Indian J Med Res 150, December 2019, pp 598-605
DOI: 10.4103/ijmr.IJMR_1409_17

Quick Response Code:

End-of-life decisions: A retrospective study in a tertiary care teaching hospital in India

Cijoy K. Kuriakose[1], Vignesh Kumar Chandiraseharan[1], Ajoy Oommen John[1], Deepti Bal[1], Visalakshi Jeyaseelan[2] & Thambu David Sudarsanam[1]

Departments of [1]Medicine & [2]Biostatistics, Christian Medical College & Hospital, Vellore, Tamil Nadu, India

Received August 28, 2017

***Background & objectives*: In developing countries like India, there is a lack of clarity regarding the factors that influence decisions pertaining to life supports at the end-of-life (EOL). The objectives of this study were to assess the factors associated with EOL-care decisions in the Indian context and to raise awareness in this area of healthcare.**

***Methods*: This retrospectively study included all patients admitted to the medical unit of a tertiary care hospital in southern India, over one year and died. The baseline demographics, economic, physiological, sociological, prognostic and medical treatment-related factors were retrieved from the patient's medical records and analysed.**

***Results*: Of the 122 decedents included in the study whose characteristics were analyzed, 41 (33.6%) received full life support and 81 (66.4%) had withdrawal or withholding of some life support measure. Amongst those who had withdrawal or withholding of life support, 62 (76.5%) had some support withheld and in 19 (23.5%), it was withdrawn. The documentation of the disease process, prognosis and the mention of imminent death in the medical records was the single most important factor that was associated with the EOL decision (odds ratio - 0.08; 95% confidence interval, 0.01-0.74; *P*=0.03).**

***Interpretation & conclusions*: The documentation of poor prognosis was the only factor found to be associated with EOL care decisions in our study. Prospective, multicentric studies need to be done to evaluate the influence of various other factors on the EOL care.**

Key words Death - do-not-resuscitate - end-of-life care - full life support - sepsis - withholding/withdrawal of life support

The majority of human deaths in the world today receive medical attention and a good number occurs in healthcare facilities[1]. This could significantly affect the quality of end-of-life (EOL) care and impose futile, yet avoidable financial burden on patients, their families and healthcare systems. World over, among hospital deaths, there is increasing incidence of withdrawal or withholding of life-sustaining therapy, which marks the transition to appropriate comfort-oriented care for a patient[2,3]. It has been shown that higher educational status of the patient and higher quality of the health-care unit are positively associated with the inclination to limit aggressive therapeutic measures at the EOL[4,5]. Indian studies have shown that despite societal and legal

barriers, almost half of the patients dying in the intensive care unit (ICU) received a decision to limit therapy, mostly in the form of withholding or do-not-resuscitate (DNR) orders[6-8]. It is common observation, in India, that some patients receive undue treatments and utilize excessive medical resources at the final stage of life, while some others opt for withholding or withdrawing therapeutic interventions early in the course of critical illness for various reasons. However, there are not enough data in literature regarding the factors that influence EOL decisions in India.

The objectives of this study were first to assess the factors that were associated with EOL care decisions in India, particularly pertaining to decisions on life support. The second objective was to compare our findings with other studies and finally to raise awareness regarding this largely neglected area of healthcare in the Indian context.

Material & Methods

This retrospective observational study was conducted including all the patients who expired in hospital while under the care of the department of Medicine, Unit II, Christian Medical College, Vellore, India, from October 2014 to September 2015. Very sick patients were cared for in an ICU setting, a step-down high-dependency unit (HDU) or a semi-ICU attached to the general ward. Medical prognostication for the critically/terminally ill patients was done by the team including a physician and an intensivist in an individualized manner taking into consideration their pre-morbid illness, current disease process, condition at admission, the number and severity of organ systems involved, course in hospital and response to therapy. The disease process and prognoses related to individual patients were explained in detail in their native language to the family and other stakeholders periodically (often twice or thrice a day) by the treating team thereby allowing them to make informed decisions regarding EOL care. Counselling and guidance were arranged for those families who requested to withhold or withdraw various life-sustaining therapies after realizing the futility of the same. The documentation of this decision-making process was done in both electronic and paper medical records of the patient.

