



# Would you like to be admitted to the ICU? The preferences of intensivists and general public according to different outcomes

Renata Rego Lins Fumis<sup>a,\*</sup>, Guilherme De Paula Pinto Schettino<sup>b</sup>,  
Pedro Bribean Rogovschi<sup>b,c</sup>, Thiago Domingos Corrêa<sup>b</sup>

<sup>a</sup> Dept. of Critical Care Medicine, Hospital Sírio-Libanês, São Paulo, Brazil

<sup>b</sup> Dept. of Critical Care Medicine, Hospital Israelita Albert Einstein, São Paulo, Brazil

<sup>c</sup> Dept. of Critical Care Medicine, Hospital Municipal Dr. Moysés Deutsch, São Paulo, Brazil

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## ABSTRACT

**Background:** Discussions about invasiveness of care (advanced directives) and end-of-life issues have become frequent among intensivists and patients. Nevertheless, there are considerable divergences in the attitudes between intensivists and patients toward end-of-life care in the intensive care units (ICU).

**Methods:** The goal was to compare the preferences between intensivists and general public regarding ICU admission of a hypothetical patient with six different clinical outcomes. For that, intensivists and the general public (university graduate professionals outside the area of health) were invited to participate in this study. A survey was conducted with a hypothetical patient with six different clinical outcomes ranging from ICU discharge without any neurological sequelae, nor dependence for daily activities, to death. The WHOQOL-BREF was applied. Comparisons were made between the answers provided by intensivists regarding what they would choose for themselves and their patients, and the preferences of general public.

**Results:** Between July 2013 and July 2016, 300 participants in 5 hospitals in São Paulo, Brazil were invited to participate in this study, of whom 257 (85.7%) responded the survey. Eighty-two intensivists responded what they would choose for themselves, 81 intensivists responded what they would choose for their patients, and 94 people from general public responded what they would choose for themselves. Quality of life did not differ among the groups. In all scenarios, except when the outcome was severe disability or death, intensivists were more likely to choose ICU admission for their patients than for themselves ( $p < .05$  for all). Compared with general public, intensivists were more likely to choose ICU admission for themselves only when the best clinical scenario outcome is considered ( $p < .001$ ). General public was significantly less prone to choosing ICU admission than intensivists when choosing for their patients, in three out of six scenarios ( $p < .001$  for all).

**Conclusions:** Considerable divergences exist between intensivists' and patients' preferences toward end-of-life care. Advanced care planning and effective ongoing communication among intensivists, patients and relatives are essential to improve end-of-life decisions and the quality of care.

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## 1. Introduction

Patients admitted to the intensive care unit (ICU) are, by definition, those who are severely ill, exhibiting a higher risk of death in comparison to other patients in the hospital [1]. Admission to the ICU is considered one of the most critical event in the life of a patient and their family members [2]. Although historical comparisons suggest that ICU

mortality has been reduced [3], surviving critically ill patients often experienced suffering, anguish, pain, and a poor quality of life after ICU discharge [4–6].

The ICUs are of paramount importance for the care of critically ill patients. Nevertheless, there are a number of patients who will not benefit from their advanced technology [7,8]. Since predictors of mortality and morbidity are not accurate enough to determine which patient might benefit from ICU admission, this decision is difficult to make [9]. Additionally, most patients who died in the ICU were submitted to extremely invasive life support, often never having discussed their preferences [10]. Quality of life prior to ICU admission has a significant impact on mortality and quality of life post ICU [11]. There are studies showing that post-ICU quality of life may improve, but it remains worse than the general population's [12]. For instance, the quality of life in

**Abbreviations:** ICU, intensive care unit; WHOQOL-Brief, The World Health Organization Quality of Life Scale Brief Version; aOR, adjusted odds ratio; ANOVA, Analysis of variance.

\* Corresponding author at: Hospital Sírio-Libanês – ICU, Rua Dona Adma Jafet, 115 - Bela Vista, São Paulo, SP 01308-050, Brazil.

E-mail address: [renata.rfumis@hsl.org.br](mailto:renata.rfumis@hsl.org.br) (R.R.L. Fumis).

advanced cancer patients who die in the ICU is worse than the quality of life of patients who die in their homes with palliative care [13].

