

## **Misunderstanding of the Term “DNR” in a Middle-Eastern Teaching Hospital**

Mohamed Ismail, ABHSA, FCAI\* Shehab Khashaba, MB, BCh\*\* Khalifa Elmusharaf, PgDip,  
FRSPH\*\*\* Mahmoud Etman, MSc\*\*\*\* Karim Abdel Hakim, MD, DM\*\*\*\*\*  
Eamon Tierney, FFARCSI, FJFICMI\*\*\*\*\*

**Background:** Do-not-resuscitate (DNR) order has been practiced for many years; though it is one of the most commonly misunderstood and misinterpreted orders in medical practice. It has many ethical, legal, geographic, religious and cultural aspects that contribute to this misunderstanding.

**Objective:** To assess the perception amongst the acute specialties who deal with DNR orders.

**Design:** A Cross-Sectional Questionnaire Type Study.

**Setting:** King Hamad University Hospital, Bahrain.

**Method:** Anonymous questionnaire was designed. Physicians working in the acute specialties were included. The questionnaire included several general questions about when DNR should be implemented and what are the appropriate aspects of management that should be given.

**Result:** Fifty doctors completed the questionnaire; 49 (98%) of the physicians thought that a hospital should have a DNR policy, 23 (46%) of the physicians believed that the DNR decision lies in the hands of the responsible doctor, 10 (20%) of the participants thought that it is a family decision only, whilst 17 (34%) thought that it is a joint decision by the family and the physician. All of the physicians agreed that there should be no code blue activation in case of cardiopulmonary arrest of a DNR labeled patients.

**Conclusion:** The term DNR should not be used as it is confusing and liable to misunderstanding. In addition, we need to educate healthcare professionals about the terminology of the management of end-of-life situations.

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\* Senior Registrar  
Department of Intensive Care  
\*\* Senior House Officer  
Department of General Surgery  
King Hamad University Hospital  
\*\*\* Lecturer, Epidemiology & Public Health, RCSI-MUB  
\*\*\*\* Registrar  
\*\*\*\*\* Consultant

\*\*\*\*\* Director  
Department of Intensive Care  
Associate Professor of Critical Care, RCSI-MUB  
King Hamad University Hospital  
Kingdom of Bahrain  
Email: mohamed.ismail@khuh.org.bh

Cardiopulmonary Resuscitation (CPR) was first introduced by the American Heart Association (AHA) in 1960. Despite the great advances in medicine and technology over the last 50 years, the overall successful outcome of in-hospital resuscitation after cardiac arrest is approximately 44% for return of spontaneous circulation and 15% to 17% for survival to discharge<sup>1,2</sup>. These statistics tell us nothing about the quality of survival. Analysis of individual groups of patients has shown a wide range of outcomes depending on comorbidities, the type of arrest and the initial rhythm of cardiac arrest. CPR could sometimes be of extremely low benefit or even futile, making Do-Not-Resuscitate (DNR) status appropriate for many patients with a hopeless prognosis.

DNR has been practiced for many years since it was first introduced in the 1980s and yet it is one of the most commonly misunderstood and misinterpreted orders in medical practice<sup>3-5</sup>. It has many ethical, legal, geographic, religious and cultural aspects that contribute to this misunderstanding.

We define DNR as a decision not to initiate cardiac compressions, shocks and artificial ventilation after the occurrence of a cardiac arrest or after cessation of circulation.

Decisions not to escalate treatment, not to initiate pulmonary ventilation, not to give vasopressors and others are decisions regarding end-of-life care, and are a separate matter from DNR which relates solely to treatment after cessation of circulation.

In our Intensive Care Unit (ICU), we are faced daily with situations where we feel that initiation of CPR is appropriate, but we are also faced with situations where, in the opinion of the ICU team, CPR would not be appropriate. In addition, we have had a few occasions of disagreement amongst the team on whether or not DNR orders should be applied. In these situations, we do not apply DNR orders.

### **Few Examples of DNR Decision**

The following are cases where DNR decisions have been either easy to make unanimously or have been not so clear-cut and we have not found unanimity amongst our ICU team.

