

Navigating Do-Not-Attempt-Resuscitation decisions in emergency department in Malaysia: A retrospective study

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ABSTRACT

Introduction: The practice of Do-Not-Attempt-Resuscitation (DNAR) aims to respect patient autonomy and acknowledge medical futility. Despite its global acceptance, there is limited research on DNAR in many Asian countries, including Malaysia. This study addressed this gap by exploring DNAR decision-making processes in a Malaysian tertiary hospital.

Materials and Methods: A mixed-method retrospective study was conducted in the emergency and trauma department (ETD) of Sarawak General Hospital, Malaysia, from February to July 2023. Data were collected from 115 DNAR cases using a surveillance form to document the patient demographics, types of DNAR orders, initiating physicians, reasons for DNAR, surrogate decision-makers, specific types of procedures withheld or withdrawn and outcomes. Thematic analysis was used for qualitative data, while inferential statistical analysis was applied to quantitative data.

Results: The mean age of patients was 71.32 years, with a male predominance (63.5%). The primary reasons for DNAR included “critical illness with poor prognosis” (33.9%), “advanced age with frailty and poor prognosis” (20.9%) and “massive haemorrhagic or ischemic stroke” (16.5%). Most DNAR decisions involved withholding resuscitation (90.4%) and were initiated mainly by internal medicine (52.2%) and emergency medicine teams (34.8%). Surrogate decision-makers were predominantly adult children (63.5%). Only one case had an advance directive. Majority of patients (80.9%) were admitted to wards, while 16.5% died in the emergency department. The median age of patients was significantly older when adult children (78 years) and spouses (76 years) were the surrogates, compared to when they were not involved (64.5 years and 62.5 years, respectively; $p < 0.001$ and $p = 0.003$, respectively). Conversely, the median age was significantly younger when parents (41.5 years) and siblings (64 years) were the surrogates, compared to when they were not involved (75 years and 74 years, respectively; $p < 0.001$ for both).

Conclusion: Advanced directives are rarely applied in Malaysia. DNAR decisions are typically made by surrogates when patients are critically ill, which is a common trend in many Asian cultures where discussing death is taboo. Cultural norms often lead families to withhold terminal

diagnoses from patients, posing challenges for end-of-life care. The most frequent surrogates were adult children, who face dilemmas balancing aggressive treatment and their parents' wishes. The study underscores the need for better communication and decision-making support in emergency departments.

KEYWORDS:

Advanced directives, Do-Not-Attempt-Resuscitation, cardiopulmonary resuscitation, surrogate decision-maker, end-of-life

INTRODUCTION

First conceptualised in the 1970s,¹ the practice of Do-Not-Attempt-Resuscitation (DNAR) has garnered increasing global acceptance. DNAR is defined as a directive to refrain from initiating resuscitative measures including cardiopulmonary resuscitation (CPR) in the event of a cardiac arrest.² This practice is grounded in two fundamental principles of medical ethics: (1) respect for patient autonomy and (2) recognition of medical futility.³

Patient autonomy aims to safeguard human dignity by avoiding needless suffering due to unnecessary medical interventions.⁴ On the other hand, medical futility asserts that a treatment is considered futile if it fails to meet its intended purpose. Specifically, medical futility is defined by the following criteria: (1) the establishment of a specific clinical goal (e.g., survival after cardiac arrest); (2) the identification of a specific course of action to achieve this goal (e.g., resuscitative measures); and (3) the determination that this course of action is ineffective in achieving the intended goal (e.g., survival after cardiac arrest).^{5,6}

Among the key determinants in establishing medical futility are the duration the patient has been in cardiac arrest as well as the anticipated quality of life following resuscitation. Once medical futility is established, physicians are not ethically obligated to administer treatments that they judge to have no realistic likelihood of benefitting the patient.⁷

In this regard, a common misunderstanding about a DNAR order is the belief that DNAR will lead to the discontinuation of all forms of medical interventions.² In reality, implementing a DNAR order does not preclude the administration of palliative care measures such as oxygen,

This article was accepted: 29 August 2024

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analgesics, sedatives and even antiarrhythmic agents and vasopressors. These measures are implemented to ensure that the dying passage of the patient is as comfortable as possible.^{2,3}

Another important aspect of end-of-life care consideration is advanced directives. An advanced directive is defined as any form of expression that conveys an individual's thoughts, wishes or preferences for his or her end-of-life care.³ These directives offer guidance on the restriction of medical care, including resuscitation in the event of cardiac arrest. Advance directives can be derived from discussions between healthcare staff with the patients and their family members, formal written directives, living wills or durable powers of attorney for healthcare decisions.³