Recently, discussions regarding advanced life support, advanced guidelines, and end-of-life issues have become more frequent among patients, their families and ICU physicians. However, there are considerable disagreements over end-of-life care in ICUs. Scenarios have been used to help in the assessment of preferences, attitudes and values assigned, with the intention to provide further clarification in the final decision process [14–16].

This study aims to compare the preferences between intensivists (ICU physicians) and general public regarding ICU admission of a hypothetical critically ill patient with six different clinical outcomes, ranging from ICU discharge without any neurological sequelae, nor dependence for daily activities, to death.

## 2. Methods

### 2.1. Study design and setting

This prospective multicenter observational study was conducted in eight ICUs located in five tertiary care hospitals in São Paulo, Brazil after obtaining institutional approval at each site. Written informed consent was obtained from each study participant.

### 2.2. The survey

An invitation to participate in this study was sent by email to the ICU directors. They gave the survey to intensivists and then sent the filled-out forms back to the coordinating centre. The intensivists who accepted to participate in this study responded to a traditional paper and pencil questionnaire, which was then put into an opaque envelope to preserve their anonymity.

Inclusion criteria were physicians working in the adult ICU for at least 1 year. General public was formed by an aleatory sample of university graduate professionals with age between 25 and 65 years old working in companies located in the central region of the city of São Paulo outside the area of health. To participate in the survey, the main investigator had personally invited all the subjects.

### 2.3. Hypothetical clinical scenarios

Study participants were divided into three groups: intensivists choosing for themselves, intensivists choosing for their patients and general public choosing for themselves. Intensivists (ICU physicians) were randomly divided in intensivists choosing for themselves, intensivists choosing for their patients.

A survey was conducted with a hypothetical patient for whom ICU admittance was considered. This hypothetical patient could have six different clinical outcomes ranging from ICU discharge without any neurological sequelae or dependence for daily activities, to death. The full survey is presented in the Supplementary data. The World Health Organization Quality of Life Scale Brief Version (WHOQOL-Brief) was applied [17,18]. To answer the scenarios, the respondent was asked to suppose that the hypothetical patient had the same age as himself/herself, e.g., a young adult, ranging in age from 25 to 65 years.

**Scenario 1.** The patient is discharged from the ICU, is able to live at home and work. He is able to walk alone but needs help with some personal needs (e.g., shaving or makeup, climbing stairs). There is a slight memory loss with difficulty remembering recent events; he maintains the capacity to perform calculations, but has difficulty concentrating on some intellectual activities (e.g., reading books, watching movies).

**Scenario 2.** The patient is discharged from the ICU, is able to live at home, but is unable to work. He is able to walk alone, but needs help with some personal needs (e.g., bathing, dressing, climbing stairs).

There is a severe loss of memory, he cannot concentrate (e.g., read books, watch movies) or even make calculations.

**Scenario 3.** The patient is discharged from the ICU, but needs help with all personal care (performing intimate hygiene, bathing, dressing, walking and feeding). He is sitting or lying most of the time and cannot go to work. There is a slight memory loss with difficulty remembering recent events, he maintains the capacity to perform calculations, but has difficulty concentrating on some intellectual activities (e.g., reading books, watching movies).

**Scenario 4.** The patient is discharged from the ICU, needs help with all personal care (performing intimate hygiene, bathing, dressing, walking and feeding), but is fit for work. There is a slight memory loss with difficulty remembering recent events; he maintains the capacity to perform calculations, but has difficulty concentrating on some intellectual activities (e.g., reading books, watching movies).

**Scenario 5.** The patient is discharged from the ICU, but needs help with all personal care (performing intimate hygiene, bathing, dressing, walking and feeding). He is sitting or lying down most of the time. He is not fit for work. There is a severe loss of memory, he cannot concentrate (e.g., read books, watch movies) or make calculations.

