

# How do intensivists treat their patients, their loved ones and themselves? Results of a survey of intensivists facing an evolving hypothetical clinical scenario

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## ABSTRACT

**AIM:** Prognostication and decisions regarding ineffectiveness of treatment remain challenging for clinicians and are some of the most difficult yet understudied aspects of clinical medicine. We sought to explore what management intensivists would advocate for a patient, for themselves or for a loved one at different points in an evolving hypothetical clinical scenario of a critically ill patient admitted to the intensive care unit (ICU).

**METHOD:** An online survey was constructed and was circulated to fellows of the College of Intensive Care Medicine (CICM) of Australia and New Zealand. Participants were presented with an evolving hypothetical clinical scenario of a patient admitted to ICU following out-of-hospital cardiac arrest (OHCA) at four time-points (day 3,7,14 and 28) during their conceptual ICU stay.

**RESULTS:** One hundred and twenty-six CICM fellows participated. Survey responses revealed significant differences in the proportion of respondents that would advocate for aggressive treatment, conservative management or withdrawal of treatment for themselves compared to patients; for a family member as compared to a patient at several time points.

**CONCLUSIONS:** The management that intensivists would advocate for patients differs from the management that they would advocate for their loved ones and themselves.

Prognostication and decisions regarding imposed burden of treatment remain challenging for critical care clinicians. Individual patients respond differently to various disease processes and therapies. Expectation of degree, and extent of recovery and values, differ among patients and their *substitute* decision makers. Hence, uncertainty regarding the clinical course and eventual outcome of critically ill patients is inevitable. This introduces subjectivity in

'prediction' of value of continued medical intervention, which is made on the basis of clinical observation, experience and patients' social and medical history.<sup>1</sup>

Although a number of scoring systems based on a range of physiologic abnormalities have been developed to predict the outcome of critically ill patients, these are limited by underlying mathematical assumptions and cannot be used to reliably guide prognostication and treatment decisions.<sup>2</sup>

This leaves critical care practitioners to determine usefulness of supportive therapies on the basis of physiological state; lethality of the underlying medical condition; projected quality of life (resultant quality of life being so poor that it is unacceptable to the patient); or imminent demise.<sup>3</sup> Such decisions may be influenced by a range of factors including clinical experience, personal, philosophical and religious beliefs. Predicting patient-centric outcomes is difficult and fraught with inherent uncertainty.<sup>3</sup>

In this survey of currently practising intensive care physicians we investigated if they were likely to treat their patients differently as compared to themselves or while acting as substitute decision makers for their loved ones.

## Methods

An online survey was constructed using Survey Monkey ([www.surveymonkey.com](http://www.surveymonkey.com)) and circulated using mailing lists of the College of Intensive Care Medicine (CICM) of Australia and New Zealand and members of the Australian and New Zealand Intensive Care Society (ANZICS). This email explained the purpose of this study—that participation was strictly voluntary and anonymous—and provided a link to the survey. The survey remained open from June 2013 to January 2014.

### Ethical approval

This study was approved by the Low-Risk Research Subcommittee of the Peninsula Health Human Research Ethics Committee (LRR/14/PH/42).

### Participants

Participants were invited to take part in this survey via the email mailing lists of the College of Intensive Care Medicine (CICM) and the Australian and New Zealand Intensive Care Society (ANZICS), which includes trainees as well as fellows of CICM. Participants were asked if they were fellows of the CICM. Only responses from participants who described themselves as fellows of the CICM at the time of this survey were analysed.

Individuals who agreed to participate were first asked to enter demographic information (including age, sex and years practising as an intensivist); how many

end-of-life discussions they had been involved in over the past month; whether they had ever been a patient in ICU; and whether they had ever been a *substitute* decision maker for a relative in ICU.

