

Death and do-not-resuscitate order in the emergency department: A single-center three-year retrospective study in the Chinese mainland

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BACKGROUND: Consenting to do-not-resuscitate (DNR) orders is an important and complex medical decision-making process in the treatment of patients at the end-of-life in emergency departments (EDs). The DNR decision in EDs has not been extensively studied, especially in the Chinese mainland.

METHODS: This retrospective chart study of all deceased patients in the ED of a university hospital was conducted from January 2017 to December 2019. The patients with out-of-hospital cardiac arrest were excluded.

RESULTS: There were 214 patients' deaths in the ED in the three years. Among them, 132 patients were included in this study, whereas 82 with out-of-hospital cardiac arrest were excluded. There were 99 (75.0%) patients' deaths after a DNR order medical decision, 64 (64.6%) patients signed the orders within 24 hours of the ED admission, 68 (68.7%) patients died within 24 hours after signing it, and 97 (98.0%) patients had DNR signed by the family surrogates. Multivariate analysis showed that four independent factors influenced the family surrogates' decisions to sign the DNR orders: lack of referral (odds ratio [OR] 0.157, 95% confidence interval [CI] 0.047–0.529, $P=0.003$), ED length of stay (ED LOS) ≥ 72 hours (OR 5.889, 95% CI 1.290–26.885, $P=0.022$), acute myocardial infarction (AMI) (OR 0.017, 95% CI 0.001–0.279, $P=0.004$), and tracheal intubation (OR 0.028, 95% CI 0.007–0.120, $P<0.001$).

CONCLUSIONS: In the Chinese mainland, the proportion of patients consenting for DNR order is lower than that of developed countries. The decision to sign DNR orders is mainly affected by referral, ED LOS, AMI, and trachea intubation.

KEYWORDS: Emergency service; Do-not-resuscitate; Death patients; Retrospective analysis; Emergency departments

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INTRODUCTION

Do-not-resuscitate (DNR) orders are intended to allow patients to forgo cardiopulmonary resuscitation (CPR) in the event of cardiopulmonary arrest. Patients who choose this option may also forgo extra life-sustaining interventions,^[1,2] which does not imply withholding or withdrawing all other treatments or interventions.^[3] A DNR order is thought to be an important part of advance directive (AD) in patients near the end of life,^[4] and has become a part of the society's ritual for dying.^[5] A signed DNR order has been gaining

popularity worldwide with the development of hospice care. However, there is no legal guarantee of a signed DNR order for patients in the Chinese mainland.^[6] It is regarded as valuable in helping patients to be treated with dignity in their last days.^[4] Signing a DNR order is currently a common practice in many countries. A DNR order indicates that the patient refuses basic or advanced life support that would delay death,^[7,8] it can also be written to avoid futile treatment and resuscitation while continuing appropriate symptom-attenuated treatment.^[9,10] The concept of the DNR order evokes controversy regarding

the appropriate care for dying patients and has received considerable attention from emergency medical staff.

Emergency departments (EDs) provide physical and psychological treatments for patients with severe diseases or terminal illnesses.^[11,12] Death frequently occurs in EDs.^[13] Recent evidence indicates that half of the elderly patients visited the emergency room in the last month of their lives.^[14] Chan^[15] reported that patients came to EDs with unexpected injuries, chronic disease exacerbations, or perhaps terminal illnesses seeking life-saving or life-prolonging treatment. Aggressive invasive treatment and life-prolonging strategies are usually prioritized due to complications and rapid changes in patients' conditions. Life-sustaining active treatments are sometimes regarded as futile for those with incurable or terminal illness, although they may prolong the patient's lives.^[11,16] Patients consenting to DNR were often able to avoid futile examination and invasive rescue measures, to alleviate suffering and maintain their dignity.^[17]

