Systematic Implementation of an Advance Directive Program in Nursing Homes

A Randomized Controlled Trial

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Context Although advance directives are commonly used in the community, little is known about the effects of their systematic implementation.

Objectives To examine the effect of systematically implementing an advance directive in nursing homes on patient and family satisfaction with involvement in decision making and on health care costs.

Design Randomized controlled trial conducted June 1, 1994, to August 31, 1998.

Setting and Participants A total of 1292 residents in 6 Ontario nursing homes with more than 100 residents each.

Intervention The Let Me Decide advance directive program included educating staff in local hospitals and nursing homes, residents, and families about advance directives and offering competent residents or next-of-kin of mentally incompetent residents an advance directive that provided a range of health care choices for life-threatening illness, cardiac arrest, and nutrition. The 6 nursing homes were pair-matched on key characteristics, and 1 home per pair was randomized to take part in the program. Control nursing homes continued with prior policies concerning advance directives.

Main Outcome Measures Residents' and families' satisfaction with health care and health care services utilization over 18 months, compared between intervention and control nursing homes.

Results Of 527 participating residents in intervention nursing homes, 49% of competent residents and 78% of families of incompetent residents completed advance directives. Satisfaction was not significantly different in intervention and control nursing homes. The mean difference (scale, 1-7) between intervention and control homes was –0.16 (95% confidence interval [CI], –0.41 to 0.10) for competent residents and 0.07 (95% CI, –0.08 to 0.23) for families of incompetent residents. Intervention nursing homes reported fewer hospitalizations per resident (mean, 0.27 vs 0.48; $P = .001$) and less resource use (average total cost per patient, Can $3490 vs Can $5239; $P = .01$) than control nursing homes. Proportion of deaths in intervention (24%) and control (28%) nursing homes were similar ($P = .20$).

Conclusion Our data suggest that systematic implementation of a program to increase use of advance directives reduces health care services utilization without affecting satisfaction or mortality.

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People complete advance directives before they lose capacity to express their wishes, extend autonomy, and guide their families and health care workers to provide care consistent with their choices.[1] Despite the promising nature of advance directives, ensuring both their completion and implementation has proved problematic. Written materials alone fail to ensure completion[2-5]; education by health care providers,[2] individualized information and counseling sessions,[6] and use of videos and case scenarios[7] result in higher completion rates. In 1 US community, 2 years after a systematic, community-wide ad-

See also p 1481 and Patient Page.

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vance directive program was implemented, 85% of the decedents had advance directives,[8] a significant increase compared with 15% before the program. Unless there is adequate communication between patients, health care workers,[9,10] and institutions,[11-13] advance directives are unlikely to improve the decision-making process. They may enhance communication of patient preferences between patients and physicians,[14,15] or they may not.[16] Although advance directives have been used in the community,[17,18] nursing homes,[19,20] hospitals,[9,16,19-24] and physicians' offices,[25-34] uncertainty still persists about their effect on patient satisfaction with health care and health care costs. In particular, while 2 randomized trials of directives failed to show a reduction in costs,[10,35] they recruited critically ill inpatients[10] and young outpatients,[35] and their small sample sizes and cost accounting have been criticized.[36]

METHODS

Summary of Study Design

We pair-matched 6 nursing homes on key characteristics and randomized 1 of each pair to systematic implementation of an advance directive or to the continuation of existing policies.

We measured satisfaction with care, costs, and mortality for all eligible residents in the home at the time of randomization for 18 months. We measured health care utilization in a cohort of patients who were in the same home at the beginning of a 1-year period prior to the start of prospective data collection and controlled for this level of utilization in our cost analysis.

Recruitment of Nursing Homes

We surveyed 215 Ontario nursing homes with more than 100 residents each; 171 (80%) responded, 150 expressed interest in the study, and 78 had health care choices documented for less than 25% of residents. We selected pairs of homes that had differences of less than 10% in the proportion of residents hospitalized annually, case-mix indexes that defined the level of care residents received, and differences of 20% or less in the number of residents in the home and the proportion of deaths occurring in a hospital. We chose 3 pairs of the homes that best matched these criteria and were geographically distant from each another.

