

Brief Communication

The practice of do-not-resuscitate orders in the Kingdom of Saudi Arabia. The experience of a tertiary care center

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The concept of cardio pulmonary resuscitation (CPR) was introduced in the 1960s in western medicine as an attempt to rescue patients who were found pulseless or apneic. Consequently, it was realized that CPR in some groups of patients did not add any meaningful benefit, but rather led to inflicting suffering to the dying patient. This led to the concept of do-not-resuscitate (DNR), which dates back to the beginning of the 1970s. Do-not-resuscitate orders are now widely accepted and practiced, as a result among the patients who die in the hospital, 70-84% have a DNR order on record.¹ In the Kingdom of Saudi Arabia (KSA) the healthcare has evolved rapidly over a 3-decade period to a state of the art level. The availability of advanced medical care and life support, gave rise to complex issues related to end of life care and DNR, ensuing in moral, ethical and legal dilemmas. At present there are no national medical guidelines concerning DNR orders, and no published surveys on these. No studies so far have looked into the practice of DNR. The little information we have regarding the do-not-practice in the KSA is that the majority of physicians favor DNR as a physician directed decision.² The purpose of this study was to examine the present practice and predictors of DNR in hospitalized adult patients in a major tertiary care center in KSA.

King Fahad National Guard Hospital (KFNGH), Riyadh, KSA is a 550-bed, level one trauma center with an active liver and kidney transplant program. King Fahad National Guard Hospital is one of the few hospitals in the KSA with a formal DNR policy, which has been in effect from 1998. The DNR policy requires 3 physicians, including the most responsible physician to agree that the patient will not receive any meaningful medical benefit from CPR. The physician has to inform and discuss the decision with the patients' next of kin. We reviewed medical records of all adult patients who died in 1998. We excluded patients who were \leq 12-years-old and brain dead patients. We evaluated patients' demographics, underlying chronic illnesses, admission diagnosis, length of stay, the timing of writing DNR orders and whether death occurred in the ward or the intensive care unit (ICU). The goal

Table 1 - Chronic and acute illnesses as predictors of do-not resuscitate using univariate analysis.

| Diagnoses | OR | CI | p value |
|--------------------------|-----|----------|---------|
| Chronic illnesses | | | |
| CVA | 1.4 | 0.6-3 | NS |
| Cardiac | 0.4 | 0.3-0.8 | 0.001 |
| Cirrhosis | 2.6 | 1.3-5.1 | 0.006 |
| Renal failure | 0.7 | 0.3-1.5 | NS |
| Cancer | 2.7 | 1.4-4.9 | 0.002 |
| Pulmonary disease | 0.7 | 0.3-1.6 | NS |
| Dementia | 3.5 | 0.8-15.4 | NS |
| Acute illnesses | | | |
| CVA | 1.5 | 0.7-3.4 | NS |
| Cardiac | 0.3 | 0.2-0.5 | <0.001 |
| Sepsis | 1.9 | 1.2-2.9 | 0.01 |
| GI bleeding | 1.7 | 0.6-4.6 | NS |
| Trauma | 0.3 | 0.1-0.8 | 0.01 |
| Encephalopathy | 1.9 | 0.9-4.4 | NS |

CVA - cerebrovascular accident, OR - odds ratio,
CI - confidence interval, NS - non significant, GI - gastrointestinal

was to identify the frequency of DNR orders among patients who eventually die in the hospital, and the factors that determine the decision for DNR status. Univariate analysis was performed to identify predictors of DNR status. Results are displayed as odds ratios (OR) and 95% confidence intervals (CI). During the study period, a total of 529 patients died in our hospital. We excluded 50 patients of age \leq 12, 49 patients with incomplete or unavailable medical records, and 10 considered brain dead. A total of 420 patients were included in the study, of which 24% (n=102) received CPR prior to death, while a vast majority (76%) at the time of death had a DNR order written.