Information was obtained from records mentioned above. The demographic data, immediate cause of death, the process that led to death, pre-existing medical illness, days of hospital stay, days in the ICU/HDU, days on ventilator, use of inotropes, presence of dyspnoea or pain, the mental status (Glasgow coma scale) at admission, documentation of prognosis and expected death by the treating physician, the patient's total hospital bill and the charity availed, if any, were gathered. The immediate cause of death was considered to be the final cause that directly caused death which included shock, respiratory failure, arrhythmia or others, and the processes leading to death included the various disease processes that led to the final cause of death. The types of life-sustaining therapy withdrawn or withheld were also looked in to.

Withdrawal of life support (WDLS) was defined as the cessation and removal of ongoing direct or indirect life support therapy (*e.g.*, mechanical ventilation, dialysis, inotropic agents, antibiotics, feeding, hydration, ICU or HDU care) with no substitution of any equivalent, alternative treatment. Withholding of life support (WHLS) was defined as the decision not to start or increase a medically appropriate or potential beneficial direct or indirect life support therapy as in the examples above. Full life support (FLS), the patient receiving all the treatment that would be considered the standard of care (and is available in the study centre) for his/her given medical condition till the point of declaration of clinical death. Participants were classified into two groups according to the decision, withdrawing or withholding life support (WWLS) group and FLS group.

The study approval was obtained from the Institutional Review Board of the Christian Medical College and Hospital, Vellore. The sample size was calculated to be 139 assuming a 90 per cent prevalence of withdrawal/WHLS at EOL (based on a pilot study of 10 patients), a precision of five per cent and a desired confidence level of 95 per cent. We collected one-year data as there was inadequate information on EOL decisions from medical records prior to the study period. The primary analysis was to evaluate the factors which predict that a patient/family and/or the physician would opt for withdrawal or withholding of any life-supporting therapy at EOL.

Statistical analysis: The data entry was done using Epidata v3.1 software (EpiData Association, Odense, Denmark), and for data analysis, statistical software SPSS v15.0 for Windows (SPSS Inc., Chicago, USA) was used. The factors associated with WWLS were analyzed by univariate and multivariate logistic regression. A two-tailed alpha of five per cent ($P<0.05$) was considered significant.

Results

There were 124 deaths in the unit amongst the 1572 patients admitted during the study (7.9%). One decedent was excluded for want of availability of the required clinical data, and another was excluded because the decision for organ donation was made, which could have confounded the study question. The remaining 122 decedents were analyzed as per the study design (Table I). Twelve patients who refused continuation of care due to various reasons were discharged at request during the study. The mean age of patients was 55.3±16.9 yr and 65 (53.3%) were male. Only eight (6.6%) patients were covered by any insurance. The median total hospital bill was ₹43,680 (~US$ 609). Ninty five (77.9%) patients availed some concessional care, while seven (5.7%) were given free treatment.

Sepsis accounted for the majority (50%) of deaths among whom respiratory (23.8%) and urinary (6.6%) were most common. Type 1 respiratory failure (29.5%) and type 2 respiratory failure (16.4%) were the next common causes. Most had a relatively short duration of illness (64.23%, <1 wk). Diabetes mellitus (47.5%) and hypertension (44.3%) were the common co-morbid diseases.

Eight one (66.4%) patients had WWLS, among whom 76.5 per cent had WHLS and 23.5 per cent WDLS. In all, these decisions were taken after a detailed discussion by the treating team with the nearest relatives of the patient about the prognosis and obtaining consent. Among the various supports, withheld or withdrawn ventilation was withheld in 88.9 per cent (n=72) and inotropes in 44.4 per cent (n=36). Most had (n=74, 91.3%) DNR orders, while 67.9 per cent (n=55) had do-not-intubate (DNI) orders. Antibiotics, feeding and hydration were withheld in none. Forty eight (39.3%) patients were admitted to the ICU when the decision was made. The remaining patients continued to receive ward care and were not given a trial of ICU care.

