Advance Directives in the Medical Intensive Care Unit of a Community Teaching Hospital*

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Study objective: To evaluate the frequency with which advance directives (ADs) are available at the time of admission and their impact on subsequent care in a medical intensive care unit (MICU) setting before and 9 months after the implementation of the Patient Self-Determination Act (PSDA).

Design: Prospective nonrandomized cohort data collection and analysis.

Setting: Thirteen-bed MICU of community teaching hospital providing primary and referred care.

Patients: Consecutive admissions during 2-month periods separated by 1 year: August-September 1991 (91) and August-September 1992 (92).

Measurements: The following were assessed: the presence and type or absence of AD at the time of admission; the presence or absence of a written order to limit resuscitation (WO-R) during the MICU stay; duration of MICU stay in hours; outcome; and combined duration of use or administration of seven selected interventions.

Main results: Fifteen of 133 patients (11.3%) in the 91 group and 15 of 171 patients (8.8%) in the 92 group presented with an AD. This difference was not significant (p=0.578). Most patients in both groups (75.9% in 91 and 80.1% in 92) presented without an AD and did not have a WO-R during their MICU course. In addition, most patients who did present with an AD, 11 of 15 (73.3%) in the 91 group and 14 of 15 (93.3%) in the 92 group, did not have a WO-R. A subgroup of older and more severely ill patients in both cohorts was identified; they did not present with an AD but subsequently a WO-R was established. These patients had the highest mortality, about 40%, when compared with the overall mortality of 8.2%.

Conclusion: Advanced directives were infrequently available and had little impact on the pattern of care.

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Key words: advance directives; intensive care unit; ethics; living wills; withdrawing/life-sustaining treatment

Advanced directives (ADs) in the form of living wills or durable powers of attorney represent methods by which individuals can attempt to delineate their wishes about medical care to be applied when decision-making capability has been lost. Living wills have been criticized for being insufficiently complete or specific when applied to a particular clinical situation.

Specifying a surrogate decision-maker by using a durable power of attorney for health care decisions is thought to be of potential benefit, but appropriate surrogates are not uniformly available and expressions by the surrogate may not accurately reflect what the patient’s wishes would have been.

Very few patients have formulated ADs or even spoken to their physicians regarding these issues. It is estimated that 4 to 17.5% of the general population have actually completed an AD. This lack of availability is contributed to not only by patient avoidance and lack of awareness but also physician reluctance to discuss end-of-life decisions in an elec-
Despite these drawbacks, ADs are believed by many to have current benefit for selected cases and potentially greater beneficial impact if accepted and used more widely.\textsuperscript{19-21}

Legal and legislative influences have been considerable in this area of medical decision making. Following and possibly influenced by the Cruzan decision of the US Supreme Court,\textsuperscript{22} Congress passed the Patient Self-Determination Act (PSDA) in December of 1990 as a component of the Omnibus Budget Reconciliation Act.\textsuperscript{23} This legislation requires healthcare institutions to inform patients at the time of hospital admission of their right to accept or refuse treatment and to prepare ADs.

Implementation of these requirements was mandatory on November 1, 1991. Legislation authorizing the Michigan Durable Power of Attorney for Health Care (MDPAHC) was passed by the state legislature in December 1990. This enabled citizens to specify an advocate who could speak for them regarding healthcare when decision-making capability had been lost.\textsuperscript{24}

The purpose of our study is to compare the availability and impact of ADs for patients admitted to the MICU of our community teaching hospital prior to and several months after the implementation of the PSDA.

\textbf{Materials and Methods}

This study took place in the 13-bed MICU of a 410-bed community teaching hospital providing primary and referred care. An anonymous prospective nonrandomized data collection was done. Approval by our Institutional Review Board was not sought. We collected data on 133 consecutive admissions to our MICU from August 1, 1991 through September 30, 1991 (91 group) and 171 consecutive admissions from August 1, 1992 through September 30, 1992 (92 group). The presence (yes) or absence (no) and type of AD was recorded by nursing personnel at the time of admission to the MICU. Subsequently recorded during the MICU stay were the presence (yes) or absence (no) of a written order to limit resuscitation (WO-R); duration of MICU stay in hours; combined duration in hours of use or administration of seven interventions (endotracheal intubation, mechanical ventilation, pulmonary artery catheter, arterial catheter, parenteral nutrition, dopamine infusion, dobutamine infusion); and outcome recorded as location of transfer or death. The Acute Physiology and Chronic Health Evaluation (APACHE III)\textsuperscript{25} scoring system was used to estimate the severity of illness for patients in the 1992 group whose MICU duration was 24 h or longer. Summary statistics were prepared and comparisons were made using a $\chi^2$ test. Differences were considered significant if $p<0.05$.

