

Résumé

Le choix d'un modèle de soins pour les patients exigeant un autre niveau de soins : le point de vue des soignants sur les accidents du travail

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On constate une augmentation de la population des patients exigeant un autre niveau de soins (ANS), lesquels accaparent des ressources hospitalières en soins actifs inadaptés à leurs besoins. Ce projet de recherche porte sur quatre établissements de soins actifs dans la province canadienne de la Colombie-Britannique, dans le but d'étudier la gestion des soins destinés aux patients ANS et d'analyser son incidence sur les accidents du travail. On a mené des entrevues pour définir différents modèles ANS et obtenu des données relatives aux accidents pour tous les soignants ($n = 2\,854$). On a ensuite effectué une analyse de régression logistique pour classer les accidents en fonction des modèles ANS. On a également sondé les travailleurs accidentés sur leurs perceptions à l'égard du risque de blessure en relation avec l'ANS. Cinq modèles ANS ressortent de l'analyse : légèrement hétérogène, très hétérogène, services ANS spécialisés, services de soins actifs et services d'évaluation gériatrique. C'est dans les services spécialisés que le risque d'accident s'est révélé le moins élevé. Ces résultats suggèrent que les établissements de soins actifs qui connaissent une augmentation de la population ANS devraient envisager de créer des services ANS spécialisés.

Mots clés : autre niveau de soins, établissements de soins actifs, accidents du travail

Choosing a Model of Care for Patients in Alternate Level Care: Caregiver Perspectives with Respect to Staff Injury

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The population of alternate level care (ALC) patients utilizing acute-care hospital resources inappropriate to their needs is growing. The purpose of this study was to explore how the care of ALC patients was managed at 4 acute-care facilities in the Canadian province of British Columbia and to examine how this care impacts on outcomes of staff injury. Interviews were conducted to identify and characterize the different models of ALC. Injury outcomes for all caregivers were obtained ($n = 2,854$) and logistic regression conducted to compare staff injuries across ALC models. Injured workers were surveyed regarding their perceptions of injury risk and ALC. Five ALC models were identified: low-mix, high-mix, dedicated ALC units, extended care units, and geriatric assessment units. The risk for caregiver injuries was lowest on dedicated ALC units. These findings suggest that acute-care facilities faced with a growing ALC population should consider creating dedicated ALC units.

Keywords: alternate level care, geriatric patients, work organization, acute-care hospitals, nursing staff, staff injury

Introduction

An issue facing gerontological nursing practice today is how best to care for the growing population of seniors receiving non-acute care in acute-care settings. Many jurisdictions, particularly those with a shortage of nursing-home beds, have large populations of seniors virtually living in their hospitals, yet very little research has been undertaken on the way in which these patients are managed.

Seniors utilize more health-care resources than the rest of the population. In Canada in 1998, those over 65 years made up 12.3% of the population yet accounted for 47% of health-care spending (Campbell, 2001). The proportion of people aged 65 and over will increase to 23.5% in the next 20 years (Statistics Canada, 2002), thus intensifying the strain on a health-care sector already experiencing cutbacks in hospitals and

acute-care beds along with the decreased availability of long-term-care beds (Clarfield, Bergman, & Kane, 2001; McGrail et al., 2001; Mulley, 2001). The strain on acute-care resources is exacerbated by the inappropriateness of utilizing acute-care beds for non-acute patients and the delayed discharge of elderly patients, termed alternate level care (ALC) patients.¹ The magnitude of this problem is demonstrated by the finding of Flintoft et al. (1998) that, in Canada, between 18 and 48% of adult admissions to acute care and between 19 and 60% of subsequent days of acute care are inappropriate.

Despite the increase in ALC patients in many hospitals, few studies have examined the management of these patients. Even exploratory research on the extent to which ALC patients suffer or benefit from remaining in a hospital environment is minimal (United Hospital Fund of New York, 1989). Parker et al. (2000) found that few studies have investigated the relationship between ALC methods and patients' quality of life, costs to the health system, or impacts on care providers and their families. A few studies have explored patient outcomes related to remaining in an acute hospital setting when such intensity of care is no longer needed. More than 20 years ago Sloane, Redding, and Wittlin (1981) noted that elderly patients had extra medical complications as a result of prolonged hospital stays, including injuries from falls and nosocomial infections. Studies also have examined the impact of an unnecessary acute hospital stay on the patient's ability to cope independently upon discharge (Epstein et al., 2001; Michota, 1995). Michota found that elderly patients in acute-care hospitals were at risk of becoming dependent.