1. An eighty-eight-year-old patient was admitted to the ICU with septic shock due to urosepsis and infected bedsore. He had a medical history of diabetes mellitus, hypertension, dementia and strokes. He was bedridden and had been managed in a nursing home for three years prior to his admission to the ICU. The patient was managed with antibiotics, fluids, and vasopressors. For 48

hours, he did not respond to treatment. The entire ICU team agreed to continue supportive care, but further treatments involving mechanical ventilation and cardiopulmonary resuscitation would be futile and a DNR decision was made.

2. A forty-five-year-old male patient was admitted to the ICU with type II respiratory failure. The patient was suffering from progressive motor neuron disease for four years. Upon admission to ICU, he had reached the terminal stage of that illness, where he had become quadriplegic and totally dependent on non-invasive ventilation. We commenced invasive ventilation, performed a tracheostomy and made arrangements for long-term home ventilation. Some of the doctors were in favor of a DNR decision, but most were against a DNR decision in view of the fact that the patient was young and, although quadriplegic, was fully conscious and still enjoyed life somewhat.

3. A twelve-year-old male who was bedridden with cerebral palsy and congenital heart disease was admitted in the ICU with cachexia, pneumonia and respiratory failure. Antibiotics and mechanical ventilation were initiated. During a 3-week period, he recovered from the pneumonia but we failed to wean him from mechanical ventilation. There was no unanimity amongst the ICU team members regarding a DNR decision. It was quite obvious to everyone that in case of a cardiac arrest, any cardiopulmonary resuscitation would be futile. Nevertheless, the fact that he was young made it very difficult for several of the ICU team members to make a decision.

4. A seventy-eight-year-old female with a history of diabetes, hypertension and chronic kidney disease presented to the emergency department with a sudden loss of consciousness. Brain CT was initially unremarkable; however, three days later, repeated brain CT showed massive parieto-temporal stroke. There was no consensus between the ICU team on the estimated outcome. Although part of the team was pro-DNR because the patient had severe stroke with many comorbidities which have poor prognosis; On the other-hand, the rest of the team was eager to correct all the metabolic reversible causes before labeling her as a DNR candidate.


5. A sixty-three-year-old diabetic female gave a history of metastatic breast cancer; for which she was treated with radiation and hormonal therapy. The patient presented to the emergency department with foul smelling wound discharge below the abdominal crease. It was associated with pain and a urinary tract infection. The wound was debrided, and she was started on antibiotics. Subsequently, she developed electrolyte imbalance and altered sensorium. There was a debate within the ICU and surgical teams on the expected outcome due to the lack of input from the oncologist and the response to the current treatment regimen. The pro-DNR team thought that the patient's expected quality of life is inadequate.

Because we, as intensivists, were having difficulty in making these decisions, we wondered what other doctors in acute specialties understood about the DNR process, so we prepared a questionnaire.

The aim of this study is to measure the perception amongst the acute specialties of what constituted DNR orders.

## METHOD

We designed a questionnaire that was anonymous but included specialty, position (SHO, registrar, senior registrar and consultant) and gender as demographical data, see figure 1. All physicians working in the acute specialties of medicine, surgery, intensive care, emergency medicine and anesthesia were included. Excluded were physicians who have discussed the questionnaire, interns (because we felt that they were not decision-makers), nurses, healthcare assistants, medical students and those doctors not in acute specialties.



KING HAMAD  
UNIVERSITY HOSPITAL  
مستشفى الملك حمد الجامعي

### End-of-Life Care Questionnaire

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1. Have you discussed this questionnaire with anyone else? Y    N

2. Should a hospital have a DNR policy? Y    N

3. Should a hospital have a DNR policy? Y    N

4. What does DNR mean?

	Y	N		Y	N
No intubation			No IV fluids		
No ventilation			No defibrillation		
No antibiotics			No change in position		
No inotropes			No code blue activation		
No renal dialysis			No frequent investigations		
No pain relief/sedation			No management of other critical issues		
No feeding			No cardiac massage		

5. If a patient writes an advance DNR directive/living will will you respect it? Y    N

6. Who should make the decision about DNR? Family Doctors

7. Should DNR be implemented in the following conditions?

	Y	N		Y	N
Terminal cancer			Sickle Cell Anemia		
COPD			premature infants		
Dementia			Children with Chromosomal defects		
Severe head trauma			children with mental retardation		
Chronic kidney disease			Advanced neuromuscular disorders		
Physically disabled patient			End-stage heart disease		

Comments:

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**Figure 1: The Questionnaire**

We included several general questions about DNR, asking whether a hospital needs a policy and whether legislation should be in place for DNR to quantify the overall acceptance of a DNR policy.