Signing a DNR consent form is an important medical decision-making process; early initiation of discussions can improve end-of-life care and reduce futile treatments in EDs.^[11] In China, many families object to revealing about an incurable diagnosis or poor disease prognosis to patients, which may impede the end-of-life care-related decisions. Studies show that Chinese patients may leave their end-of-life care-related decisions, such as receiving life-sustaining therapy or signing DNR directives, to family members.^[18] However, making these decisions is difficult for physicians and family surrogates, and depends on ethical issues associated with legal, moral, cultural, and religious values.^[19,20] The medical staff often have little information about patients' wishes and have no previous relationship with them.^[14] Several studies on DNR in the acute care setting have been reported in intensive care units (ICUs). To our knowledge, this remains the first pilot study on the implementation of DNR directives to patients at their end-of-life in EDs in the Chinese mainland.

This study aimed to describe the clinical characteristics of patients who died in EDs, to investigate the signing of DNR orders, and to analyze the related factors.

METHODS

Study design and setting

This was a retrospective chart study conducted in an adult ED, in a tertiary university-affiliated hospital from January 1, 2017 to December 31, 2019. The study protocol was reviewed and approved by the Institutional

Review Board of the Second Affiliated Hospital of Zhejiang University School of Medicine (IRB number: IR2020001036). Personal informed consent was not required.

Selection of participants

The inclusion criteria were adult patients who died in an ED after being admitted. The exclusion criteria were patients with out-of-hospital cardiac arrest.

Patients were required to be ≥ 18 years old and had at least one immediate family member present during the ED stay. The immediate family members needed to be ≥ 18 years old and acted as the primary family caregivers and patients' surrogates.

The DNR order was defined as a complete and formal DNR discussion between emergency medical staff and family surrogates, after which a form was signed by the physician and the surrogate.

Data collection

Data were collected using a questionnaire designed by the investigator. The collected variables from each patient's electronic medical records were guided by the literature review. Demographic information included age, sex, medical insurance, place of residence, and duration from morbidity to DNR signing. Triage information contained the number of referrals, ambulance transfer, 30-day readmission, triage classification, and the clinical department. Disease-related information included disease diagnosis and Charlson Comorbidity Index (CCI). Invasive operation information included tracheal intubation, invasive mechanical ventilation, cardiopulmonary resuscitation, electric cardioversion, central venous catheter, indwelling gastric tube, and indwelling catheter. Death information included the time of death, death trajectory, and ED length of stay (ED LOS). The ED LOS was defined as the time between emergency admission and patient death, in hours. A complete and formal DNR discussion, a record of a signature by the patient or their family surrogates, and the time of death were included with the signed DNR order.

Statistical analysis

All analyses were carried out using SPSS software (version 25). Parametric data were presented as mean with standard deviation (SD), and differences between groups were assessed using a *t*-test. Mann-Whitney *U*-test was used to test for differences between groups for nonparametric distribution data, and the results

were presented as the median and interquartile range (IQR). The categorical variables were presented as frequency and percentage and analyzed by the Chi-squared test. Factors associated with signing DNR orders were examined using univariate analysis, and those with significant differences were used for multivariate analysis. The strength of association was indicated by the odds ratio (OR) and 95% confidence interval (CI). $P < 0.05$ was considered to be significant.

RESULTS

Characteristics of patients who died in the ED

A total of 214 patients died in the ED, and 82 (38.3%) were excluded because of out-of-hospital cardiac arrest (Figure 1). The demographic and pre-hospital characteristics of 132 patients are summarized in Table 1. Table 2 shows the clinical characteristics of patients.