The results of these few studies suggest that the standard model of ALC is to mix such patients with acute-care patients on medical or surgical nursing units. However, because pressure on the acute-care system has increased, many jurisdictions have developed different ALC models, ranging from conventional mixed units to specialized geriatric assessment and treatment units.

Two studies investigated the outcomes for elderly patients placed on dedicated ALC units. A study conducted by the United Hospital Fund of New York (1989) showed that ALC patients who were moved to a dedicated ALC unit experienced longer stays than those who were kept

¹ The Canadian Institute of Health Information defines an ALC patient as: "A patient who is considered a non-acute treatment patient but occupies an acute care bed. This patient is awaiting placement in a chronic unit, home for the aged, nursing home, rehabilitation facility, other continuing care institution or home care program, etc. The patient is classified as ALC when the patient's physician gives an order to change the level of care from acute care and requests a transfer to another facility."

on acute-care units. The authors hypothesize that longer stays resulted because of the type of patients the hospital placed on these dedicated units: those with few social supports or with problematic behaviour.

Bowcutt, Andrews, and Kaye (2000) assessed the health outcomes for care received on a unit dedicated solely to ALC patients. The unit was self-contained and staffed by a multidisciplinary team of specialists. Although, as in the United Hospital Fund of New York (1989) study, these patients stayed longer than ALC patients assigned to acute-care units, they were likely to be in better health upon discharge than ALC patients discharged directly from mixed acute-care units. Despite the longer stays on the dedicated ALC unit, the direct costs for patients admitted to the new unit were significantly lower than those for ALC patients on the mixed unit.

Neither study investigated the impact of these ALC models (mixed vs. dedicated) on staff outcomes such as job satisfaction, health, and injury, despite the importance of staff morale and health outcomes as factors to consider when choosing among various models of care for ALC patients. It has been suggested that registered nurses intent on specializing in hospital acute care often regard care for stable, elderly patients as “low status” (the territory of licensed practical nurses and care aides) and unchallenging (Campbell, 1971; Stevens & Crouch, 1992). Increased pressure to care for ALC patients may therefore affect the morale and the sense of perceived control by registered nurses, particularly if organized and administered in a non-participatory fashion.

The management of ALC patients requires extensive lifting and transferring of patients, which is the main cause of injuries in nurses (Yassi, Ostry, Spiegel, Walsh, & de Boer, 2002). The risk of injury is magnified on units where staff do not have proper patient-lifting equipment or are not properly trained for lifting tasks. This is highly pertinent because in 1997 nurses had the highest prevalence of illness and days lost amongst all groups of workers in Canada, both within and outside the health-care sector (Akyeampong & Usalca, 1998).

In the South Fraser Health Region (now part of the Fraser Health Authority) in the Canadian province of British Columbia, a “natural experiment” has been underway in the region’s four acute-care facilities as different models have evolved regarding the organization of nursing care for ALC patients. We assume that these ALC models are similar to others that have emerged in acute-care hospitals, both in Canada and elsewhere, so that the results from our study will be generalizable and hence useful in other jurisdictions.

The purpose of this investigation was to identify and characterize ALC models in the four regional acute-care hospitals; to determine the impact of these ALC models on the rate of staff injuries sustained during patient

care; and to determine, through interviews, the perspectives of injured caregivers regarding the cause of their injuries, the extent to which these were related to ALC, and ways of avoiding such injuries in the future.

Methods

Characterizing the Models of Care and the Perceptions of Health-Care Workers

This study was conducted with representatives from a joint union-management committee of the South Fraser Health Region and the four institutions. Ethics approval was obtained from the University of British Columbia's behavioural ethics board. Ethics approval for the qualitative interviews was based on a review of the questionnaires, participant selection and approach, and procedures for obtaining informed consent from interviewees.

