Resuscitation 90 (2015) 73–78

Contents lists available at ScienceDirect

Resuscitation

journal homepage: www.elsevier.com/locate/resuscitation

Clinical paper

What CPR means to surrogate decision makers of ICU patients☆

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ARTICLE INFO

Article history:
Received 29 March 2014
Received in revised form 4 February 2015
Accepted 8 February 2015

Keywords:
Cardiopulmonary resuscitation
Decision-making
Surrogate

ABSTRACT

Aim of the study: The decision to accept or decline cardiopulmonary resuscitation (CPR) by surrogate decision makers on behalf of a family member is a common and important component of end-of-life decision-making in the ICU. While many determinants influence this decision, surrogates' understanding of CPR may be a major guiding factor. However, little is known about surrogates' knowledge and perceptions of CPR during the periods of time when their family member is critically ill. We conducted this study to explore surrogates' understanding of some basic concepts of CPR.
Methods: This is a descriptive, survey-based exploratory study of understanding of CPR concepts and outcomes conducted in a single-center medical ICU at a tertiary academic hospital in the United States. Study subjects were surrogate decision-makers of critically ill ICU patients who participated in an interview-format survey within 24 h of the patient's ICU admission.
Results: Of 97 eligible subjects (surrogates), 50 were enrolled in this study and represented a wide spectrum of demographics. All subjects had heard of CPR. The main source of information about CPR was a course. While 46% identified cardiac arrest as a main indication for CPR, only 8% identified at least 2 of the 3 main components of CPR. The majority (72%) believed survival after CPR was ≥75%. Forty-two percent of surrogates had spoken to the patient about CPR prior to coming to the hospital, and 57% had spoken to the physician during this hospitalization. Twenty-six percent changed their decision on CPR during the ICU stay.
Conclusion: There is a wide variation in surrogates' understanding and knowledge of CPR concepts and outcomes.

1. Introduction

The decision to accept or decline cardiopulmonary resuscitation (CPR) on behalf of a critically ill family member is one of the most important and difficult decisions a person can make during their lifetime. In recent years, most deaths in the intensive care unit (ICU) have occurred after some degree of limitation of life-sustaining therapy.[1] Withholding CPR is often an initial step in the process to limit life-sustaining therapy when imminent death is anticipated. However, due to patients' incapacitation from their illness or its treatments, the decision to accept or decline CPR in the ICU is most commonly made between the physician and the patient's surrogate decision-maker, often a family member, regardless of whether advance directives have been completed or not.[1–7] This approach to decision-making is common in the USA but may vary among other countries of the world. Consequently, effective communication between these two participants is necessary to ensure that surrogates clearly understand as with any medical intervention, the indications, alternatives, benefits, and risks of CPR.[5] However, many studies report that communication between physicians and patients or their surrogates is suboptimal in the ICU, and many families consequently experience increased difficulties in making end-of-life decisions.[5,8–10] Surrogates may therefore be forced to rely upon their own knowledge, perceptions, and past experiences to make these decisions. Unfortunately, little is known about surrogates' understanding of CPR concepts, including the process of accepting or rejecting CPR, its components and outcomes. Limited or inaccurate understanding and knowledge of CPR may be a significant barrier to making appropriate and timely end-of-life decisions.

Prior studies from different countries have reported suboptimal understanding and misconceptions of CPR among specific

☆ A Spanish translated version of the summary of this article appears as Appendix in the final online version at doi:10.1016/j.resuscitation.2015.02.014.

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http://dx.doi.org/10.1016/j.resuscitation.2015.02.014
0300-9572/

patient and caregiver populations, as well as significant variability in decision-making and implementation of Do-Not-Attempt-Resuscitation orders.[11–20] While the public is often familiar with the general concept of CPR as a life-saving medical intervention and may even identify some components of it, the majority of patients and their caregivers demonstrate poor understanding of its prognosis, even after explanations are offered, advance directives are completed, or CPR courses taken.[14,21,22] When CPR has been explained to patients, many reverse their initial decision to accept it, suggesting poor initial understanding.[14] Although these studies provide some evidence that knowledge and understanding of CPR may be limited, they relate primarily to patients who are not imminently or critically ill and do not include their surrogates' perspectives during critical illness, when decisions on CPR by their surrogates are most likely to be made, particularly in the USA. One study by our group evaluated discussions on CPR between resident physicians and surrogates of ICU patients and reported that although only half of patients' surrogates had participated in CPR discussions within 24 h of the patient's ICU admission, a minority recalled the core components of CPR after these discussions.[23]

There are few studies that specifically target surrogate decision makers during a patient's critical illness period to determine their understanding of the role, components, and outcomes of CPR. Building on our prior work, we conducted this study to determine surrogates' specific understanding of CPR concepts, including the process of deciding on CPR, its components, and outcomes. We hypothesize that surrogates have a limited understanding of the basic concepts of CPR.

