 24 per cent ($n = 11$) of survey responders compared to 28 per cent ($n = 16$) of all facilities in the region. However, the majority of respondents were urban non-profit facilities, which is generally representative of nursing homes in the region. The length of employment of directors of care in respondent facilities ranged from less than one month to 18 years, with a median of 4 years.

Staffing Mix, Levels, and Organization

A majority of facilities ($n = 35, 78%$) had a care coordinator and at least one specialized clinical nursing position ($n = 32, 71%$). The proportion of facilities with access to non-nursing staff varied, as Table 2 indicates, from a majority having access to a dietician ($n = 42, 93%$) to only 40 per cent having rehabilitation assistants/activity aides ($n = 18$).

Mean RN hours per resident day was 0.60 ($SD = 0.20$), equivalent to an average of 36 minutes per resident per day. Mean total direct care nursing hours per resident day was 3.17 ($SD = 0.69$) or just over three hours per resident per day.

Most facilities ($n = 41, 91%$) reported that the director of care regularly met with nursing staff. However, fewer than half reported that care aides regularly attended patient care conferences. One in five facilities ($n = 9, 21%$) reported contracting out their nursing staff.

Organization of Physician Care

Facilities reported an approximate ratio of one family physician to five residents, as Table 3 indicates. While one third of respondents reported that access to a resident's usual physician by phone was very easy or easy ($n = 30, 67%$), a similar number reported that getting a resident's usual physician to attend to a resident in a timely manner was somewhat difficult or difficult ($n = 29, 64%$).

The majority ($n = 37, 82%$) of respondents reported that physicians made their own arrangements for out-of-hours coverage. Over one half reported that access to an on-call physician by phone was very easy or easy ($n = 25, 56%$).

Most reported that few ($n = 24, 53%$) or none ($n = 9, 20%$) of the residents' usual physicians participated in their annual care conference, and a majority reported

Table 1: Descriptive characteristics of study population – nursing homes in Vancouver Coastal Health Region (June–December 2009)

Descriptive Characteristics	Facilities invited to respond (<i>n</i> = 58)	Facilities responding (<i>n</i> = 45) (78%)
Facility characteristics		
Facility size (number of beds)		
Mean (SD)	112.5 (SD 58.4)	118.8 (SD 58.4)
Median (IQR)	97.0 (IQR 75.0)	100.0 (IQR 77.0)
Facility ownership, <i>n</i> (%)		
For-profit	16 (28%)	11 (24%)
Non-profit	23 (40%)	19 (42%)
Public	19 (33%)	15 (33%)
Urban*, <i>n</i> (%)	50 (86%)	38 (84%)
Survey respondents' characteristics		
Respondent, <i>n</i> (%)		
Director of Care		31 (69%)
Nursing Director/Leader		5 (11%)
Other		9 (20%)
Employment length of respondent (months)		
Mean (SD)		65.0 (SD 64.0)
Median (IQR)		48.0 (IQR 83.5)
Missing data		1

IQR = interquartile range

SD = standard deviation

*** Based on facility postal code**

no increase in access to physicians over the past four years (*n* = 27, 60%).

Organization and Staff Training in End-of-Life Care

Less than one half (*n* = 18, 40%) of facilities reported having standing orders in place for palliative care, as Table 4 indicates. Almost all facilities (*n* = 44, 98%) reported regular updating of residents' degrees of intervention at the resident's annual care conference, and staff training in end-of-life issues (*n* = 41, 91%). However, approximately one in five facilities (*n* = 10, 22%) were unaware of specialized end-of-life care training programs for nursing staff offered by the health authority.

Directors of Care Opinion Regarding Factors That Influence Potentially Avoidable Hospital Transfers

Finally, as Table 5 indicates, respondents identified the following four common factors influencing potentially avoidable hospital transfers: family requesting transfer (*n* = 34, 76%); access to diagnostic tests not available on-site (*n* = 30, 67%); resident's degree of intervention directing hospitalization (*n* = 25, 56%); and access to physicians (*n* = 14, 31%). A minority (*n* = 8, 18%) described access to community palliative care or staffing as factors that influence hospital transfers.