We visited the candidate pairs of homes to ensure the accuracy of data, willingness to participate, and the absence of plans for major changes during the study. Local hospitals provided approval to educate staff about the program and to provide access to the charts of residents admitted during the study. When the 3 pairs were chosen, we randomized homes within pairs to receive the systematic implementation of the advance directive program (intervention home) or to continue with conventional use of advance directives (control home).

The Directive

In 1988, we developed the Let Me Decide advance directive (LMD) and evaluated its systematic implementation in nursing homes and in the community.[17,37,38] We found consistent support from residents, families, and health care workers for the program.[37,38]

The program has instructional and proxy components,[39] providing a range of health care choices for life-threatening illness, cardiac arrest, and feeding. Individuals or proxies can choose different levels of care for life-threatening illness (from intensive to palliative), nutrition (from intubation to basic), and cardiopulmonary resuscitation (CPR) (resuscitation or no resuscitation) if they are in a "reversible" condition with an "acceptable" quality of life or an "irreversible" condition with an "unacceptable" quality of life. This unacceptable condition is described in a personal statement.

The Education Process in the Intervention Homes

Three registered nurses employed in the program homes attended a 2-day workshop to train as health care facilitators (HCFs). They learned a specific approach to educating hospital staff, nursing home staff, residents, and families about directives and measuring a person's capacity to complete directives. The HCFs provided educational sessions and in-service training to hospital staff, with special emphasis on emergency workers, at open information sessions and through the libraries that provided access to 3 videotapes describing the LMD program. Refresher sessions throughout the study educated new staff and maintained awareness of the program among previously trained staff.

Each HCF contacted the president and members of the residents' council, nursing staff, social workers, and administrators and provided educational sessions about the implementation process.

Directive Implementation

Head nurses on each ward used their experience with residents in other areas of decision making to classify the residents as definitely incompetent to complete an advance directive or "otherwise." Residents rated as otherwise completed the Standardized Mini-Mental State Examination (SMMSE).[40] Those who scored 16 or more on a scale of 0 to 30 were educated about the LMD.[41] If residents designated otherwise scored 15 or less, we contacted their proxies (court-appointed guardians for personal care, attorneys for personal care, board-appointed representatives, family members or partners, or public guardians and trustees) to complete LMDs on their behalf.

Competent residents and proxies of incompetent residents met with the HCF to discuss their treatment choices. When they were educated about the LMD, the HCF assessed the resident's capacity using validated instruments specific to LMD.[41] Competent residents and proxies for incompetent residents had the opportunity to complete directives. Physicians reviewed and signed directives, originals remained in the residents' charts, and residents, families, proxies, and family physicians received copies. Charts with directives were flagged and extra copies were produced to accompany residents if they were transferred to hospitals.

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One year later, the HCFs contacted competent residents and proxies of incompetent residents to update the directives.

Control Institutions

We provided no specific directions or written material to control institutions. They continued their usual policies, which did not prescribe any particular advance directive.

Outcome Measures

We obtained consent from residents and families for data collection in intervention and control homes. Competent residents and relatives of incompetent residents completed satisfaction questionnaires[42] at the start of the study and 6, 12, and 18 months thereafter. If residents became incompetent during the study, families completed the instrument designed for relatives of an incompetent resident.

These instruments focus on 2 areas: satisfaction with level of health care received and involvement in decision making. Some patients and relatives wish to be fully involved in health care decisions,[8,9,14,17] while others prefer to leave these decisions to health care providers.[43-45] Mean scores of elderly patients and their relatives were between 75% and 80% of the maximum with a wide range, and the intraclass correlation for test-retest reliability for the instruments varied from 0.86 to 0.94.[42] Thus, while the mean score of close to 80% of the maximum suggests the possibility of a ceiling effect, the high intraclass correlation demonstrates that between-respondent heterogeneity was high, suggesting a good chance of detecting improvement in satisfaction.