The univariate comparison of those who had WWLS and FLS (Table II) showed that older age, type 2 respiratory failure, lower Glasgow coma scale score at admission, chronic kidney disease, clear documentation of the disease prognosis and documentation of expected death were associated with decision to withdraw or withhold life support. The factors associated with a decision for FLS were shock, inotropic use, care in the ICU and sepsis of any cause. The total hospital bill and the number of days on the

Table I. Characteristics of the study population (122 decedents)

Variable	Mean (%) (range)
Age (yr)	55.3±16.9 (18-89)
Sex	
Male	65 (53.3)
Female	57 (46.7)
State	
Tamil Nadu	70 (57.4)
Andhra Pradesh	28 (23)
West Bengal	11 (9)
Others	13 (10.7)
Hospital bill (₹)	95,000±251.90 (5180-2,516,880), median - 43,680
Insured	8 (6.6)
Charity availed	95 (77.9)
Full free	7 (5.7)
The immediate cause of death	
Shock	61 (50)
Type 1 respiratory failure	36 (29.5)
Type 2 respiratory failure	20 (16.4)
Arrhythmia	1 (0.8)
Others	4 (3.3)
Primary diagnosis (process that leads to death)	
Respiratory infection	29 (23.8)
Urinary infection	8 (6.6)
Other infections	26 (21.3)
ACS/IHD	12 (9.8)
COPD	4 (3.3)
Poisoning	6 (4.9)
CVA	16 (13.1)
Ischaemic	12 (9.8)
Haemorrhagic	4 (3.3)
Others	21 (17.2)
Duration of the current illness	
Less than a week	78 (63.9)
One week to one month	25 (20.5)
One month to one year	18 (14.8)
More than a year	1 (0.8)
Co-morbid illness	
Diabetes mellitus	58 (47.5)
Hypertension	54 (44.3)
Dyslipidaemia	10 (8.2)

Contd...

Variable	Mean (%) (range)
Obesity	5 (4.1)
Asthma	3 (2.5)
COPD	7 (5.7)
Interstitial lung disease	2 (1.6)
Chronic liver disease	6 (4.9)
IHD	16 (13.1)
CCF	11 (9)
CVA	14 (11.5)
Neurodegenerative diseases	3 (2.5)
Epilepsy	3 (2.5)
Tuberculosis	8 (6.6)
CKD	15 (12.3)
Hypothyroidism	12 (9.8)
GCS (at admission)	
15/15	56 (45.9)
3/15	8 (6.6)
Mental status	
Alert	57 (46.7)
Drowsy	50 (41)
Comatose	15 (12.3)
Physical pain	15 (12.3)
Dyspnoea	88 (72.1)
Smoking	18 (14.7)
Alcohol	17 (13.9)
Days of hospital stay	6.6±9.4 (1-62), median - 4
ICU admission	48 (39.3)
Days in the intensive unit	6±9.8 (0-62), median - 4
Days on ventilator	3±7.1 (0-62), median - 1
Inotrope use	73 (59.8)
Prior CPR	19 (15.6)
Full life support	41 (33.6)
Withholding or withdrawal life support	81 (66.4)
Withholding	62 (50.8)
Withdrawal	19 (15.6)
Support withheld/withdrawn	
Renal replacement therapy	7 (8.6)
Antibiotics	None
Hydration	None
Feeding	None
Inotropes	36 (44.4)
Mechanical ventilation	72 (88.9)
DNI order	55 (67.9)
DNR order	74 (91.3)

CKD, chronic kidney disease; CCF, congestive cardiac failure; ACS, acute coronary syndrome; IHD, ischaemic heart disease; COPD, chronic obstructive pulmonary disease; CVA, cerebrovascular accident; GCS, Glasgow coma scale; CPR, cardiopulmonary resuscitation; DNI, Do-not-intubate; DNR, Do-not-resuscitate; ICU, intensive unit care

ventilator were also found to be significantly (P=0.003 and P<0.001, respectively) higher among those who had FLS.