Next we asked specific questions about precise aspects of treatment that each doctor considered were parts of the DNR process.

We questioned the detail of how the implementation of DNR in a specific patient would be carried out, such as who has the authority to make the decision of DNR, and in which groups of patients that implementation of DNR should be considered.

The questionnaire was distributed to physicians in the different specialties. Anonymity was assured by placing the unidentifiable completed questionnaire in a sealed box. The questionnaire was distributed in person by two investigators and collected immediately in the box. After completion, the box was opened and the data were tabulated.

We excluded any physician who had discussed the survey with anyone else, as prior discussion might have affected that doctor's opinions.

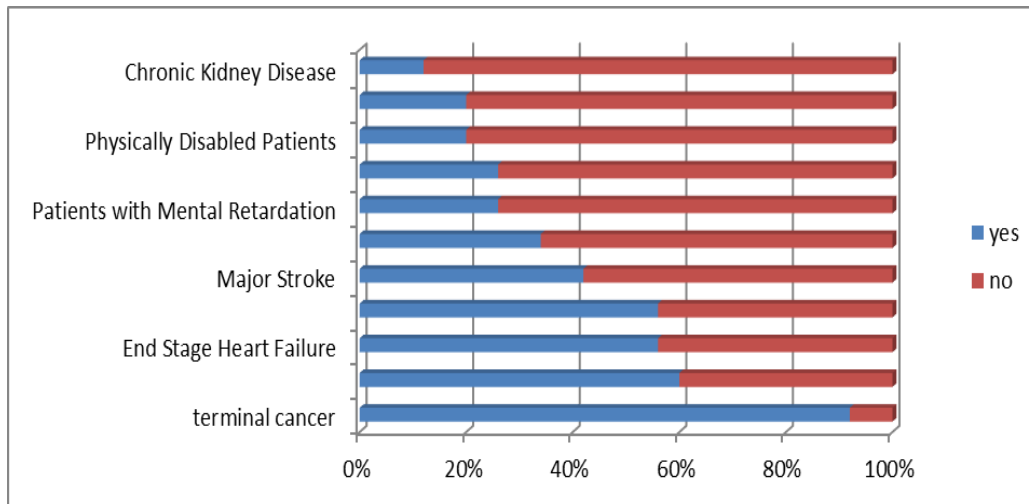
## RESULT

Fifty doctors completed the questionnaire; 49 (98%) physicians thought that a hospital should have a DNR policy and 48 (96%) thought that there should be a legislation regarding DNR.

Twenty-three (46%) physicians believed that the DNR decision lies with the doctor, while 10 (20%) thought it is a family decision only; 17 (34%) thought that the decision should be made by both the family and physician, see table 1 and figure 2.

**Table 1: Physicians' Interpretation of DNR**

<b>What does DNR mean?</b>	<b>Yes/Total Valid Answers</b>
No code blue activation	50 (100%)
No defibrillation	48 (96%)
No cardiac massage	48 (96%)
No intubation	33 (66%)
No ventilation	30 (60%)
No renal dialysis	22 (44%)
No frequent investigation	24 (48%)
No inotropes	22 (44%)
No management of other critical issues	12 (24%)
No antibiotics	9 (18%)
No pain relief/sedation	5 (10%)
No feeding	4 (8%)
No intravenous fluids	2 (4%)



**Figure 2: Responses to “When DNR Should Be Implemented”**

## DISCUSSION

A DNR order gives guidance to physicians and nurses on how they should react in case of a cardiac arrest or cessation of circulation<sup>6</sup>. There is ambiguity in the interpretation of the term DNR; it is commonly misinterpreted as being a decision on the management of the patient in the period before a cardiac arrest occurs, which is, in reality, what “end-of-life care” is. In the authors’ institution, “end-of-life care” is defined as the administration of all standard care with fluids, antibiotics, feeding, pain relief, etc., but there is no advanced resuscitation to be initiated including chest compressions, defibrillation, cardioversion, intubation, ventilation, inotropes, vasopressors and renal replacement therapy.

