

# Pediatricians' Perceptions Toward Do Not Resuscitate: A Survey in Saudi Arabia and Literature Review

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Abdulrahman Aljethaily<sup>1</sup>  
Turki Al-Mutairi<sup>1</sup>  
Khalid Al-Harbi<sup>1</sup>  
Saleh Al-Khonezan<sup>1</sup>  
Abdallah Aljethaily<sup>2</sup>  
Hossam S Al-Homaidhi<sup>2</sup>

<sup>1</sup>College of Medicine, Al-Imam University, Riyadh, Saudi Arabia; <sup>2</sup>Al-Yamamah Hospital (Ministry of Health), Riyadh, Saudi Arabia

**Objective:** To explore the pediatricians' attitudes and perceptions toward do-not-resuscitate (DNR) orders in a specific region of the world not fully explored before.

**Methods:** A cross-sectional study was conducted between March 4 and May 30, 2018. Pediatricians from three public hospitals in the city of Riyadh were asked to respond to a questionnaire consisting of 22 questions designed to meet the objectives of our study.

**Results:** A total of 203 pediatricians (51.2% female) completed the questionnaire, both junior pediatricians (JPs) and senior pediatricians (SPs). A majority (58.9% of JPs and 61.4% of SPs) thought patients have the right to demand intensive care, despite their terminal illness. Half the participants in both groups thought that DNR is a physician's decision. Only 9.3% of JPs and 12.5% of SPs felt comfortable discussing DNR with patients/families. Medical school was also a source of knowledge on DNR issues, mainly for JPs (40.2% of JPs vs 20.8% of SPs,  $P=0.005$ ). Half the participants felt that DNR is consistent with Islamic beliefs, while 57.9% of JPs vs 41.7% of SPs felt they are legally protected. Hospital policy was clear to 48.6% of JPs vs 66.7% of SPs, while procedure was clear to 35.5% of JPs vs 49% of SPs.

**Conclusion:** Several factors are present that may hinder DNR implementation, such as doubts concerning being legally protected, doubts concerning consistency with Islamic sharia, unclear policies and procedures, and lack of training and orientation on DNR issues. Policies may need to include patients as decision-makers.

**Keywords:** DNR policies, DNR implementation, "shared decision-making" paradigm, attitude toward DNR

## Introduction

Significant advances have been made in life-support therapy and cardiopulmonary resuscitation (CPR). However, these therapies have a very low success rate, if any, in terminally ill patients. Also, these therapies inflict potential harm to the patient and a significant burden on the family and the community.<sup>1-3</sup> This led to the concept of do not resuscitate (DNR), which means that a DNR patient receives all treatment needed, except CPR.

DNR orders are popular in many Western countries,<sup>4,5</sup> but not so in our region. Previously, DNR was not legally recognized in Saudi Arabia hospitals. With a scholarly declaration of a fatwa (religious verdict) in 1988,<sup>6</sup> DNR got legal support. Recently, the Ministry of Health adopted a unified policy for DNR. In some countries in the region, ie, the United Arab Emirates, any doctor who fails to

Correspondence: Hossam S Al-Homaidhi  
Department of Pediatrics, Al-Yamamah  
Hospital, PO Box 103168, Riyadh 11695,  
Saudi Arabia  
Tel +966 11 491 4444  
Email [hossam50@gmail.com](mailto:hossam50@gmail.com)

resuscitate a patient is liable for prosecution. However, in August 2016 a federal decree on medical liability in the Emirates was issued, under which doctors will no longer be compelled to resuscitate dying patients.<sup>7</sup> Nonetheless, there is still ongoing debate, due to the sensitivity and complexity of this issue and differences in ethical and cultural values.

Despite CPR being routinely practiced in hospitals in Saudi Arabia, few studies have looked into the issue of DNR.<sup>8–14</sup> These studies were mainly among internist and intensivists, and pertained to adult patients. The ethical issues that influence the implementation of DNR orders for adult patients are clearly different from those applicable to pediatric patients.<sup>15</sup> There is a lack of studies regarding attitudes and perceptions toward DNR orders among pediatric physicians. We investigated this attitude and perception by means of a questionnaire distributed to pediatric physicians in three public hospitals in the city of Riyadh.