The variables which showed association in univariate analysis for WWLS were entered into multivariate analysis, namely age, shock, type 2 respiratory failure, cerebrovascular accident, congestive cardiac failure, Glasgow coma scale, inotrope use and documentation of poor prognosis. It showed that the documentation of the disease process, prognosis and the mention of imminent death (a single variable) was the only factor independently associated with the decision to WWLS [odds ratio (OR) – 0.08; 95% confidence interval (CI) 0.01 - 0.74, P=0.03]. There was a trend towards significance in the use of inotropic support with an OR of 4.12 (95% CI 0.96-17.61) suggesting that those who received inotropic support had a greater probability of receiving FLS.

Discussion

Despite research evidence that most people prefer to die in their own homes, a significant proportion of deaths occur in hospitals and their ICUs[9-11]. In the United States, an estimated 20 per cent of all deaths occur during or soon after ICU care and half of the patients who die in a hospital are admitted to an ICU during the last three days of their life[12,13].

The realization that indiscriminate use of cardiopulmonary resuscitation on terminally ill patients only prolonged suffering leads to the evolution of DNR orders as an important component of EOL care[14]. With the advent of various technologies for artificial life support, huge, yet avoidable financial burden on patients and families has been more acutely felt in resource-limited contexts like that of India. Optimal utilization of the available scarce resources in such settings also includes withholding or withdrawal of life-supporting interventions in non-salvageable patients[15-17]. ICU care as part of EOL care lacks clear benefits and may impede the provision of ‘good death’ (painless, free of aggressive intervention and in the presence of dear

Table II. Comparison of various characteristics of decedents who received full life support (n=41) with those who had withholding or withdrawal of life support (n=81) - Results of univariate analysis

Variable	Full life support, n (%)	Withholding or withdrawal of life support, n (%)	OR (95% CI)	*P*
Age, yr (mean)	49.1	58.4	Mean difference: 9.3±3.1	0.01
Sex				
Male	21 (51.2)	44 (54.3)	0.9 (0.4-1.9)	0.85
Female	20 (48.8)	37 (45.7)		
Bill paid by insurance	5 (12.2)	3 (3.7)	3.7 (0.8-16.4)	0.11
Charity availed	31 (75.6)	64 (79)	0.8 (0.3-2.0)	0.65
Immediate cause of death				
Shock	26 (63.4)	35 (43.2)	2.3 (1.1-4.9)	0.05
Respiratory failure type 1	11 (26.8)	25 (30.9)	0.8 (0.3-1.9)	0.68
Respiratory failure type 2	2 (4.9)	18 (22.2)	0.2 (0.03-0.8)	0.02
Process that led to death				
ACS/IHD	2 (4.9)	10 (12.3)	0.4 (0.1-1.7)	0.33
COPD	1 (2.4)	3 (3.7)	0.6 (0.06-6.4)	1.00
Sepsis (all causes)	27 (65.9)	36 (44.4)	2.4 (1.1-5.3)	0.03
Urinary source	3 (7.3)	5 (6.2)	1.2 (0.3-5.3)	1.00
Respiratory source	10 (24.4)	19 (23.5)	1.0 (0.4-2.5)	1.00
Gastrointestinal	1 (2.4)	3 (3.7)	0.6 (0.06-6.4)	1.00
Others	12 (29.3)	9 (11.1)	3.3 (1.3-8.7)	0.02
CVA				
Haemorrhagic	0 (0)	4 (4.9)	1.5 (1.3-1.7)	0.30
Ischaemic	2 (4.9)	10 (12.3)	0.4 (0.1-1.7)	0.33
All causes	2 (4.9)	14 (17.3)	0.2 (0.1-1.1)	0.09
Comorbidities				
Diabetes (n=58)	16 (39.0)	42 (51.9)	0.6 (0.3-1.3)	0.25
Hypertension (n=54)	14 (34.1)	40 (49.4)	0.5 (0.2-1.2)	0.13
Dyslipidaemia (n=10)	4 (9.8)	6 (7.4)	1.3 (0.4-5.1)	0.73
CKD (n=15)	1 (6.7)	14 (17.3)	0.1 (0.01-0.9)	0.02
IHD (n=16)	2 (5.0)	14 (17.3)	0.2 (0.05-1.2)	0.09
CCF (n=11)	2 (4.9)	9 (11.1)	0.4 (0.1-2)	0.33
CVA (n=14)	4 (9.8)	10 (12.3)	0.8 (0.2-2.6)	0.77
GCS (adjusted for *T*=1)	13.1 (3.8)	11.5 (4.1)	Difference 1.5 (0.02-3.1)	0.05
Mental status				
Alert	24 (58.5)	33 (40.7)	2.0 (0.9-4.4)	0.08
Drowsy	13 (31.7)	37 (45.7)	0.5 (0.2-1.2)	0.17
Comatose	4 (9.8)	11 (13.6)	0.7 (0.2-2.3)	0.77
Physical pain (n=15)	8 (19.5)	7 (8.6)	2.6 (0.8-7.6)	0.14
Dyspnoea (n=88)	32 (78.0)	56 (69.1)	1.6 (0.7-3.8)	0.39
Smoking history (n=18)	4 (11.4)	14 (20.9)	0.5 (0.1-1.6)	0.28
Alcohol history (n=17)	5 (14.3)	12 (17.6)	0.8 (0.2-2.4)	0.78
ICU admission	23 (56.1)	25 (30.9)	2.9 (1.3-6.2)	0.01