2. Methods

This is a descriptive, survey-based exploratory study of the perspectives of critically ill patients' surrogate decision makers about CPR. The study was conducted in a 16-bed "closed" medical ICU (MICU) at an academic tertiary care 900-bed hospital. Study subjects are the designated surrogate decision-makers (surrogates) for critically ill patients admitted to the MICU. Primary screening through patients' medical chart review identified eligible patients who met study criteria. All patients were ≥ age 18, had Acute Physiology and Chronic Health Evaluation (APACHE) II scores ≥ 15 and had an expected MICU stay ≥ 48 h. All surrogates were ≥ age 18 and were the patient's designated decision-makers for healthcare, based on documentation, legal statues, or family consensus. Excluded patients were those who had life-sustaining therapy withdrawn as part of an end-of-life decision early in the MICU stay, or those who had a written document specifically detailing patient's wishes regarding CPR.

The survey instrument content was generated based on a literature review of existing surveys and publications on CPR understanding as well as individual and local group discussions with healthcare providers such as ICU physicians, nurses, and palliative care specialists.[11,14,22,24,25] Content items were then refined and developed into the initial survey draft through testing and re-testing by medical and non-medical staff to assess for content and face validity. Questions were assessed for accuracy, clarity, usability, and completeness. Readability and understanding were also assessed and confirmed by both physicians and non-healthcare personnel. In addition, an interim analysis of a random sample of 12 patients was performed to verify the accuracy and completeness of data entry. Once eligible subjects were identified and consented, the survey (online Appendix I) was administered verbally through an in-person interview by a pre-trained researcher in a private room within 24 h of the patient's ICU admission.

In addition to the survey interview responses, other data were collected during the interview and from the medical record and included surrogates' and patients' demographic and clinical data, and outcomes data such as length of stay and changes in CPR decisions made during the patient's ICU course. All statistical analyses were performed using the Microsoft Excel copyright 2010 program. Descriptive data are reported as means (± standard deviation) or medians (range) for continuous data and proportions or frequency (%) for categorical data. The study protocol was approved by the University of Texas Institutional Review Board (HSC-MS-08-0208).

3. Results

All new admissions to the MICU over an 8-week period were screened for eligibility to participate in this study. Of 137 new patients admitted, 40 did not meet inclusion criteria: APACHE score < 15 (22), ICU stay < 48 h (9), patient re-admitted to ICU and already enrolled (6), and other reasons (3). Of the remaining 97 patients, 47 were not enrolled due to the following: lack of availability of surrogates (36), refusal (5), early death (1), or other reasons (5). The remaining 50 patients and their surrogates (52% of eligible patients) were enrolled and completed the study.

Characteristics of patients and their surrogates who participated in the study represent a wide spectrum of patient and surrogate ethnicities and patient admission diagnoses (Tables 1 and 2). Most surrogates were spouses or adult children and 35% had post-high school education. The main source of surrogates' understanding of CPR was from a course (Fig. 1). Surrogates' understanding of CPR indications, components, and complications demonstrate wide variations (Table 3). The majority (72%) believed survival after CPR was ≥ 75%.

Other specific characteristics of CPR discussions and decisions demonstrated a range of understanding about CPR-related decisions and rights by surrogates (Fig. 2). All surrogates had heard of CPR, but only 42% spoke to the patient about it before their ICU admission and 57% had spoken to the doctor during this admission. When asked about their level of comfort about deciding on CPR on behalf of the patient, 68% of surrogates indicated that they are "very comfortable", while 12% indicated being "not comfortable". About half (52%) believed the decision on CPR *should be made* by both

Table 1
Patient demographics.

Patients	
Number of study subjects (*n*)	50
Age (years)[a]	63 ± 18
Gender (% male)	50%
Ethnicity	
Caucasian	50%
African-American	38%
Hispanic	12%
APACHE II score[a]	24 ± 7
Major admission diagnoses[b]	
Respiratory failure	66%
Infection/sepsis	36%
Shock	20%
Metabolic abnormality	14%
Non-pulmonary organ failure	18%
Admission source	
Emergency center	78%
Hospital ward	18%
Other	4%
ICU admission code status (% full code)[c]	94%
ICU discharge code status (% full code)	72%
ICU length of stay[a]	8.1 ± 8.4
Survival	88%

APACHE II, acute physiology and chronic health evaluation; ICU, intensive care unit.
[a] Data represent means ± standard deviation.
[b] Patient may have multiple diagnoses.
[c] "Code status" represents the decision to accept/decline CPR. "Full code" implies CPR, and "no code" implies DNR.