

Are long-term care residents referred appropriately to hospital emergency departments?

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ABSTRACT

OBJECTIVE To explore the rate of referrals of long-term care (LTC) residents to emergency departments (EDs) and to determine the appropriateness of the referrals.

DESIGN Retrospective analysis of 2 administrative data sets, paramedic records and hospital records, for the year 2000.

SETTING Catchment area of Hamilton, Ont.

PARTICIPANTS Nineteen LTC facilities and 3 EDs of Hamilton Health Sciences.

MAIN OUTCOME MEASURES Number and appropriateness of referrals were the main outcomes measured; we also examined the timing of and reasons for referrals, arrival status of patients, admissions to hospital, referrals to specialists, and treatments. Unit of analysis was the referral. As no evidence-based guidelines exist for appropriateness of referral, we defined *appropriateness* as a balance of issues with blinded physician judgment calls on anonymous random subsamples of patients admitted to hospital and those not admitted to determine appropriateness of referrals. Descriptive statistics were used, as well as χ^2 and *t* tests.

RESULTS Out of 2473 licensed LTC beds, 606 residents were referred to 1 of 3 EDs of the Hamilton Health Sciences hospitals, giving a referral rate of 24.5%. The average age of these LTC residents was 81.6 years, and 63.2% were women. Peak referral months were late winter; peak days were Tuesday and Friday. Time of arrival to the EDs was reported in 6-hour segments, with just over half (51.2%) of residents arriving during the day and one-third in the evening. Respiratory and cardiovascular problems comprised 48.6% of referrals. At arrival 67.3% of cases were deemed urgent or emergent. Wait times ranged from 0 to 60 hours, with 25% of residents seen within 1 hour, 44% within 2 hours, and 50% within 4 hours. Two-thirds (66.7%) of residents were admitted to hospital and of these 62% stayed 1 week.

CONCLUSION Our results agree with previous studies that cast doubt on the idea that LTC residents are “dumped” on EDs. Most referrals appeared appropriate as defined by criteria established by the physician team and given the number of hospital admissions, diagnostic tests, and treatments provided. Potentially, more acute care could be provided in LTC facilities with enhancement of services. Prospective studies could tell us more.

EDITOR'S KEY POINTS

- The appropriateness of referral of long-term care (LTC) residents to hospital emergency departments (EDs) for assessment, monitoring, treatment, or admission has been debated for many years. This research team, which has extensive experience in LTC, examined the situation in their community in order to make changes and quell the debate.
- These authors found the relatively small number of referrals to EDs per day (0.07% of 2473) to be commendable and believed their results did not support the notion that LTC residents are “dumped” on EDs.
- Physicians' decisions about the transfer of patients are often influenced by patient and family preferences; this issue needs to be studied further.

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Les résidents d'établissements de soins de longue durée sont-ils adéquatement dirigés vers les urgences des hôpitaux?

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RÉSUMÉ

OBJECTIF Déterminer le taux de transfert des résidents des centres de soins de longue durée (SLD) vers les départements d'urgence (DU) et vérifier la pertinence de ces transferts.

TYPE D'ÉTUDE Analyse rétrospective de 2 types de données administratives : dossiers des ambulanciers et dossiers hospitaliers pour l'année 2000.

CONTEXTE La région sanitaire d'Hamilton, Ontario.

PARTICIPANTS Dix-neuf centres de SLD et 3 DU du Hamilton Health Sciences.

PRINCIPAUX PARAMÈTRES À L'ÉTUDE Les principaux paramètres étudiés étaient le nombre et la pertinence des transferts; nous avons aussi examiné le moment choisi et les raisons des transferts, l'état des patients à l'arrivée, et les admissions, demandes de consultations spécialisée et traitements. L'unité d'analyse était le transfert. Comme il n'existe aucune directive basée sur des données probantes pour évaluer la pertinence des transferts, nous avons défini la *pertinence* comme résultant de plusieurs facteurs, les médecins se prononçant à l'aveugle sur la pertinence des transferts à partir de sous-échantillons aléatoires anonymes de patients admis ou non à l'hôpital. On a utilisé des statistiques descriptives ainsi que les tests de χ^2 et de *t*.