## Methods

This was a cross-sectional study conducted between March 4 and May 30, 2018 targeting pediatric physicians and their opinions on the study topic. Pediatric physicians were randomly approached by the survey team at their morning-report meetings and in the physician's lounge. The survey team started by briefing pediatric physicians on the purpose of the research, then asked them if they were willing to participate. Then, a questionnaire was handed to willing pediatricians. The questionnaire carried the name of the study and its purpose, with a question asking whether they were willing to participate or not. As such, their informed consent was obtained verbally and in written form. The vast majority of pediatricians who were approached agreed to participate and fill out the questionnaire. Questionnaires were then collected within the same setting, giving participants no chance to discuss items of questionnaire with their colleagues or be influenced by others' opinions. Neonatologists were not included in this survey. The questionnaire consisted of 22 questions covering four domains: demographic data, knowledge, attitudes, and practice of DNR. The questionnaire was in English and designed to meet the objectives of our study.

Participating pediatricians were from three main public hospitals in Riyadh (King Saud Medical City and King Salman Hospital in southern Riyadh and Alyamamah hospital in eastern Riyadh). Both areas of the city are heavily populated. Participants were divided into junior pediatricians

(JPs; physicians in the residency training program) and senior pediatricians (SPs; physicians holding a certificate of successful completion of residency training). Statistical analysis was performed using SPSS 24 and R studio 1.1.49. We ran analyses twice to ensure the credibility of results. The research protocol was approved by the Al-Imam University IRB Committee.

## Results

A total of 203 pediatric physicians (51.2% female) completed the questionnaire. Various age-groups were represented in the study. Half the physicians were residents under training (JPs, n=107, 52.7%). Two-thirds of participants were graduates of national medical schools (Table 1).

Half the participants reported that DNR was a physician's decision (52.3% of JPs vs 51% of SPs). Participants believed that patients and family had the right to refuse medical care (68.2% of JPs vs 59.4% of SPs) and to demand intensive care, despite their terminal illness (58.9% of JPs vs 61.4% of SPs). Both groups thought that it was best for patients and family to be aware of their DNR status (64.5% of JPs vs 71.9% of SPs, Table 2).

The majority in both groups preferred to inform patients and families about their DNR status with a

**Table 1** Demographic Characteristics of the Study Sample (n=203)

		n	%
Hospital affiliation	KSH	23	11.3%
	KSMC	98	48.3%
	Alyamamah	82	40.4%
	Hospital		
Age, years	<30	82	40.4%
	30–39	52	25.6%
	40–50	44	21.7%
	>50	25	12.3%
Sex	Female	104	51.2%
	Male	99	48.8%
Years since graduation from medical school	<5	87	42.9%
	5–10	28	13.8%
	>10	88	43.3%
Hospital position	JPs	107	52.7%
	SPs	96	47.3%
Where did you attend medical school?	Saudi Arabia	127	62.6%
	Abroad	76	37.4%

**Abbreviations:** JPs, junior pediatricians; SPs, senior pediatricians; KSH, King Salman Hospital; KSMC, King Saud Medical City.

**Table 2** Patient's Rights Regarding DNR

		JPs (n=107), n (%)	SPs (n=96), n (%)	Total, n (%)	P
Is DNR a physician decision?	No	33 (30.8%)	35 (36.5%)	68 (33.5%)	0.56
	Yes	56 (52.3%)	49 (51%)	105 (51.7%)	
	Do not know	18 (16.8%)	12 (12.5%)	30 (14.8%)	
Patient/family have the right to refuse medical care	No	22 (20.5%)	26 (27.1%)	48 (23.7%)	0.38
	Yes	73 (68.2%)	57 (59.4%)	130 (64%)	
	Do not know	12 (11.2%)	13 (13.5%)	25 (12.3%)	
Patient/family have the right to demand intensive medical care, despite their terminal illness	No	22 (20.5%)	23 (24%)	45 (22.2%)	0.51
	Yes	63 (58.9%)	59 (61.4%)	122 (60.1%)	
	Do not know	22 (20.5%)	14 (14.6%)	36 (17.7%)	
It is best that patient/family are not aware of DNR status	No	69 (64.5%)	69 (71.9%)	138 (68%)	0.07
	Yes	22 (20.5%)	22 (22.9%)	44 (21.7%)	
	Do not know	16 (15%)	5 (5.2%)	21 (10.3%)	

**Abbreviation:** DNR, do not resuscitate.

medical team, rather than by themselves (88.8% of JPs vs 93.7% of SPs). Only a small fraction of participants (9.3% of JPs vs 12.5% of SPs) felt very comfortable discussing DNR with patients and families. However, the majority (81.3% of JPs vs 88.5% of SPs) reported that training in DNR during residency would improve their ability to discuss DNR with patients and families (Table 3).