**Scenario 6.** Patient dies in the ICU after the 14th day of hospitalization.

### 2.4. Data collected

The data collected from all physicians and general public were gender, age, years of professional activity, years of ICU experience, marital status, monthly income, religion, previous hospitalization, previous ICU admission, experience in taking care of a family member in the ICU, taking caring of a family member with sequelae, treatment for anxiety or depression or any psychiatric disorder and the WHOQOL-Brief [17,18]. The WHOQOL-Brief was validated for Portuguese, used in the literature in epidemiological studies in the health area, and appears to be a safe and appropriate quality of life assessment instrument [18].

### 2.5. Statistical analysis

Comparisons between intensivists' and general public's preferences regarding ICU admission of a hypothetical critically ill patient with six different outcomes were analyzed using a generalized linear model with binomial distribution and logit link function adjusted for age and quality of life (WHOQOL-brief). Pairwise comparisons were adjusted for multiple comparisons (Bonferroni correction). Pairwise comparisons were presented as adjusted odds ratio (aOR) along with 95% confidence interval (95% CI), which were calculated by logistic regression. We assessed the linearity assumption for continuous variables included in regression models by analyzing the interaction between each predictor and its own log (natural log transformation). All analyses were performed using IBM SPSS (version 23.0). A *p* value of <.05 was considered statistically significant.

## 3. Results

### 3.1. Characteristics of participants

We invited a total of 300 potential participants, intensivists and general public to participated in this study. Out of those, 257 (85.7%) agreed to participate and responded the survey.

Eighty-two intensivists answered what they would choose for themselves, 81 intensivists answered what they would choose for their patients, and 94 participants from the general public answered what they would choose for themselves. The characteristics of the study participants are presented in Table 1. General public was slightly older

**Table 1**  
Characteristics of study participants.

Characteristics	Intensivists choosing for themselves (n = 82)	Intensivists choosing for their patients (n = 81)	General public (n = 94)	p Value
Age, years	36 (3–40) <sup>#</sup>	34 (31–41) <sup>§</sup>	40 (31–51)	<.001 <sup>a</sup>
Male	56/82 (68.3)	56/81 (69.1)	43/94 (45.7)	.001 <sup>b</sup>
Marital status				.498 <sup>b</sup>
Married	44/82 (53.7)	49/81 (60.5)	59/94 (62.8)	
Single	31/82 (37.8)	25/81 (30.9)	24/94 (25.5)	
Divorced	7/82 (8.5)	7/81 (8.6)	11/94 (11.7)	
Religion				.059 <sup>b</sup>
Catholic	47/81 (58.0)	46/81 (56.8)	55/94 (58.5)	
Spititism	7/81 (8.6)	8/81 (9.9)	13/94 (13.8)	
None	17/81 (21.0)	13/81 (16.0)	8/94 (8.5)	
Other	2/81 (2.5)	4/81 (4.9)	8/94 (8.5)	
Evangelical	1/81 (1.2)	2/81 (2.5)	7/94 (7.4)	
Atheism	7/81 (8.6)	6/81 (7.4)	3/94 (3.2)	
Judaism	0/81 (0.0)	2/81 (2.5)	0/94 (0.0)	
Monthly income >US\$ 2500.00	62/81 (76.5)	65/81 (80.2)	22/94 (23.4)	<.001 <sup>b</sup>
Time since medical graduation	11 (5–16)	10 (6–17)		.745 <sup>c</sup>
Treatment for anxiety and/or depression	11/82 (13.4)	12/81 (14.8)	18/94 (19.1)	.552 <sup>b</sup>
Previous hospitalization	33/82 (40.2)	40/81 (49.4)	44/94 (46.8)	.479 <sup>b</sup>
Previous ICU admission	2/82 (2.4)	6/81 (7.4)	8/94 (8.5)	.218 <sup>b</sup>
Took care of family in the ICU	46/82 (56.1)	43/81 (53.1)	39/94 (41.5)	.120 <sup>b</sup>
Took care of family members with sequelae	26/82 (31.7)	30/81 (37.0)	19/94 (20.2)	.042 <sup>b</sup>
WHOQOL-Brief domains				
Physical health	78.6 (71.4–85.7)	82.1 (71.4–89.3)	78.6 (71.4–85.7)	.340 <sup>d</sup>
Psychological	72.9 (66.7–83.3)	75.0 (66.7–83.3)	75.0 (66.7–83.3)	.413 <sup>d</sup>
Social relationships	75.0 (58.3–83.3)	75.0 (66.7–83.3)	75.0 (58.3–83.3)	.738 <sup>d</sup>
Environment	67.2 (62.5–78.1)	71.9 (62.5–78.1)	68.7 (59.4–78.1)	.274 <sup>d</sup>

