

# How advance directives affect hospital resource use

## *Systematic review of the literature*



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### ABSTRACT

**OBJECTIVE** To assess whether advance directives influence resource use by hospitalized patients.

**DATA SOURCES** A systematic search of computerized medical databases, reference lists from relevant articles, and personal files was conducted to identify studies examining the association between advance directives and resource use.

**STUDY SELECTION** Primary studies assessing the effect of advance directives on hospital resource use were selected if they had a clear quantitative measure of hospital resource use, hospitalized patients as a study population, a control group for comparison, and a description of the advance directive being studied. Data on the following topics were abstracted from studies meeting inclusion criteria: study methods and design, resource use, source of financial data, description of advance directive, population size and composition, length of assessment.

**SYNTHESIS** Six studies met inclusion criteria. Three retrospective studies showed significant reductions in resource use associated with documentation of advance directives while three prospective studies (two randomized, one not randomized) showed no association between advance directives and reduced resource use. Studies were limited to narrowly defined patient populations in US tertiary care hospitals.

**CONCLUSIONS** Little evidence supports the hypothesis that advance directives reduce resource use by hospitalized patients. Some retrospective studies have shown savings, but their conclusions are weakened by shortcomings in study design. Prospective trials, which have better experimental methods, have demonstrated no evidence of cost savings with the use of advance directives.

### RÉSUMÉ

**OBJECTIF** Évaluer si les directives préalables ont une influence sur l'utilisation des ressources par les patients hospitalisés.

**SOURCES DES DONNÉES** Une recension systématique des bases de données médicales informatisées, des listes de références des articles pertinents et des dossiers personnels a été effectuée pour relever les études portant sur le rapport entre les directives préalables et l'utilisation des ressources.

**SÉLECTION DES ÉTUDES** Les études primaires évaluant l'effet des directives préalables sur l'utilisation des ressources étaient retenues si elles comportaient des mesures quantifiables précises de l'utilisation des ressources hospitalières, des patients hospitalisés comme sujets de l'étude, un groupe de contrôle aux fins de comparaison et une description des directives préalables à l'étude. Les données sur les sujets suivants ont été extraites des articles qui rencontraient les critères d'inclusion: les méthodes et la conception de l'étude, l'utilisation des ressources, la source des données financières, la description de la directive préalable, la taille et la composition de la population, et la durée de l'évaluation.

**SYNTHÈSE** Six études répondaient aux critères d'inclusion. Trois études rétrospectives démontraient des réductions importantes dans l'utilisation des ressources associées à la documentation des directives préalables, tandis que trois études prospectives (deux aléatoires et une non randomisée) n'établissaient aucun rapport entre les directives préalables et une réduction dans l'utilisation des ressources. Les études se limitaient à des populations de patients définies très précisément dans des hôpitaux de soins tertiaires aux États-Unis.

**CONCLUSIONS** Très peu de données probantes appuient l'hypothèse que les directives préalables réduisent l'utilisation des ressources par les patients hospitalisés. Certaines études rétrospectives ont fait valoir certaines économies, mais leurs conclusions sont affaiblies par des lacunes dans la conception de l'étude. Les études prospectives, dont les méthodes expérimentales sont meilleures, n'ont fait ressortir aucune donnée probante à l'effet que le recours aux directives préalables se traduisait par des économies de coûts.

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**M**edicine is moving from the view of a beneficent physician practising with little guidance from patients toward acceptance of a near-absolute right of patients to control the course of their health care.<sup>1</sup> The idea of an autonomous patient has been around for close to half a century, and since the 1960s, use of advance directives (formerly known as living wills) has been encouraged in an attempt to preserve this autonomy.<sup>2</sup>

Development of advance directives has coincided with patients' increasing role in the clinical decision-making process, and has thus been endorsed strongly by patients, physicians, lawyers, courts, public interest groups, and ethics committees alike.<sup>1-6</sup> Provision of compassionate care with dignity at the end of life, together with the goal of preserving patient autonomy, have been identified as justification for use of these directives.<sup>2,5</sup>

A possible secondary benefit of advance directives has also been proposed. Considerable interest has been expressed in the potential for advance directives to help reduce health care resource use during end-of-life care by preventing unwanted medical interventions. Most patients who execute advance directives choose to limit life-sustaining treatment.<sup>4,7</sup> Advance directives, therefore, have the potential to fulfil their primary role of increasing patient autonomy and satisfaction with care while also reducing use of limited resources. In an era of downsizing and large funding cuts in the Canadian health care system, this is a particularly compelling idea for family physicians caring for patients in hospital.