Demographics. There was no significant age (64 ± 17 years versus 60 ± 19 years), length of hospital stay (18 ± 22 days versus 27 ± 91 days) and sex {(male/female)} (183/135 versus 62/40} difference between the DNR and the full code patients. Patients dying on the ward were more likely to have a DNR order written, than patients dying in the ICU (84% versus 66%).

Chronic illnesses predicting DNR orders. When we analyzed chronic illnesses as predictors of DNR, it was noted that underlying dementia, renal failure, pulmonary disease and cerebrovascular accident (CVA) did not increase the likelihood of receiving a DNR order (Table 1). The patients with underlying cardiac condition were least likely to be made DNR {OR 0.4 (CI 0.3-0.8)}, in contrast to patients with cancer and cirrhosis (Table 1), who were more likely to have a DNR order at the time of death.

Acute illnesses predicting DNR order. Patients admitted with acute cardiac diagnoses and trauma were more likely to have full code status at the time of death. On the contrary, septic patients were much more likely to have DNR order recorded (**Table 1**).

Predictors of timing of DNR. Do-not-resuscitate orders were more likely to be written on day one of hospitalization in cancer patients {OR 2.5 (1.4-4.5)} and on the last hospital day in cirrhotic patients OR 2.8 (CI 1.6-5.1) and gastrointestinal bleeding patients OR 3.7 (CI 1.6-8.4).

Results of this study revealed some interesting information on the current practice, and predictors of patient DNR in a tertiary care center in the KSA. 1. The majority of the patients dying in our institute had DNR order by the time of death. 2. The numbers of patients who were labeled DNR at the time of death; in our institute, we are close to international figures.¹ 3. Dying patients with cancer, cirrhosis and those admitted with sepsis are less likely to be resuscitated, whereas dying cardiac and trauma patients are more likely to continue receiving full support. In addition, DNR status was initiated early in cancer patients, on the other hand there was a delay in DNR orders in cirrhotic patients, which may reflect the fact that majority of the patients were referred for possible liver transplant.

It may seem that any decision to withhold CPR should be fairly uniform, and not vary with the underlying disease after adjustment for physician estimate of prognosis. However, in real practice the converse is true, for example, incurable metastatic cancer or coma have well defined prognosis, therefore, many physicians and patients would agree on withholding CPR when confronted with the above disease.³ In our study as well, we observed that cancer patients were readily given a DNR, avoiding undue suffering. However, patients with other diseases such as end stage congestive heart failure (CHF), follow a less predictable course.⁴ In our study, unclear prognosis and unpredictable response to treatment even late in the course of CHF, may explain why DNR orders were less likely to be written for patients with CHF compared to patients with other diseases.

Surprisingly, in our study patients with dementia, renal failure, end-stage lung disease and CVA were less likely to be labeled DNR, which may reflect lack of subgroup analysis or lack of awareness of the prognosis among the physician, or resistance from the family in making patients DNR. In our analysis, cirrhotics were another group in which the physicians agreed that resuscitating the majority of such patients is futile, which may indicate increased awareness among our staff regarding the futility of CPR and poor prognosis among patient with the diagnosis of liver cirrhosis. The late timing of DNR order in cirrhosis patient could be due to the fact

that our institute is a liver transplant center, and a large population of our patients are on the transplant waiting list.

Our study's main limitation is that it is a monocenter reflecting the practice in one center in a single country. However, considering the limited literature regarding end of life issues and the practice of DNR in Muslims,⁵ this article comes as a first step in exploring this important field.

As the medical community of the KSA comes to grip with the new realities of limited budget and increasing burden on health care to provide state of the art medical care, we believe it is the right time to have national medical guidelines concerning end of life issues. This would lead to more uniform and standard practice of DNR, and appropriate use of medical resources without compromising the quality of medical care. In addition, we anticipate that this study will encourage further research among the medical community in the KSA and other muslim countries regarding end-of-life care relevant to adult muslim patients.

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The first Arabic health related quality of life visual function assessment tool. The Arabic visual function tool (AVFT)

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