

The moment of death in an Internal Medicine ward*

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Abstract

Background: In-hospital cardiorespiratory arrest (CRA) has a severe prognosis, but is usually preceded by alarm signs. These signs should be recognized and necessary procedures predicted.

Methods: Retrospective evaluation of 2 alert signs and symptoms in the 6 hours before death, decision of Do Not Resuscitate (DNR) and attitudes chosen in deceased patients in a 3 year period.

Results: Four hundred and three patient files were reviewed (mortality rate 11.4%). Mortality was homogeneously distributed in respect to week day and time. Alert signs and symptoms in the 6 hours before death were identified in 291 patients (72.2%), specially: depressed level of consciousness (129 patients), desaturation (104) and dyspnoea (92). Doctors were called in 133 cases and their attitudes were: reversion in 70 patients, relieving in 67, no attitude at all in 60 and assuming DNR in 40. The DNR

was present in 348 patients (86.4%) and registered in 92.0%. Cardio-pulmonary resuscitation (CPR) was attempted in 2 patients (0.5%) with explicit DNR and in 1 (0.2%) with implicit DNR. CPR was not attempted in 35 patients (8.7%), although there was no recorded indication in the patient file for DNR.

Conclusions: Alert signs and symptoms preceded most CRA, allowing an opportunity for intervention. Mostly nurses identified these signs. The indication for DNR was recorded in the files of most patients. The low number of patients with indication for CPR is a surrogate of patient's complexity. This study reinforces the need for intervention in recognition, evaluation and decision in the pre-arrest patients.

Key words: cardiorespiratory arrest; medical emergency teams; do not resuscitate.

Introduction

Keeping the patient's life with the highest possible quality of life is the daily target of every health professional. In the specific case of Medicine, death has always been and will keep being a traumatic event for the physician in charge of the care given to that patient, even if the human contact between the two of them has been short and even in the endless situations where it is acknowledged there is no perspective of clinical improvement of a satisfactory prognosis. In Internal Medicinal specialty, dealing mainly with the elderly carrying multiple severe pathologies, almost always leading to reserved prognosis, being death whilst in admission unfortunately a too frequent reality albeit not a simpler approach.

It is known that the in-hospital environment, CRA occurs mainly in non-defibrillated cardiac rhythms (asystole or electric activity without pulse), what implies, on its own, a very bad prognosis.¹⁻³ Several symptoms and signs have also been described which can raise the alarm to the health professional for an imminent CRA,²⁻⁴ reason why several medical associations have already made recommendations and acting protocols accordingly,⁵⁻⁷ although its efficacy in potential studies for such purpose is yet to be proven.⁸ The European Resuscitation Council (ERC) has defined a set of signs as criteria to call an Emergency Medical Team, with a role to evaluate and intervene on the due patient.⁹ In contemporary Medicine, it is not admissible that the possibility of death during admission is not foreseen, its moment not anticipated and its alarm signs not identified. The same way, it is crucial that the approach in a CRA case is previously defined and well understood for all dealing with the patient.

In most Portuguese hospitals, the in-hospital approach to CRA is badly structured, generating some uncertainty in practical intervention. Starting from collected data in a similar study, made 10 years ago in this very same hospital,¹⁰ the authors aim to evaluate the current state of the circumstances at the moment

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of death in Internal Medicine. As concrete objectives, it were evaluated the presence of alert signs in the 6 hours before the CRA, DNR documentation, the moment death occurred and the approach taken by the involved professionals.

Material and methods

All clinical files from all patients deceased in an Internal Medicine Service from the 1st January 2003 to the 31st December 2005 were reviewed. It was assessed retrospectively the date/time of death, the presence of alarm signs in the 6 previous hours, who acknowledged such signs, what action had been taken and whether an indication of DNR (explicit or implicit) was present.

The alert signs researched (according to the ERC model) were:

- Threatened airways;
- Signs of breathing difficulty;
- Unease to speak “again”;
- Peripheral saturation of O₂ lower than 90%, in spite of oxygen therapy;
- Respiratory rate lower than 5 or over 35 cycles per minute;
- Heart rate lower than 40 or above 140 beats per minute;
- Systolic blood pressure lower than 90 mmHg, in spite of the treatment;
- Unexplained depression while conscious;
- Restlessness or delirium “again”;
- Prolonged or repeated seizures;
- Serious concern with the patient;
- Uncontrolled pain.