Discussion

This study's goal was to explore the extent to which modifiable facility factors, associated in the literature

with fewer potentially avoidable hospitalizations and/or improved care quality, were present among nursing homes in one large health region in British Columbia. Table 6 summarizes the main findings from our survey of nursing homes.

Staffing Mix, Levels, and Organization

The survey found that almost all facilities had access to some specialized nursing staff services. The literature generally supports an association between better trained nursing staff and a reduced rate of potentially avoidable hospital visits (Horn et al., 2005; Intrator et al., 2004). Although the precise nature of their roles is not known, and only a minority had access to nurse practitioners, the fact that a majority of facilities had some nursing staff with more specialized training is overall a positive factor in light of findings described in past literature.

The survey also found that the mean registered nurse and total direct care nursing hours per resident day were 0.60 (*SD* = 0.20) and 3.17 (*SD* = 0.69), respectively. These levels fall below staffing levels recommended in the literature for "avoidable harm" (Centers for Medicare and Medicaid Services, 2001). In addition, a number of observational studies have demonstrated an association of higher levels of RN nursing hours with lower hospitalization rates for care-sensitive conditions (Carter & Porell, 2005) and hospitalizations (Horn et al., 2005) more generally. However, there are no

Table 2: Staffing mix, levels, and organization of nursing homes in Vancouver Coastal Health Region (n = 45)

	Total
Facilities employing one or more of the following, n (%)	
Care Coordinator	35 (78%)
Clinical Nursing Position	
Clinical Resource Nurse	17 (38%)
Clinical Nurse Educator	15 (33%)
Clinical Nurse Specialist	11 (24%)
Nurse Clinician	7 (16%)
Nurse Practitioner	6 (13%)
Any of the above	32 (71%)
Dietitian	42 (93%)
Physiotherapist	26 (58%)
Social Worker	23 (51%)
Recreation Therapist	22 (49%)
Occupational Therapist	18 (40%)
Rehabilitation Assistant/Activity Aide	18 (40%)
Staffing levels	
RN direct care hours per resident day	
Mean (SD)	0.60 (SD 0.20)
Median (IQR)	0.58 (IQR 0.23)
Missing data	2
Total nursing* direct care hours per resident day	
Mean (SD)	3.17 (SD 0.69)
Median (IQR)	3.11 (IQR 1.01)
Missing data	2
Staffing organization, n (%)	
DOC has routine meetings with nursing staff	41 (91%)
DOC has routine meetings with:	
RN	42 (96%)
LPN	31 (71%)
Care aides	35 (80%)
Missing data	1
Care aides regularly attend annual care conferences	21 (47%)
Contracted-out nursing staff	9 (21%)
Contracted-out	
RN	3 (7%)
LPN	6 (14%)
Care aides	7 (16%)
Missing data	1

DOC = Director of Care

IQR = interquartile range

LPN = licensed practical nurse

RN = registered nurse

SD = standard deviation

* RN, LPN, care aides

Canadian studies that address the question of staffing and hospitalization rates or other measures of quality. Such research is urgently needed.

The finding that most directors of care meet regularly with nursing staff suggests some effort to provide communication between the facility leadership and direct care staff. This is a positive finding, given the

Table 3: Organization of physician care in nursing homes in Vancouver Coastal Health Region (n = 45)

	Total
# family physicians/ 10 residents	
Mean (SD)	1.7 (SD 1.4)
Median (IQR)	1.4 (IQR 1.8)
Access to resident's usual physician by phone, n (%)	
Very easy or easy	30 (67%)
Somewhat difficult or difficult	15 (33%)
Physician/nurse practitioner attends in a timely manner, n (%)	
Very easy or easy	16 (36%)
Somewhat difficult or difficult	29 (64%)
Arrangements for physician coverage, n (%)	
Physician makes arrangement	37 (82%)
House physician model	3 (7%)
Utilize emergency department	3 (7%)
Other	2 (4%)
Access to on-call physician by phone, n (%)	
Very easy or easy	25 (56%)
Somewhat difficult or difficult	20 (45%)
Medical director of care participates in annual care conferences, n (%)	
Most of the time	25 (57%)
Sometimes	7 (16%)
Almost never	8 (18%)
No medical director of care	4 (9%)
Missing data	1
Resident's usual physician participates in annual care conferences, n (%)	
The majority	12 (27%)
A few	24 (53%)
None	9 (20%)
Facility uses all sessional hours for medical director of care, n (%)	
Yes	29 (64%)
No	8 (18%)
Don't know or no medical director of care	8 (18%)
Perceived increase in nursing staff's access to physicians over past 4 years, n (%)	
Yes	7 (16%)
No	27 (60%)
Not able to assess (< 4 years on staff)	11 (24%)
Hospital transfer deferred by telephone consultation, n (%)	
Seldom	17 (38%)
Some of the time	14 (31%)
Most of the time	14 (31%)