Compared to JPs, a significantly higher percentage of SPs reported familiarity with the term "DNR" (80.4% of JPs vs 91.7% of SPs,  $P=0.02$ ). When they were asked about where they learned about DNR, medical school was reported mainly by JPs (40.2% of JPs vs 20.8% of

SPs,  $P=0.005$ ), while hospital orientation programs were reported mainly by SPs (13.1% of JPs vs 28.1% of SPs, Table 4).

Although a small percentage of participants in both groups thought that DNR was not consistent with Islamic sharia, doubt about this issue was high (39.2% of JPs vs 47.9% of SPs,  $P=0.21$ ). More SPs than JPs felt they are not legally protected (14% of JPs vs 32.3% of SPs,  $P=0.006$ , Table 5). Compared to JPs, a larger percentage of SPs reported that both DNR policy (48.6% of JPs vs 66.7% of SPs,  $P=0.009$ ) and DNR procedure (35.5% of JPs vs 49% of SPs) were clear to them (Table 6).

**Table 3** Approach to Patient/Family Regarding DNR

		JPs (n=107), n (%)	SPs (n=96), n (%)	Total, n (%)	P
How do you prefer to inform the patient and family about DNR status?	By myself	12 (11.2%)	6 (6.3%)	18 (8.9%)	0.21
	With a medical team	95 (88.8%)	90 (93.7%)	185 (91.1%)	
How do you start a discussion with a patient/family regarding DNR status?	Ask if they know about DNR	21 (19.6%)	13 (13.5%)	34 (16.8%)	0.49
	Discuss the patient's medical condition	63 (58.9%)	66 (68.8%)	129 (63.5%)	
	Do not know	9 (8.4%)	6 (6.2%)	15 (7.4%)	
	Explain DNR	14 (13.1%)	11 (11.5%)	25 (12.3%)	
Are you comfortable discussing DNR status with a patient/family?	Not comfortable	52 (48.6%)	34 (35.4%)	86 (42.4%)	0.16
	Somewhat comfortable	45 (42%)	50 (52.1%)	95 (46.8%)	
	Very comfortable	10 (9.3%)	12 (12.5%)	22 (10.8%)	
Will training on DNR issues during residency improve your ability to discuss DNR with the patient and family?	No	7 (6.5%)	4 (4.2%)	11 (5.4%)	0.39
	Yes	87 (81.3%)	85 (88.5%)	172 (84.7%)	
	Do not know	13 (12.1%)	7 (7.3%)	20 (9.9%)	

**Table 4** Knowledge About DNR

		JPs (n=107), n (%)	SPs (n=96), n (%)	Total, n (%)	P
Are you familiar with the term "DNR"?	No <sup>a</sup>	21 (19.6%)	8 (8.3%)	29 (14.3%)	0.02
	Yes <sup>a</sup>	86 (80.4%)	88 (91.7%)	174 (85.7%)	
What is the definition of DNR?	Do not know	9 (8.4%)	5 (5.2%)	14 (6.9%)	0.23
	Basic primary	5 (4.7%)	9 (9.4%)	14 (6.9%)	
	Full medical service (no CPR)	78 (72.9%)	62 (64.6%)	140 (69%)	
	Providing full medical service with CPR	15 (14%)	20 (20.8%)	35 (17.2%)	
Where did you learn about DNR?	Do not have any information <sup>b</sup>	5 (4.7%)	1 (1%)	6 (3%)	0.005
	During residency training <sup>b</sup>	42 (39.2%)	45 (46.9%)	87 (42.8%)	
	In medical school <sup>a</sup>	43 (40.2%)	20 (20.8%)	63 (31%)	
	Through attending medical conferences <sup>b</sup>	3 (2.8%)	3 (3.1%)	6 (3%)	
	Through hospital orientation programs <sup>a</sup>	14 (13.1%)	27 (28.1%)	41 (20.2%)	

**Notes:** <sup>a</sup>Differences among these items statistically significant at level indicated; <sup>b</sup>not statistically significant.