Despite the nearly five-decade implementation of DNAR and advance directives globally,¹ there remains a notable lack of studies on these practices in many Asian countries, including Malaysia. Many of the studies in the Asian context were conducted in countries such as Taiwan,^{4,8} Japan,^{9,10} South Korea^{11,12} and Singapore.^{13,14} To address this gap in the Malaysian context, this study was conducted to determine the key decision-making processes in recent DNAR cases in a tertiary hospital in Malaysia (including the physicians who initiated the decision discussion with the patients or their surrogate decision makers, the types of medical interventions withheld or withdrawn following the establishment of a DNAR as well as the reasons for initiating DNAR).

MATERIALS AND METHODS

This mixed method retrospective study was conducted from February 2023 to July 2023 in the emergency and trauma department (ETD) of Sarawak General Hospital (SGH), Malaysia. The DNAR cases were recruited sequentially during the study period. Permission to utilise the retrospective data was obtained from the head of ETD of SGH. Medical ethics approval from the Medical Research Ethics Committee (MREC) (NMRR ID-23-00019-NHE) in the Malaysian National Medical Research Register website (www.nmrr.gov.my) was obtained.

A surveillance form detailing the DNAR process such as the physician who initiated the DNAR discussion, the reasons for initiating the DNAR as well as the decision makers (i.e., the patient and/or surrogate decision makers) were recorded. DNAR decisions were broadly categorised into two types, i.e., "withholding of further resuscitative interventions" and "withdrawal of current resuscitative interventions".²

Additionally, the specific types of procedures withheld or withdrawn as part of the DNAR decision were also studied. The final dispositional decision made in the emergency department, i.e., (1) admission to a ward for end-of-life care, (2) patient's death occurring in the emergency department itself, (3) discharge to home with an appropriate palliative care plan, or (3) transfer to an alternative facility like a nursing home was determined (Table I).

After a DNAR decision was made by the managing team in the ETD SGH, the clinical progress of the patient was tracked

until a final dispositional decision was made. Consent was sought and obtained from the patient's family members and relatives before the medical officer in-charge completed the study surveillance form. This form was designed to document key data of the DNAR decision-making process, as detailed in Table I. No personally identifiable or sensitive information, such as names or identification numbers, was recorded during this process.

For data analysis, the reasons prompting the initiation of DNAR discussions, as documented by the medical officers in charge, were first subjected to qualitative thematic analysis and coding with the purpose of identifying the overarching themes or reasons for the decision. Subsequently, an inferential statistical analysis of the quantitative data was carried out. The selection of the statistical test for categorical data (i.e., whether Chi-square test or Fisher's exact test), depended on whether the expected count in each cell of the compiled data table was five or greater. For continuous data, the selection to use either the independent student t-test or the Mann-Whitney U test was contingent upon the determination of data normality.

All DNAR cases aged 18 years and above, as decided in the ETD SGH from March 2023 to June 2023, were recruited in this study after obtaining informed consent from family members and relatives.

RESULTS

From March 2023 to June 2023, a total of 115 DNAR cases were recorded in ETD SGH. The mean age of these patients were 71.32 years (standard deviation +/- 16.23), with a gender distribution of 73 males (63.5%) and 42 females (36.5%).

Thematic analysis of the descriptions recorded in the surveillance forms revealed eight overarching reasons for initiating DNAR, with the most prevalent being "critical illness with poor prognosis" (39 cases, 33.9%) followed by "advanced age with frailty and poor prognosis" (24 cases, 20.9%), "massive haemorrhagic or ischemic stroke" (19 cases, 16.5%), and "long-term bedridden status with poor prognosis" (17 cases, 14.8%). Notably, only one case (0.9%) had an advance directive from a patient in an old folks' home.

Following the DNAR decision, most patients in fact did not pass away in the emergency department itself. Rather, a significant number, i.e., 93 cases (80.9%), were admitted to their respective wards. Deaths in the emergency department were recorded in only 19 cases (16.5%), while three cases (2.6%), were discharged home. The surrogate decision-makers were mainly the patients' adult children (73 cases, 63.5%), followed by their spouses (18 cases, 15.7%) and their siblings (15 cases, 13.0%). Healthcare providers only made decisions in the absence of other surrogates in one case (0.9%). The most avoided or withdrawn procedures in these DNAR cases were CPR in 114 cases (99.1%), endotracheal intubation in 95 cases (82.6%) and defibrillation in 14 cases (12.2%). The details of the descriptive statistics of these DNAR cases are described in Table II.