Participants were then presented with an evolving hypothetical clinical scenario of a critically ill patient admitted to ICU following a witnessed out-of-hospital cardiac arrest (OHCA) at four time-points during their ICU stay (day 3, day 7, day 14 and day 42). In response to each scenario, the intensive care physicians were asked to indicate whether they would advocate aggressive management/intervention (option 'a'); limitations in duration of "aggressive" therapies (option 'b'), limitation of "aggressive" treatment itself (option 'c') or withdrawal of life-sustaining therapy (option 'd'). The scenario involved the absence of any loved one who could share patient's values, forcing intensivists to become the sole decision maker at each stage. Participants were then asked to respond to the same scenarios if they were acting as substitute decision maker (eg, family member), if they were the patient in question or if they were the intensive care physician treating a patient in the scenario.

### Statistical analysis

Descriptive statistics for participants' characteristics are provided as frequencies and percentages of valid responses.

For the purposes of analysis, the response of the scenarios were a priori classified as follows: the first option for each clinical scenario (Table 1) was classified as 'aggressive management'; the second and third as 'conservative management'; and the fourth as 'withdrawal of ineffective treatment'. Descriptive analysis was completed using SPSS statistical software (v. 20, IBM). Because of nested design of the study, multilevel logistic regression<sup>4</sup> was used to assess the within- and between-participant level variation. The analyses were carried out via lme4 package in R program 3.3.2.<sup>5</sup>

## Results

One hundred and twenty-six of the invited 880 CICM fellows completed this survey, a response rate of approximately 14%. Demographic information for respondents is presented in Table 2.

**Table 1:** Summary of questionnaire.

<b>Day 3</b>
<p>Mr X is a 72-year male admitted to your ICU three days ago after suffering a witnessed out-of-hospital cardiac arrest. His initial rhythm was VF and he needed 25 minutes of CPR along with 5 DC shocks for persistent VF before return of his spontaneous circulation. He has mild COPD, hypertension and hypercholesterolemia, all of which were well controlled. He was cooled to 33° and passively rewarmed. He underwent a coronary angiogram and stent to his left anterior descending artery. He had no sedation for the last 48 hours and not responding to any painful stimuli. His brainstem reflexes are preserved. He is haemodynamically stable, being ventilated with SIMV, on 40% FiO<sub>2</sub>. There is no other metabolic cause for his depressed consciousness. No acute pathology was detected on a plain CT Brain/Cervical spine performed at the time of admission. Transthoracic Echocardiogram done on Day 2 showed moderate global LV dysfunction with moderate pulmonary hypertension.</p> <p>Mr X does not have any advanced care plans. He lives alone and there is no record of any next of kin available to act as substitute decision maker. What would your course of action be?</p> <ul style="list-style-type: none"> <li>• Aggressive therapy exploring all therapeutic options with no limitation to duration or intensity of treatment.</li> <li>• Limited duration of further aggressive management followed by withdrawal of mechanical ventilation should there be no further improvement.</li> <li>• Trial of further therapy with limitation of intensity of certain treatment modalities.</li> <li>• Withdrawal of mechanical ventilation and comfort care only.</li> </ul>
<b>Day 7</b>
<p>Mr X has now been in the unit for seven days. He is requiring multi-organ support with ongoing mechanical ventilation (FiO<sub>2</sub> 60%, SIMV), increasing inotropic support over last 24 hours and continuous venovenous haemodiafiltration (CVVHDF). He has been off sedation for the last six days with GCS - E1M4Vt. MRI of his brain suggested multiple watershed territory infarcts. He developed progressive abdominal distension with persisting ileus and rising serum lactate. CT scan of his abdomen was performed early this morning, which suggested possibility of an ischaemic segment of small bowel. What would be your further course of action?</p> <ul style="list-style-type: none"> <li>• Advocate strongly for surgical management of his ischaemic gut.</li> <li>• Continue nonsurgical aggressive management, with some limitations of intensity of treatment modalities.</li> <li>• Continue nonsurgical aggressive management, with some limitations of duration of further treatment (should there be no improvement) in place.</li> <li>• Withdrawal of all life-sustaining therapies and comfort care only.</li> </ul>
<b>Day 14</b>
<p>Mr X has now been in the unit for 14 days. He underwent a laparotomy and resection of 60cms of small bowel a week ago. He was extubated on Day 11 of his ICU stay. Post-extubation his GCS has progressively declined to E1M5V1, with no obvious focal neurological deficit. He is febrile, tachypnoeic and has deranged inflammatory markers along with new infiltrates in right lower and middle lobe on portable chest x-ray.</p> <p>His CVVHDF was discontinued two days ago and inotropes were weaned off on the day of extubation. His creatinine is 226µmol/L and urea 17mmol/L and rising. He is passing 50–60mls/hour of urine without being put on diuretics. There is no other metabolic derangement which can explain his depressed conscious state. What will your further course of action be?</p> <ul style="list-style-type: none"> <li>• Reintubation and continue further intensive care without any limitation in duration or aggressiveness of therapy.</li> <li>• Reintubation and continue mechanical ventilation for a limited period of time followed by withdrawal of mechanical ventilation if there is no improvement in his condition.</li> <li>• Treat his respiratory failure conservatively with non-invasive ventilation.</li> <li>• Withdraw all life-sustaining therapies and focus management on comfort care only.</li> </ul>