## Discussion

Several studies have been conducted in Saudi Arabia on DNR, but from different perspectives. A study in 1995 explored this issue among 100 physicians in Riyadh (central province) dealing with adult patients.<sup>8</sup> Other studies targeted interns and/or residents in internal medicine in western province,<sup>9,10</sup> intensivists in western province,<sup>11</sup> DNR decisions in a pediatric intensive-care unit (PICU) in Riyadh,<sup>12</sup> and community views on DNR.<sup>13</sup>

In our study, half the participating pediatricians in both groups believed that DNR was a physician's decision. This is similar to a previous study conducted among internal medicine physicians, where a much higher percentage (70%) felt that DNR was a physician's decision.<sup>8</sup> Contrarily, a study conducted on interns and residents in internal medicine in western Saudi Arabia showed that the majority (67% of interns and 55% of residents) believed that policies should include the patient as a decision-maker.<sup>9</sup> The majority of participants in our study (58.9% of JPs vs 61.4% of SPs) felt that patient

and family had the right to demand intensive care, despite their terminal illness. This is in contradiction to a previous study, where most of the adult physicians (71%) indicated that patients did not have the right to demand intensive-care treatment when benefit was considered unlikely by physicians.<sup>8</sup>

Our study showed that 64.5% of JPs and 71.9% of SPs thought it best for patients and families to be aware of their DNR status, a finding similar to a previous study.<sup>9</sup> However, in reality, a prospective study conducted to assess compliance of internal medicine physicians with hospital DNR policy in western province showed that documentation of discussion with patients' families was absent in 53.8% of cases assigned a DNR order.<sup>11</sup>

Only a minority of participants (9.3% of JPs vs 12.5% of SPs) reported that they would be comfortable discussing DNR with parents. A similar finding was reported by Da Costa et al,<sup>16</sup> where physicians in a neonatal ICU in Oman were often reluctant to discuss DNR with parents. In

**Table 5** Legality and Belief Issues Concerning DNR

		JPs (n=107), n (%)	SPs (n=96), n (%)	Total, n (%)	P
Do you think DNR is consistent with Islamic sharia?	No	14 (13.1%)	5 (5.2%)	19 (9.4%)	0.21
	Yes	51 (47.7%)	45 (46.9%)	96 (47.3%)	
	Do not know	42 (39.2%)	46 (47.9%)	88 (43.3%)	
Regarding DNR, do you think you are legally protected?	No <sup>a</sup>	15 (14%)	31 (32.3%)	46 (22.7%)	0.006
	Yes <sup>a</sup>	62 (57.9%)	40 (41.7%)	102 (50.2%)	
	Do not know <sup>b</sup>	30 (28%)	25 (26%)	55 (27.1%)	

**Notes:** <sup>a</sup>Differences among these items statistically significant at level indicated; <sup>b</sup>not statistically significant.

**Table 6** Clarity of DNR Policy and Procedure

		JPs (n=107), n (%)	SPs (n=96), n (%)	Total, n (%)	P
How many times have you been involved in writing DNR orders?	Did not write it <sup>a</sup>	89 (83.2%)	61 (63.5%)	150 (73.9%)	0.007
	1–2/year <sup>b</sup>	14 (13.1%)	23 (24%)	37 (18.2%)	
	3+/year <sup>a</sup>	4 (3.7%)	12 (12.5%)	16 (7.9%)	
Is DNR policy clear to you?	No <sup>a</sup>	55 (51.4%)	32 (33.3%)	87 (42.9%)	0.009
	Yes <sup>a</sup>	52 (48.6%)	64 (66.7%)	116 (57.1%)	
Is DNR procedure clear to you?	No <sup>b</sup>	42 (39.3%)	42 (43.7%)	84 (41.4%)	0.003
	Yes <sup>b</sup>	38 (35.5%)	47 (49%)	85 (41.9%)	
	Do not know <sup>a</sup>	27 (25.2%)	7 (7.3%)	34 (16.7%)	

**Notes:** <sup>a</sup>Differences among these items statistically significant at level indicated; <sup>b</sup>not statistically significant.