Patient management in the ED

The frequent modalities of invasion operation

Table 1. Demographic and pre-hospital information of the 132 patients who died in ED

Variables	n (%)
Demographic characteristics	
Age (years), median (IQR)	77 (55.25, 87.75)
Sex	
Male	88 (66.7)
Female	44 (33.3)
Living of place	
Countryside	21 (15.9)
City	111 (84.1)
Expense category	
Self-supporting	35 (26.5)
Medical insurance	97 (73.5)
Duration from morbidity to signing DNR (hours), median (IQR)	14 (2, 42)
Pre-hospital information	
Referral	
No	91 (68.9)
Yes	41 (31.1)
30-day readmission	
Yes	54 (40.9)
No	78 (59.1)
Ambulance transfer	
Yes	108 (81.8)
No	24 (18.2)
Triage	
Level I	73 (55.3)
Level II	31 (23.5)
Level III	21 (15.9)
Level IV	2 (1.5)
Level V	5 (3.8)
Clinical department	
Internal medicine	61 (46.2)
Neurology department	37 (28.0)
Cardiology department	11 (8.3)
Emergency department	10 (7.6)
Neurosurgery department	8 (6.1)
Surgical department	5 (3.8)

ED: emergency department; IQR: interquartile range; data are expressed as n (%) unless otherwise indicated.

were indwelling catheter for 77 (58.3%) patients, invasive mechanical ventilation for 53 (40.2%) patients, cardiopulmonary resuscitation for 33 (25.0%) patients,

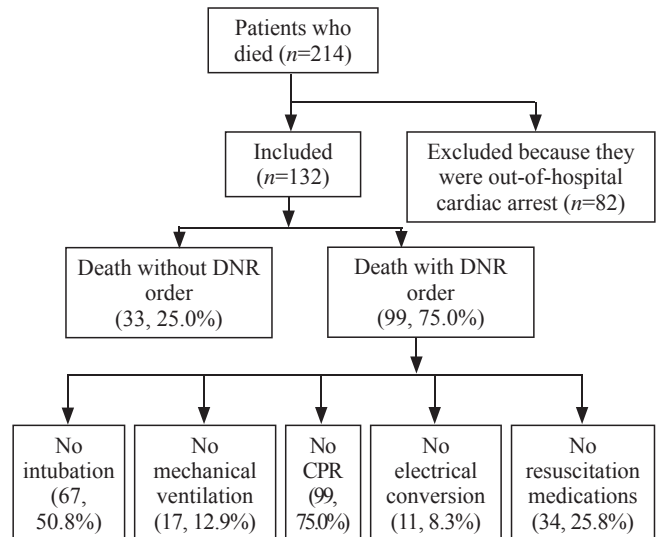


Figure 1. Trial profile of 214 patients admitted to emergency department during the study period.

Table 2. Clinical characteristics of the 132 patients who died in ED

Variables	n (%)
CCI (mean±SD)	4.39±2.61
ED LOS (hours), median (IQR)	25.50 (10.25, 83.50)
Acute medical disorders	
ACVD	44 (33.3)
AHDT	10 (7.6)
Shock	10 (7.6)
Multiple trauma	9 (6.8)
AMI	5 (3.8)
Toxicosis	4 (3.0)
AECOPD	2 (1.5)
Chronic underlying diseases	
Malignancy	26 (19.7)
Chronic respiratory disease	24 (18.2)
Coronary artery disease	17 (12.9)
Chronic renal disease	11 (8.3)
Chronic liver disease	10 (7.6)
Dementia	4 (3.0)
Organ failures	
Respiratory failure	17 (12.9)
Renal insufficiency	15 (11.4)
Heart failure (NYHA class 4)	14 (10.6)
Hepatic insufficiency	8 (6.1)
Main medical disorders	
Neurological	49 (37.1)
Cardiovascular	27 (20.5)
Respiratory	27 (20.5)
Cancer	26 (19.7)
Infectious	24 (18.2)
Digestive	16 (12.1)
Traumatic	9 (6.8)
Death trajectory	
Frailty	45 (34.1)
Sudden death	42 (31.8)
Organ failure	25 (18.9)
Terminal illness	20 (15.2)

CCI: Charlson Comorbidity Index; ED LOS: emergency department length of stay; ACVD: acute cerebrovascular disease; AHDT: acute hemorrhage of digestive tract; AMI: acute myocardial infarction; AECOPD: acute exacerbation of chronic obstructive pulmonary disease; NYHA: New York Heart Association; SD: standard deviation; IQR: interquartile range; data are expressed as n (%) unless otherwise indicated.