In the experimental homes and their matched controls, we collected prospective data for 18 months on the date the first LMD directive was completed and retrospective data for 12 months prior to that date. In the prospective period, we collected information on health care utilization for patients and proxies who consented to participate. Unit cost of hospital tests, procedures, emergency department visits, and patient days in a hospital by type of ward and type of diagnosis came from a hospital participating in the Ontario Case Costing Project.[46] The Ontario provincial fee schedule for services[47] provided cost estimates for physician consultations and assessments, daily hospital visits, diagnostic procedures, and surgical operations. The Ontario Ministry of Health price list[48] provided data for stock medications cost, while nonstock prescription medication costs were based on the Ontario Drug Benefit formulary[49] plus a 10% pharmacy markup and a standard Can $6.11 dispensing fee for prescriptions. We surveyed local pharmacies for nonprescription, nonstock drug prices.

Statistical Analysis

We summarized characteristics of the homes and residents at baseline using means and proportions (FIGURE). Analyses of intervention effects were based on homes as the unit of randomization, rather than on individual patients. Detection of the treatment effect in our analyses was based on the magnitude of differences between homes within pairs and on the extent to which these differences were large in relation to the variability in these differences across pairs of homes.

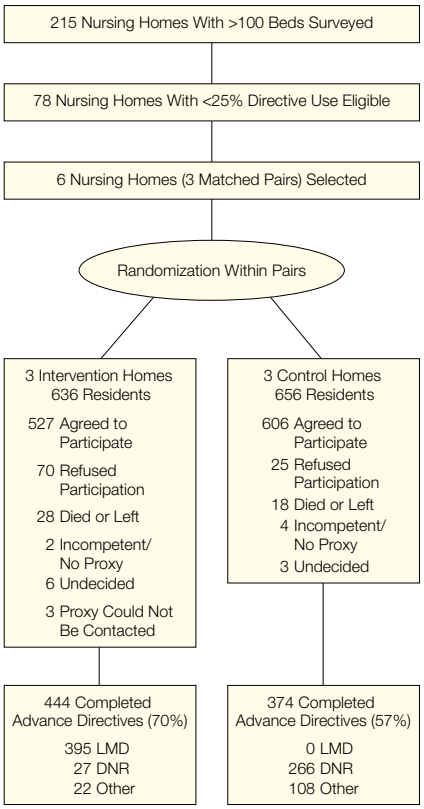
To determine if satisfaction differed between intervention and control homes, we used a weighted analysis of covariance with the last available satisfaction score as the dependent variable and baseline satisfaction scores in these same patients as the covariate. The analysis of covariance was required because of baseline differences between groups, and the weighting was used to adjust data for the different number of participants in each home.

The home with the lowest number of residents was assigned a weight of 1. The other 5 homes were assigned a fractional weight determined by dividing the number of residents in the home with the fewest participants by the number of participants in each of the other 5 homes.

To compare health care use in intervention and control homes, we calculated the total cost for each person based on health care use and unit costs of services. The difference in mean cost per person between each paired nursing home was compared using an unpaired *t* test (with 2 *df*). A logit model, adjusted for clustering, was used to compare the consent rate, sex composition, death rate, and hospitalization rate in the directive and control homes. A least squares model (based on the square root transformation) adjusting for clustering was used to compare the number of hospital days in the directive and the control home groups.[50] A secondary analysis compared the average number of hospitalizations and hospital days in patients in the intervention homes who had or had not completed an advance directive.

Institutional review board approval for the study was granted by Hamilton Health Sciences Corporation.

Figure. Flow Diagram for the Prospective Study



LMD indicates Let Me Decide; DNR, do not resuscitate; and other, living wills, directives, power of attorney, no hospital.

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RESULTS

Participants

There were 636 and 656 residents in the intervention and control homes, respectively, at the start of the prospective data collection period. In the intervention homes, 228 residents (36%) were competent and 408 (64%) were incompetent. Of the 228 competent residents, 177 (78%) consented to chart review and/or to complete baseline assessments, 38 residents (17%) refused to participate, and 13 (6%) died or left the home before contact. For the 408 incompetent residents, 350 proxies (86%) consented to chart review and/or to complete baseline assessments, 32 proxies (8%) refused to participate in the study, 2 (0.5%) were ineligible because they did not have a proxy, and 15 (4%) died or left the home before contact. Three of the residents' families (0.7%) could not be contacted, and 6 (1.5%) had not made a decision 12 months after the start of the prospective period.