The high cost of treating patients at the end of life has been well documented. In a widely quoted article, Lubitz and Prihoda<sup>8</sup> observed that 27.9% of the annual United States Medicare budget flows to the 5.9% of Medicare enrollees who die in a year. An estimated 18% of lifetime medical costs are incurred during the last year of life.<sup>9</sup> It is possible that a large portion of these costs, unfortunately, result from treatments that have questionable efficacy or are unwanted.<sup>4,10,11</sup> If advance directives have the power to prevent treatments of this nature from occurring,

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in theory, they would be effective in reducing some of the costs of expensive terminal care.

To date, several studies examining the associations between advance directives and costs have produced conflicting results. Systematic reviews are a useful tool for summarizing large bodies of knowledge and helping to explain differences among studies on the same questions.<sup>12</sup> The objective of this study was to systematically review the medical literature and to assess the evidence for an effect of advance directives on hospital resource use by inpatients. Although we found one other review with a similar objective,<sup>13</sup> it was not a systematic review of the literature, and it did not include all of the papers included in our analysis.

## METHODS

**Data sources.** We searched the medical literature to identify studies quantifying the effect advance directives have on hospital resource use. Electronic databases were searched using the following dates: MEDLINE 1966 to June 1997, BIOETHICSLINE 1973 to June 1997, CINAHL 1982 to June 1997, CANCERLIT 1983 to June 1997, and HEALTHSTAR 1975 to June 1997. The following key words were used: explode economics, explode advance directives, explode hospitals, and terminal care. Second, we used our personal files to search for additional citations. Finally, we reviewed the reference lists of all available review articles, primary studies, and editorial articles to identify references not found in the computerized searches.

**Study selection.** To be included in this review, articles had to be primary studies that contained the following: first, a clear quantitative measure of outcome (ie, resource use); second, a study population of hospitalized patients; third, a control group for comparison; and fourth, a description of the advance directive being studied. We defined an advance directive as any expression of patient wishes (written, verbal, or otherwise) that specified preferences or values regarding life-sustaining treatment.

**Data abstraction.** We abstracted the following data from primary studies: study design, resource use, the source of financial data, a description of the advance directive, the population size and composition, and the length of time over which the effect of advance directives was assessed. This process was completed independently by each author, and any differences were resolved through discussion to achieve consensus.

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### SYNTHESIS

#### Study selection

We identified 46 relevant citations, which then were retrieved and screened for content. Two of us (J.S.T. and S.J.T.) screened the papers to determine whether they met our inclusion criteria. Six articles<sup>7,14-18</sup> measuring the effect of advance directives on hospital resource use were included. Five of these articles<sup>7,14,16-18</sup> were identified through the electronic database search; the other<sup>15</sup> was identified through a reference list. Articles not included lacked one or more of the required criteria.

#### Outcome data

**Table 1**<sup>7,14-18</sup> shows the data abstracted from each study included in the review.

**Retrospective studies.** Of the articles included in this review, only three retrospective studies showed a savings of resources when patients had advance directives.<sup>7,14,16</sup> In each of these studies, investigators reviewed the charts of patients who died and classified them by presence or absence of advance directives (**Table 1**<sup>7,14-18</sup>). As is often the case with retrospective designs, however, confounding variables affected study populations. These differences included disease severity, stage of disease, sex, patient perception of disease curability, and admitting service. It is likely these variables affected hospital resource use, and the reduction in charges could, therefore, be the result of differences other than the presence or absence of advance directives. These uncontrolled variables weaken the conclusions of these papers.

Each of the retrospective studies examined only patients' terminal hospitalization, a limited time frame. This short period of measurement would not account for any previous, potentially expensive hospitalizations, and hence could have exaggerated the results in these studies.

**Prospective studies.** Failure of the prospective studies to show an effect of advance directives on resource use could be related to the paucity of these documents. In phase I of SUPPORT,<sup>15</sup> 618 of 3058 patients (20%) reported having formal written advance directives, but only 36 (1.1%) had any mention of the subject in their medical records, and only two had a copy of the directive filed in their medical records. In addition, there were important differences in baseline demographics

between patients with advance directives and those without.