contrast, Aljohaney and Bawazir<sup>10</sup> showed that 51.9% of internal medicine residents in western province felt comfortable during DNR discussions with patients and families. Pediatricians and parents find discussions on DNR difficult and emotional.<sup>17,18</sup> Therefore, proposed general guidelines regarding communicating bad news to parents were published in 2002.<sup>18</sup>

In our study, a considerable percentage of physicians (27.1% of JPs vs 35.4% of SPs) could not define DNR correctly. This indicates suboptimal training on this sensitive issue, and may have a negative effect on DNR implementation. An overwhelming majority in our study (81.3% of JPs vs 88.5% of SPs) felt that training on DNR issues during residency would improve their ability to discuss DNR with patients and families. Similar findings have been reported by other studies.<sup>10,19</sup>

As a source of knowledge on DNR issues, medical school was reported mainly by JPs (40.2% of JPs vs 20.8% of SPs,  $P=0.005$ ). This may indicate that DNR got its popularity recently forcing our medical schools to include it in their curriculum. In a study by Ury et al<sup>20</sup> of three consecutive cohorts (1996–1998) of new interns who were graduates of US medical schools, they reported very little classroom teaching, clinical observation, or clinical experience with end-of-life communication during medical school. They lacked comfort and skill in end-of-life communication.

Despite the fact that only a small fraction of participants thought that DNR was inconsistent with Islamic sharia, doubt about this issue is high (39.2% of JPs vs 47.9% of SPs). Only 57.9% of JPs vs 41.7% of SPs felt they were legally protected. Therefore, these doubts may hinder DNR implementation. Saeed et al<sup>21</sup> studied the religious aspects of end-of-life care among 461 Muslim physicians in the US and other countries.

They reported that 66.8% of respondents believed that DNR was allowed in Islam, compared to 47.3% in our study. It is worth mentioning that the scholarly declaration (fatwa 12086) that regulates DNR in Saudi Arabia delineates six situations where DNR is granted.<sup>6</sup> The Islamic Medical Association of North America does not believe in prolonging the misery of dying patients who are terminally ill. When death becomes inevitable, patients should be allowed to die without unnecessary intervention. However, no attempt should be made to enhance the dying process.<sup>22</sup>

In our study, a considerable fraction of pediatricians reported that hospital DNR policy (51.4% of JPs vs 33.3% of SPs) and procedure (39.3% of JPs vs 43.7% of SPs) were not clear to them. A similar finding was noticed in other study.<sup>9</sup> This lack of clarity can be attributed to poor hospital orientation programs, which will have a negative effect on DNR implementation. This may explain, with other factors, why a retrospective study done in Riyadh found that only 51% of all deaths in a PICU followed DNR orders.<sup>12</sup> Similarly, several international studies (from the US, UK, France, and Pakistan) reported that up to 60% of all deaths in PICUs were attributable to DNR orders.<sup>23–26</sup> Different numbers were reported by Devictor and Nguyen<sup>27</sup> (survey of 12 PICUs from northern Europe and 27 from southern Europe), where the decision to forgo life-sustaining treatment was more often made in PICUs in northern European countries than in southern ones (47% vs 30%,  $P=0.02$ ). A much higher percentage was reported by Moore et al:<sup>28</sup> 74% of deaths in an Australian children's hospital ICU followed the withdrawal and limitation of life-sustaining treatment.

It is worth mentioning that several studies have shown that DNR orders in patient files would affect patient care



negatively. In a survey among critical care health-care providers in the Middle East, 46.5% of responders expressed their concern that patients were likely to be clinically neglected once labeled as DNR.<sup>29</sup> Stevenson et al<sup>30</sup> showed that residents appear to assume that patients with DNR orders would prefer not to receive other interventions, so potentially beneficial care may be withheld against the patient's wishes. Beach et al<sup>31</sup> found that the presence of a DNR order may affect a physician's willingness to order a variety of interventions/treatments not related to CPR (such as taking blood cultures, putting in a central line, or referral to an ICU). Sanderson<sup>32</sup> found that 69% of clinicians reported that the care of a patient changes once a DNR order is written. There may be limitations or withdrawal of other appropriate interventions. Nurses were significantly less likely to perform a variety of monitoring modalities and interventions for patients with DNR orders than for patients without such orders.<sup>33</sup>