Contd...

Variable	Full life support, n (%)	Withholding or withdrawal of life support, n (%)	OR (95% CI)	*P*
Use of inotropes	32 (78.0)	41 (50.6)	3.5 (1.5-8.2)	0.00
CPR attempted (n=19)	10 (24.4)	9 (11.1)	2.6 (0.9-6.9)	0.07
Charity availed (n=95)	31 (75.6)	64 (79.0)	0.8 (0.4-2.0)	0.65
Documentation of prognosis (n=100)	22 (55)	78 (97.5)	0.03 (0.01-0.1)	0.00
Documentation of expected death (n=18)	1 (2.5)	17 (21.3)	0.09 (0.01-0.7)	0.00

CI, confidence interval; OR, Odds ratio

ones)[18]. Contrary to common perception, it has been found that the ability to decide on limiting treatments at EOL can be taken as an indicator of the quality of a hospital[4]. Patients with higher educational qualification are less likely to die in hospitals or receive aggressive interventions at EOL, suggesting that lack of awareness of EOL-care (EOLC) options may be an important determinant of the quality of EOLC[5].

In general, the decision to withdraw or withhold treatment is usually made by patients and families in consultation with the physicians. There have been attempts by the Indian Society of Critical Care Medicine to develop an ethical framework and practical procedure for limiting inappropriate therapeutic interventions to improve the quality of care of the dying in the ICU through a professional consensus process[16,19].

Contemporary research in this area has identified various factors that contributed to the withdrawal and WWLS which could be classified into patient-related factors, physician-related factors and disease-related factors. These are summarized in Table III and include factors such as the age, financial and educational status of the patient, treating physician's perception and specialty, general condition and primary diagnosis[20-25].

In our study on EOL care seven per cent patients expired during their hospital stay. About 40 per cent of these patients were given ICU care. A significant proportion had DNI and DNR orders. Patients who were likely to survive were given FLS including inotropic care.

Literature search suggested that older patients, with neurological illness, malignancy, lack of insurance, with clinicians rating of poor chance of survival were associated with WWLS. Cook *et al*[21], in an international multicentric study, found that the strongest determinant of withdrawal of ventilation in critically ill patients was the perception of the treating physician that the patient did not prefer FLS and his/her own prediction of a low likelihood of survival in the ICU. It appears that physicians in our study gave inotropes to those who they perceived would survive, while the study by Cook *et al*[21] suggested that the use of inotropes was associated with WWLS. Perhaps there, sicker patients were on inotropes and clinicians used this as an indicator of poor prognosis.