Table I: Types of data collected in the DNAR process

Demographic data
Age
Gender
Date and time of DNAR order
Details of the DNAR order
Type of DNAR order
<input type="checkbox"/> Withhold resuscitation
<input type="checkbox"/> Withdrawal of resuscitation
Physician who initiated DNAR
<input type="checkbox"/> Anaesthetist
<input type="checkbox"/> Emergency physician
<input type="checkbox"/> Internal medicine physician
<input type="checkbox"/> Surgeon
<input type="checkbox"/> Paediatrician
<input type="checkbox"/> Others. Please specify
Reason for DNAR order
Decision-making process
Decision maker:
<input type="checkbox"/> Patient himself/herself
<input type="checkbox"/> Surrogate decision-maker
<input type="checkbox"/> Spouse
<input type="checkbox"/> Adult child
<input type="checkbox"/> Parent
<input type="checkbox"/> Sibling
<input type="checkbox"/> Other relatives (if applicable)
Outcomes of discussion with patient or surrogate about DNR order
Types of interventions avoided/withdrawn
<input type="checkbox"/> Chest compression
<input type="checkbox"/> Endotracheal intubation
<input type="checkbox"/> Defibrillation
<input type="checkbox"/> IV-line insertion
<input type="checkbox"/> Further blood draw for investigation
<input type="checkbox"/> Feeding tube insertion
<input type="checkbox"/> All interventions avoided
Outcome of ED visit:
<input type="checkbox"/> Admission to ward
<input type="checkbox"/> Discharge home
<input type="checkbox"/> Death in department
<input type="checkbox"/> Transfer to other facility. Please specify:

The types of DNAR decisions were primarily categorised into two groups, i.e., withholding resuscitation, which accounted for 104 cases (90.4%), and withdrawal of resuscitation in 11 cases (9.6%). The internal medicine team initiated most of these cases (60 cases, 52.2%), followed by the emergency medicine team (40 cases, 34.8%). No statistical difference was noted in terms of outcomes in ETD stay according of the types of DNAR decisions (Table III).

Unsurprisingly, the median age of the patients was significantly older when adult children (i.e., patient’s median age = 78 years) and spouses (i.e., patient’s median age = 76 years) were involved in surrogate decision-making than when adult children and spouses were not involved in such decision-making (i.e., patient’s median age of 64.5 and 62.5 years, respectively) ($p < 0.001$ and $p = 0.003$, respectively). On the contrary, the median age of the patients was significantly younger when their parents (i.e., patient’s median age of 41.5 years) and siblings (i.e., patient’s median age = 64 years) were involved in surrogate decision-making than when they were not (median age of 75.0 years and 74 years, respectively; $p < 0.001$ in both instances; (Table IV).

Regarding the analysis of the types of interventions avoided or withdrawn, only the number of endotracheal intubation procedures was found to be significantly different across the different categories of predominant reasons, as assessed using Fisher-exact test, $p < 0.001$. Post hoc analyses with pairwise comparisons using 28 z-tests of two proportions with a Bonferroni correction were subsequently performed with statistical significance accepted at $p < 0.01$. Statistically significant differences were noted in the proportion of patients with reason of “advanced age with frailty and poor prognosis” compared to patients with “post-CPR return of spontaneous circulation (ROSC) achievement but with poor prognosis” ($n = 23, 95.8\%$ vs $n = 0, 0\%$), $p < 0.001$; as well as the proportion of patients who are “long term bedridden with poor prognosis” compared to patients with “post-CPR ROSC achievement but with poor prognosis” ($n = 17, 100\%$ vs $n = 0, 0\%$), $p < 0.001$, were shown to be the two pairs with statistical significance. No significant difference was found in all other pairwise comparison analyses (Table V).