Values are expressed as n/total (%) or median (interquartile range). WHOQOL-Brief: World Health Organization Quality of Life Scale Brief Version. a = One-way ANOVA. Tukey post-hoc test after ANOVA: comparisons significant at the 0.05 level: # = Intensivists choosing for themselves vs. General public, § = Intensivists choosing for their patients vs. General public, b = Chi-square test, c = Independent t-test and d = Kurskal-Wallis test.

( $p < .001$ ), more often female ( $p = .01$ ), had lower monthly income ( $p < .001$ ) and more often had already taken care of a family member with sequelae ( $p = .042$ ) when compared to intensivists choosing for themselves and intensivists choosing for their patients (Table 1). The quality of life (WHOQOL-Brief) did not differ across the three groups (Table 1).

### 3.2. Intensivists choosing for themselves versus intensivists choosing for their patients

In all scenarios, except when the outcome was severe disability (Scenario 5) or death (Scenario 6), intensivists were more likely to propose ICU admission for their patients rather than for themselves (Table 2). In Scenario 1, 86.6% (71/82) of intensivists choosing for themselves compared to 97.5% (79/81) of intensivists choosing for their patients would accept to be admitted to the ICU (aOR, 6.95; IC95%,

1.30–35.13;  $p = .028$ ) (Table 2). In Scenario 4, 39.0% (32/82) of intensivists choosing for themselves compared to 72.8% (59/81) of intensivists choosing for their patients would like to be admitted to the ICU (aOR, 4.41; IC95%, 2.23–8.72;  $p < .001$ ) (Table 2).

### 3.3. Intensivists choosing for themselves versus general public

The intensivists' opinion did not differ from the general public's opinion in 50% of clinical scenarios (Scenarios 2, 4 and 6) (Table 3). In Scenario 1, 86.6% (71/82) of intensivists choosing for themselves compared to 48.9% (46/94) of general public would like to be admitted to the ICU (aOR, 0.16; IC95%, 0.007–0.34;  $p < .001$ ) (Table 3). In Scenario 3 (aOR, 3.30; IC95%, 1.61–6.85;  $p = .001$ ) and Scenario 5 (aOR, 35.7; IC95%, 7.70–165.10;  $p < .001$ ), general public were more likely to choose ICU admission than intensivists choosing for themselves (Table 3).

**Table 2**

Preferences of intensivists choosing for themselves and Intensivists choosing for their patients accordingly six different hypothetical scenarios.

Scenario	Intensivists choosing for themselves (n = 82)	Intensivists choosing for their patients (n = 81)	aOR <sup>a</sup> (95%CI)	p Value
1	71/82 (86.6%)	79/81 (97.5%)	6.95 (1.38–35.13)	.028
2	26/82 (31.7%)	55/81 (67.9%)	4.67 (2.39–9.13)	<.001
3	15/82 (18.3%)	41/81 (50.6%)	4.58 (2.24–9.37)	<.001
4	32/82 (39.0%)	59/81 (72.8%)	4.41 (2.23–8.72)	<.001
5	2/82 (2.4%)	8/81 (9.9%)	4.94 (0.98–25.00)	.180
6	30/82 (36.6%)	26/81 (32.1%)	0.81 (0.42–1.56)	1.000

Values are expressed as n/total (%). aOR = Adjusted odds ratio, 95%CI = 95% confidence interval. Reference group: Intensivists choosing for themselves.

<sup>a</sup> OR adjusted for age and quality of life (World Health Organization Quality of Life Scale Brief Version).

**Table 3**

Preferences of intensivists choosing for themselves and general public accordingly six different hypothetical scenarios.

