

# (In-Hospital Management of Out-of-Hospital Cardiac Arrest Patients with “Do Not Attempt Resuscitation” orders: A Cross-Sectional Survey)

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## **Abstract**

### **Objective**

This research investigated treatment patterns for out-of-hospital cardiac arrest patients with Do Not Attempt Resuscitation orders in Japanese emergency departments and the associated clinician stress.

### **Methods**

A cross-sectional survey was conducted at 9 hospitals in Okayama, Japan, targeting emergency department nurses and physicians. The questionnaire inquired about the last treated out-of-hospital cardiac arrest patient with a Do Not Attempt Resuscitation. We assessed emotional stress on a 0–10 scale and moral distress on a 1–5 scale among clinicians.

### **Results**

Of 208 participants, 107 (51%) had treated an out-of-hospital cardiac arrest patient with a Do Not Attempt Resuscitation order in the past 6 months. Of these, 65 (61%) clinicians used a “slow code” due to perceived futility in resuscitation (42/65 [65%]), unwillingness to terminate resuscitation upon arrival (38/65 [59%]), and absence of family at the time of patient’s arrival (35/65 [54%]). Female clinicians had higher emotional stress (5 vs. 3;  $P = 0.007$ ) and moral distress (3 vs. 2;  $P = 0.002$ ) than males. Nurses faced more moral distress than physicians (3 vs. 2;  $P < 0.001$ ). Adjusted logistic regression revealed that having performed a “slow code” (adjusted odds ratio, 5.09 [95% CI, 1.68–17.87]) and having greater ethical concerns about “slow code” (adjusted odds ratio, 0.35 [95% CI, 0.19–0.58]) were associated with high stress levels.

### **Conclusions**

The prevalent use of “slow code” for out-of-hospital cardiac arrest patients with Do Not Attempt Resuscitation orders underscores the challenges in managing these patients in clinical practice.

## 1. Aim of Research

### 1-1 Background

A Do Not Attempt Resuscitation (DNAR) or “Allow Natural Death” order is an advance directive to withhold resuscitative measures at the time of cardiac arrest. EMS personnel sometimes encounter OHCA patients with DNAR orders (OHCA/DNAR patients), for whom resuscitation is frequently attempted globally (Murahashi, et al. *Acute Med & Surg*, 2021).

In Japan, the law mandates EMS personnel to provide emergency care, including CPR even in the presence of advance directives such as the DNAR order. However, the specifics of how this directive is managed can vary based on local protocols. In the case of Okayama City, the regional guidelines require EMS personnel to perform CPR irrespective of an existing DNAR order. Consequently, we recently reported 98% of OHCA/DNAR patients (120/122) received CPR by EMS personnel in the suburban city of Okayama, Japan (Tanabe, et al. *Resuscitation*, 2022). Little is known about how OHCA/DNAR patients are managed after emergency department (ED) arrival. In the prehospital setting, we found 30% of EMS personnel who provided CPR to OHCA/DNAR patients were highly stressed by what they perceived as care inconsistent with patients’ wishes. It is unknown whether healthcare professionals in the ED perceive a similar emotional burden when care for OHCA/DNAR patients.

Importantly, perceived medical futility and reluctance to fully terminate resuscitation may contribute to incomplete resuscitative efforts, termed a “slow code”. A “slow code” refers to a practice in which medical professionals respond to a cardiac arrest in a deliberate and less enthusiastic manner, often performing CPR without the vigor associated with resuscitative efforts. Although a “slow code” is considered deceptive and paternalistic, previous surveys documented over two-thirds of clinicians had participated in “slow code” in the intensive care unit (Einav, et al. *Resuscitation*, 2004).

The ambiguity and ethical implications of this practice can be sources of significant stress and conflict for healthcare providers. To date, no studies have evaluated the frequency and reasons for performing a “slow code” or how it affects clinicians in the ED.

### 1-2 Aim

The objectives of this study were to: (1) investigate how OHCA/DNAR patients were managed in the ED and the associated clinical context; (2) evaluate ethical dilemmas, physical and emotional stress for clinicians resulting from OHCA/DNAR patient care.