Even in our conservative cultural setting, families were willing to accept and understand the futility of medical care, especially in the elderly, those with malignancy and chronic irreversible disease processes

Table III. Factors associated with withdrawing or withholding life support as per existing literature

Patient-related factors	Physician-related factors	Disease-related factors
Age[19]	Physician's prediction of poor patient outcome[18]	APACHE score[20]
Lack of insurance (less WWLS)[21]	Perception that the patient did not want advanced life support[18]	Poor neurological prognosis[18]
Family and financial condition[5,22]	Admission under neurology/neurosurgery (more/early WWLS)[21]	Malignancy or other fatal diseases[22,23]
Culture, Nationality	Admission under surgical, trauma, cardiovascular service[20] (less/delayed WWLS)	Neurological diagnosis[20]
Longer hospital and ICU stay[20]	Documentation of poor prognosis*	Poor GCS at admission[20]
Educational and professional status[5]		Use of inotropes[19]

*Present study. WWLS, withdrawing or withholding life support; APACHE, acute physiology and chronic health evaluation

such as chronic obstructive pulmonary and chronic kidney disease. Furthermore, the neurological status of the patient at admission as an important factor impacting EOL decisions has been corroborated in existing literature[22]. On the contrary, shock (and associated inotropic use) and sepsis were usually acute and considered potentially reversible, hence, the increased number of FLS in these conditions.

As our study was focused on the mortality in a single medical unit in a tertiary care hospital in southern India, it could be possible that we missed the pan-India perspective. Given the retrospective nature of our study, it was not possible to look into certain factors (such as the educational status of the patient and family, marital status, number of children, socio-economic status, number of decision-makers, any discord in the family, documentation of spiritual support given to the patient, religion, faith philosophy of the patient and family among others) which were shown to influence the WWLS decision according to the literature. The sample size of 139 could not be achieved in view of inadequate documentation on EOL decisions in the medical records prior to the study period. The lesser sample size achieved in this study had an adverse impact on precision by 0.3 per cent compared to the assumed precision of five per cent.

Utilizing and documenting a standardized scoring system like the APACHE II for all critically ill patients would have given a more objective idea of their illness and would have made the comparison easier. Unfortunately, this was not available in most patients. A prospective study would be able to overcome these deficiencies.

In conclusion, our study showed that for almost two-thirds of all the decedents prolonged and pointless medical applications were limited at the EOL. The documentation of poor prognosis was the only significant factor associated with decision to withhold or withdraw life support. Larger, multicentre, prospective studies would be required to assess the influence of various other factors such as the socio-cultural milieu on EOL care.

***Acknowledgment*:** Authors acknowledge the contribution of the patients, their families and the healthcare team in the medical ward, ICU and HDU.

***Financial support & sponsorship*:** None.

***Conflicts of Interest*:** None.

References

1. Kulkarni P, Kulkarni P, Anavkar V, Ghooi R. Preference of the place of death among people of Pune. *Indian J Palliat Care* 2014; *20* : 101-6.
2. von Gunten C, Weissman DE. Ventilator withdrawal protocol. *J Palliat Med* 2003; *6* : 773-4.
3. Law Commission of India. 196th Report. Medical Treatment of Terminally Ill Patients (for the Protection of Patients and Medical Practitioners). Law Commission of India; 2006. Available from: *http://lawcommissionofindia.nic.in/reports/rep196.pdf,* accessed on February 11, 2019.
4. Bertolini G, Boffelli S, Malacarne P, Peta M, Marchesi M, Barbisan C, *et al*. End-of-life decision-making and quality of ICU performance: An observational study in 84 Italian units. *Intensive Care Med* 2010; *36* : 1495-504.
5. Weissman JS, Cooper Z, Hyder JA, Lipsitz S, Jiang W, Zinner MJ, *et al*. End-of-life care intensity for physicians, lawyers, and the general population. *JAMA* 2016; *315* : 303-5.
6. Mani RK, Mandal AK, Bal S, Javeri Y, Kumar R, Nama DK, *et al*. End-of-life decisions in an Indian intensive care unit. *Intensive Care Med* 2009; *35* : 1713-9.
7. Divatia JV, Amin PR, Ramakrishnan N, Kapadia FN, Todi S, Sahu S, *et al*. Intensive care in India: The Indian intensive care case mix and practice patterns study. *Indian J Crit Care Med* 2016; *20* : 216-25.
8. Kapadia F, Singh M, Divatia J, Vaidyanathan P, Udwadia FE, Raisinghaney SJ, *et al*. Limitation and withdrawal of intensive therapy at the end of life: Practices in intensive care units in Mumbai, India. *Crit Care Med* 2005; *33* : 1272-5.
9. Estimates of mortality indicators. Available from: *http://censusindia.gov.in/vital_statistics/srs/Chap_4_-_2010.pdf*, accessed on February 11, 2019.
10. Gruneir A, Mor V, Weitzen S, Truchil R, Teno J, Roy J. Where people die: A multilevel approach to understanding influences on site of death in America. *Med Care Res Rev* 2007; *64* : 351-78.
11. Tang ST. When death is imminent: Where terminally ill patients with cancer prefer to die and why. *Cancer Nurs* 2003; *26* : 245-51.
12. Angus DC, Barnato AE, Linde-Zwirble WT, Weissfeld LA, Watson RS, Rickert T, *et al*. Use of intensive care at the end of life in the United States: An epidemiologic study. *Crit Care Med* 2004; *32* : 638-43.
13. A controlled trial to improve care for seriously ill hospitalized patients. The study to understand prognoses and preferences for outcomes and risks of treatments (SUPPORT). The SUPPORT Principal Investigators. *JAMA* 1995; *274* : 1591-8.
14. Burns JP, Truog RD. The DNR order after 40 years. *N Engl J Med* 2016; *375* : 504-6.
15. Gursahani R, Mani RK. India: not a country to die in. *Indian J Med Ethics* 2016; *1* : 30-5.
16. Myatra SN, Salins N, Iyer S, Macaden SC, Divatia JV, Muckaden M, *et al*. End-of-life care policy: An integrated care plan for the dying: A joint position statement of the Indian Society of Critical Care Medicine (ISCCM) and the Indian Association of Palliative Care (IAPC). *Indian J Crit Care Med* 2014; *18* : 615-35.