IQR = interquartile range

SD = standard deviation

evidence that better communication between nursing leadership and staff contributes to improved care quality (Rantz et al., 2004). However, the fact that very few facilities include care aides in team meetings is less positive, as research suggests that care aide involvement in decision making is associated with lower staff

Table 4: Organization and staff training in end-of-life care in nursing homes in Vancouver Coastal Health Region (n = 45)

	Total
Facility has standing orders for palliative care, n (%)	18 (40%)
Facility routinely updates degree of intervention, n (%)	44 (98%)
Frequency of degree of intervention updates, n (%)	
Yearly	4 (9%)
Yearly and as needed	39 (91%)
Missing data	2
Facility reports staff training in end-of-life care*, n (%)	41 (91%)
Which staff groups offered some training in end-of-life, n (%)	
RN	42 (93%)
LPN	30 (67%)
Care aides	29 (64%)
Others (activity aides etc.)	10 (22%)
Percentage of nursing staff to have attended specialized end-of-life care training program offered by health authority**	
Mean (SD)	14.4 (SD 21.8)
Median (IQR)	5.0 (IQR 20.0)
Unaware of specialized end-of-life care training program offered by the health authority, n (%)	10 (22%)

IQR = interquartile range

SD = standard deviation

*** This refers both to "in-house" and formal training programs offered by the health region**

**** This reflects the highest % of RNs, LPNs, or care aides to have attended the program**

turnover, greater social engagement, and improved resident outcomes (Barry et al., 2005).

Finally, despite legislation enacted in 2001, legalizing the contracting out of nursing staff, this remains a relatively unusual practice. Although there is no literature that directly examines the association of contracting out and potentially avoidable hospitalizations, this is generally a positive finding, given the literature on contracting out of nursing staff and poorer care quality (Bourbonniere et al., 2006).

Organization of Physician Care

Our survey found a mean of almost one family physician per five residents. This ratio is unlikely to attract most physicians to make routine facility visits. Some research suggests a positive association between continuity and frequency of physician visits with residents' designation to not be hospitalized (McGregor et al., 2010), which in turn is highly correlated with lower rates of transfer to hospital (Molloy et al., 2000; Travis, Loving, McClanahan, & Bernard, 2001). One qualitative

Table 5: Directors of care opinions of non-clinical factors influencing hospital transfers in Vancouver Coastal Health Region (n = 45)

Non-clinical factors influencing hospital transfer, n (%)	Total
Family requesting transfer	34 (76%)
Laboratory or x-ray assessment not available on site	30 (67%)
Degree of intervention	25 (56%)
Access to physicians	14 (31%)
Use of community palliative care	4 (9%)
Staffing	4 (9%)
Other	8 (18%)

study found that directors of care thought physicians' familiarity with residents was a factor in decisions to hospitalize and that physicians who were familiar with residents also had greater confidence in the information provided by nursing staff about the resident's condition (Bottrell et al., 2001). Finding ways to encourage house physicians to assume care for larger numbers of residents, thereby enabling more frequent facility visits is likely to support improved continuity of care.

A majority of respondents reported that telephone access to a resident's usual physician and an on-call physician was easy or relatively easy. However, after-hours on-site management of ill residents remains a challenge for most facilities, with almost two thirds of respondents reporting that physician attendance to an ill resident in a timely manner was somewhat difficult or difficult. A number of studies have demonstrated an association between after-hours decline and greater odds of hospitalization for worsening heart failure (considered to be a potentially avoidable condition), presumably due to the absence of medical assessment at these times (Hutt, Ecord, Eilertsen, Frederickson, & Kramer, 2002; Hutt, Frederickson, Ecord, & Kramer, 2003).