**Table 1:** Summary of questionnaire (continued).

<b>Day 42</b>
<p>Mr. X has been in ICU for six weeks. His hospital-acquired pneumonia has resolved. He follows simple commands, but he has been difficult to wean. He doesn't tolerate more than 10–15 minutes off ventilator even though trials of weaning started three weeks ago. He has started having febrile episodes with rising inflammatory parameters. His blood cultures are growing ESBL E. coli. However, he is comfortable on a pressure support of 18cms of H<sub>2</sub>O with 10cms of PEEP with satisfactory gas exchange while being ventilated. He has grade 3 and 2 power in his proximal upper and lower limb muscles respectively due to critical illness neuromyopathy. He is disorientated and has ongoing hypoactive delirium. His transthoracic echocardiogram performed two days ago suggested moderate diastolic dysfunction with LVEF of 35%. His creatinine has plateaued at around 180µmol/L with urea of 12–15mmols/L.</p> <p>Assuming that you are the intensivist looking after him, having met him for the first time three days ago, what will be your further course of action?</p> <ul style="list-style-type: none"> <li>• Continue weaning efforts and investigate underlying source of sepsis.</li> <li>• Pursue further therapy with limitations in place (eg, no escalation in degree of organ support, etc.).</li> <li>• Pursue further weaning for a limited period of time followed by withdrawal of mechanical ventilation and comfort-directed therapy in case there was no progress in his weaning.</li> <li>• Based on his long ICU stay, difficulty in weaning and perceived poor quality of life, would recommend withdrawal of mechanical ventilation and comfort-directed care.</li> </ul>

**Table 2:** Demographics of participants in this study.

	%	n
<b>Age (years)</b>		
<40	29.4%	37
40–50	39.7%	50
50–60	22.2%	28
>60	8.73%	11
<b>Gender</b>		
Male	78.4%	98
Female	21.6%	27
Data not available		1
<b>Years as an ICU Consultant</b>		
<5	34.1%	43
5–10	19.1%	24
10–20	28.6%	36
>20	18.3%	23
<b>Level of ICU</b>		
Level 1	10.4%	13
Level 2	20.0%	25
Level 3	69.6%	87
Data not available		1

**Table 2:** Demographics of participants in this study.

End of life situations in previous month		
0	4.0%	5
1-2	15.9%	20
3-4	35.7%	45
≥5	44.4%	56
Have been a patient in ICU	7.9%	10
Have been a substitute decision maker for a patient in ICU	22.4%	28
Religion		
Christian	28.6%	36
Muslim	2.4%	3
Hindu	14.3%	18
None/agnostic/atheist	47.6%	60
Other	7.1%	9

The majority of the responders (96%) stated that they had faced end-of-life situations in the past month and almost one-quarter had acted as substitute decision maker for a patient in ICU. Less than 10% of the intensivists had been a patient in ICU themselves.