\textbf{Results}

The patient population was separated into four subgroups: NN=no AD, no WO-R; NY=no AD, yes WO-R; YN=yes AD, no WO-R; and YY=yes AD, yes WO-R (Table 1). The NN subgroups in both 91 (75.9%) and 92 (80.1%) were the largest. The NY subgroups had the longest duration of stay in both 91 (169.9 h per patient) and 92 (116.7 h per patient). The combined intervention hours per patient in the 91 group was 142.3 and 134.4 for the 92 group with the NY subgroups demonstrating the most intervention hours (91:658.8 h per patient; 92:344.3 h per patient). Mortality was 8.3% in the 91 group and 8.2% in the 92 group. The NY subgroup had the highest mortality rate in both 91 (41%) and 92 (40%).

Overall, 15 of the 91 patients (11.3%) and 15 of the 92 patients (8.8%) presented with an AD. This did not represent a significant difference ($p=0.578$). In the 91 group with AD (average age=67.7 years), the duration spent in the MICU per patient was 55.4 h while the average combined duration of interventions was 6.7 h per patient. For the 92 group with AD (average age=71.3 years), the duration in the MICU was 65.2 h per patient with a combined duration of interventions of 18.2 h per patient. The type of AD was noted. In the 91 group, eight patients had a durable power of attorney while seven patients had a living will. For the 92 group, seven patients had a durable power of attorney and eight had a living will.

Many patients were admitted to the MICU for monitoring. Among the 91 NN subgroup, 80 patients

\begin{table}
\centering
\caption{Comparison Data for 91 and 92 Groups and Subgroups*}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|}
\hline
& No. of Patients & Average Age, yr & Duration in ICU, h per Patient & Total Intervention, per Patient & Average APACHE III Scores & ICU Deaths (% of Group) \\
& & 91 & 92 & 91 & 92 & 91 & 92 & 91 & 92 & 91 & 92 \\
\hline
All & 133 & 171 & 63.5 & 63.9 & 82.2 & 70.0 & 142.3 & 134.4 & 44.8 & 11 & 14 \\
\hline
NN & 101 & 137 & 60.2 & 61.1 & 71.3 & 86.0 & 72.5 & 117.5 & 40.1 & 3 & 5 \\
\hline
NY & 17 & 19 & 79.6 & 76.0 & 169.9 & 116.7 & 658.8 & 344.3 & 75.0 & 7 & 8 \\
\hline
YN & 11 & 14 & 60.5 & 70.9 & 52.3 & 63.3 & 0 & 0 & 41.4 & 0 & 0 \\
\hline
YY & 4 & 1 & 87.5 & 79.0 & 68.5 & 92.3 & 100.4 & 273.0 & 87.0 & 1 & 1 \\
\hline
\end{tabular}
\*NN=No AD, no WO-R; NY=No AD, yes WO-R; YN=yes AD, no WO-R; YY=yes AD, Yes WO-R.
\end{table}
(79.2% of that subgroup) received no interventions. These patients had an average age of 61.5 years, MICU duration of 41.6 h per patient, and no deaths. For the NN subgroup in the 92 sample, 98 patients (71.6% of that subgroup) received no interventions. These patients had an average age of 60.2 years, MICU duration of 55.9 h per patient, and no deaths. All of the patients in the NY subgroup (91) received one or more interventions as did 73% of the 92 NY subgroup.

An analysis was done on the deaths in the 92 group. Five patients (3.6%) in the NN subgroup died following unsuccessful cardiopulmonary resuscitation. Eight patients (40%) in the NY subgroup died in MICU and an additional three patients in this subgroup died before leaving the hospital. For this group of 11 patients, the average age was 69.5 years, duration in MICU was 113.1 h per patient (98.9 h before WO-R, 14.2 h after WO-R), combined intervention hours were 458.5 h per patient, and average APACHE III score was 88.3.

**DISCUSSION**

Advance directives are uniformly discussed and often supported in reviews of ethical guidelines for decision making in the critical care setting and in summary recommendations regarding the issue of withholding and withdrawing of life-sustaining medical interventions published by various professional organizations, including the American College of Chest Physicians/Society of Critical Care Medicine, American Thoracic Society, American College of Physicians, and the American Medical Association. Silverman et al have reviewed the topic of ADs in critical care units. Living wills are noted to be widely recognized legally but narrow in scope and often not specific enough to apply in actual clinical settings. An example of this narrow scope is the prerequisite in many living wills that the patient be terminally ill before the living will is relevant. Particularly in the critical care setting, an analysis of the proportionate benefit in terms of quality of life to be expected from life-sustaining interventions may lead to decisions to forego treatment in nonterminal conditions. The appointment of an agent to make medical decisions in the event of decision-making incapability, durable power of attorney for health care, is specifically available in 27 states as exemplified by the Michigan statute. This offers the advantage of having a surrogate decisionmaker who can participate in a discussion regarding the specific clinical aspects of a given situation, overcoming to some extent the limited scope of an instructional directive or living will. This author (RFJ) recommends a combined approach when designing an AD. The durable power of attorney designation clarifies a decision maker who can interpret the patient's current situation so that medical treatment is consistent with prior attitudes and behavior as well as previously expressed wishes. A living will statement can provide a general framework to guide a surrogate decisionmaker. He contends that this combination, while still imperfect, could have significant practical value.