It was deemed as an explicit DNR indication, if written and signed by a doctor duly identified in the appropriate place. Implied DNR has been defined as follows:

- It is explicit in clinical file the decision of not escalating vital support;
- The patient is acknowledged as dying or at risk of imminent death in the medical record, with an explicit decision of not intervening in the disease course;
- Explicitly defined as terminal patient in the medical records.

Outcome

In the Internal Medicine timeframe and service mentioned, 483 patients died (11.4% of the admitted), and 403 files were reviewed. In spite of not being

uniform, the mortality distribution did not suffer a statistically significant change, both throughout the day ($p=0.73$) as throughout the week ($p=0.74$), as can be seen in *Fig1 and 2*.

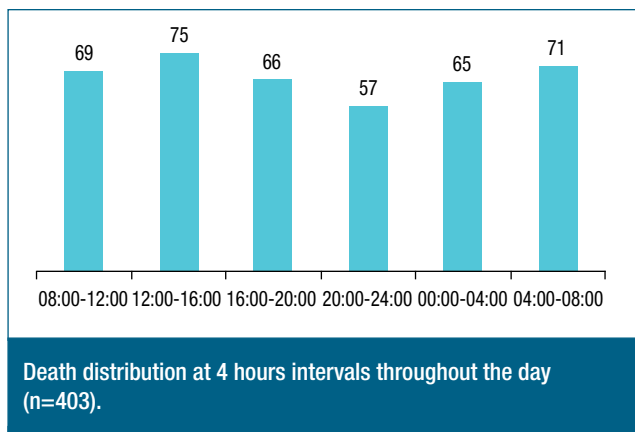
In 291 patients (72,2%) were recorded 610 alert signs during the 6 hours preceding CRA (*Figure 3 and 4*). Such signs were recognized in most cases (206 of 291 patients, or 70.8%), by the nursing team; in 77 cases were recognized by the physician and in 8 patients it was not possible to identify the responsible person through the records.

Several actions were taken after identifying the alert signs, both by nurses as doctors, as shown in *Fig. 5 and 6*. When the signs were recognized by the nurses, the doctor was called in 133 of the 206 cases (64.6%); in 24 patients (11.6%) the nurse acted without calling the medical team and in 49 cases (23.8%) nothing was done. Medical intervention, asked for in 133 cases identified by the nurse and in 77 by the author, was discriminated as follows: attempt to reverse the condition in 76 patients, comfort attitudes in 67 patients and DNR confirmation in 40 patients. In 60 cases the doctor did nothing and 3 patients were not even seen by the physician.

In 348 patients (86.4% of the total) there was a DNR indication at CRA moment. Such indication was explicit in 320 cases. Several CPR actions were attempted in 21 patients (5.2%); from these, two (0.5%) had an explicit DNR indication and one (0.2%) had implicit DNR. In 35 patients (8.7%) CPR was not attempted, in spite of not existing any implicit or explicit DNR indication.

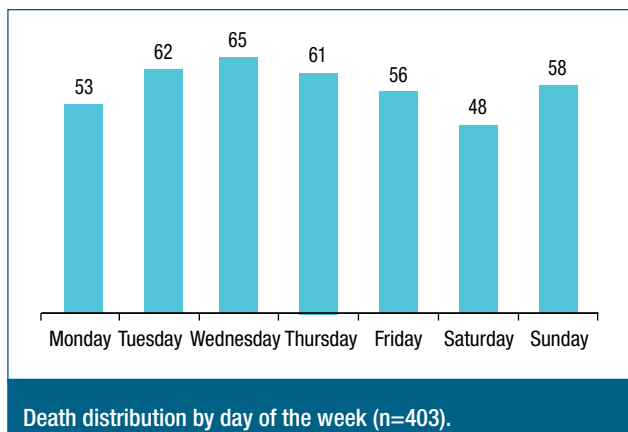
Discussion

This work exposes some facts deserving particular attention. As a matter of fact, we verified that in most (86.4%) patients admitted in Internal Medicine who would die there was a DNR indication. In the previous study,¹⁰ already mentioned, such percentage was 30.5%. Such fact reveals a trend to the generalization of DNR record which can be read in several ways. On one hand, it is undeniable that the complexity of Internal Medicine in-patients (considering their age, co-morbidities and severity of an acute condition) always implies a very bad prognosis if they are resuscitated after intra-hospital CRA. DNR generalization might be the reflex of a wider awareness of this reality by the medical profession. It can also translate a growing notion of the utmost importance presumed



Death distribution at 4 hours intervals throughout the day (n=403).