electric cardioversion for 2 (1.5%) patients, central venous catheter for 20 (15.2%) patients, indwelling gastric tube for 24 (18.2%) patients, and tracheal intubation for 54 (40.9%) patients. Of the 99 (75.0%) cases with a DNR order, 97 were from family surrogates, and only two made their own decisions. The most frequent orders were: no cardiopulmonary resuscitation (CPR) for 99 (75.0%) patients, no intubation for 67 (50.8%) patients, no resuscitation medications for 34 (25.8%) patients, and no mechanical ventilation for 17 (12.9%) patients (Figure 1). Sixty-four (64.6%) cases consented the DNR within 24 hours of the ED admission, and 68 (68.7%) patients died within 24 hours after consenting.

Comparison of the characteristics between patients with and without DNR

DNR patients were elderly, lived in cities, and had medical insurance (Table 3). Patients who consented DNR also used less tracheal intubation or invasive mechanical ventilation ($P<0.001$). The results also showed that patients with acute myocardial infarction (AMI) were less likely to sign DNR orders ($P=0.018$),

and patients with DNRs had higher CCI ($P=0.001$) and more complications than patients without DNRs. The time from ED admission to death was significantly longer in the DNR group than in the non-DNR group (median: 29 hours and 12 hours, respectively, $P=0.008$).

Factors related to the DNR decision

Factors associated with DNR as determined using univariate analysis were: older age, living in a city, having medical insurance, no referral, CCI >3 , ED LOS ≥ 72 hours, tracheal intubation, invasive mechanical ventilation, AMI, and trauma. Other variables did not correlate with the DNR decision directive ($P>0.05$) (Table 4).

Multivariate analysis was applied to factors found to be significant using univariate analysis. The multivariate analysis showed that no referral, ED LOS ≥ 72 hours, AMI, and tracheal intubation were significantly associated with DNR decision.

DISCUSSION

Acute internal diseases were the main reasons for ED

Table 3. Comparison of characteristics between patients with DNR and without DNR, *n* (%)

Variables	DNR (<i>n</i> =99)	Without DNR (<i>n</i> =33)	<i>P</i> -value
Age (years), median (IQR)	82 (63, 89)	59 (45, 73)	<0.001
Male	66 (66.7)	22 (66.7)	1.000
City	89 (89.9)	22 (66.7)	0.002
Medical insurance	82 (82.8)	15 (45.5)	<0.001
No referral	76 (76.8)	15 (45.5)	0.001
30-day readmission	40 (40.4)	14 (42.4)	0.838
Ambulance transfer	82 (82.2)	26 (78.8)	0.602
Triage			0.060
Level I	54 (54.5)	19 (57.6)	
Level II	27 (27.3)	4 (12.1)	
Level III	15 (15.2)	6 (18.2)	
Level IV	0 (0)	2 (6.1)	
Level V	3 (3.0)	2 (6.1)	
CCI (mean \pm SD)	4.83 \pm 2.49	3.06 \pm 2.55	0.001
ED LOS (hours), median (IQR)	29 (13, 99)	12 (3, 59)	0.008
Trachea intubation	26 (26.3)	28 (84.8)	<0.001
Invasive mechanical ventilation	25 (25.3)	28 (84.8)	<0.001
Electric cardioversion	0 (0)	2 (6.1)	0.061
Central venous catheter	13 (13.1)	7 (21.2)	0.400
Indwelling gastric tube	19 (19.2)	5 (15.2)	0.602
Indwelling catheter	57 (57.6)	20 (60.6)	0.760
AMI	1 (1.0)	4 (12.1)	0.018
ACVD	32 (32.3)	12 (36.4)	0.670
AHDT	9 (9.1)	1 (3.0)	0.447
AECOPD	2 (2.0)	0 (0)	1.000
Multiple trauma	4 (4.0)	5 (15.2)	0.073
Shock	7 (7.1)	3 (9.1)	1.000
Toxicosis	3 (3.0)	1 (3.0)	1.000
Coronary artery disease	12 (12.1)	5 (15.2)	0.881
Chronic respiratory disease	19 (19.2)	5 (15.2)	0.602
Malignancy	22 (22.2)	4 (12.1)	0.206
Liver disease	9 (9.1)	1 (3.0)	0.447
Renal disease	8 (8.1)	3 (9.1)	1.000
Dementia	4 (4.0)	0 (0)	0.558