RÉSULTATS Sur 2473 lits de SLD avec licence, 606 résidents ont été dirigés vers 1 des 3 DU des hôpitaux du Hamilton Health Sciences, soit un taux de transfert de 24,5 %. Ces patients avaient en moyenne 81,6 ans et 63,2 % étaient des femmes. Les périodes les plus actives étaient les mois de fin d'hiver, et les mardis et jeudis. Sur 4 quarts de 6 heures, un peu plus de 51,2 % des patients étaient arrivés à l'urgence durant le jour et un tiers durant la soirée. Les problèmes respiratoires et cardiovasculaires représentaient 48,6 % des transferts. À l'arrivée, 67,3 % des cas étaient jugés urgents ou en voie de le devenir. Les temps d'attente variaient de 0 à 60 heures, 25 % des patients étant vus en moins d'une heure, 44 % en moins de 2 heures et 50 % en moins de 4 heures. Les deux tiers des résidents (66,7 %) ont été admis à l'hôpital, 62 % d'entre eux pour 1 semaine.

CONCLUSION Nos résultats confirment les études antérieures qui mettent en doute l'idée qu'on se débarrasse des résidents des SLD en les dirigeant vers les DU. La plupart des transferts semblaient appropriés d'après les critères établis par l'équipe des médecins et en considérant le nombre d'admissions à l'hôpital, les tests diagnostiques et les traitements prodigués. Plus de cas aigus pourraient être traités dans les établissements de SLD avec des services améliorés. Des études prospectives pourraient nous éclairer à ce sujet.

POINTS DE REPÈRE DU RÉDACTEUR

- Depuis plusieurs années, on se demande si les résidents des centres de soins de longue durée (SLD) sont dirigés adéquatement vers les départements d'urgence (DU) hospitaliers pour évaluation, surveillance, traitement ou admission. Forte d'une longue expérience en SLD, notre équipe de recherche a étudié la situation dans sa communauté afin d'apporter des changements et de mettre fin au débat.
- Les auteurs ont trouvé que le nombre relativement faible de patients dirigés vers les DU à chaque jour (0,07 % sur 2473) était raisonnable et ils estimaient que leurs résultats n'appuyaient pas l'idée qu'on envoie les résidents des SLD aux DU pour s'en débarrasser.
- Les décisions des médecins concernant le transfert des patients sont souvent influencées par le patient et par les préférences des familles; cette question devra être étudiée davantage.

Cet article a fait l'objet d'une révision par des pairs.
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Research | Are long-term care residents referred appropriately to hospital EDs?

In Canada long-term care (LTC) facilities provide residential accommodation for people who require on-site delivery of supervised care, including professional health services and personal care services (eg, meals, laundry, housekeeping), 24 hours a day.¹ For more than 20 years, debate has simmered about the question “Are residents of LTC facilities sent appropriately to hospital emergency departments (EDs)?” In the United States, with its complex mix of private and public health care, the relationship between LTC and hospitals is adversarial,² reaching the status of an ethical debate.³ Referral to EDs is deemed by some to be “dumping.” Australia recognizes the right of LTC residents to access emergency care and challenges the “myths and stereotypes” around referrals.⁴ In Canada referral issues differ for each stakeholder: For LTC residents the issues include timeliness of care, personal and family preference, and potential for benefit. For EDs the issue is resources. For attending physicians, who typically make referral decisions, the issue is multifaceted: timely access to diagnostic tests, availability of nursing care in LTC facilities, and potential for benefit. Their questions include the following: “Will the referral stabilize or improve the resident’s health status?” “What is the potential for ‘transfer distress’ and iatrogenic illness?” “Do advanced directives address the present problem?” “What is the position of the family?” Answers are not always clear or easy.

Three literature reviews on LTC referrals to EDs,⁵⁻⁷ which are now decades old, reveal a range of research methods and report mostly descriptive findings. One US study claims half (48.2%) of referrals are “avoidable.”⁸ Recent investigations include audits of 1 LTC facility,⁹ several LTC facilities,¹⁰⁻¹⁴ and an ED,¹⁵ and a population-level study.¹⁶ Estimates of “inappropriate referrals” range from 48% in the United States,¹⁰ 36% in the United Kingdom,¹⁷ and 7% in Canada,⁹ to less than 1% in Australia.⁴