FIG. 1



Death distribution by day of the week (n=403).

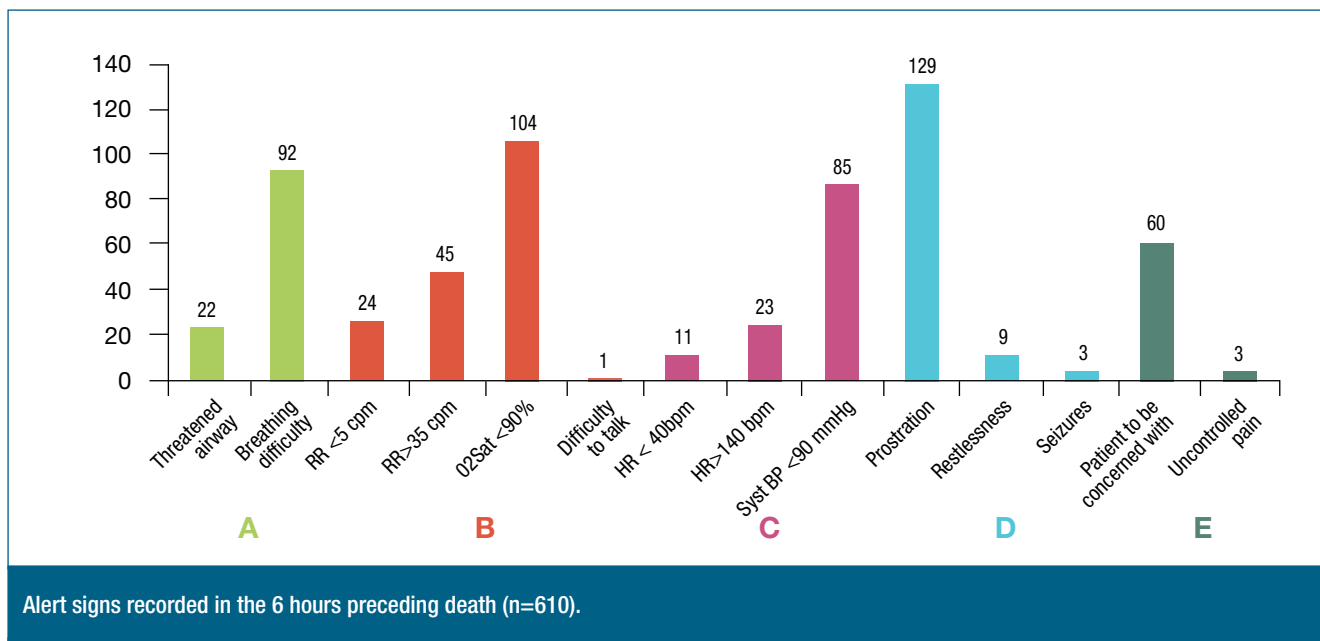
FIG. 2

by the effective presence of that decision in the clinical process of the patient found in CRA, in a way that the DNR does not have to be deemed only at the moment of arrest by a doctor who does not know the patient, or the shift nurse.

Another interesting result was the absence of variable mortality, with statistic significance, according the time of the day or the day of the week. In the already mentioned previous work, it had been verified a significant increase on mortality, without a clear medical explanation for such event, from 7 to 8 O'clock and Sundays and Mondays until 12 Noon.

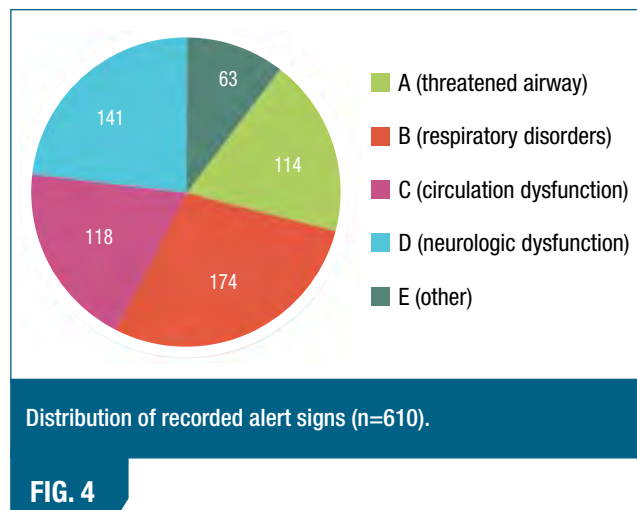
If, for the increase on mortality, from 7 to 8 O'clock reasons could be easily pointed out related with the logistic of nursing routines, for the mortality peak on Sunday and Monday morning there was no other explanation different from the absence of doctors in the wards for longer periods of time. In those days, there was not in this hospital the role of the Medical Resident, at the week-ends, implemented only after concluding that study. The current homogenous mortality distribution may be an indicator of the positive role performed by the physical presence of a permanent doctor in the wards.