In the control homes, 267 residents (41%) were competent and 389 (59%) were incompetent. Of the 267 competent residents, 256 (96%) consented to chart reviews and/or to complete baseline assessments, 8 (3%) refused to participate in the study, and 3 (0.8%) died or left the homes before contact. Of the 389 incompetent residents, 350 proxies (90%) consented to chart review and/or complete baseline assessments, 17 (4%) refused to participate, 4 (1%) had no proxy to consent, 15 (4%) died or were discharged before contact, and 3 (1%) had not made a decision 12 months after the start of the prospective period.

In all, 12% in the intervention homes and 4.4% in the control homes refused chart review or to complete the baseline assessment. The remaining nonconsenters (5% in the intervention homes and 3.1% in the control homes) were discharged or deceased before the baseline assessment. Differences in consent rate between intervention and control homes, within the 3 pairs, were not significant (odds ratio [OR], 0.53; 95% confidence interval [CI], 0.20 to 1.42).

TABLE 1 describes characteristics of consenting and nonconsenting residents in intervention and control homes. There was a higher percentage of men in the intervention (220/636 [35%]) than in control homes (138/656 [21%]) (OR, 0.51; 95% CI, 0.35 to 0.76).

Directive Completion

Of 208 residents who expressed interest in completing advance directives, 23 were deemed incompetent by the HCF, and 90 (49%) of the remaining 185 competent residents completed advance directives. Of 389 proxies of incompetent residents who expressed interest in completing advance directives for their relatives, 305 (78%) did so. There was no significant difference be-

Table 1. Characteristics of Consenting and Nonconsenting Residents*

Variable	Pair 1		Pair 2		Pair 3	
	Intervention	Control	Intervention	Control	Intervention	Control
	Consenting Residents					
	(n = 190)	(n = 203)	(n = 146)	(n = 157)	(n = 191)	(n = 246)
Age, mean, y	79.40 (77.90-80.90)	83.44 (82.24-84.63)	82.99 (81.48-84.49)	84.26 (82.89-85.62)	83.63 (82.30-84.96)	84.80 (83.69-85.91)
Female sex, %	63.16 (56.24-70.08)	77.34 (71.53-83.15)	70.55 (63.07-78.03)	74.05 (67.14-80.96)	71.73 (65.28-78.17)	81.71 (76.84-86.57)
White, %	94.09 (90.66-97.51)	98.03 (96.10-99.96)	99.32 (97.96-100.00)	100.00 . . .	97.92 (95.88-99.96)	98.37 (96.77-99.97)
Definitely incompetent, %	44.21 (37.08-51.34)	48.77 (41.83-55.70)	61.38 (53.36-69.40)	58.97 (51.17-66.78)	58.73 (51.65-65.81)	57.96 (51.73-64.18)
Annual income <$20 000, %	86.75 (79.30-94.20)	79.73 (73.18-86.28)	85.54 (77.82-93.27)	93.07 (88.03-98.11)	87.40 (81.55-93.25)	88.07 (83.96-92.17)
Elementary school education, %	67.06 (59.92-74.20)	47.45 (40.40-54.50)	48.20 (39.79-56.61)	50.00 (41.85-58.15)	49.17 (41.82-56.52)	48.95 (42.57-55.34)
SMMSE score, mean	22.22 (21.10-23.33)	23.54 (22.66-24.41)	24.32 (22.88-25.76)	24.10 (23.28-24.92)	23.10 (21.85-24.35)	25.61 (24.67-26.56)
Barthel index, mean†	46.74 (42.11-51.36)	44.16 (40.34-47.97)	41.58 (36.30-46.86)	41.54 (37.14-45.93)	37.49 (33.96-41.02)	45.00 (40.58-49.42)
	Nonconsenting Residents					
	(n = 36)	(n = 27)	(n = 16)	(n = 17)	(n = 57)	(n = 6)
Age, mean, y	82.85 (77.95-87.76)	82.87 (78.83-86.92)	84.92 (79.95-89.89)	84.20 (79.59-88.77)	83.37 (80.67-86.08)	88.69 (29.97-147.21)
Female sex, %	44.12 (26.53-61.70)	80.77 (64.54-97.00)	68.75 (43.24-94.26)	93.31 (75.55-100.00)	50.91 (37.27-64.55)	83.33 (40.49-100.00)
Definitely incompetent, %	36.36 (19.04-53.69)	70.37 (51.96-88.78)	50.00 (22.48-77.52)	93.75 (80.43-100.00)	50.00 (36.49-63.51)	66.67 (12.47-100.00)