CCI: Charlson Comorbidity Index; ED LOS: emergency department length of stay; AMI: acute myocardial infarction; ACVD: acute cerebrovascular disease; AHDT: acute hemorrhage of digestive tract; AECOPD: acute exacerbation of chronic obstructive pulmonary disease; SD: standard deviation; IQR: interquartile range.

admission. This finding was consistent with a previous study by Le Conte et al.^[21] Patients who died had more complications in the ED. In our study, the average CCI score was 4.39, which was higher than that reported by Hsu et al.^[22] The average ED LOS for patients who died in the ED was 25.5 hours in this study, which was higher than the results reported by Ye et al.^[23] The reasons may be connected with the patients with more complicated conditions, diagnoses that involved multiple departments, or delayed admission to the ward.

In this cohort, 99 (75.0%) of the 132 patients in the ED had signed a DNR order before they died. Studies showed that 87.3% of patients signed DNR orders before death in America.^[24] In the UK, there were about 160,000 hospital deaths annually, and 80% of patients died with a DNR order.^[25] In Australia, 82% of patients signed a DNR before death.^[26] By comparison, Chinese patients who died in the hospital had a lower DNR rate than those in developed countries. It is considered as blasphemous and disrespectful to mention death in Chinese traditional culture; this may result in avoidance of any discussion about death.^[27] Decisions about DNR orders are usually made by family surrogates when the patients are severely ill.^[6] Confucianism deeply influences Chinese tradition and culture;^[28] the eldest son or daughter is regarded as their agent by most elderly patients. Filial piety strongly affects decision-making,^[18] signing DNR directives was once considered to abandon life and wait for death, which was contrary to the traditional filial piety in China.

In our study, 97 (98.0%) patients had DNR signed by family surrogates, and only two patients made their own decisions. However, in Europe and North America, older patients prefer to make their final DNR directives.^[17,29] The possible reasons are few ADs,^[30] no anticipation about end-of-life decisions before admission in ED, and conversations between physicians and family surrogates at the last admission. Because of the lack of ADs, family members need to express patients' wishes concerning their end-of-life preferences.^[31] Kwok et al^[32] found

that most family surrogates had poor knowledge of life-sustaining treatments, and most of them depended on their views but not the patients' wishes to make the final DNR directives. By tradition, the eldest son or daughter is obliged by filial piety to do everything to prolong the elderly patient's life; the opinions of family members and health-care professionals take precedence over personal opinions or preferences.^[18]

Previous studies reported a strong association between the presence of a DNR order and mortality.^[17] In our study, we found that signing DNR orders on the day of the patients' death was the most common (68.7%). Signing DNR order increased as death approached. Also, 64.6% (64/99) of the patients signed DNR directives within 24 hours after ED admission. Demographic data showed that the median duration from morbidity to DNR signing was 14 hours. These findings will help us better understand the importance of timing in the initiation of the DNR process in the ED. In clinical practice, patients with terminal illnesses or sudden devastating events usually have a poor prognosis, and emergency medical staff would communicate with patients or their family surrogates earlier. An early DNR order in the ED may indicate a person's preference to restrict care because of particular beliefs and the state of their health.^[33] Conversely, a DNR order signed after the first 24 hours (late DNR) in the ED may indicate that the individual does not respond to medical treatment,^[33] so their families accept the fact that the patients are unable to wake up and be cured.