Finally, the survey found that over one half of respondents perceived no improvement in access to physicians over the past four years. As well, the majority of physicians are still not attending resident care conferences, despite financial incentives to do so. This suggests that the increase in financial incentives for physicians to do work in nursing homes has not translated into perceived better access to physicians.

Organization and Staff Training in End-of-Life Care

The finding that the majority of facilities routinely held resident care conferences, at which degrees of intervention were reviewed and updated, is positive and suggests that all facilities have some institutionalized process for discussion of end-of-life issues. The fact that most facilities offered end-of-life care training to RNs (93%), LPNs (67%), and care aides (64%) is also

Table 6: Summary of main findings from survey of nursing homes, Vancouver Coastal Health Region, 2009 (n = 45)

More-positive *	Less-positive *
Staffing mix, staffing levels, and organization	
Majority have personnel with specialized nursing skills**	Mean total nursing hours per resident day below recommended levels in U.S. literature
Majority have access to physiotherapists	Minority have nurse practitioners
Directors of care meet regularly with nursing staff	Care aides usually excluded from team meetings
Practice of contracting out nursing staff remains rare	
Physician organization and access	
Majority reported <i>telephone access</i> to usual physician as "easy"	Average ratio of physician to resident 1:5 (too low to support continuity)
	Majority reported <i>physician attendance</i> of an ill resident in a <i>timely manner</i> as 'difficult'
	One half of respondents perceived no improvement to physician access over the past four years
End-of-life care	
Majority routinely hold yearly resident care conferences during which degrees of intervention are reviewed	Highest reported number of nursing staff to have actually attended formal end-of-life training program offered by the health authority: 14%
Most offer end-of-life care education to nursing staff	Less than one half have palliative-care standing orders in place

* **Factors associated in the literature with decreased (more positive) or increased (less positive) avoidable hospitalization and/or care quality**

** **Includes clinical resource nurse, clinical nurse educator, clinical nurse specialist, nurse clinician, and nurse practitioner.**

positive, given the research evidence supporting greater penetration of end-of-life care programs with lower rates of transfer to hospital.

The fact that the highest reported number of nursing staff to have attended specialized training programs in end-of-life care offered by the health authority was 14 per cent is surprising given that this was a free resource offered to all publicly funded facilities. This may be partly explained by the relatively large number of facility directors of care who were not aware of the programs. Moreover, despite higher uptake of facility training in end-of-life care, less than one half of facilities had palliative-care standing orders in place.

Capacity to manage end-of-life care has been found to be one important determinant of avoidable transfer to hospital. One quasi-experimental study found that proactive end-of-life care discussion, targeted to residents on a trajectory of decline, resulted in greater uptake of hospice care and lower rates of hospital admissions compared to usual care (Casarett et al., 2005). A number of other studies have found that hospitalization is lower in facilities with greater use of end-of-life care (hospice) programs (Miller, Gozalo, & Mor, 2001) and/or the presence of advanced directives (Molloy et al., 2000; Zweig, Kruse, Binder, Szafara, & Mehr, 2004). Given the evidence, the survey suggests a need to further build facility capacity to deliver end-of-life care.

Facility Resources to Manage Acute Illness On-site and Director of Care Opinion Regarding Factors that Influence Hospital Transfers

The two most common reasons for potentially avoidable hospital transfers offered by respondents were (a) families requesting transfer and (b) the need to access diagnostic tests. This differs from a U.S. survey of medical directors, where the two most common reasons for overhospitalization were considered to be (a) lack of familiarity between on-call doctors and residents, and (b) lack of information and support to residents and families around end-of-life care (Buchanan et al., 2006).

Study Limitations and Strengths

This survey has several limitations. First, the questions were not subjected to rigorous psychometric development, as the authors believed that the survey content was sufficiently clear to the target audience that such an effort was unwarranted. However, rather than rely on an instrument with face validity only, we did make efforts to pilot the survey questions, clarify anything that was confusing, and then re-pilot the questions. Second, the research was limited to descriptive data. Such data provide useful information about indicators for hospital transfer and better care quality, as identified from previous literature. However, without linkage to outcomes, it was not possible to identify which indicators were actually associated with hospital transfers in

our study population. Additionally, the survey was restricted to facilities in one Canadian health region, and some of the findings (such as those referring to specific end-of-life educational programs offered by the health authority) may not be generalizable to other regions and jurisdictions.