17. Mani RK, Amin P, Chawla R, Divatia JV, Kapadia F, Khilnani P, *et al*. Guidelines for end-of-life and palliative care in Indian intensive care units' ISCCM consensus ethical position statement. *Indian J Crit Care Med* 2012; *16* : 166-81.
18. Angus DC, Truog RD. Toward Better ICU use at the end of life. *JAMA* 2016; *315* : 255-6.
19. Macaden SC, Salins N, Muckaden M, Kulkarni P, Joad A, Nirabhawane V, *et al*. End of life care policy for the dying: Consensus position statement of Indian association of palliative care. *Indian J Palliat Care* 2014; *20* : 171-81.
20. Sprung CL, Cohen SL, Sjokvist P, Baras M, Bulow HH, Hovilehto S, *et al*. End-of-life practices in European intensive care units: The Ethicus Study. *JAMA* 2003; *290* : 790-7.
21. Cook D, Rocker G, Marshall J, Sjokvist P, Dodek P, Griffith L, *et al*. Withdrawal of mechanical ventilation in anticipation of death in the intensive care unit. *N Engl J Med* 2003; *349* : 1123-32.
22. Kranidiotis G, Gerovasili V, Tasoulis A, Tripodaki E, Vasileiadis I, Magira E, *et al*. End-of-life decisions in Greek intensive care units: A multicenter cohort study. *Crit Care* 2010; *14* : R228.
23. Huynh TN, Walling AM, Le TX, Kleerup EC, Liu H, Wenger NS. Factors associated with palliative withdrawal of mechanical ventilation and time to death after withdrawal. *J Palliat Med* 2013; *16* : 1368-74.
24. Zhao Q, Zhang X, Fang Y, Gong J, Gu B, Ma G. Current situation and associated factors of withdrawing or withholding life support to patients in an intensive care unit of cancer center in China. *PLoS One* 2014; *9* : e98545.
25. Cavallazzi R, Hirani A, Vasu TS, Pachinburavan M, Kane GC. Influence of malignancy on the decision to withhold or withdraw life-sustaining therapy in critically ill patients. *Am J Hosp Palliat Care* 2009; *26* : 464-9.

For correspondence: Dr Vignesh Kumar Chandiraseharan, Department of Medicine, Unit II, Christian Medical College, Vellore 632 004, Tamil Nadu, India
e-mail: vigneshmmc02@gmail.com