Four factors associated with executing a DNR by patients' surrogates were identified: referral, ED LOS, AMI, and tracheal intubation. Patients who were not referred from local hospitals were more likely to sign DNR orders than those who were. This reason could be that the patients' families usually insist on life-sustaining treatment if the patient is referred to the ED of an urban tertiary referral hospital in China. As mentioned above, the most important reasons to self-refer to an ED were

Table 4. Influencing factors of DNR signing in emergency death patients ($n=132$)

Variables	Univariate analysis			Multivariate analysis		
	OR	95% CI	P-value	OR	95% CI	P-value
Age	1.045	1.022–1.068	<0.001	-	-	-
Living in city	4.450	1.678–11.801	0.003	-	-	-
Medical insurance	5.788	2.445–13.700	<0.001	-	-	-
No referral	0.252	0.110–0.578	0.001	0.157	0.047–0.529	0.003
CCI >3	5.084	2.195–11.772	<0.001	-	-	-
ED LOS ≥72 hours	3.152	1.018–9.757	0.046	5.889	1.290–26.885	0.022
AMI	0.074	0.008–0.688	0.022	0.017	0.001–0.279	0.004
Traumatic	0.236	0.059–0.938	0.040	-	-	-
Trachea intubation	0.064	0.022–0.182	<0.000	0.028	0.007–0.120	<0.001
Mechanical ventilation	0.060	0.021–0.173	<0.000	-	-	-

CCI: Charlson Comorbidity Index; ED LOS: emergency department length of stay; AMI: acute myocardial infarction; OR: odds ratio; CI: confidence interval.

health concerns and further examinations.^[34]

ED LOS was a predictive factor for the DNR decision, which was similar to the result of the study by Cheng et al.^[11] Patients whose family surrogates signed a DNR order tended to stay longer at the ED and increased overcrowding.^[22] These DNR patients with more complex comorbidities and terminal illnesses were more likely to die in the ED; this is a questionable development as the ED is not the most appropriate place for adequate end-of-life care, which should take place in a quiet and peaceful area.^[35] Previous studies reported similar findings.^[15,36] Early discussions about DNR with family surrogates and persistent education about hospice care may help the patients receive hospice care in the last stage of life.^[11]

One predictive factor explained that patients diagnosed with AMI weren't inclined to sign DNR orders. Previous studies showed that $\leq 1\%$ of AMI patients had DNR orders before hospital admission.^[37] The predictive factor of DNR was found to be relevant to tracheal intubation. A possible explanation is that patients' family surrogates who refused resuscitation usually also refused intubation. A previous study pointed out that do-not-intubate orders were generally accompanied by DNR orders.^[38]

There were limitations to this study: (1) it was a retrospective study, and there were some incomplete data in the electronic medical records; (2) the relatives' satisfaction levels and emotional state regarding the quality of care in the ED could not be measured; (3) it was performed in a single academic hospital, and the results may not be representative of the general situation in the Chinese mainland.

CONCLUSIONS

The DNR signing rate is lower in the Chinese mainland, with DNR consent forms almost exclusively signed by family surrogates in the ED. The decision on whether to attempt resuscitation is just one of many end-of-life decisions. Physicians and nurses are encouraged to have early discussions about end-of-life care with patients or their surrogates. DNR directives should be developed to improve end-of-life care quality and reduce futile medical interventions in the ED.

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Ethical approval: The study protocol was reviewed and approved by the Institutional Review Board of the Second Affiliated

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Conflicts of interest: The authors declare that there are no conflicts of interest regarding the publication of this paper.

Contributors: CQD proposed and wrote the first draft. All authors contributed to the design and interpretation of the study and to further drafts.