One of the major strengths of this study was the relatively high response rate. Since all eligible facilities in the region were invited to participate, this represents near-complete coverage of all nursing homes in the region. Additionally, the results provide a rich description of the variation in organizational characteristics identified in the literature as potentially influencing hospital transfers of residents, and care quality more generally.

In summary, concern about nursing home care quality has been the topic of multiple reports over the past two years (Canadian Healthcare Association, 2009; Canadian Union of Public Employees, 2009; Carter, 2009; Cohen, Tate, & Baumbush, 2009; Sharkey, 2008), and there is little prior Canadian research on the topic. This study provides useful information for decision makers. It is also an important starting point for further research on the relationship of nursing home organizational characteristics and potentially avoidable hospitalization at a time when Canada's shifting demographics will place increasing demands on both acute and long-term care sectors.

Conclusion

Many of the modifiable organizational characteristics associated in the literature with potentially avoidable hospital transfers and better care quality are present in nursing homes in British Columbia. Their presence, however, is not universal, and some features, especially around physician care and end-of-life planning and services, are lacking.

Reference List

- Ackermann, R.J., & Kemle, K.A. (1998). The effect of a physician assistant on the hospitalization of nursing home residents. *Journal of the American Geriatrics Society*, 46(5), 610–614.
- Allman, R.M., Laprade, C.A., Noel, L.B., Walker, J.M., Moorer, C.A., Dear, M.R., et al. (1986). Pressure sores among hospitalized patients. *Annals of Internal Medicine*, 105(3), 337–342.
- Barry, T.T., Brannon, D., & Mor, V. (2005). Nurse aide empowerment strategies and staff stability: effects on nursing home resident outcomes. *The Gerontologist*, 45(3), 309–317.
- Bates-Jensen, B.M., Schnelle, J.F., Alessi, C.A., Al-Samarrai, N.R., & Levy-Storms, L. (2004). The effects of staffing on in-bed times of nursing home residents. *Journal of the American Geriatric Society*, 52(6), 931–938.
- Bergman, H., & Clarfield, A.M. (1991). Appropriateness of patient transfer from a nursing home to an acute-care hospital: A study of emergency room visits and hospital admissions. *Journal of the American Geriatrics Society*, 39(12), 1164–1168.
- Bottrell, M.M., O'Sullivan, J.F., Robbins, M.A., Mitty, E.L., & Mezey, M.D. (2001). Transferring dying nursing home residents to the hospital: DON perspectives on the nurse's role in transfer decisions. *Geriatric Nursing*, 22(6), 313–317.
- Bourbonniere, M., Feng, Z., Intrator, O., Angelelli, J., Mor, V., & Zinn, J.S. (2006). The use of contract licensed nursing staff in U.S. nursing homes. *Medical Care Research and Review*, 63(1), 88–109.
- Brooks, S., Warshaw, G., Hasse, L., & Kues, J.R. (1994). The physician decision-making process in transferring nursing home patients to the hospital. *Archives of Internal Medicine*, 154(8), 902–908.
- Buchanan, J.L., Murkofsky, R.L., O'Malley, A.J., Karon, S.L., Zimmerman, D., Caudry, D.J., et al. (2006). Nursing home capabilities and decisions to hospitalize: A survey of medical directors and directors of nursing. *Journal of the American Geriatrics Society*, 54(3), 458–465.
- Canadian Healthcare Association. (2009). *New directions for facility-based long term care*. Ottawa, Ontario, Canada: Canadian Healthcare Association. Retrieved July 31, 2010, from http://www.cha.ca/index.php?option=com_content&view=article&id=223&Itemid=101
- Canadian Healthcare Association. (2010). *Guide to Canadian Healthcare Facilities*. Ottawa, Ontario, Canada: Canadian Healthcare Association.
- Canadian Union of Public Employees. (2009). Residential long-term care in Canada – Our vision for better senior's care. Ottawa, Ontario, Canada: Canadian Union of Public Employees.
- Carter, K.S. (2009). *The best of care: Getting it right for seniors in British Columbia (Part 1)*. Victoria: BC Ombudsperson, Retrieved July 31, 2010, from http://www.ombudsman.bc.ca/images/resources/reports/Public_Reports/Public_Report_No_46.pdf. Carter, M.W. 2003.
- Carter, M.W., & Porell, F.W. (2005). Vulnerable populations at risk of potentially avoidable hospitalizations: The case of nursing home residents with Alzheimer's disease. *American Journal of Alzheimer's Disease and Other Dementias*, 20(6), 349–358.
- Casarett, D., Karlawish, J., Morales, K., Crowley, R., Mirsch, T., & Asch, D.A. (2005). Improving the use of hospice services in nursing homes: A randomized controlled trial. *Journal of the American Medical Association*, 294(2), 211–217.
- US Centers for Medicare and Medicaid Services. (2001). *Report to Congress: Appropriateness of minimum nurse staffing ratios in nursing homes: Phase II final report*. Report No.: 2 of 3. Prepared by Abt Associates Inc. Baltimore:

- US Center for Medicare and Medicaid Services. Retrieved August 29, 2011 from [http://www.allhealth.org/briefingmaterials/abt-nursestaffingratios\(12-01\)-999.pdf](http://www.allhealth.org/briefingmaterials/abt-nursestaffingratios(12-01)-999.pdf)
- Cohen, M., Tate, J., & Baumbush, J. (2009). An uncertain future for seniors – BC's restructuring of home and community health care, 2001–2008. Canadian Centre for Policy Alternatives. Vancouver Retrieved August 29, 2011 from <http://www.policyalternatives.ca/publications/reports/uncertain-future-seniors>
- Decker, F.H. (2008). The relationship of nursing staff to the hospitalization of nursing home residents. *Research in Nursing and Health, 31*(3), 238–251.
- Dosa, D. (2005). Should I hospitalize my resident with nursing-home acquired pneumonia? *Controversies in Long-term Care, 6*(5), 327–333.
- Engle, V.F. (1998). Care of the living, care of the dying: Reconceptualizing nursing home care. *Journal of the American Geriatric Society, 46*(9), 1172–1174.
- Finucane, P., Wundke, R., Whitehead, C., Williamson, L., & Baggoley, C. (2000). Use of in-patient hospital beds by people living in residential care. *Gerontology, 46*(3), 133–138.
- Fried, T.R., Gillick, M.R., & Lipsitz, L.A. (1997). Short-term functional outcomes of long-term care residents with pneumonia treated with and without hospital transfer. *Journal of the American Geriatric Society, 45*(3), 302–306.
- Gillick, M.R., Serrell, N.A., & Gillick, L.S. (1982). Adverse consequences of hospitalization in the elderly. *Social Science and Medicine, 16*(10), 1033–1038.
- Grabowski, D.C., O'Malley, A.J., & Barhydt, N.R. (2007). The costs and potential savings associated with nursing home hospitalizations. *Health Affairs (Millwood), 26*(6), 1753–1761.
- Grabowski, D.C., Stewart, K.A., Broderick, S.M., & Coats, L.A. (2008). Predictors of nursing home hospitalization: A review of the literature. *Medical Care Research and Review, 65*(1), 3–39.
- Harrington, C., & Swan, J.H. (2003). Nursing home staffing, turnover, and case mix. *Medical Care Research and Review, 60*(3), 366–392.
- Horn, S.D., Buerhaus, P., Bergstrom, N., & Smout, R.J. (2005). RN staffing time and outcomes of long-stay nursing home residents: Pressure ulcers and other adverse outcomes are less likely as RNs spend more time on direct patient care. *American Journal of Nursing, 105*(11), 58–70.
- Hutt, E., Ecord, M., Eilertsen, T.B., Frederickson, E., & Kramer, A.M. (2002). Precipitants of emergency room visits and acute hospitalization in short-stay Medicare nursing home residents. *Journal of the American Geriatrics Society, 50*(2), 223–229.
- Hutt, E., Frederickson, E., Ecord, M., & Kramer, A.M. (2003). Associations among processes and outcomes of care for Medicare nursing home residents with acute heart failure. *Journal of the American Medical Directors Association, 4*(4), 195–199.
- Intrator, O., Castle, N.G., & Mor, V. (1999). Facility characteristics associated with hospitalization of nursing home residents: Results of a national study. *Medical Care, 37*(3), 228–237.
- Intrator, O., Grabowski, D.C., Zinn, J., Schleinitz, M., Feng, Z., Miller, S., et al. (2007). Hospitalization of nursing home residents: The effects of states' Medicaid payment and bed-hold policies. *Health Services Research, 42*(4), 1651–1671.
- Intrator, O., Zinn, J., & Mor, V. (2004). Nursing home characteristics and potentially preventable hospitalizations of long-stay residents. *Journal of the American Geriatrics Society, 52*(10), 1730–1736.
- Jones, J., Dwyer, P., White, L., & Firman, R. (1997). Patient transfer from nursing home to emergency department: Outcomes and policy implications. *Academic Emergency Medicine, 4*(9), 908–915.
- Konetzka, R.T., Spector, W., & Limcangco, M.R. (2008). Reducing hospitalizations from long-term care settings. *Medical Care Research and Review, 65*(1), 40–66.
- Lee, S.W., Goh, C., & Chan, Y.H. (2003). Emergency department usage by community step-down facilities – patterns and recommendations. *Annals of the Academy of Medicine, Singapore, 32*(5), 697–702.
- McGregor, M.J., Pare, D., Wong, A., Cox, M.B., & Brasher, P. (2010). Correlates of a “Do Not Hospitalize” designation in a sample of frail nursing home residents in Vancouver, Canada. *Canadian Family Physician, 56*(11), 1158–1164.
- McGregor, M.J., Tate, R.B., McGrail, K.M., Ronald, L.A., Broemeling, A.M., & Cohen, M. (2006). Care outcomes in long-term care facilities in British Columbia, Canada. Does ownership matter? *Medical Care, 44*(10), 929–935.
- Miller, S.C., Gozalo, P., & Mor, V. (2001). Hospice enrollment and hospitalization of dying nursing home patients. *American Journal of Medicine, 111*(1), 38–44.
- Molloy, D.W., Guyatt, G.H., Russo, R., Goeree, R., O'Brien, B.J., Bedard, M., et al. (2000). Systematic implementation of an advance directive program in nursing homes: A randomized controlled trial. *Journal of the American Medical Association, 283*(11), 1437–1444.
- Rantz, M.J., Hicks, L., Grando, V., Petroski, G.F., Madsen, R.W., Mehr, D.R., et al. (2004). Nursing home quality, cost, staffing, and staff mix. *The Gerontologist, 44*(1), 24–38.
- Schnelle, J.F., Simmons, S.F., Harrington, C., Cadogan, M., Garcia, E., & Bates-Jensen, M. (2004). Relationship of nursing home staffing to quality of care. *Health Services Research, 39*(2), 225–250.