In addition, some physicians are unilateral in taking DNR decisions, excluding patients and families from participation. A study conducted in western Saudi Arabia showed that documentation of DNR discussions with patients and families was absent in 53.8% of patients assigned DNR orders.<sup>11</sup> International literature has shown that the DNR decision was documented in medical charts in 51% of cases in southern European PICUs and 100% of the cases in northern PICUs ( $P=0.001$ ).<sup>27</sup> Several stories have emerged that doctors are placing secret DNR orders on patients' files.<sup>34</sup> In the UK, a court ruled that doctors should consult dying patients on DNR decisions.<sup>35</sup> In the US, a boy who is now 8 years old was assigned a DNR order at birth without his parents' permission. The mother was told that the DNR decision was nonnegotiable and the physician's right. This led to the enactment of a new law that limits doctors' ability to invoke DNR orders without a patient's consent.<sup>36</sup>

Recently, several medical bodies have started reviewing their recommendations regarding end-of-life care. In April 2003, the International Consensus Conference on End-of-Life Care in the ICU recommended that decision-making about end-of-life care should be shared between the physician and the patient or his/her family ("shared decision-making" paradigm).<sup>37</sup> In 2008, the American College of Critical Care Medicine extended their recommendations for end-of-life care, stating that there is increasing consensus within the field of critical care on

some important principles, such as shared decision-making and the importance of caring for patients' families.<sup>38</sup>

The shared decision-making paradigm injects more balance into the process. Clinicians often fail to predict patient desires regarding end-of-life treatment accurately and may be unaware of patients' personal values or religious beliefs that may be important in determining the appropriate aggressiveness of care.<sup>37</sup> Based on "quality of life", several treatments needed may be withheld from patients. As quality of life is a value judgement, patients rather than physicians are to decide what is the accepted quality of life for them.

It is worth mentioning that there are some limitations to our study. As a third of participants were graduates of foreign medical schools, our results may not reflect the actual situation of our national medical schools. Though Riyadh is heavily populated, our results cannot be generalized to other provinces of Saudi Arabia, because there is a variety of cultures and values in these provinces. Added to that, there are different policies and procedures regarding DNR in effect in our national health institutes.

## Conclusion

Pediatric physicians need to have access to continuing medical education on DNR-related issues. Several factors are present that may hinder DNR implementation, such as doubts about being legally protected, consistency with Islamic sharia, unclear policies and procedures, and lack of training and orientation on DNR issues. DNR policies may need to include patients/parents as decision-makers and place them at the center of the discussion.

## Abbreviations

DNR, do-not-resuscitate; SPs, senior pediatricians; JPs, junior pediatricians; PICU, pediatric intensive-care unit; CPR, cardiopulmonary resuscitation.

## Author Contributions

Aljethaily Abdulrahman, Al-Mutairi, Al-Harbi, and Al-Khonezan conceptualized and designed the study, collected data, carried out the initial analyses, and drafted the initial manuscript. Al-Homaidhi and Aljethaily Abdallah conceptualized and designed the study, designed the data-collection format, coordinated and supervised data collection, and reviewed and revised the manuscript. All authors approved the final manuscript as submitted, and agree to be accountable for all aspects of work.

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## Disclosure

The authors report no conflicts of interest in this work.