To obtain ethics approval for the quantitative portion of the study, we ensured that all personnel files collected were stripped of identifiers (names) after linkages with outcome files had been made. Identifiers were replaced with numeric codes to ensure confidentiality and privacy. This was important as it was not feasible to contact each of nearly 3,000 cohort members individually to obtain their consent for the analytic component of the study. As well, results were grouped and reported in this fashion so that no individual could be identified through the presentation of analytic results.

Extensive qualitative interviews were undertaken with workers and managers at each facility to identify all nursing units that cared for ALC patients and to characterize the type of ALC model used. Each prospective interviewee was first given the study protocol to read and discuss with the interviewer, then invited to participate in the study and asked to sign a consent form (approved by the ethics committee).

A medical sociologist conducted interviews with senior managers and nursing staff at each facility as well as the managers responsible for the region-wide seniors' program, to identify all ALC nursing units and to better characterize the philosophy and structure of ALC across the four facilities.

Once the ALC units were identified, further interviews were conducted with senior nursing managers and key staff involved in ALC patient assessment, care, rehabilitation, and discharge planning (such as physiotherapists, social workers, nurses, and geriatricians) in each unit. Interviews were conducted with managers and staff involved with ALC patients to ascertain each unit's: (1) philosophy of care; (2) type, number, and acuity of ALC patients typically on each unit; (3) availability and

quality of lifting equipment; (4) typical patient-staff ratios and staff mix; (5) availability of specialized staff to assess and treat ALC patients; (6) suitability of the built environment for ALC patients; and (7) the advantages and disadvantages of these different models of care.

The interviews were audiotaped, transcribed, and reviewed by each interviewee. A follow-up meeting was held to discuss and refine the interview findings. Through this iterative process, a detailed qualitative as well as quantitative (e.g., the typical number of ALC patients treated, type and number of lifts available, and typical staffing mix) description for every unit involved in ALC was obtained at the four facilities. From these qualitative and quantitative data, we identified archetypal ALC models. The typology of ALC models was further reviewed in a focus group session with key staff involved in ALC in the region, as was the classification of particular units. A total of 30 individuals were interviewed, with equal representation from each archetypal ALC model.

Identification of Cohort

Using personnel records, we identified 2,854 caregivers (registered nurses, licensed practical nurses, care aides, and rehabilitation staff such as physiotherapists) employed by the acute-care facilities on June 10, 2001. The average age of cohort members was 42.3 years and the average seniority was 7.4 years. The cohort consisted of 1,528 (53.5%) registered nurses, 1,063 (37.2%) licensed practical nurses/care aides, and 263 (9.2%) rehabilitation staff.

All reported injuries and time-loss injuries to cohort members were obtained prospectively from the regional occupational health and safety database during the 6-month follow-up period (June 10–December 10, 2001). (Once this linkage was made, all identifiers, as per the ethics approval process, were stripped from the data and replaced with numeric identifiers in order to ensure participant confidentiality.)

Logistic regression models were developed in a forward stepwise fashion for all reported injuries, staff injuries sustained during patient care, violence-related injuries, all time-loss injuries, and time-loss staff injuries sustained during patient care. Conceptually relevant variables, including the socio-demographic variables of age and seniority, were added, followed by a variable measuring whether the worker had sustained a work-related injury in the preceding year, because injury history is often the strongest single predictor of future injury (Tate, Yassi, & Cooper, 1999). Next, the hospital variable was entered in order to test for an organizational-level effect on injury, followed by the occupation variable. In the final step, the ALC model variable was added to the logistic regression model. Analyses were performed using SPSS Windows Version 10.

Follow-up Interviews with Injured Workers

To obtain both a more detailed understanding of the conditions leading to injury and the workers' opinions as to the cause and prevention of such injuries, injured workers were contacted by telephone and a semi-structured interview conducted. The sample comprised all workers injured during the 6-month follow-up period. Interviewees were first contacted by letter (in keeping with the ethics approval process).