Emmanuel recently summarized the overall status of ADs, including patients and physician factors that limit their current and potential impact. These include reluctance by patients and physicians to initiate a discussion at an opportune time and clinician concerns that time devoted to establishing an AD will not be useful or even perhaps counterproductive by engendering patient distrust and misunderstanding. Noting that decisions based on ADs may well result in more rather than less care, Emmanuel does not believe that health-care costs will be reduced as a result of the implementation of the PSDA. This leaves the major benefit of ADs a matching of medical intervention pattern with patient desires, respecting patient autonomy. Emmanuel also concludes that a combination of instructional directive and surrogate designation is likely to be most effective in achieving the potential benefits of AD.

Our analysis separated those patients who had ADs from those who did not. The frequency with which ADs were available at the time of admission before implementation of the PSDA in comparison to 9 months after implementation is not significantly different. Our findings that approximately 10% of patients in both samples presented with an AD is consistent with previously described estimates of availability. To determine the impact of advance directives on the clinical course of our patients, various measurements were made. The patients with both an AD and a WO-R (YY) were the smallest subgroup as well as the oldest. The mortality was high in this subgroup and the presence of an AD did affect their care by limiting interventions at the end of life. Another and more sizable subgroup with ADs but without a WO-R (YN) during the MICU stay was younger and had no interventions performed. No deaths were noted in this subgroup. These patients had considered and formulated an AD prior to admission to the hospital. Situations did not arise that would necessitate the activation of their AD. Therefore, no impact on their care was seen.

Most patients did not have an AD or WO-R during their MICU stay (NN). They were younger and most often in the MICU for monitoring purposes. Mortality was low in this group. However, the subgroup presenting without an AD but subsequently during the MICU stay having a WO-R established (NY) was noted to be older and with the longest duration of stay in the MICU as well as the most inter-

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ventions. Mortality was also highest in this subgroup. These patients came to the MICU without an AD. Based on their subsequent clinical course and discussion with representatives, most often family, a WO-R was established. This usually coincided with other limitations or withdrawal of life-sustaining treatment and the patient often died shortly after the WO-R was written. We suggest that the availability of an AD at the time of admission for the patients in this subgroup could have altered the length of stay and intensity of intervention in these older and severely ill patients. An AD could have the benefit of facilitating the discussion of foregoing life-sustaining treatment at an earlier time in the hospital course. Knowledge of the patient’s wishes in a general sense, while admittedly often difficult to apply to a specific situation, or the presence of a designated spokesperson could lead to an earlier decision to limit care in situations where the physician opinion regarding eventual prognosis was consistent from an early point in the hospitalization. Such a course of events would lead to a better match between patient preference and medical treatment. Since many of these patients die shortly after a decision to limit care has been made, the duration of care would be shortened. A cost savings is possible assuming this course of events.

Limitations to our study are significant. Data were obtained from a relatively small sample of patients from one community teaching hospital and may not be representative of other hospitals and locations. Multiple staff members were involved in data collection that may have led to inconsistencies. APACHE III scores were not documented on the 91 group. We did not record cost-related data. While our data include a period of time before and several months after the passage of the PSDA, they may not reflect the eventual impact of this legislation. The MICU environment is most likely not an optimal location for an initial discussion and formulation of ADs. It is more likely, but not certain, that patients in the MICU represent a population in which the impact of ADs will be more prominent. Perhaps the influence of ADs will be seen more in the types and frequency of admissions to a critical care environment rather than altering the course of events once the decision to admit has taken place.

Advance directives have one major goal: to assist in making decisions for patients without decision-making ability that would reflect individual patient preferences. Although multiple concerns have been expressed, many patients and physicians desire a discussion of the issues that would eventually lead to the formation of an AD. This discussion would preferably take place in a physician-patient relationship as part of ongoing health care without the presence of a crisis situation. Our study in the MICU population supports the finding of previous studies indicating infrequent availability of ADs. Little impact on the duration and intensity of care in this setting was demonstrated. However, a subgroup was identified in which there is potential for a meaningful effect. We believe this should encourage health-care workers to acquire and disseminate information on the importance of ADs and how they can have an impact on medical care. We believe that ADs have the potential to allow patients to directly or indirectly make informed decisions about their health care.

CONCLUSION

Our study describes the infrequent availability of ADs for patients presenting to the MICU of our institution. The presence of ADs had little impact on patterns of care or the utilization of resources. Recent national and state legislation had no appreciable effect. However, a subgroup of patients was identified for which ADs could lead to a beneficial impact. This supports continued efforts by physicians and the public to promote the formulation and application of ADs. This information could also hopefully serve as a reference for future studies of the use of ADs in the MICU setting.

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