Referral with ambulance transfer from an LTC facility to an ED is an important clinical decision. Five domains of transfer have been identified, each with its own risks, communications challenges, possible inefficiencies, and duplications of care.¹⁸ Frail elderly are described by nurses as experiencing “transfer distress”¹⁹ characterized by disorientation, confusion, rapid deterioration in condition, comorbidity, and the need for hospitalization.^{9,15,20} The elderly are also at greater risk of adverse events²¹ and iatrogenic illness due to excessive diagnostic and therapeutic interventions.^{15,22-25} Studies of the elderly admitted to hospital report 22.9%²⁵ to 43.7%²⁶ of elderly experience 1 or more iatrogenic illnesses with potential for serious or fatal complications. The use of ambulances and emergency services for referrals puts unnecessary pressure on these services and is not cost effective.⁶

Given the debate on LTC referrals, we wanted to examine the situation in our community in order to make changes or to quell the debate. Our retrospective

audit of the hospital data is unique in a number of ways: 1) it covers a complete year; 2) it includes data on all 19 LTC facilities in a large catchment area; 3) it examines care provided in 2 random subsamples; and 4) it uses anonymous patient cases and physician evaluators blinded to outcome in random subsamples to determine appropriateness of referral.

METHODS

McMaster University Research Ethics Board gave approval for our study in Hamilton-Wentworth, a catchment area in southwestern Ontario of 500 000, with 19 LTC facilities and 3 EDs of the Hamilton Health Sciences (HHS) family of hospitals.

Data collection

Two retrospective administrative data sets for the year 2000 were obtained: paramedic records and the HHS hospital records for the LTC residents in the area. This study reports on the HHS administrative data analyzed for rate of referral to EDs, demographics, health status, and service delivery. The paramedic file, provided by the local ambulance service, contained all abstracted cases in which the pickup location was designated as an LTC facility and the ED drop-off location was at 1 of 3 EDs of the HHS hospitals: Hamilton General Hospital, Henderson Hospital, and McMaster University Medical Centre. At the time there was a policy of ambulance diversion to the nearest available ED, which provided a randomization effect. The 2 data sets were obtained with the expectation of linking them and comparing paramedic pickup “reasons for referral” with ED discharge diagnosis as a measure of appropriateness of referral. Because of privacy policies, we were unable to link the files; therefore, only the HHS data set is reported in this study. Considerable challenges were faced in cleaning the data, as 16.5% of referrals were incorrectly coded as LTC residents by the paramedics. Replicated by ED staff, this produced 13.6% error of LTC attribution in the HHS files and a reduction in the number of cases from 701 to 606. Cleaned HHS data were copied into SPSS software to explore rate of referral, demographics, health status, and service delivery. As the unit of analysis was the referral, it is possible that an LTC resident was counted more than once.

To examine clinical reasons for referral and care, 2 subsamples of the HHS data were drawn using a table of random numbers: those admitted to hospital (n=26) and those not admitted (n=26). Sample size was calculated using a valid Web-based program²⁷ (95% confidence interval, power=0.8).

The physician team, experienced in LTC, defined *appropriateness of referral* and the essential clinical data needed to be abstracted from the hospital files in the subsamples

to make judgment calls on appropriateness of referral. As no evidence-based guidelines exist for appropriateness of referral, our team defined *appropriateness of referral* as a balance of issues: timeliness, availability of diagnostic and treatment resources (eg, intravenous, oxygen, pharmaceuticals), timely test results, physician availability and expertise (ie, attending or covering physician), nursing availability and expertise, advanced directives, respect for patient or family wishes, availability of background medical information, and premorbid health status. The physician team, blinded to outcome (admitted to hospital or not admitted), independently reviewed the anonymous patient cases and made clinical judgment calls on appropriateness of referral. Majority consensus ruled in a meeting format.

Analysis

Frequencies and descriptive statistics were calculated using SPSS. The “arrival status” variable taken from ED records ranged from resuscitation, emergent (ie, seen within 30 minutes), or urgent (ie, seen within 2 hours), to less urgent (ie, seen that day), and nonurgent (ie, seen when possible). To correct for small cell size (<5), the categories emergent and urgent were combined, as were the categories less urgent and nonurgent.