The correlation between CPR action and the ab-



Alert signs recorded in the 6 hours preceding death (n=610).

FIG. 3

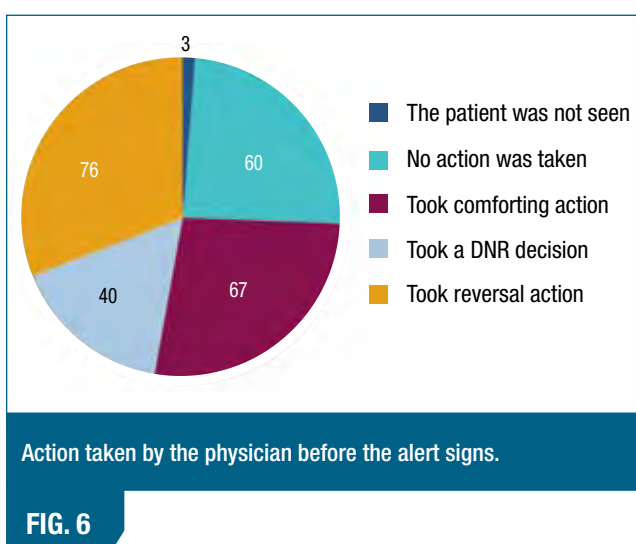
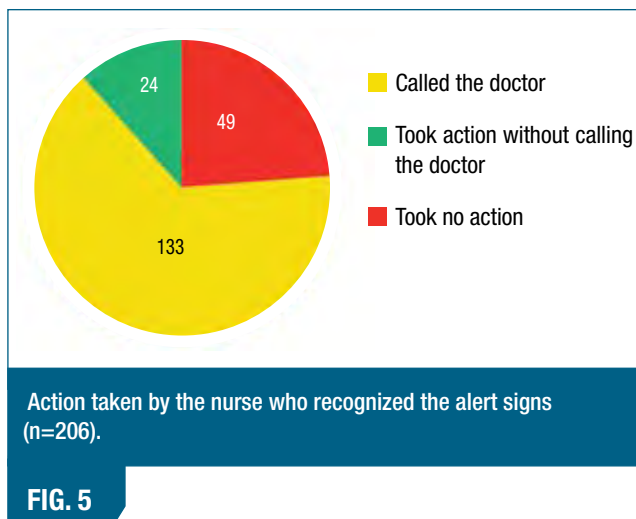


sence of a DNR indication is in frank improvement: in this study, the patients' percentage without DNR who did not receive CPR was 8.7%, against 86.7% in the previous study.

At present, the point needing more intervention is the definition of what action to take when a health professional acknowledges that a specific patient is in imminent CRA (or at least, showing clear signs of serious clinic deterioration). A crucial aspect is the verification that effectively are the nurses, who identify in most cases, the alert signs which can indicate CRA. As such, the nursing team should be specifically prepared to the correct observation of such signs, as well as with the procedures to adopt in such cases. Other essential aspect is to clarify the DNR concept: in spite of the high number of patients showing such warning and the low number of patients that, without DNR indication did not receive CPR action, there were 49 patients to whom alert signs were recognized and were not subject to any action. Although this work was not designed to assess conveniently this point, it is raised the hypothesis of a DNR indication leading to some limitation on taking action when a patient shows clear signs of peri-arrest.

Conclusion

In-patients in Internal Medicine wards are of the utmost clinical complexity, what in some way is confirmed by the fact that almost all cases in this sample have shown DNR indication. It is crucial, however, to proceed to a better definition of the DNR concept and its practical implications at medical and nursing attitude level, because a patient with DNR



indication should not be resuscitated after CRA but should not either be deprived of assistance in case he/she shows any evidence of clinical deterioration. It is relevant to observe that more than 70% of CRA, in this study, were preceded by alert signs seen by the nursing team. Identifying such signs provides a unique opportunity to intervene and to attempt to correct any pathophysiology disorders if the right steps are taken. To prevent CRA, through the specific training of health professionals identifying alert signs and acting accordingly may contribute to reduce the mortality of in-patients. ■

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