DISCUSSION

This study shows that advanced directives are rarely used in

Table II: Characteristics of the DNAR cases

Variables	Total, n (%)	Mean +/-SD
Age		71.32 (16.23)
Gender of patients		
Male	73 (63.5%)	
Female	42 (36.5%)	
Types of DNAR		
Withhold resuscitation	104 (90.4%)	
Withdrawal of resuscitation	11 (9.6%)	
Teams that initiated DNAR in emergency department		
Anaesthesiology	2 (1.7%)	
Emergency medicine	40 (34.8%)	
General surgery	6 (5.2%)	
Internal medicine	60 (52.2%)	
Neurosurgery	6 (5.2%)	
Oncology	1 (0.9%)	
Reasons for DNAR		
Advanced age with frailty and poor prognosis	24 (20.9%)	
Advanced cancer	7 (6.1%)	
Critical illness with poor prognosis	39 (33.9%)	
Long term bedridden with poor prognosis	17 (14.8%)	
Massive haemorrhagic or ischemic stroke	19 (16.5%)	
Polytrauma	2 (1.7%)	
Post-CPR ROSC achievement but with poor prognosis	5 (4.3%)	
Severe surgical conditions	2 (1.7%)	
Availability of advanced directives		
Yes	1 (0.9%)	
No	114 (99.1%)	
Outcomes of ETD stay		
Admitted to respective wards	93 (80.9%)	
Died in department	19 (16.5%)	
Discharged home	3 (2.6%)	
Involvement of the following surrogate decision makers*		
Spouse	18 (15.7%)	
Adult child	73 (63.5%)	
Siblings	15 (13.0%)	
Parents	6 (5.2%)	
Other relatives	16 (13.9%)	
Healthcare providers	1 (0.9%)	
Interventions/procedures avoided/withdrawn in the DNAR**		
CPR	114 (99.1%)	
Endotracheal intubation	95 (82.6%)	
Defibrillation	14 (12.2%)	
Further blood tests	10 (8.7%)	
Intravenous line insertion	5 (4.3%)	

Note:

*In some cases, there were more than one surrogate decision maker involved in the discussion. The categories of surrogate decision makers listed are not mutually exclusive. It should be noted that although a number of categories of surrogate decision makers were listed in this study, ultimately however, DNAR decision is a clinician's decision, after discussion with these relatives and family members.

**In many cases, there were more than one intervention/procedure avoided/withdrawn. The categories of intervention/procedure listed are not mutually exclusive.

CPR = cardiopulmonary resuscitation, ROSC = return of spontaneous circulation, ETD = emergency and trauma department

Malaysia. Out of 115 cases studied, only one case had advanced directive. In the other 114 cases or 99.1%, prior DNAR decisions were made by the surrogates only when the patients were already very ill and near the end of their lives. In fact, in many other Asian cultures besides Malaysia, end-of-life decisions are also often shown to be delegated to their surrogates and not made by the terminally ill patients themselves.^{4,7,15}

This is likely due to the fact that talking openly about death is often avoided in traditional Asian societies because it is largely perceived as a taboo topic.¹⁵ In Chinese culture, for

example, the impact of bad news on families is frequently believed to be deep, often leading to families withholding information on the terminal diagnoses from the patients themselves.⁴ Inadvertently, families and healthcare teams often face awkward challenges in navigating through this complex emotional maze of end-of-life care.¹⁵ In fact, according to Huang et al.¹⁶, in many Asian cultures, people often avoid telling the truth directly about any serious illnesses, as this is often perceived to be rude or harmful. For example, in Japan, there is a preference for ambiguity over explicitness in end-of-life communications. The notion of a "good death" in the Japanese culture means not being

Table III: Categorical analysis of the outcomes in ETD stay according to the types of DNAR decisions

Types of DNAR decisions	Outcome in ETD stay			p-value*
	Admission to ward	Died in department	Discharged home	
Withhold resuscitation (% within types of DNAR)	84 (80.8%)	18 (17.3%)	2 (1.9%)	0.33
Withdrawal of resuscitation (% within types of DNAR)	9 (81.8%)	1 (9.1%)	1 (9.1%)	

Note: *As three cells (50%) have expected count less than 5, Fisher-exact test analysis was used.

Table IV: Comparison of median age of patients according to the presence of different surrogate decision makers

	Median age of patient (years old)		p-value
	Yes	No	
Spouse as surrogate decision maker	76.0	62.5	0.003
Adult child as surrogate decision maker	78.0	64.5	<0.001
Siblings as surrogate decision maker	64.0	74.0	<0.001
Parents as surrogate decision maker	41.5	75.0	<0.001
Other relatives	76.00	74.00	0.48

Note: as normality of data cannot be ascertained due to Shapiro-Wilk test <0.05 for one or both groups, Mann-Whitney U test was performed in all analyses.