The proportion of respondents that would advocate for the withdrawal of conservative management or aggressive treatment for the patient, themselves, and as a substitute decision maker for a relative in ICU is shown in Figure 1.

The survey answers revealed significant differences in the proportion of respondents that would advocate for each course of action for themselves compared to patients; for a family member as compared to a patient; or for themselves as compared to a family member at each time-point (Table 3).

### Management differences in being a physician vs when acting as a patient

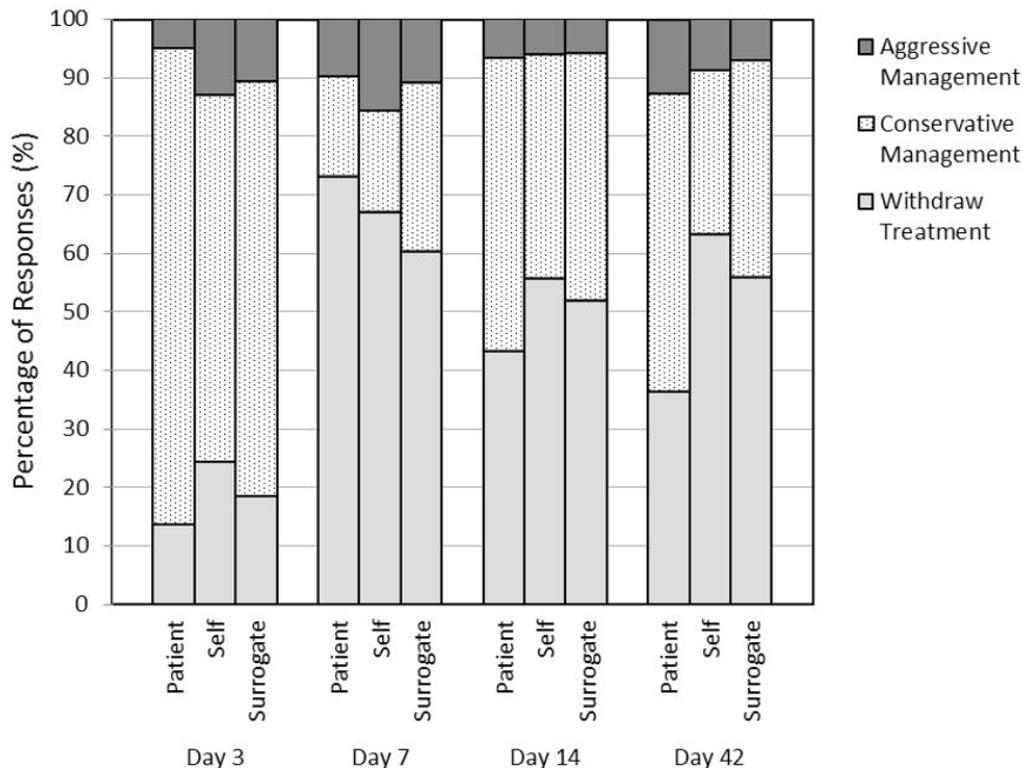
Being an intensive care physician, they were more likely to institute aggressive management (OR: 18.3, 95% CI: 2.6–127.3) on day 3 and withdrawal of life-sustaining treatment on day 3 (OR: 5.25, 95% CI: 1.70–16.22), day 14 (OR: 4.53, 95% CI:

1.67–12.29) and day 42 (OR: 21.80, 95% CI: 5.88–80.84) when compared to acting as a patient. However, being an intensivist, they were less likely to draw up limitations on day 3 (OR: .15, 95% CI: .06–.38), day 14 (OR: .29, 95% CI: .12–.71) and day 42 (OR: .17, 95% CI: .07–.39) when compared to acting as a patient (see column 2 on Table 3).