The semi-structured telephone interview was used to collect socio-demographic information and to determine the circumstances of the injury such as whether or not it was sustained while the worker was caring for an ALC patient. The workers' identification of the risks of caring for ALC patients and their recommendations for preventing future injuries were solicited.

Results

Description of ALC Models

Of a total of 84 nursing units across the four acute-care hospitals, 44 (52.4%) were involved in the care of ALC patients. These 44 units were categorized into five ALC models: units in which ALC patients were mixed into the general medical/surgical patient population, either (1) sporadically (low-mix), or (2) extensively (high-mix), (3) dedicated ALC units, (4) extended care units (ECUs) that had ALC patients, and (5) geriatric assessment units (GAUs). Table 1 shows the distribution of caregivers by hospital and across ALC models.

ALC Care Model	Hospital A	Hospital B	Hospital C	Hospital D	Total Number of Workers
Low-mix	34 (14.4) ^a	95 (15.0)	122 (15.7)	141 (11.7)	392 (13.8)
High-mix	0	29 (4.6)	27 (3.5)	92 (7.6)	148 (5.2)
Dedicated ALC	23 (9.7)	21 (3.3)	31 (4.0)	0	75 (2.6)
ALC/ECU	95 (40.1)	259 (40.9)	371 (47.8)	256 (21.2)	981 (34.4)
GAU	0	0	23 (3.0)	35 (2.9)	58 (2.0)
Non-ALC unit	7 (2.9)	108 (17.0)	90 (11.6)	560 (46.4)	765 (26.8)
Unknown unit ^b	78 (32.7)	122 (19.2)	112 (14.4)	123 (10.2)	435 (15.2)
Total	237	634	776	1,207	2,854

^a Figure in parenthesis is column percentage (proportion of workers in an ALC nursing unit within the hospital).
^b Unknown refers to the 435 cohort members who were nurse casuals or rehabilitation staff. Because these workers are not linked to a nursing unit in the personnel records (they often work in multiple units), there cannot be an assigned unit.

Twenty-two units (one half of the 44 ALC units) were identified as ECUs. These units were found in all four facilities. A total of 981 cohort members (34.4%) worked on this type of unit (Table 1). Most of these units were extended care *only*, although some had a mix of alternate care and extended care patients. These units were generally located in buildings originally designed to care for elderly patients. Although some units were built many years ago, they had better and more available lifting equipment than other ALC units.

Table 2 shows the characteristics of ALC models as determined through qualitative interviews. These units used a modified ECU staffing mix, with lower registered nurse-licensed practical nurse/care aide ratios than other ALC models. For example, while non-ALC units had 12 registered nurses for each licensed practical nurse/care aide, ECUs had approximately three licensed practical nurses/care aides for each

Table 2 *Characteristics of ALC Models Determined Through Qualitative Interviews*

	Dedicated ALC	Non-ALC	Low-Mix ^a	ALC/ECU	High-Mix ^b	GAU
Philosophy of care	Acute	Acute	Acute	Long-term ^c	Acute	Long-term
Staff mix: RNs to licensed practical nurses/care aides	1.3:1	12:1	6.5:1	0.35:1	2.5:1	2.1:1
Access to rehabilitation staff	Good	Limited	Limited	Limited	Limited	Good
Access to lifts	Average	Poor	Poor	Good	Poor	Best
Percentage of workers with previous injuries	17.3	15.2	19.9	23.2	21.6	27.6
Percentage of workers with injuries during follow-up ^d	8.0	8.7	11.2	14.3	20.3	20.7
Percentage of workers with time-loss injuries during follow-up	2.7	2.2	3.8	5.7	6.1	10.3
Ratio of time-loss to all injuries during follow-up	0.33	0.29	0.34	0.40	0.30	0.50

^a Low-mix units typically have 15% or fewer ALC patients.

^b High-mix units typically have 15 to 50% ALC patients.

^c Long-term philosophy of care: staff are trained and psychologically prepared to care for elderly non-medical patients.

^d Models sorted left to right in ascending percentage of injuries during follow-up.

registered nurse. Finally, these ECUs operated under a philosophy of long-term rather than acute care, which means that staff were trained and psychologically prepared to care for elderly non-medical patients.