The majority of the respondents believe that there should be a legislation in place covering DNR. How would such a law be framed? Does the absence of such a law suggest that we must do CPR for everyone in every circumstance? And when would we stop CPR if we were not allowed to make a DNR decision? Furthermore, determination of care decisions such as determining a patient to be inoperable due to advanced disease, or determining whether further chemotherapy for advanced cancer is futile, do not seem to attract the same demand for legislation. Would DNR legislation demand that we do CPR on a patient whom we have already decided is dying and inoperable? This would be completely illogical. We think that the matter should simply be left to the medical profession as a clinical decision.

In our study, 54% believed that the family should be a participant in the DNR decision. The family lacks knowledge or training to make such a decision, and is hampered in making a sensible decision because they are emotionally involved. In addition, involving the family in DNR decisions was found to be socially and culturally unacceptable from an Islamic perspective<sup>7</sup>. In our opinion, the doctors should make the decision as a team, and keep the family fully informed at all times. This view mirrors the Islamic perspective on DNR in case of terminal illness, as described in an important fatwa from Saudi Arabia<sup>8-11</sup>.

In our study, only 5 seemed to understand DNR correctly in accordance with our definition; this is worrying. Some of the respondents assumed that DNR means no intravenous fluids or no antibiotics. There were some extreme opinions such as four doctors who did not believe that feeding was compatible with a DNR order.

One of the most interesting opinions we received in the comments section of the questionnaire was “I noticed a common misunderstanding in the hospital, where people confuse DNR with watching the patient die and do not treat simple treatable reversible issues, like hyperkalemia, etc.”

Another five respondents did not believe that DNR status included relief of pain and anxiety, which the investigators believe needs further investigation, as under no circumstances should a patient not receive pain relief. Pain relief and feeding are inalienable rights and we must ask what is being taught in medical schools if doctors do not think patients should receive pain relief.

These results, although surprising and disappointing, may actually be worse if we take into account the inherent weakness of the questionnaire survey because respondents tend to give answers they believe will please the investigator. These unacceptable opinions were as common as the small number of doctors who had the correct understanding of DNR. None of the respondents thought that, in nursing care, the frequency of change-of-position should be altered. It is the authors' assessment that the doctors' ideas of DNR were directed towards medical care only, rather than being directed towards aspects such as change-of-position, which is an aspect of nursing care.

Most respondents found DNR acceptable for terminal cancer patients (92%), but there was controversy over other conditions. Only 56% felt that end-stage heart disease would merit a DNR instruction despite heart disease being the number one killer in the United States<sup>12</sup>. It is a recognized fact that successful CPR in critically ill patients with multiple comorbidities, such as sepsis and multiple organ dysfunctions have very poor end-result, and yet only 20% thought that DNR was appropriate in severe sepsis<sup>13</sup>. This suggests that doctors wrongly view cardiovascular arrest in sepsis as being associated with a good prognosis or that sepsis can be reversed simply with antibiotics and supportive treatment. Myrianthefs et al investigated 111 critically ill patients in whom CPR was started within 30s of cardiac arrest; the survival was zero<sup>13</sup>.

These views and beliefs that show a poor understanding of the DNR process have serious implications for patient care as they may lead to inferior care being given to patients with a DNR order in comparison to patients without. Studies have shown that patients with DNR orders have a higher mortality rate, receive substandard care and that clinical decisions are not related to the management of cardiac arrest are generally affected by DNR<sup>14-18</sup>. This is unacceptable medical practice; because of this, some physicians may be reluctant to place a DNR order on a patient in case it will lead to less intensive care and a higher mortality.

## CONCLUSION

We recommend stopping the use of the term DNR because it is an extremely confusing and misunderstood term. Instead, we should view care of patients with an end-stage illness as being a continuum, where CPR is seen as a natural progression of full active treatment, but when further active management of patients' primary problems is deemed to be futile, such as surgical inoperability, or when cancer has become too advanced for further chemotherapy, then a clear instruction stating what is to be done and what is not to be done should be recorded for each patient. We term this "end-of-life care" and it should be a team decision rather than an individual one.

In addition, we need to educate healthcare professionals about the terminology of the management of end-of-life situations, including labels such as DNR, palliative care, withdrawal of care and non-escalation of therapy.

We need to ensure that certain basic aspects of care, such as pain relief and sedation, are never withheld from patients because of lack of knowledge of the principles of end-of-life management.

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