### Management differences when acting as a substitute decision maker for their relatives vs a patient

No differences in management approach were noted during the four time points in terms of institution of aggressive managements. Acting as a substitute for their relatives, they were less likely to institute treatment limitations at day 3 (OR: .31, 95% CI: .12–.77) and day 42 (OR: .31, 95% CI: .14–.71), and withdrawal of life-sustaining treatment on day 7 (OR: .24, 95% CI: .10–.61) when compared to acting as a patient. In addition, acting as a substitute, they were more likely to institute treatment limitations at day 7 (OR: 3.9, 95% CI: 1.44–10.56) and withdrawal of life-sustaining treatment on day 42 (OR: 9.86, 95% CI: 2.98–32.60) when compared to acting as a patient (see column 3 on Table 3).

**Figure 1:** Percentage of responses at each time point that would advocate for aggressive management, conservative management, or withdrawal of life-sustaining treatment for a patient, for themselves, or a family member in the same situation.



**Table 3:** Odds ratios confidence intervals derived from multilevel logistic models.

<b>Aggressive</b>	<b>Self vs patient</b>	<b>Substitute vs patient</b>	<b>Self vs substitute</b>
Day 3 OR (95%CI)	18.33** (2.64, 127.27)	5.37 (.81, 35.72)	1.36 (.4, 4.64)
Day 7 OR (95%CI)	3.46 (.88, 13.57)	1.4 (.3, 6.43)	2.51 (.62, 10.21)
Day 14 OR (95%CI)	.58 (.08, 4.32)	.56 (.07, 4.29)	1.17 (.17, 8.25)
Day 42 OR (95%CI)	.32 (.08, 1.25)	.25 (.06, 1.16)	1.33 (.28, 6.30)
<b>Limitation</b>			
Day 3 OR (95%CI)	.15** (.06, .38)	.31* (.12, .77)	.49 (.21, 1.12)
Day 7 OR (95%CI)	1.06 (.41, 2.74)	3.9** (1.44, 10.56)	.18** (.06, .56)
Day 14 OR (95%CI)	.29** (.12, .71)	.58 (.24, 1.37)	.50 (.20, 1.24)
Day 42 OR (95%CI)	.17** (.07, .39)	.31** (.14, .71)	.53 (.23, 1.21)
<b>Withdraw</b>			
Day 3 OR (95%CI)	5.25** (1.7, 16.22)	1.97 (.62, 6.21)	3.52 (.95, 12.99)
Day 7 OR (95%CI)	.51 (.22, 1.17)	.24** (.1, .61)	2.12** (2.11, 2.12)
Day 14 OR (95%CI)	4.53** (1.67, 12.29)	2.2 (.83, 5.81)	2.23 (.82, 6.08)
Day 42 OR (95%CI)	21.8** (5.88, 80.84)	9.86** (2.98, 32.6)	2.17 (.81, 5.8)

\**p*<.05, \*\**p*<.01, OR—Odds Ratio, CI—Confidence Interval.

## Management differences between in being a physician vs acting as a substitute decision maker for their relatives

No significant differences were noted in institution of aggressive management. However, at day 7, being a physician, they were less likely to recommend limitations of treatment (OR: .18, 95% CI: .06–.56) but more likely to wish withdrawal of life-sustaining treatment for themselves (OR: 2.12, 95% CI: 2.11–2.12) as compared to acting as substitute decision makers (see column 4 on Table 3).

### Religion

Participants who belong to other religions were more likely to draw up limitations of treatment on days 14 and 42 (all  $p < .05$ ) when compared to participants with no religious affiliations. However, participants who belong to Christian and Hindu were less likely to wish withdrawal of life-sustaining treatment on day 7 (all  $p < .01$ ) when compared to the participants who were not religious.