The second most common ALC model, also found across all four facilities, was random placement of ALC patients on existing medical/surgical nursing units. Seventeen units (38.6% of the ALC units) and 540 (18.9%) cohort members worked on these mixed units, which were divided into low-mix (< 15% ALC patients) and high-mix (> 15% ALC patients); 392 cohort members (13.8%) worked on low-mix ALC units and 148 (5.2%) worked on high-mix ALC units.²

Three of the four hospitals had dedicated ALC units. Seventy-five (2.6%) cohort members worked on these units. Patients on these units had access to specialized assessment, treatment, and in some cases rehabilitation staff. These units usually had access to more and better lifting equipment than the mixed units.

Unlike the ALC/extended care units, dedicated ALC units operated under an acute-care philosophy. Although they had an acute-care staffing mix, the ratio of registered nurse to licensed practical nurse/care aide was lower than that on the low- and high-mix ALC units and GAUs.

Two of the hospitals had dedicated geriatric assessment and treatment units. Fifty-eight (2.0%) cohort members worked and functioned as a specialized team supervised by a geriatrician on these units, which had been especially built and equipped for ALC. On these units, patients assessed as able to return home quickly were stabilized and rapidly discharged, whereas more difficult patients were kept until they were stabilized and could be placed on other ALC units. Thus, although the GAUs were best equipped and staffed regarding ALC patients, they also had the most difficult-to-manage patients.

Finally, the ratio of registered nurses to licensed practical nurses/care aides depended on the intensity of ALC. On non-ALC units in these four facilities, for example, for every licensed practical nurse/care aide there were 12 registered nurses. Moving to the low-mix units, which had the least number of ALC patients, this ratio decreased to 6.5 registered nurses for each licensed practical nurse/care aide. On GAUs, which treat only ALC patients, there were approximately two registered nurses per licensed practical nurse/care aide, and on dedicated ALC units, which also treat only ALC patients, there was an even mix of registered nurses and licensed practical nurses/care aides (see Table 2).

² Medical units were divided into low- and high-mix based on interviews with head nurses of these units. During the interviews, head nurses were asked to estimate the "usual" number of ALC patients on each unit. Those units with 15% or fewer ALC patients were designated low-mix and those with more than 15% as high-mix.

Staff Assessment of the Different Models of Care

In interviews with staff, four themes concerning management of ALC patients emerged. First, the interviewees continually stressed the importance of proper classification of ALC patients. They stated repeatedly that without proper classification ALC patients may be mismanaged and/or inappropriately placed and that proper classification ensures that these patients are placed in the right ALC model.

Interviewees stressed the importance of timely patient access to rehabilitation staff. On mixed units and ECUs, rehabilitation staff were sometimes difficult to access, a situation that was exacerbated by the restricted availability of rehabilitation staff, from 9 a.m. to 5 p.m., on ECUs. Interviewees said that the health status of ALC patients who lacked adequate rehabilitation often deteriorated and that, particularly on ECUs when rehabilitation staff were unavailable, rehabilitation tasks tended to be provided by care aides.

Interviewees stated repeatedly that the key to smooth functioning of any ALC model are interdisciplinary teams of nurses, social workers, physiotherapists, occupational therapists, and geriatricians to assess, classify, and appropriately assign patients in a timely manner. Finally, they noted the lack of adequate physical supports, particularly lifts, on the mixed units; even on the few nursing units where lifts were available, inappropriate unit design and time pressures rendered use of the lifts difficult or impossible.

Risk of Injury to Caregiving Staff

The numbers of cohort members who reported any injury and a time-loss injury during the 6-month follow-up period were, respectively, 320 (11.2%) and 111 (3.9%). Table 2 illustrates that within ALC models the proportion of workers sustaining any injury in the 6-month follow-up period ranged from 8.0% on dedicated ALC units, to 11.2% on low-mix units, to 14.3% on extended care/ALC units, to 20.3% on high-mix units, to 20.7% on GAUs. The proportion of workers sustaining any injury during the follow-up period was 2.5 times higher for those on high-mix units and GAUs than those on dedicated ALC units. This pattern was similar for time-loss claims. The ratio of time-loss claims to all injuries was 0.25 for workers on non-ALC units. This ratio was higher for all units caring for ALC patients and particularly for extended care/ALC units (0.40) and GAUs (0.50).