Scenario	Intensivists choosing for themselves (n = 82)	General public (n = 94)	aOR <sup>a</sup> (95%CI)	p Value
1	71/82 (86.6%)	46/94 (48.9%)	0.16 (0.07–0.34)	<.001
2	26/82 (31.7%)	36/94 (38.3%)	1.42 (0.74–2.72)	.915
3	15/82 (18.3%)	38/94 (40.4%)	3.30 (1.61–6.85)	.001
4	32/82 (39.0%)	39/94 (41.5%)	1.28 (0.68–2.41)	1.000
5	2/82 (2.4%)	36/94 (38.3%)	35.70 (7.70–165.10)	<.001
6	30/82 (36.6%)	44/94 (46.8%)	1.64 (0.88–3.09)	.407

Values are expressed as n/total (%). aOR = Adjusted odds ratio, 95%CI = 95% confidence interval. Reference group: Intensivists choosing for themselves.

<sup>a</sup> OR adjusted for age and quality of life (World Health Organization Quality of Life Scale Brief Version).

**Table 4**  
Preferences of intensivists choosing for their patients and general public accordingly six different hypothetical scenarios.

Scenario	Intensivists choosing for their patients (n = 81)	General public (n = 94)	aOR <sup>a</sup> (95%CI)	p Value
1	79/81 (97.5%)	46/94 (48.9%)	0.03 (0.01–0.11)	<.001
2	55/81 (67.9%)	36/94 (38.3%)	0.30 (0.16–0.58)	<.001
3	41/81 (50.6%)	38/94 (40.4%)	0.70 (0.37–1.31)	.890
4	59/81 (72.8%)	39/94 (41.5%)	0.28 (0.14–0.56)	<.001
5	8/81 (9.9%)	36/94 (38.3%)	7.37 (2.93–18.55)	<.001
6	26/81 (32.1%)	44/94 (46.8%)	1.97 (1.00–3.88)	.101

Values are expressed as n/total (%). aOR = Adjusted odds ratio, 95%CI = 95% confidence interval. Reference group: Intensivists choosing for their patients.

<sup>a</sup> OR adjusted for age and quality of life (World Health Organization Quality of Life Scale Brief Version).

### 3.4. Intensivists choosing for their patients versus general public

General public was significantly less prone than intensivists to choose ICU admission in three (Scenarios 1, 2 and 4) out of six clinical scenarios (Table 4). In Scenario 5, 9.9% (8/81) of intensivists choosing for their patients compared to 38.3% (36/94) of general public would like to be admitted to the ICU (aOR, 7.37; IC95%, 2.93–18.55;  $p < .001$ ) (Table 4). The intensivists' opinion choosing for their patients did not differ from the general public's opinion when the clinical outcome was death (Scenario 6) (Table 4).

## 4. Discussion

In this study, we observed a considerable divergence between the preferences of intensivists choosing for themselves, intensivists choosing for their patients and the general public's preferences regarding ICU admission of a hypothetical critically ill patient with six different clinical outcomes, ranging from ICU discharge without any neurological sequelae, nor dependence for daily activities, to death. We found that intensivists often would not make the same choices for their patients they would make for themselves. Moreover, the preferences of general public differ from those intensivists would commonly choose for their patients. It is possible that intensivists choosing for themselves are more prone than the general public to take risks when the expected outcome is only mildly disabling but less prone to take risks when the outcome is severe disability. In contrast, general public has a more uniform approach.

Culture influences perceptions regarding quality of life. The balance between patients' autonomy and physicians' paternalism varies considerably between regions and countries. Making decisions about the ICU admission of a critically ill patient is a complex process. It requires taking into account both the expected benefits and the potential burdens of critical care therapies while at the same time considering the patients' values and preferences [16,19].

Two decades ago, Sjökvist and cols. Performed a survey with the general public asking whether they would like the ventilatory support to be discontinued if they were the patient [20]. They found that half of the general public wanted to discontinue treatment in case of patient's comatose status [20]. In this study, important differences were observed regarding admission to the ICU in a hypothetical scenario. This helps us to think about the need for a good comprehension of the diagnosis, treatment and prognosis by the family members in a real situation to the doctors sharing with family members the goals of care, especially in the case of end-of-life decisions, limiting advanced life support, and being able to make the best choice for the patient. It is important that intensivists consider palliative care to provide comfort and establish empathic communication, while respecting patients' values and preferences [21].