## 2. Method of Research & Progression

### 2-1 Study design and participants

This was a multicenter cross-sectional survey study conducted at 9 hospitals in the western suburban area of Okayama, Japan. We invited clinicians in participating EDs, including attending physicians, residents, and nurses to complete the survey between January 1 and January 31, 2023. We distributed the survey using Google Forms, then sent two reminder emails to encourage response. The Okayama University Hospital Ethics Committee approved this study (K2207-014).

### 2-2 Survey questionnaire

The survey was developed and its reporting was aligned with the guidelines from “A Consensus-Based Checklist for Reporting of Survey Studies.” We did not conduct pretesting, primarily due to our reliance on a rigorous multidisciplinary panel review and development process. This panel, comprising 8 emergency physicians, 2 emergency nurses, and 1 nurse expert in medical ethics, collaboratively designed and reviewed an anonymous and structured questionnaire. The survey consisted of 4 sections: (1) respondent demographic characteristics; (2) experience of taking care of OHCA/DNAR patients; (3) assessment of clinician stress during or after treatment of OHCA/DNAR patients; and (4) attitudes and opinions regarding treatment of OHCA/DNAR patients. For the second part,

we encouraged participants to recall the number of OHCA patients with or without DNAR order they had cared for in the previous 6 months. We included questions about the last OHCA/DNAR patient treated in the previous 6 months, specifically patient characteristics, the circumstances of resuscitation, and treatment decisions. We identified these topics based on both medical and non-medical considerations, including patient, family, and clinician perspectives as well as medicolegal concerns. To evaluate perceived psychological stress among clinicians related to the treatment of the most recent OHCA/DNAR patient, we used a visual analog scale (VAS) from 0 to 10. We assessed moral distress on a scale of 1 to 5. We measured post-traumatic stress disorder (PTSD) using a short version of the Post-traumatic Diagnostic Scale. We defined high risk individuals for PTSD as those who scored 3 or greater out of 9. Similarly, we measured burnout using a short version of the Maslach Burnout Inventory. We identified individuals as high risk for burnout if they answered more than once a week to the single item measures. The final section included questions about attitude toward treating OHCA/DNAR patients and “slow codes”.

### 2-3 Data analysis

We categorized the last OHCA/DNAR patient for whom participants cared in the previous 6 months into 3 groups based on the resuscitation code on arrival in the ED: “full code”, “slow code”, and “termination of resuscitation”. We divided participants into 2 groups based on the extent of stress in managing the last OHCA/DNAR patient: high stress group (defined as VAS score of 7 or higher) and low stress group (defined as VAS score of 6 or lower).<sup>20</sup> We performed multiple logistic regression analysis to identify predictors of high stress, estimating adjusted ORs with their 95% CIs. Covariates included participants’ gender, profession, whether “slow code” was performed, whether debriefing was conducted, and participants’ ethical values regarding “slow code”. We considered statistical significance at a P

value of <0.05. Statistical analyses and generation of summary graphs were performed in Prism 9.0 (GraphPad, San Diego, CA).

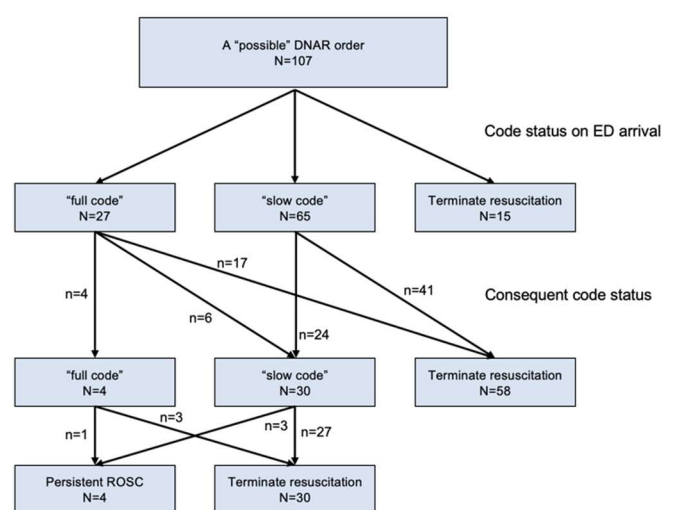
## 3. Results of Research

### 3-1 Participant demographic and characteristics

The survey had an overall response rate of 67% (208/310), with a 64% response rate for nurses (106/166) and a 71% response rate for physicians (102/144). Among 208 participants, median (IQR) age was 33 (28–42) years; 112 (54%) were female, 92 (44%) were male, and 4 (2%) preferred not to answer.