Table V: Comparison of Reasons of DNAR according to different interventions/procedures avoided/withdrawn

Interventions or procedures	Categories of reasons of DNAR decisions								p-value
	Advanced age with frailty and poor prognosis (n = 24)	Advanced cancer (n = 7)	Critical illness with poor prognosis (n = 39)	Long term bedridden with poor prognosis (n = 17)	Massive haemorrhagic or ischemic stroke (n = 19)	Polytrauma (n = 2)	Post-CPR ROSC achievement (n = 5)	Severe surgical conditions (n = 2)	
CPR	24 (100%)	7 (100%)	38 (97.4%)	17 (100%)	19 (100%)	2 (100%)	5 (100%)	2 (100%)	1.00*
Endotracheal intubation	23 (95.8%)	6 (85.7%)	32 (82.1%)	17 (100%)	16 (84.2%)	0 (0)	0 (0)	1 (50%)	<0.001*
Defibrillation	5 (20.8%)	1 (14.3%)	5 (12.8%)	0	2 (10.5%)	0	1 (20%)	0	0.53*
No further blood tests	2 (8.3%)	0	5 (12.8%)	1 (5.9%)	2 (10.5%)	0	0	0	0.99*
Intravenous line insertion	1 (4.2%)	1 (14.3%)	3 (7.7%)	0	0	0	0	0	0.60*

Note: *analysed using Fisher-exact test

forthright or not knowing exactly about one's medical condition.⁹ Consequently, most people in Japan consider “dying without awareness” of the exact illness or with the bliss of “not being informed of the bad news” as crucial during the final days of life of a person, which essentially, points to a significant cultural departure from the Western end-of-life care culture of open discussion with the patients.⁹ Additionally, this study also showed that the most frequent surrogate decision-makers were the patients' adult children. This mirrors the findings from other past Asian studies.^{4,15} For example, Cheng et al.¹⁵ observed that in the Chinese culture, it is similarly common for the adult children to take on the role as the surrogate decision-makers. This responsibility, however, often places these adult children in a very tough spot. They often face the dilemma of choosing between aggressive medical treatments, driven by a sense of filial duty, and honouring the actual wishes of their dying parents. In this study, it is also observed that the proportion of endotracheal intubation withheld due to reasons of “advanced age with frailty and poor prognosis” and “long term bedridden with poor prognosis” were significantly greater compared to patients with reason of “post-CPR ROSC

achievement but with poor prognosis” is hardly surprising given the fact that once ROSC was achieved, endotracheal intubation would follow suit.

This study has a number of pertinent limitations that deserve mentioning. First, the categorisation of reasons for DNAR decisions into distinct, exclusive categories for the purpose of statistical analyses is reductionistic and oversimplifies the complex clinical decision-making processes. In actual clinical practice, the reasons for initiating DNAR orders are frequently multifaceted and cannot be neatly compartmentalised. For example, a patient classified under “post-CPR ROSC achievement but with poor prognosis” might also have the reason of “advanced age with frailty and poor prognosis”. Secondly, the study was conducted in a single hospital, which may limit the generalisability of the findings to other settings or populations. Furthermore, the small sample size in this study over a short period of five months might not have captured the full variability and trends in DNAR decision-making processes, especially in a diverse population. To enhance the generalisability of the findings, future studies should include multiple hospitals

across different regions of Malaysia. This would help capture a wider range of practices and influences on DNAR decisions. Third, this study was conducted as a retrospective study. Retrospective studies rely on existing records, which may be incomplete, inaccurate, or inconsistent. In this regard, the quality of the data obtained in this study depends on how well the DNAR decisions and associated details were captured at the time of care. There may be missing or incomplete records which can lead to biased results. Hence, a future prospective study is called for. Finally, this study also did not explore the different ethnic nuances and their socio-cultural and religious factors influencing DNAR decisions in a multicultural country like Malaysia. In this regard, incorporating in-depth qualitative interviews and focus groups with patients, families, and healthcare providers may be needed in future studies to explore these socio-cultural and religious beliefs that may influence DNAR decisions.

CONCLUSION

In conclusion, this study highlights the complexities and cultural nuances of Do Not Attempt Resuscitation (DNAR) decision-making in Malaysian emergency departments. It reveals the crucial role of surrogate decision-makers, predominantly adult children, highlighting the necessity for practical strategies to enhance communication and decision-making support within the high-stress and chaotic environment of an emergency department.

ACKNOWLEDGEMENT

The authors acknowledged the support from Universiti Malaysia Sarawak VC IMPACT Grant (VC-HIRP/P13) for this publication.

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