*Data in parentheses are 95% confidence intervals. SMMSE indicates Standardized Mini-Mental State Examination; ellipses, all consenting residents in pair 2 control home were white.

†The Barthel index is described in: Mahoney FI. Rehabilitation of spinal cord injured patients. *Md State Med J.* 1969;18:113-116.

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tween the advance directive completion rates between males (62%) and females (67%) (OR, 0.79; 95% CI, 0.58 to 1.07).

At the end of the study, 57% of residents in the control homes and 70% in the intervention homes had completed advance directives; 71% of directives in the control homes were "do not resuscitate" orders and 89% of directives in the intervention homes were LMD. The time span between the dates when the first and last directives were completed for the intervention homes was 1.08, 1.67, and 1.45 years.

Table 2. Retrospective and Prospective Hospitalizations, Deaths, and Discharges

Variable	12-mo Retrospective		18-mo Prospective		
	Intervention Homes	Control Homes	Intervention Homes	Control Homes	*P* Value*
No. of residents	655	672	527	606	. . .
Total hospitalizations†	197 (0.30)	183 (0.27)	143 (0.27)	290 (0.48)	.001
Total hospitalization days‡	1728 (2.64)	2024 (3.01)	1378 (2.61)	3551 (5.86)	.01
No. of deaths (%)§	135 (21)	117 (17)	129 (24)	167 (28)	.20
No. of discharges	13	23	10	16	. . .

*Difference between intervention and control homes for patients participating in the prospective study after adjusting for baseline differences in the retrospective period.
†Numbers in parentheses are hospitalizations per patient.
‡Mean numbers in parentheses are hospitalized days per patient.
§Percentage of total residents.

Directive Choices

In the event of irreversible conditions, 70% of competent residents chose palliative care, 47% basic feeding, and 91% no CPR. For reversible conditions, 41% chose intensive care, 35% intravenous feeding, and 67% no CPR. For irreversible conditions, 66% of proxies for incompetent residents chose palliative care, 56% supplemental feeding (additional liquid supplements taken orally), and 97% no CPR. For reversible conditions, 51% chose limited care, 48% supplemental feeding, and 84% no CPR. Most competent residents and families of incompetent residents defined the inability to recognize family or communicate as an intolerable/irreversible condition.

Of 395 completed directives, 72 residents and 234 proxies participated in an annual review, 68 residents had died, and 9 had left the institution. Residents and proxies made 18 changes to residents' advance directives.

Satisfaction With Health Care

Satisfaction scores ranged from 1 (lowest) to 7 (highest). The mean (SD) satisfaction score for competent residents in the intervention group was 4.77 (1.10) at baseline and 5.07 (1.17) following the intervention, and 5.09 (0.98) at baseline and 5.10 (1.11) following intervention for controls. The postintervention adjusted mean difference, –0.16 (95% CI, –0.41 to 0.10), was not significant ($F_{1,218}$ = 1.38, *P* = .24).

The mean (SD) satisfaction score for incompetent residents in intervention homes was 5.49 (1.04) at baseline and 5.71 (1.03) following the intervention. For incompetent residents in control homes, the preintervention and postintervention means (SDs) were 5.44 (1.11) and 5.61 (1.15), respectively. The difference between the postintervention adjusted means, 0.07 (95% CI of the difference, –0.08 to 0.23), was not significant ($F_{1,459}$ = 0.82, *P* = .37).