### 3-2 Experience of taking care of OHCA/DNAR patients

187 (90%) respondents treated at least 1 OHCA patient during the last 6 months before the survey. Among them, 107 (57%) respondents cared for at least 1 OHCA/DNAR patient without ROSC on hospital arrival during the 6 months. Of 107 treated cases, 27 (25%) participants continued “full code” resuscitation, 65 (61%) participants provided “slow code” resuscitation, and 15 (14%) participants terminated resuscitation upon arrival. Fig. 1 depicts the evolution of resuscitation strategy and eventual outcomes.

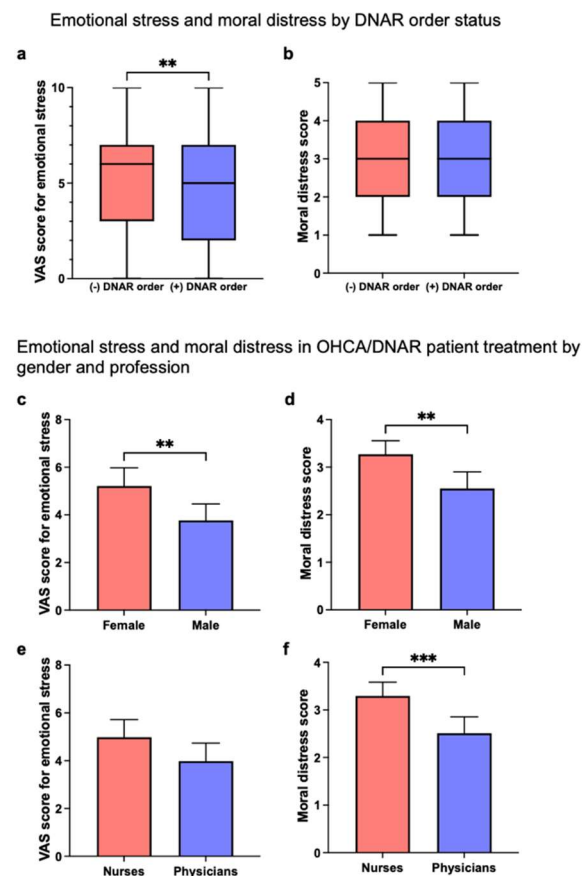


**Fig. 1.** Flowchart for management of OHCA/DNAR patient after arrival in the ED.

### 3-3 Clinician emotional stress, moral distress, PTSD, and burnout feeling during

or after treatment of OHCA/DNAR patients

We assessed emotional stress or moral distress among respondents who cared for at least 1 OHCA/DNAR patient in the last 6 months (Fig. 2). Emotional stress levels during or after treatment of an OHCA/DNAR patient were lower than those associated with treatment of an OHCA patient without a DNAR order (5 vs 6;  $P = 0.004$ ). During or after treatment of OHCA/DNAR patient, female clinicians had higher VAS score for emotional stress (5 vs. 3;  $P = 0.007$ ) and higher moral distress score (3 vs. 2;  $P = 0.002$ ) compared with male clinicians. Nurses had higher moral distress score compared with physicians (3 vs. 2;  $P < 0.001$ ).



**Fig. 2.** Clinician emotional stress or moral distress during or after treatment of OHCA/DNAR patients.

A multiple logistic regression analysis revealed that having performed a “slow code” (adjusted OR, 5.09 [95% CI, 1.68–17.87]) and having stronger ethical concerns about performing a “slow code” (adjusted OR, 0.35 [95% CI, 0.19–0.58]) were associated with high stress levels.

#### 4. Future Area to Take Note of, and Going Forward

Although thorough preparation before patient arrival, shared decision-making, respecting team members, and team discussion or reflection may be a key aspect to consider, future research is encouraged to examine interventions to take better care of OHCA/DNAR patients and individual clinicians involved.

#### 5. Means of Official Announcement of Research Results

This study was published in Resuscitation Plus on November 10, 2023, and was presented as an oral presentation at 51th Annual Meeting of the Japanese Association for Acute Medicine, November 29, 2023 in Tokyo, Japan.