The logistic regression results for any injury, staff injury sustained during patient care, violence-related injury, any time loss, and time loss injury sustained during patient care are presented in Table 3. For all outcomes, age, seniority, and hospital were not statistically significant in the

Table 3 *Adjusted Odds Ratios from Logistic Regression Model*

Variable	Adjusted Odds Ratio (95% CI)				
	Any injuries	Injuries during patient care	Violence-related injuries	Time-loss injuries	Time-loss injuries during patient care
Previous injury	3.23 (2.44–4.12)	3.07 (2.30–4.10)	2.32 (1.32–4.07)	3.15 (2.17–4.57)	2.78 (1.81–4.26)
Occupation					
RN (referent)	1.00	1.00	1.00		1.00
LPN/Care aide	1.58 (1.24–2.36)	2.08 (1.46–2.96)	3.09 (1.53–6.24)		1.78 (1.05–3.01)
Rehabilitation staff	0.11 (0.03–0.45)				
ALC model					
Non-ALC (referent)	1.00	1.00	1.00		1.00
Staff not assigned to a unit	0.68 (0.39–1.17)	0.63 (0.31–1.27)	0.62 (0.11–3.37)	0.58 (0.23–1.47)	.71 (0.18–2.73)
ALC/ECU	1.07 (0.73–1.56)	1.22 (0.77–1.94)	1.65 (0.56–4.82)	2.46 (1.46–4.16)	2.79 (1.25–6.22)
Low-mix	1.1 (0.73–1.67)	1.35 (0.82–2.23)	2.44 (0.79–7.56)	1.56 (0.79–3.08)	1.79 (0.72–4.46)
High-mix	2.08 (1.27–3.41)	2.71 (1.53–4.80)	5.36 (1.67–17.17)	2.62 (1.18–5.79)	3.47 (1.29–9.34)
Dedicated ALC	0.67 (0.27–1.64)	1.10 (0.44–2.80)	1.09 (0.12–9.76)	1.59 (0.46–5.54)	2.43 (0.63–9.48)
GAU	1.97 (0.98–4.00)	3.47 (1.66–7.26)	4.95 (1.12–21.83)	4.65 (1.84–11.73)	8.08 (2.84–23.01)
<p><i>Note:</i> Rehabilitation staff were excluded from models with staff injuries involving patient care and violence-related injuries as outcomes, because none of them was injured during patient care or in a violence-related situation.</p>					

bivariate analyses and were therefore not included in the final logistic regression models. After previous injury and occupation were controlled for, the likelihood of any staff injury during patient care on high-mix ALC units was approximately triple that for non-ALC units (OR = 2.71; 95% CI = 1.53–4.80). Staff injuries during patient care were 3.5 times more likely to occur in GAUs than in non-ALC units (OR = 3.47; 95% CI = 1.66–7.26). For all five outcomes, low-mix and dedicated ALC units were not significantly different from non-ALC units. Logistic regression models for violence-related injuries showed a similar pattern to models with any injury and staff injury during patient care, but with

higher risk for injury in high-mix units and GAUs. Similar findings emerged for time-loss injuries, with high-mix ALC units having 3.47 times (95% CI = 1.29–9.34) the risk of non-ALC units and GAUs having over eight times the risk (95% CI = 2.84–23.01).

Interviews with Injured Workers

Interviews were conducted with 261 (81.6%) of the workers with a time-loss injury during the 6-month follow-up period. Interviewees cited “dealing with uncooperative/aggressive patients” as the main cause of injury (29.9%), with “lifting/transferring/re-positioning in bed” a close second (23.4%). All lifting/transferring options amounted to 41.8% of the cited causes of injury. When asked how working conditions could be improved to reduce injuries, 173 (66.3%) of the injured workers listed “increased staffing” as the most important solution; the second most frequently cited solution was “more teamwork/support from co-workers” (31.4%)