Health Care Costs

TABLE 2 presents hospitalizations, hospitalized days, deaths, and discharges in the retrospective and prospective periods. In the retrospective period, hospitalizations and hospital days were similar in intervention and control homes. The mean number of days of follow-up in the prospective period averaged 479 for intervention residents and 475 for controls. The death rate in the prospective period, adjusted for death rate in the retrospective period, was not significantly different between intervention and control homes (24% vs 28%; *P* = .20). In the prospective period, the adjusted risk of hospitalization was lower in intervention home residents than controls (0.27 vs 0.48 mean hospitalizations per patient; *P* = .001). Intervention home residents had a lower mean number of hospital days than controls (2.61 vs 5.86; *P* = .01). Residents in the intervention homes who completed an LMD had similar hospitalizations (0.273 vs 0.267; *P* = .93) and mean number of hospitalized days (2.44 vs 3.24; *P* = .42) compared with those who did not.

TABLE 3 presents health care costs. The mean hospital cost per resident was Can $1772 for intervention homes and Can $3869 for control homes (*P* = .003). Total health care and implementation costs were significantly lower for residents in the intervention homes (Can $3490 vs Can $5239; *P* = .01) compared with controls.

The only systematic difference in baseline characteristic between the 2 groups was a greater number of men in the intervention group. However, when data were pooled across both groups, men showed a greater rate of hospitalizations than women (0.43 vs 0.36) and a higher number of mean hospital days (4.84 vs 4.18).

COMMENT

Strengths of this study include the randomized controlled trial design, use of validated questionnaires to measure satisfaction, and comprehensive collection of health care resource use.

One major limitation of this study is related to the small sample size, which increases the likelihood that randomization may fail to balance prognostic factors between groups.[51] This limitation was ameliorated by our careful matching of the pairs of homes according to a number of relevant variables. Despite our careful matching strategy, we did find some imbalance between the groups. First, consent rates to complete satisfaction questionnaires and collect resource use data collection were different: 83% and 92% in the control and intervention homes, respectively.

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However, we observed substantial differences in consent rate in only 1 home (Table 1) and, overall, the difference in consent rates did not reach statistical significance. The second imbalance was the higher percentage of men in the intervention homes. Prior studies have suggested that male residents are hospitalized more often than female residents.[52,53] We also observed a greater rate of hospitalization in men. Any bias from this imbalance would decrease the difference in hospitalizations and costs between intervention and control groups, suggesting that our estimate of the difference is a conservative one.

Another limitation associated with our small sample size has to do with generalizability. In particular, one may question the extent to which other countries with different attitudes and differently structured health care systems could expect a substantial health care cost reduction through systematic implementation of advance directives in nursing homes.

Although we enrolled only homes with health care choices documented for less than 25% of their residents, by the end of the study, 70% of residents in the intervention homes and 57% in the control homes had an advance directive. Directives in the control homes were generally less specific and comprehensive than in LMD homes. Systematic implementation of comprehensive, specific directives may reduce costs in institutions with a high rate of nonspecific directives. Another possibility is that the educational process in nursing homes and hospitalizations was responsible for this effect, rather than patients' completion of advance directives. If this is the case, one might also expect an impact even in homes where most patients already have some form of advance directive.

The LMD advance directive is a comprehensive and complex document. To the extent that its complexity deterred residents from completing it, we might have underestimated the potential impact of systematic implementation of advance directives. However, the HCFs were trained to provide clear explanations and answer residents' questions. Patients with SMMSE scores as low as 16 may be capable of completing an LMD. Therefore, even patients with impaired cognitive function can, with the aid of trained facilitators, understand and complete LMD.

This study confirms that, given the opportunity, competent residents in nursing homes and the families of incompetent residents are willing to complete advance directives.[37,38] Rates of approximately 50% for directive completion for competent residents and in families of incompetent residents can be achieved after comprehensive education of health care workers, patients, and families.

Systematic implementation of LMD in the intervention homes required an HCF commitment of 100% of a standard work shift for 6 to 8 months, depending on the size of the home. After initial implementation, HCFs worked half a day in the small home and a full day in the 2 larger homes to maintain the program. The percentage of time varied slightly depending on the size of the home and the admission rate.

We anticipated that systematic application of LMD would decrease overall resource utilization because staff would follow the wishes of acutely ill residents and their families and allow these residents to remain in the home. Without LMD, staff in the control homes would transfer more residents to the hospital. Increased acknowledgment of patient wishes might also create an environment in which staff would develop a higher threshold for transferring patients to hospital. Our results are consistent with at least 1 of these situations occurring in each of the intervention homes.