## References

1. Schatzadeh S. Cardiopulmonary resuscitation in patients with terminal illness: an evidence-based analysis. *Ont Health Technol Assess Ser.* 2014;14:1–38.
2. Peberdy MA, Kaye W, Ornato JP, et al. Cardiopulmonary resuscitation of adults in the hospital: a report of 14720 cardiac arrests from the National Registry of Cardiopulmonary Resuscitation. *Resuscitation.* 2003;58:297–308. doi:10.1016/S0300-9572(03)00215-6
3. 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:e27–34. doi:10.18295/squmj.2016.16.01.006
4. Van Delden JJ, Lofmark R, Deliens L, et al. Do-not-resuscitate decisions in six European countries. *Crit Care Med.* 2006;34:1686–1690. doi:10.1097/01.CCM.0000218417.51292.A7
5. Loertscher L, Reed DA, Bannon MP, Mueller PS. Cardiopulmonary resuscitation and do-not-resuscitate orders: a guide for clinicians. *Am J Med.* 2010;123:4–9. doi:10.1016/j.amjmed.2009.05.029
6. General Presidency of Scholarly Research and Ifta. Fatwa # 12086; 1988. Available from: <http://www.alifta.net/fatawachapters.aspx?language=en&View=Page&PageID=299&PageNo=1&BookID=17>. Accessed August 25, 2018.
7. Webster N. Law gives patients new “right to die”. *The National*. Available from: <https://www.thenational.ae/uae/law-gives-patients-new-right-to-die-1.200397>. Posted September 5, 2016. Accessed August 28, 2018.
8. Mobeireek A. The do-not-resuscitate order: indications on the current practice in Riyadh. *Ann Saudi Med.* 1995;15:6–9. doi:10.5144/0256-4947.1995.6
9. Amoudi A, Albar M, Bokhari A, Yahya S, Merdad A. Perspectives of interns and residents toward do-not-resuscitate policies in Saudi Arabia. *Adv Med Educ Pract.* 2016;7:165–170. doi:10.2147/AMEP.S99441
10. Aljohaney A, Bawazir Y. Internal medicine residents’ perspectives and practice about do not resuscitate orders: survey analysis in the western region of Saudi Arabia. *Adv Med Educ Pract.* 2015;6:393–398. doi:10.2147/AMEP.S82948
11. Gouda A, Al-Jabbary A, Fong L. Compliance with DNR policy in a tertiary care center in Saudi Arabia. *Intensive Care Med.* 2010;36:2149–2153. doi:10.1007/s00134-010-1985-3
12. Al-Ayed T, Rahmo N. Do not resuscitate orders in a Saudi pediatric intensive care unit. *Saudi Med J.* 2014;35:561–565.
13. Al Sheef MA, Al Sharqi MS, Al Sharief LH, Takrouni TY, Mian AM. Awareness of do-not-resuscitate orders in the outpatient setting in Saudi Arabia. Perception and implications. *Saudi Med J.* 2017;38:297–301. doi:10.15537/smj.2017.3.18063
14. Al-Mobeireek AF. Physicians’ attitudes towards ‘do-not-resuscitate’ orders for the elderly: a survey in Saudi Arabia. *Arch Gerontol Geriatr.* 2000;30:151–160. doi:10.1016/S0167-4943(00)00047-9
15. Goldberg DS. The ethics of DNR orders as to neonatal and pediatric patients: the ethical dimension of communication. *Houston J Health Law Policy.* 2007;1:57–83.:
16. Da Costa DE, Ghazal H, Al-Khusaiby S. Do Not Resuscitate orders and ethical decisions in a neonatal intensive care unit in a Muslim community. *Arch Dis Child Fetal Neonatal Ed.* 2002;86:F115–F119. doi:10.1136/fn.86.2.F115
17. McCallum DE, Byrne P, Bruera E. How children die in hospital. *J Pain Symptom Manage.* 2000;20(6):417–423. doi:10.1016/S0885-3924(00)00212-8
18. Jan M, Girvin JP. The communication of neurological bad news to parents. *Can J Neurol Sci.* 2002;29:78–82. doi:10.1017/S0317167100001773
19. Durall A, Zurakowski D, Wolfe J. Barriers to conducting advance care discussions (ACD) for children with life-threatening conditions. *Pediatrics.* 2012;129:e975–82. doi:10.1542/peds.2011-2695
20. Ury WA, Berkman CS, Weber CM, Pignotti MG, Leipzig RM. Assessing medical students’ training in end-of-life communication: a survey of interns at one urban teaching hospital. *Acad Med.* 2003;78:530–537. doi:10.1097/00001888-200305000-00019
21. Saeed F, Kousar N, Aleem S, et al. End-of-life care beliefs among Muslim physicians. *Am J Hosp Palliat Care.* 2015;32:388–392. doi:10.1177/1049909114522687
22. Islamic Medical Association of North America (IMANA), & Ethics Committee. Islamic medical ethics: the IMANA perspective. *J Islamic Med Assoc North Am.* 2005;37:33–42. doi:10.5915/37-1-5528
23. Vernon DD, Dean JM, Timmons OD, Banner W Jr, Allen-Webb EM. Modes of death in the pediatric intensive care unit: withdrawal and limitation of supportive care. *Crit Care Med.* 1993;21:1798–1802. doi:10.1097/00003246-199311000-00035
24. Sands R, Manning JC, Vyas H, Rashid A. Characteristics of deaths in paediatric intensive care: a 10-year study. *Nurs Crit Care.* 2009;14:235–240. doi:10.1111/j.1478-5153.2009.00348.x
25. Martinot A, Grandbastien B, Leteurtre S, Duhamel A, Leclerc F. Groupe Francophone de Réanimation et d’Urgences Pédiatriques. [No resuscitation orders and withdrawal of therapy in French paediatric intensive care units]. *Acta Paediatr.* 1998;87:769–773. doi:10.1111/j.1651-2227.1998.tb01745.x
26. Siddiqui NU, Ashraf Z, Jurair H, Haque A. Mortality patterns among critically ill children in a pediatric intensive care unit of a developing country. *Indian J Crit Care Med.* 2015;19:147–150. doi:10.4103/0972-5229.152756
27. Devictor DJ, Nguyen DT. Forgoing life-sustaining treatments in children: a comparison between Northern and Southern European pediatric intensive care units. *Pediatr Crit Care Med.* 2004;5:211–215. doi:10.1097/01.PCC.0000123553.22405.E3
28. Moore P, Kerridge I, Gillis J, Jacobe S, Isaacs D. Withdrawal and limitation of life-sustaining treatments in a paediatric intensive care unit and review of the literature. *J Paediatr Child Health.* 2008;44:404–408. doi:10.1111/j.1440-1754.2008.01353.x
29. Ur Rahman M, Abuhasna S, Abu-Zidan FM. Care of terminally-ill patients: an opinion survey among critical care healthcare providers in the Middle East. *Afr Health Sci.* 2013;13:893–898. doi:10.4314/ahs.v13i4.5
30. Stevenson EK, Mehter HM, Walkey AJ, Wiener RS. Association between Do Not Resuscitate/Do Not Intubate status and resident physician decision-making: a National survey. *Ann Am Thorac Soc.* 2017;14:536–542. doi:10.1513/AnnalsATS.201610-798OC
31. Beach MC, Morrison RS. The effect of do-not-resuscitate orders on physician decision-making. *J Am Geriatr Soc.* 2002;50:2057–2061. doi:10.1046/j.1532-5415.2002.50620.x
32. Sanderson A. DNR orders and end-of-life decisions for children: the elephant in the room. *Boston Children’s Hospital*. <https://vector.chil-drenshospital.org/2013/09/dnr-orders-and-end-of-life-decisions-for-children-the-elephant-in-the-room>. Posted September 19, 2013. Accessed September 11, 2018.
33. Henneman EA, Baird B, Bellamy PE, Faber LL, Oye RK. Effect of do-not-resuscitate orders on the nursing care of critically ill patients. *Am J Crit Care.* 1994;3:467–472. doi:10.4037/ajcc1994.3.6.467