Seventy-five percent of the interviewees from high-mix units and 66.7% of interviewees from low-mix units attributed their injuries to caring for ALC patients. When all interviewees were asked to identify which specific ALC feature most contributed to their injuries, 33% cited “unpredictable and aggressive behaviour and dementia,” 29.5% cited “heavy lifting and transferring,” and 23.8% cited the “heavier workloads” associated with ALC. When they were asked how ALC injuries could be prevented, their most frequently cited solution was improved staffing levels (25.7%), followed by “dedicated ALC units” (23.0%)

Discussion

Approximately half the nursing units and approximately 60% of the caregivers in the region’s hospitals cared for alternate level care patients. While the Fraser Valley Health Region may be unique because of its unusually high proportion of elderly residents, its struggle with ALC may be a predictor of future acute-care situations in many jurisdictions.

The five identified ALC models showed profound differences in terms of philosophy of care, staffing levels and mix, physical setting, and availability of quality lifting equipment. While these ALC models have evolved more or less naturally in response to the increased needs for elder care in the region, it is likely that similar methods of ALC have been developed in other jurisdictions.

These five ALC models vary greatly in terms of unit level but are knitted together by facility-level features of ALC that staff identified as essential for the smooth operation of the entire elder-care system. Specifically, staff asserted that specialized interdisciplinary teams are essen-

tial for the appropriate assessment and classification of ALC patients, to ensure optimal placement as well as timely discharge. According to interviewees, in order to increase effectiveness, the interdisciplinary team must function in close collaboration with skilled rehabilitation specialists.

Clearly, these observations require elaboration and further examination. While this study has demonstrated the ways in which ALC matters in terms of caregiver injury, the interviewees commented repeatedly that well-coordinated interdisciplinary teams throughout the system are key to the smooth functioning of ALC. This must be the focus of future research in the area.

The results of this study demonstrate that different methods of ALC organization have very different impacts on the outcomes of caregiver injury. Aiken and colleagues found staff morale as well as staff health and injury outcomes to be closely linked with patient health outcomes. As elder care increases in hospitals, managers must attend to the ways in which it is organized and delivered, and, as the findings of this study show, must plan systems of care in relation to staff needs as well as patient needs. This becomes critical in the context of an ageing registered nurse workforce and a registered nurse shortage, because reducing injuries among nurses may help to prevent their early exit from the workforce (Aiken, Clarke, Sloane, & Patrician, 2001; Aiken, Smith, & Lake, 1994).

As well, given the much higher risk for injury on high-mix units compared to dedicated ALC units, there may be a cost-benefit argument for placing ALC patients in dedicated units. In most hospital systems, planning for different types of care does not involve cost-benefit impact in terms of reduced staff injury. Given the differences in risk for injury between high-mix and dedicated units, it may be prudent to calculate cost savings that could result from the adoption of ALC methods that involve fewer staff injuries.

The high injury and time-loss risks observed on geriatric assessment units indicate that even in the case of a highly specialized team working in a specially designed environment with appropriate equipment, the assignment of the most "difficult" ALC patients may overwhelm the staffing, equipment, and design advantages. This further indicates that not just the staffing mix, but also the right staffing *levels*, may be key, particularly for these specialty units.

The GAUs received most of their patients directly from Emergency. Many of these patients were unstable and had yet to be properly assessed. The unpredictability of many of these patients meant that GAU staff were more at risk for injury than staff in other units treating ALC patients. This is because dedicated ALC units and ALC/extended care units received ALC patients who had already been assessed and stabilized.

Thus, the GAU was the front line in the hospital in terms of ALC patients.

These results show that most units cared for relatively stable ALC patients (extended care units, low- and high-mix units, and dedicated ALC units). Of these ALC models, the risk of injury is lowest on dedicated ALC units. This finding indicates that, at least in terms of staff injury, planners should move to a strategy of placing stable ALC patients on dedicated ALC units as opposed to mixing them in with acutely ill medical and surgical patients.

Finally, the follow-up survey of injured workers found that improvements in staffing levels were perceived as the means most likely to reduce injuries. Thus, whatever ALC model is used, better staff-to-patient ratios will be necessary to provide effective patient care while maintaining low levels of caregiver injury.

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