- Sharkey, S. (2008). People caring for people – Impacting the quality of life and care for residents of long-term care homes – A report of the independent review of staffing and care standards for long-term care homes in Ontario. Ontario Government. Retrieved August 29, 2011 from http://www.health.gov.on.ca/english/public/pub/ministry_reports/staff_care_standards/staff_care_standards.pdf
- Spector, W.D., Selden, T.M., & Cohen, J.W. (1998). The impact of ownership type on nursing home outcomes. *Health Economics*, 7(7), 639–653.
- Travis, S.S., Loving, G., McClanahan, L., & Bernard, M. (2001). Hospitalization patterns and palliation in the last year of life among residents in long-term care. *The Gerontologist*, 41(2), 153–160.
- Zimmerman, S., Gruber-Baldini, A.L., Hebel, J.R., Sloane, P.D., & Magaziner, J. (2002). Nursing home facility risk factors for infection and hospitalization: Importance of registered nurse turnover, administration, and social factors. *Journal of the American Geriatric Society*, 50(12), 1987–1995.
- Zweig, S.C., Kruse, R.L., Binder, E.F., Szafara, K.L., & Mehr, D.R. (2004). Effect of do-not-resuscitate orders on hospitalization of nursing home residents evaluated for lower respiratory infections. *Journal of the American Geriatrics Society*, 52(1), 51–58.