34. Lifenews.com. Doctors and hospitals are placing secret DNR orders in patient's files. *lifenews.com*. <https://www.lifenews.com/2017/11/16/doctors-and-hospitals-are-placing-secret-dnr-orders-in-patients-files>. Posted November 16, 2017. Accessed September 11, 2018..
35. Etheridge Z, Gatland E. When and how to discuss "do not resuscitate" decisions with patients. *BMJ*. 2015;350:h2640. doi:10.1136/bmj.h2640
36. Ackerman T. New law limits doctors' ability to invoke DNR without patient consent. *Houston Chronicle*. <https://www.houstonchronicle.com/news/medical/article/New-law-limits-doctors-ability-to-invoke-DNR-12204922.php>. Posted September 17, 2017. Accessed September 13, 2018.
37. Carlet J, Thijs LG, Antonelli M, et al. Challenges in end-of-life care in the ICU: statement of the 5th international consensus conference in critical care. Brussels, Belgium, April 2003. *Réanimation*. 2004;13:440–452. doi:10.1016/j.reaurg.2004.08.001
38. Truog RD, Campbell ML, Curtis JR, et al. American academy of critical care medicine. Recommendations for end-of-life care in the intensive care unit: a consensus statement by the American college of critical care medicine. *Crit Care Med*. 2008;36:953–963. doi:10.1097/CCM.0B013E3181659096

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