Schneiderman et al<sup>18</sup> also showed a low rate of advance directive completion among patients randomized to the intervention group. Of the 104 patients offered advance directives, only 66 chose to fill out a form. Patients were followed for almost 3 years; 21 of 204 (10.3%) patients were lost to follow up. Of the 66 patients who chose to complete advance directives, only three needed advance directives during the study period. An effect on resource use is unlikely with these low rates of utilization. Finally, this study has limited generalizability, as it recruited a highly select patient population (mostly elderly, male veterans), of which 26% refused to participate in the study.

Phase II of SUPPORT<sup>17</sup> was a major intervention that attempted to increase patient participation in clinical decision making. It involved giving patients opportunities to discuss their preferences for life-sustaining therapies with nurse facilitators, and also provided physicians with daily prognostic information. However, no significant impact on resource use, or any aspect of clinical decision making, was observed. Likewise, physicians of patients in the intervention group were no more likely to be aware of their patients' advance directives than physicians in the control group. Despite the increase in discussions concerning life-sustaining therapies with nurses, there seemed to be little or no corresponding increase in communication on this topic between physicians and their patients. The limited follow up of study patients (limited to concurrent hospitalization) could have contributed to the negative findings of this study.

A final limitation of all six studies is the measurement of resource use. All but one study used charges or a surrogate for charges (such as length of stay multiplied by a disease severity index) to measure resource use. The remaining study attempted to convert charges into costs through a mathematical formula. Unfortunately, charges are a poor representation of true costs to hospitals and the health care system.<sup>19</sup> This weakens the validity of these results in assessing the true effect of advance directives on the actual costs of health care.

### DISCUSSION

This study was designed to provide a systematic review of the medical literature to assess how advance directives affect resource use by hospitalized patients.

Through a search of electronic databases, personal files, and reference lists, we found six articles that met our inclusion criteria. These papers reported conflicting results.

The three retrospective studies showing cost savings with advance directives demonstrated a positive outcome only when patients were admitted to hospital with directives already in place. However, directives filled out in advance of a terminal illness present some serious ethical dilemmas. For one, it is debatable whether or not competent patients, not facing life-or-death decisions, can make a truly informed decision about what they would want in the event of becoming incompetent with life-threatening illnesses. This is true even when decisions are made in an optimal setting with guidance and input from their primary care physicians.

As well, the more time that has elapsed since completion of advance directives, the greater the possibility patients' preferences will have changed. If

advance directives are not updated, they will express wishes that are no longer valid. Therefore, the type of advance directives that seem to have the greatest potential for reducing resource use, those completed well before a terminal illness, are the most troublesome from an ethical standpoint.

Prospective studies that showed advance directives and resource use to be unrelated all had methodologic weaknesses. In each study there was either a very low rate of advance directive activation, a breakdown in communication regarding patients' treatment preferences, or both. If patients' wishes do not get incorporated into the clinical decision-making process, there is little hope these wishes will change the care patients receive. For this reason, ongoing communication between patients and physicians is crucial to implement patients' wishes.

Improving communication, however, must go one step beyond simply being aware of patients' wishes. We distinguish between simply eliciting patients'

**Table 1. Studies examining the association between hospital resource and advance directives**

STUDY	TYPE OF STUDY	STUDY POPULATION	INTERVENTION	PERIOD OF ASSESSMENT	SOURCE OF FINANCIAL DATA	AVERAGE CONVENTIONAL CARE PATIENTS	COSTS* ADVANCE DIRECTIVE PATIENTS
Chambers et al <sup>7</sup>	Retrospective chart review	474 Medicare inpatients who died in hospital	Documentation of advance directive in hospital records	Terminal hospitalization	Medicare hospital charges	95 305	30 478
Weeks et al <sup>16</sup>	Retrospective chart review	336 inpatients who died in hospital	Documentation of advance directive in hospital records	Terminal hospitalization	Hospital charges	49 900	31 200 <sup>†</sup>
Maksoud et al <sup>14</sup>	Retrospective chart review	852 inpatients who died in hospital	Documentation of a "do not resuscitate" order in the hospital record	Terminal hospitalization	Hospital charges	61 215	10 631 <sup>†</sup>
Teno et al <sup>15</sup> (SUPPORT Phase I)	Prospective cohort study	3058 inpatients with 50% 6-month predicted mortality	Patient report of an advance directive	Duration of hospital admission after enrolment	Hospital charges, length of stay, and TISS score <sup>‡</sup>	56 300	65 535
SUPPORT Principal Investigators <sup>17</sup> (SUPPORT Phase II)	Randomized controlled trial	4722 inpatients with 50% 6-month predicted mortality	Nurse facilitator to elicit preferences; physician given prognostic information	Duration of hospital admission after enrolment	Length of stay and TISS score <sup>‡</sup>	33 000	27 000
Schneiderman et al <sup>18</sup>	Randomized controlled trial	204 inpatients with a life-threatening illness	California Durable Power of Attorney for Health Care	From enrolment in study to death	Medical records, hospital bills, self-report questionnaires by patients	77 500	94 400