REFERENCES

- 1 Beach MC, Morrison RS. The effect of do-not-resuscitate orders on physician decision-making. *J Am Geriatr Soc.* 2002;50(12):2057-61.
- 2 Richardson DK, Zive D, Daya M, Newgard CD. The impact of early do-not-resuscitate (DNR) orders on patient care and outcomes following resuscitation from out of hospital cardiac arrest. *Resuscitation.* 2013;84(4):483-7.
- 3 Chan WL. The "do-not-resuscitate" order in palliative surgery: ethical issues and a review on policy in Hong Kong. *Palliat Support Care.* 2015;13(5):1489-93.
- 4 Brink P, Smith TF, Kitson M. Determinants of do-not-resuscitate orders in palliative home care. *J Palliat Med.* 2008;11(2):226-32.
- 5 Burns JP, Truog RD. The DNR order after 40 years. *New Engl J Med.* 2016;375(6):504-6.
- 6 Huang BY, Chen HP, Wang Y, Deng YT, Yi TW, Jiang Y. The do-not-resuscitate order for terminal cancer patients in the Chinese mainland: a retrospective study. *Medicine.* 2018;97(18):e0588.
- 7 van Delden JJ, Löfmark R, Deliens L, Bosshard G, Norup M, Cecioni R, et al. Do-not-resuscitate decisions in six European countries. *Crit Care Med.* 2006;34(6):1686-90.
- 8 Kizawa Y, Tsuneto S, Hamano J, Nagaoka H, Maeno T, Shima Y. Advance directives and do-not-resuscitate orders among patients with terminal cancer in palliative care units in Japan: a nationwide survey. *Am J Hosp Palliat Care.* 2013;30(7):664-9.
- 9 Ahmad AS, Mudasser S, Khan MN, Abdoun HN. Outcomes of cardiopulmonary resuscitation and estimation of healthcare costs in potential "do not resuscitate" cases. *Sultan Qaboos Univ Med J.* 2016;16(1):e27-34.
- 10 Azad AA, Siow SF, Tafreshi A, Moran J, Franco M. Discharge patterns, survival outcomes, and changes in clinical management of hospitalized adult patients with cancer with a do-not-resuscitate order. *J Palliat Med.* 2014;17(7):776-81.
- 11 Cheng YH, Wang JJ, Wu KH, Huang S, Kuo ML, Su CH. Do-not-resuscitate orders and related factors among family surrogates of patients in the emergency department. *Support Care Cancer.* 2016;24(5):1999-2006.
- 12 Hight BH, Hsieh Y, Smith TJ. A pilot trial to increase hospice enrollment in an inner city, academic emergency department. *J Emerg Med.* 2016;51(2):106-13.
- 13 Ahrens B, Hart R. Death in the emergency department. *Ann Emerg Med.* 1999;33(3):356.
- 14 Abbott J. The POLST paradox: opportunities and challenges in honoring patient end-of-life wishes in the emergency department. *Ann Emerg Med.* 2019;73(3):294-301.
- 15 Chan GK. End-of-life models and emergency department care. *Acad Emerg Med.* 2004;11(1):79-86.
- 16 Weng L, Joynt GM, Lee A, Du B, Leung P, Peng J, et al. Attitudes towards ethical problems in critical care medicine: the Chinese perspective. *Intensive Care Med.* 2011;37(4):655-64.
- 17 Patel K, Sinvani L, Patel V, Kozikowski A, Smilios C, Akerman M, et al. Do-not-resuscitate orders in older adults during