Changes in care goals for comfort are not always discussed as an option in family conferences and little is discussed about patients'

preferences and values. We shall consider that an ethical debate about which treatment routes should be routinely presented to the substitutes of patients with advanced critical illness. It is important that important issues such as autonomy, independence, emotional and social well-being, physical function, cognitive function and spirituality are considered [22].

There is a growing trend toward allowing patients die with dignity, instead of pointlessly prolonging the life and suffering of both the patient and family with futile treatments. Laws governing the patients' right to anticipate their decisions on care procedures, that is, advance directives, have been created and reiterated in countries in North America, South America and Europe. In Brazil, the Federal Council of Medicine (Conselho Federal de Medicina – CFM), through Resolution 1805/2006, stated that the physician is allowed to limit or suspend procedures and treatments that prolong the life of patients in the terminal phase of a critical and incurable illness, thereby respecting the wishes of the person or his/her legal representative and consequently basing the medical decision on the philosophy of palliative care. The patient's right to express his or her wishes has been guaranteed through advance directives in resolution 1955/2012 of the CFM [23].

Many critically ill surviving patients will remain dependent on invasive life support. Intensivists are unable to provide the best treatment options according to the patient's wishes when his goals of care and treatment preferences are not clear and treatment decisions are not shared with him and his family [24]. Moreover, patient's pre-ICU quality of life, medical comorbidities, predicted mortality, predicted post-ICU quality of life, and the family's wishes were important factors in deciding whether ICU therapy would be withheld or withdrawn [25]. Previous studies have shown that lack of communication skills among ICU physicians, poor skills in prognostic estimation and their lack of knowledge about relevant legal framework are all barriers to the provision of good end-of-life care to patients in the ICU [26].

The nature and severity of the patient's chronic disorders as well as his wishes are important factors in the potential influence of decisions regarding ICU admission [27]. Our study reinforces that it is mandatory that intensivists share the complex decisions regarding ICU admission and life-sustaining therapies in emergency situations or deterioration of the patient's underlying disease [28,29]. The ethical issues involved are favorable to the individual right of choice regarding life-sustaining treatment, namely, patients' and surrogates' desired autonomy [28,30].

This study has limitations. First, respondents reacted to hypothetical scenarios, which might affected their perceptions about a real need for ICU admission. Second, this study was carried out in only five ICUs from one city located at the same country. Third, a small portion of the general public was included in this study. Therefore, this study cannot be viewed as a representation of the opinion of Brazilian ICU physicians, nor of its population.

## 5. Conclusion

Considerable divergences between intensivists' and patients' preferences toward end-of-life care exist. Advanced care planning and effective ongoing communication among intensivists, patients and relatives are essential to improve end-of-life decisions and the quality of care.

### Ethics approval and consent to participate

The study was approved by Hospital Sírio-Libanês as well as by four participant hospitals ethics committees. The institutional review board (IRB), called “The Comitê de Ética em Pesquisa da Sociedade Beneficente de Senhoras do Hospital Sírio-Libanês” reviewed and approved this study (HSL- protocol number HSL 2013–17, 04/18/2013).

### Consent for publication

Not applicable.

## Availability of data and material

The full data set from this study can be obtained by sending requests to Renata Rego Lins Fumis at Intensive Care Unit, Hospital Sírio-Libanês, São Paulo, Brazil.

## Competing interests

On behalf of all authors, the corresponding author states that there is no conflict of interest.

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## Authors' contributions

Conception or design of the work: Fumis RRL, Schettino G; Acquisition of data: Fumis RRL, Correa T, Rogovschi PB; Statistical Analysis: Fumis RRL, Correa T, Rogovschi PB; Interpretation of data: Fumis RRL, Correa T, Rogovschi PB, Schettino G; Drafting the work: Fumis RRL, Correa T, Rogovschi PB, Schettino G. Final approval of the version to be published: Fumis RRL, Correa T, Rogovschi PB, Schettino G.

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jcrc.2019.06.019>.

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