We expected that residents transferred to hospital would have lower mortality than those who remained in the home. However, despite a lower rate of hospitalization, mortality was similar in the intervention and the control homes. We did not measure symptom control and quality of life and so cannot com-

Table 3. Costs per Resident Participating in the Prospective Study*

Cost by Category	Mean (Median) Cost per Resident, Can $: Intervention Homes	Control Homes	Difference (Intervention vs Control) in Mean Cost per Resident	*P* Value†
Pair 1				
Hospitalization costs‡	1415 (0)	3625 (0)	−2210	
Nursing home drug costs	1548 (945)	1517 (1044)	32	
LMD implementation	110 (110)	0	110	
Total costs	3074 (1318)	5142 (1889)	−2068	
Pair 2				
Hospitalization costs	1295 (0)	3132 (0)	−1837	
Nursing home drug costs	1769 (1164)	1467 (1000)	302	
LMD implementation	116 (116)	0	116	
Total costs	3180 (1604)	4599 (1700)	−1419	
Pair 3				
Hospitalization costs	2491 (0)	4540 (0)	−2050	
Nursing home drug costs	1538 (1069)	1186 (765)	352	
LMD implementation	113 (113)	0	113	
Total costs	4141 (1727)	5726 (1687)	−1585	
Combined homes				
Hospitalization costs	1772 (0)	3869 (0)	−2097	.003
Nursing home drug costs	1606 (1069)	1370 (901)	236	.149
LMD implementation	113 (113)	0	113	NA§
Total costs	3490 (1499)	5239 (1812)	−1748	.013

*Some columns do not add to totals due to rounding. LMD indicates Let Me Decide advance directive.
†Based on a 1-sample *t* test of the difference in mean values across nursing home pairs. Statistical tests were done across all 3 pairs and not within each pair.
‡All hospitalization costs in 3 pairs and combined homes include drug costs.
§NA indicates not applicable (no test performed) because there are no implementation costs in control homes.

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ment on the effect of different hospitalization rates on these outcomes.

Unlike 2 previously conducted randomized trials,[10,35] this study explored the effect of advance directives in nursing homes in homogeneous populations. We also educated health care workers in homes and in hospitals, and LMD differs from other advance directives used previously. The LMD directive is more comprehensive and covers life-threatening illness, cardiac arrest, and feeding options for reversible and irreversible conditions. It has a personal statement that allows individuals to specify what disability they would accept or reject, and has a comprehensive education and capacity assessment process that acts as a quality assurance measure to assure health care providers that the directives truly reflect the wishes of those who complete them. Our findings may be a consequence of any or all of these differences.

The cost difference between intervention and control groups was consistent across all pairs of homes and was statistically significant, suggesting that we observed a true effect of systematic implementation of advance directives. The applicability of our results to health care systems internationally depends on the fact that while reimbursement mechanisms differ, all systems have incentives to reduce hospitalizations and related costs. While patient populations and their resulting expectations differ, the movement toward greater patient autonomy is an international one. We believe that cultures and health care systems across Canada, the United States, and northern Europe may be sufficiently similar that the findings could be replicated in other countries.[54,55]

If these findings are judged both valid and generalizable, the results may have implications for training of nursing home personnel. The workers in many nursing homes are not educated about advance directives, and the homes are not equipped to provide symptom relief and palliative care to residents at the end of life.[56] It is likely that the systematic application of advance directives will increase the need for effective palliative care in nursing homes.

Systematic application of LMD in nursing homes can reduce costs substantially by reducing hospitalizations. Replications of this study, with exploration of generalizability in different settings, would greatly strengthen the case for a widespread program of systematic implementation of certain kinds of advance directives in nursing homes.

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A good writer, and one who writes with care, often finds that the expression he's spent a long time hunting for without finding it, and which he finds at last, turns out to be the simplest and most natural one, which looks as if it ought to have occurred to him at the beginning, without any effort.
—Jean de la Bruyère (1645-1696)

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