- hospitalization: a propensity score-matched analysis. *J Am Geriatr Soc.* 2018;66(5):924-9.
- 18 Cheng HB, Shek PK, Man CW, Chan OM, Chan CH, Lai KM, et al. Dealing with death taboo: discussion of do-not-resuscitate directives with Chinese patients with noncancer life-limiting illnesses. *Am J Hosp Palliat Care.* 2019;36(9):760-6.
- 19 Vincent JL. Cultural differences in end-of-life care. *Crit Care Med.* 2001;29:N52-55.
- 20 Listed N. Ethical and moral guidelines for the initiation, continuation, and withdrawal of intensive care. American College of Chest Physicians/ Society of Critical Care Medicine Consensus Panel. *Chest.* 1990;97(4):949-58.
- 21 Le Conte P, Riochet D, Batard E, Volteau C, Giraudeau B, Arnaudet I, et al. Death in emergency departments: a multicenter cross-sectional survey with analysis of withholding and withdrawing life support. *Intensive Care Med.* 2010;36(5):765-72.
- 22 Hsu NC, Shu CC, Lin YF, Yang MC, Su S, Ko WJ. Why do general medical patients have a lengthy wait in the emergency department before admission? *J Formos Med Assoc.* 2014;113(8):557-61.
- 23 Ye L, Zhou G, He X, Shen W, Gan J, Zhang M. Prolonged length of stay in the emergency department in high-acuity patients at a Chinese tertiary hospital. *Emerg Med Australas.* 2012;24(6):634-40.
- 24 Holley A, Kravet SJ, Cordts G. Documentation of code status and discussion of goals of care in gravely ill hospitalized patients. *J Crit Care.* 2009;24(2):288-92.
- 25 Aune S, Herlitz J, Bng A. Characteristics of patients who die in hospital with no attempt at resuscitation. *Resuscitation.* 2005;65(3):291-9.
- 26 Walkey AJ, Weinberg J, Wiener RS, Cooke CR, Lindenauer PK. Hospital variation in utilization of life-sustaining treatments among patients with do-not-resuscitate orders. *Health Serv Res.* 2018;53(3):1644-61.
- 27 Cheng HW, Li CW, Chan KY, Ho R, Sham MK. Bringing palliative care into geriatrics in a Chinese culture society—results of a collaborative model between palliative medicine and geriatrics unit in Hong Kong. *J Am Geriatr Soc.* 2014;62(4):779-81.
- 28 Tse CY, Chong A, Fok SY. Breaking bad news: a Chinese perspective. *Palliat Med.* 2003;17(4):339-43.
- 29 Frank C, Heyland DK, Chen B, Farquhar D, Myers K, Iwaasa K. Determining resuscitation preferences of elderly inpatients: a review of the literature. *CMAJ.* 2003;169(8):795-9.
- 30 Wall J, Hiestand B, Caterino J. Epidemiology of advance directives in extended care facility patients presenting to the emergency department. *West J Emerg Med.* 2015;16(7):966-73.
- 31 Douplat M, Berthiller J, Schott AM, Potinet V, Le Coz P, Tazarourte K, et al. Difficulty of the decision-making process in emergency departments for end-of-life patients. *J Eval Clin Pract.* 2019;25(6):1193-9.
- 32 Kwok T, Twinn S, Yan E. The attitudes of Chinese family caregivers of older people with dementia towards life sustaining treatments. *J Adv Nurs.* 2007;58(3):256-62.
- 33 Bradford MA, Lindenauer PK, Wiener RS, Walkey AJ. Do-not-resuscitate status and observational comparative effectiveness research in patients with septic shock. *Crit Care Med.* 2014;42(9):2042-7.
- 34 Kraaijevanger N, van Leeuwen H, Rijpsma D, Edwards M. Motives for self-referral to the emergency department: a systematic review of the literature. *BMC Health Serv Res.* 2016;16(1):685.
- 35 Kompanje EJ. The worst is yet to come. Many elderly patients with chronic terminal illnesses will eventually die in the emergency department. *Intensive Care Med.* 2010;36(5):732-4.
- 36 Decker K, Lee S, Morphet J. The experiences of emergency nurses in providing end-of-life care to patients in the emergency department. *Australas Emerg Nurs J.* 2015;18(2):68-74.
- 37 Jackson EA, Yarzebski JL, Goldberg RJ, Wheeler B, Gurwitz JH, Lessard DM, et al. Do-not-resuscitate orders in patients hospitalized with acute myocardial infarction: the Worcester Heart Attack Study. *Arch Intern Med.* 2004;164(7):776-83.
- 38 Stream S, Nolan A, Kwon S, Constable C. Factors associated with combined do-not-resuscitate and do-not-intubate orders: a retrospective chart review at an urban tertiary care center. *Resuscitation.* 2018;130:1-5.

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