### Age

As age increases, participants were less likely to withdraw life-sustaining treatment on day 7 ( $p < .05$ ) with no difference noted in managements at all other time points.

### Gender

Male participants were more likely to wish withdrawal of life-sustaining treatment as compared to females at day 42 ( $p < .05$ ) and day 7 ( $p < .01$ ) with no differences noted in institution of aggressive treatments or limitation of treatments.

### Years as an ICU consultant

Participants with more experience as an ICU consultant were less likely to institute limitations of treatment ( $p < .05$ ) but more likely to withdraw life-sustaining treatments ( $p < .01$ ) at day 7 when compared to participants with less experience.

## Discussion

Respect for patients' autonomy, beneficence, non-maleficence and distributive justice are ethical pillars of care in management planning of patients.<sup>6–9</sup> When it comes to prognostication and end-of-life decisions, complexities can arise from conflict among these principles. In situations where patients lose capacity to make

informed decisions, right to choose appropriate therapies devolves to substitute decision makers in Australia and treating teams in New Zealand.<sup>10</sup> Regardless of the jurisdiction, it is vital to reach a 'shared decision'.<sup>10,11</sup> Despite emphasis on advance care planning in New Zealand, interpretation of advance care plans in letter vs in principle can present an ethical dilemma.<sup>12,13</sup> Moreover, in absence of advance care plans, treating doctors are unable to ascertain patient's values, expectations from treatment and goals of medical care. In some situations, neither patients nor loved may be able to participate in 'shared decision making'. It is unclear how clinicians reach their decisions in these challenging circumstances. As far as we are aware, this is the first survey of its kind exploring management by intensivists facing a specific clinical scenario and contrasting this with the course of action that they would advocate for their loved ones or themselves.

The majority of the respondents faced end-of-life situations frequently and had more than five years of experience as a consultant. The demographics of the intensivists surveyed revealed that only 11 respondents (8.73%) were over 60, confirming that the vast majority of doctors surveyed were significantly younger than the hypothetical patient (72 years of age). The bias that this age difference may have had on the results is difficult to interpret but could have influenced the responses provided.

Religious beliefs of ICU personnel is known to influence decision to forego life-sustaining treatments.<sup>14,15</sup> Unfortunately, small sample size precluded generating any meaningful hypothesis regarding association of religious beliefs, experience of being a substitute decision maker or prior experience of being a patient in ICU, with recommendations of various treatment options in the survey.

This approach to management may reflect the particular case scenario where neurological prognostication is still ambiguous, or may indicate a more general conservatism in the initial management of ICU patients. However, after day 7 in intensive care, a conservative approach to management was replaced by a tendency to withdrawal of treatment.

By this time, the clinical scenario had progressed to one of confirmed radiological evidence of neuropathology and presumptive bowel ischaemia. The tendency for intensivists to withdraw after an evolving clinical scenario may imply that time and results of the radiological investigations gave intensivists more confidence to advocate withdrawal of continued treatment.

The attitude of physicians who had advocated withdrawal of life-sustaining therapy on a hypothetical patient changed with the passage of time. Initially, on day 3, there were few respondents advocating withdrawal of therapy for a hypothetical patient. In this small group of intensivists who advocated withdrawal of life-sustaining therapy, 70.6% would withdraw life-sustaining treatment if they were the patient and 66.7% would withdraw life-sustaining treatment if their loved one was the patient. The small sample size in this initial scenario where withdrawal was advocated for a hypothetical patient made statistical interpretation difficult. With the progression of the clinical case scenario, the responses changed substantially. By day 42, 97.6% of respondents that would withdraw therapy on a hypothetical patient would want therapy withdrawn for themselves if they were the patient, and 97.3% would advocate this course of action for a loved one. This data implies greater consistency in attitudes to withdrawal of therapy, irrespective of the hypothetical patient's identity, as ICU stay became prolonged.