\*Data for costs are listed in US dollars.

<sup>†</sup>Statistically significant differences cited in study data ( $P < .05$ ).

<sup>‡</sup>Therapeutic Intervention Scoring System (TISS)—estimate of cost quantifying the number and magnitude of procedures performed on a patient.

## CME

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### How advance directives affect hospital resource use

#### Key points

- This systematic review examined whether use of advance directives reduced health care costs for hospitalized patients.
- Six trials met eligibility criteria; three retrospective and three prospective.
- The three retrospective trials showed some resource savings, but the three prospective trials did not.
- All six trials had significant methodologic problems.
- To date, there is no evidence that advance directives reduce health care costs for hospitalized patients.

#### Points de repère

- Cette étude systématique examinait l'influence du recours aux directives préalables sur la réduction éventuelle du coût des soins de santé aux patients hospitalisés.
- Six études répondaient aux critères d'admissibilité, dont trois rétrospectives et trois prospectives.
- Les trois études rétrospectives signalaient une certaine économie de coûts, mais les trois études prospectives n'en démontraient aucune.
- Les six études comportaient toutes d'importants problèmes sur le plan de la méthodologie.
- Jusqu'à présent, il n'existe pas de donnée probante qui permette de conclure que les directives préalables réduisent le coût des soins de santé prodigués aux patients hospitalisés.

preferences and facilitating a decision. When prospective studies referred to eliciting patients' preferences, they were describing a process that typically involved some form of interview process or chart review. We contend that an informed decision should be the result of meaningful interaction between patients and health care providers. This interaction is not the result of simply asking patients what they would like, but should be a continuous discourse regarding their desires, fears, and values.

This interaction fits well into a model in which physicians are frequently in touch with patients, patients' wishes, and patients' ongoing care, as is the case with primary care providers. A system of advance care planning that incorporates such open communication between patients and physicians

could be a great improvement over advance directive documents and their limitations.

Further research should focus on enhancing communication between physicians and patients to better incorporate patients' preferences into decision making. Until this happens, limitations that have hindered current advance care documentation and planning will likely persist. Future interventions should be designed to establish *ongoing* discussions between patients and physicians on preferences for life-sustaining therapies. This would be an important step in improving advance care planning. Family physicians might be called upon to play a greater role in initiating these discussions as patients approach the end of their lives.

There are several limitations to our study. First, the electronic databases do not contain the world's entire medical literature, so it is possible a study was missed. As well, any work currently in progress or under review would not have been included. Finally, detailed quantitative comparison and analysis of outcome data was impossible because of the heterogeneity of methods used for outcome measure.

It is difficult to determine whether the results of these studies apply to the Canadian medical system. There is a very obvious difference in the economics of medical funding in Canada and the United States. Arguably, there are also other relevant differences between these two nations, such as societal attitudes and values. These factors undoubtedly affect how the practice of medicine is viewed, what the public expects from physicians and the health care system, and ultimately, how resources are used. Thus the results of these studies of advance directives are not necessarily generalizable to the Canadian health care system.

## CONCLUSION

To date, little evidence supports the hypothesis that advance directives reduce resource use by hospitalized patients. Some studies have shown varying degrees of savings, but their conclusions are weakened by shortcomings in their retrospective designs. Prospective trials, which have better experimental methods, have demonstrated no evidence of cost savings with use of advance directives for hospitalized patients. All of the prospective trials demonstrated problems implementing advance directives, so evaluations of their potential effect are inconclusive. ♦

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