RESULTS

In 2000 the Hamilton-Wentworth area had 2473 licensed LTC beds, with a calculated referral rate to EDs of 24.5% (606 of 2473). This is 1.66 LTC residents per 24-hour day for 3 EDs. Two-thirds of referred patients were women (63.2%), and the average age of referred patients was 81.6 years (range 46 to 104 years [LTC facilities also house non-seniors with chronic illness], SD=10.02). Peak months of referral were in late winter (January, February, and March), and peak referral days were Tuesday and Friday. Lowest numbers of referrals occurred on weekends. Time of arrival to the ED was reported in 6-hour segments: 0001 to 0600 (14.6%); 0601 to 1200 (26.8%); 1201 to 1800 (24.4%); 1801 to 2400 (34.1%). Just over half (51.2%) of residents arrived during the day and one-third arrived in the evening.

The primary problems presented were respiratory (30.4%), cardiovascular (18.2%), traumatic (falls and fractures) (14.9%), gastrointestinal (9.4%), neurologic (5.9%), infection (5.3%), renal (5.1%), and others (10.8%) (diabetes, dehydration, cancer, dementia, etc). Respiratory and cardiovascular problems comprised almost half (48.6%) of the transfers. In the subsamples, 67.3% were documented with arrival status of emergent or urgent care. The relationship between arrival status and whether or not residents were admitted was not significant (**Table 1**). Emergency department wait times ranged from 0 to 60 hours, with 25% seen within 1 hour,

44% within 2 hours, and 50% within 4 hours. Two-thirds (66.7%) of residents were admitted to hospital; of these, 62.5% were admitted to hospital into an acute care bed for 1 week and one-quarter were admitted to hospital for 2 weeks. The trimmed mean stay was 10 days (range 0 to 84 days, SD=31 days).

Table 1. Rates of admission based on arrival status to emergency departments of long-term care residents: N=52; $\chi^2 = 2.8$, P = .139.

ARRIVAL STATUS	ADMITTED TO HOSPITAL N (%)	NOT ADMITTED N (%)
Emergent or urgent n = 35	20 (57.1)	15 (42.8)
Less or not urgent n = 17	6 (35.3)	11 (64.7)

Most of the LTC residents received treatment in the EDs, with those who were admitted to hospital less likely (69.2%) to receive treatment in EDs than those not admitted (96.2%). No significant difference was found for ED treatments given to those admitted to hospital compared with those not admitted, as measured by *t* test. Treatments included intravenous therapy (38.5% admitted to hospital [AH] vs 34.6% not admitted [NA]), urinary catheterization (11.5% AH vs 11.5% NA), oxygen (38.5% AH vs 11.5% NA), and laboratory tests (69.2% AH vs 65.4% NA). Those who were not admitted were more likely to be rehydrated (3.8% AH vs 15.4% NA). Those who were admitted to hospital were more likely to receive intravenous antibiotics (69.2% AH vs 30.7% NA). There was no significant difference between those admitted to hospital and those not admitted regarding laboratory tests (69.2% AH vs 65.4% NA), cultures (26.9% AH vs 34.6% NA), electrocardiograph (26.9% AH vs 38.5% NA), heart monitoring (65.4% AH vs 50.0% NA), and diagnostic radiography (69.2% AH vs 65.4% NA). Significantly more specialist consultations (P=.001) were requested for those admitted to hospital (57.7% AH vs 3.8% NA) (**Table 2**). However, this is an exploratory finding owing to one cell size (<5).

Table 2. Consultations with specialists for long-term care residents referred to emergency departments: N=52; $\chi^2 = 17.7$, P = .001.

CONSULTATION	ADMITTED TO HOSPITAL N (%)	NOT ADMITTED N (%)
Yes n = 16	15 (57.7)	1 (3.8)
No n = 36	11 (42.3)	25 (96.2)

DISCUSSION

Aging of the Canadian population and the associated increase in illness burden creates an urgent need for increased resources for care of the elderly.¹⁷ In Hamilton,

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LTC facilities do not have the diagnostic capability nor the on-site health care personnel to provide acute care. The standard practice is to transfer patients to hospital when their care needs exceed the resources of the facility.