Physician attitudes to withdrawal of life-sustaining intervention for themselves or their loved ones when they had advocated ongoing aggressive patient treatment for a hypothetical patient also changed with ICU length of stay. These data are not entirely surprising, given a survey of European ICUs demonstrated that 27% of the practitioners believed that they provided care that was inappropriate on the day of the study.<sup>16</sup> Another single-centre study demonstrated that up to 20% of patients received at least “probably ineffective” therapy.<sup>17</sup>

There are various explanations why a significant proportion of intensivists advocated continuing potentially burdensome therapies for the patient but advocated for withdrawal on themselves and their loved ones. In interviews with nurses and

physicians, 47% of all respondents reported acting contrary to conscience in providing care to the critically ill with many providing excessive rather than under treatment.<sup>18</sup> Possible reasons for this discrepancy could be fear of failing patient expectations and concerns regarding litigation. Fear of civil liabilities and disciplinary or coronial proceedings may contribute to this approach as well. A recent survey highlighted the gaps in the knowledge of the legal aspects of end-of-life decisions for adults lacking decision-making capacity, among doctors practising end-of-life medicine.<sup>19</sup> Potentially inappropriate treatments can be defined as those that have some potential to achieve goals sought by the patient, but are not instituted due to conflicting ethical considerations.<sup>20</sup> Most of the treatment requests made to ICU physicians fall under this category. Responding to such requests involves weighing burden of the treatment against intended benefits. Denying treatment based on age alone, on the basis of “fair innings argument” or “rationing” leads to inconsistent decision making and subjectivity.<sup>21,22</sup> To ensure fairness, healthcare systems should implement processes within ICUs with opportunity for external review, to examine requests for potentially inappropriate treatments.<sup>23</sup> In situations where such processes cannot be followed due to time constraints, clinicians should not offer such treatments, if they are considered outside contemporary standard practice, with high degree of certainty. However, in circumstances where uncertainty prevails, time limited trial of intensive care-based treatments—while balancing burden vs benefit—is prudent and must be considered.<sup>24</sup>

In multicultural societies like New Zealand and Australia, cultural awareness and compassion is crucial to achieve patient-centred end-of-life decision making. Emphasis on advanced care planning framed using cultural diversity and values will go a long way towards helping clinicians make right decisions in circumstances otherwise fraught with uncertainty.

## Limitations

A number of limitations must be considered when interpreting the results of this survey. Firstly, the responses of intensivists surveyed relate to a specific clinical

scenario with limited information, and it is possible that some characteristics of this scenario may lead intensivists to prognosticate differently than for patients that they care for. It is worth noting, however, that the details of this case and its clinical course are not unusual for the ICU setting.

Secondly, prognostication is a complex process that often involves the gathering of information from a number of sources including patients, their families, clinical observations, management guidelines, discussions with other intensivists and interdisciplinary input. The lack of information inherent in a clinical scenario may therefore have influenced the high proportion of respondents opting for conservative management.

Furthermore, the reasons for advocating for conservative and aggressive therapy under the different clinical scenarios were not included in the survey.

This survey captured less than 20% of fellows of College of Intensive Care Medicine of Australia and New Zealand despite the survey being sent twice from

two different (ANZICS and CICM) email mailing lists. While conclusions drawn from this survey may also not reflect the views of the broader group of intensivists in New Zealand and Australia, this response rate is similar to some of the previously done surveys including Australian intensive care doctors.<sup>25</sup> Prognostication and intensive care management practices are likely to be different in other countries; hence, the results of this survey may not be generalisable to countries where the healthcare and cultural values are dissimilar to the setting of this survey.

## Conclusion

Intensivists are often tasked with prognostication for critically ill patients; however, this process remains challenging and subjective. This hypothetical survey implies that there are a group of ICU patients that would be offered ongoing aggressive management despite intensivists advocating for withdrawal of life-sustaining therapy for themselves or their loved ones under similar circumstances. Further research is required to better understand this phenomenon.

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### Competing interests:

Nil.

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