The Hamilton LTC referral rate of 24.5% (606 of 2473) is similar to a 1991 Toronto, Ont, study (26%)⁹ and US reports for skilled nursing facilities (25%),¹¹ but is much lower than the rate at a US intermediate-care facility (41.7%).¹⁶ Compared with other studies reporting demographics of residents transferred, the percentage of women (63.2%) is similar to Australia,⁴ the United Kingdom,⁸ the United States¹³ but lower than the Toronto study (72%)⁹ and a US report (76%).¹² The average age of LTC residents in Ontario is 86 years,²⁸ but is slightly less (81.6 years) for Hamilton LTC residents referred to EDs. These findings are similar to those of the Toronto⁹ and Australia studies⁴ but slightly older than a US study citing an average age of 76 years.¹³

In Hamilton, peak months for transfers are in late winter, coinciding with peak months for community-acquired respiratory infections. The data show almost one-third of cases present with respiratory problems. Peak transfer days of Tuesday and Friday with lowest numbers on weekends challenges the notion that transfers result from unavailability of physicians on weekends. Friday might be a peak day for proactive referrals to avert problems for call group colleagues who provide after-hours or weekend coverage. As there is no timely, in-house diagnostic support in LTC facilities, the threshold of what can be safely managed is subjective. It depends upon a number of factors: physician and nursing availability and expertise, culture of practice within the facility, patient care plans, and nursing home policy. Provider knowledge and comfort level managing acute illness and increasingly complex patients also influences decisions to refer to the ED.

Weekly laboratory and 24- to 48-hour mobile radiology services are not adequate for treating acute illness. Improving access to these services could reduce some transfers to the ED.¹¹

More than 80% of our sample patients in EDs required treatments that were not readily available in LTC facilities. Also, LTC staff generally lack training and expertise to provide such treatments. At the same time, introduction of safe management protocols that can be implemented in LTC facilities now assist physicians in providing care on-site without transfers to EDs. These protocols include providing new oral antibiotics, which are as effective as intravenous antibiotics, and rehydration through hypodermoclysis. Although some LTC staff might not be comfortable treating acutely ill patients, upgrading the skills of the staff and using geriatric nurse practitioners in LTC facilities has assisted with hospital-avoidance strategies.^{29,30} Advance directives and family requests influence physician decisions about transfers, even when patients can be safely and

effectively managed in LTC facilities. This is an issue that needs to be studied.


Two-thirds of subsample referrals (67.3%) were defined as emergent or urgent upon arrival in the ED, yet only 44% were seen within 2 hours. Of these emergent or urgent cases, 57.1% were admitted. This suggests that not all LTC residents received timely care in the ED. In the subsamples, only 2 LTC residents (3.8%) were neither treated nor admitted to hospital and did not meet other criteria for appropriate referral. Patient and family preference might account for these.^{31,32}

An observation based on cleaning the data sets suggests that misappropriation of arrivals attributed to LTC facilities might be contributing to the perception that LTC residents are being “dumped” on EDs. With the “uncleaned data” included (701 in 365 days), the average number of LTC residents referred rises to 1.9 persons each day arriving in 1 of these 3 HHS EDs, which although still not excessive might help to explain prevailing attitudes.

Limitations

The primary limitation of our study is the lack of evidence-based measurement of “appropriateness of transfer” and the use of global assessments. Research with administrative data faces the usual challenge of working with data collected for specific purposes that do not always fit the exact range and depth of research agendas. Privacy rules prevented linking of the data sets, limiting our picture of what happened in the EDs for all cases. We also lacked access to “code status” and advance directives, which influence the transfer decisions as clinician threshold for transfer is influenced by knowledge of cardiopulmonary resuscitation status.

Conclusion

This study casts doubt on the notion of “dumping” of LTC residents on EDs and supports an earlier Canadian study.¹⁵ The relatively small number of referrals to EDs per day of 0.07% of 2473 residents is commendable. Given our physician team definition of *appropriateness of referral* (ie, a balance of the issues of timeliness, availability of diagnostic and treatment resources, timely test results, physician availability and expertise, nursing availability and expertise, advanced directives, respect for patient or family wishes, availability of background medical information, and premorbid health status), the hospital administrative data set from year 2000 and 2 random subsamples show that the referrals are appropriate. 

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Contributors

Drs Jensen, Fraser, Shankardass, Epstein, and Khara contributed to the concept and design of the study; data gathering, analysis, and interpretation; and preparing the manuscript for submission.

Competing interests

None declared

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