

# Evaluation of do not resuscitate orders (DNR) in a Swiss community hospital

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**Objective:** To evaluate the effect of an intervention on the understanding and use of DNR orders by physicians; to assess the impact of understanding the importance of involving competent patients in DNR decisions.

**Design:** Prospective clinical interventional study.

**Setting:** Internal medicine department (70 beds) of the hospital of La Chaux-de-Fonds, Switzerland.

**Participants:** Nine junior physicians in postgraduate training.

**Intervention:** Information on the ethics of DNR and implementation of new DNR orders.

**Measurements and main results:** Accurate understanding, interpretation, and use of DNR orders, especially with respect to the patients' involvement in the decision were measured. Junior doctors writing DNR orders had an extremely poor understanding of what DNR orders mean. The correct understanding of the definition of a DNR order increased from 31 to 93% ( $p < 0.01$ ) after the intervention and the patients' involvement went from 17% to 48% ( $p < 0.01$ ). Physicians estimated that 75% of their DNR patients were mentally competent at the time of the decision.

**Conclusion:** An intervention aimed at explaining the ethical principles and the definition of DNR orders improves understanding of them, and their implementation, as well as patient participation. Specific efforts are needed to increase the involvement of mentally competent patients in the decision.

Do not resuscitate (DNR) orders are somewhat ambiguous with respect to the distinction between life saving therapies (cardiopulmonary resuscitation (CPR)) and life sustaining measures. This situation is a source of confusion and misinterpretation by physicians.<sup>1–6</sup>

Physicians are also reluctant to discuss DNR attitudes with patients despite their known unreliability in predicting their patients' preference for or against CPR.<sup>3 7–12</sup>

Contrary to the situation prevailing in the USA and the UK where recommendations for the use of DNR orders have been produced and regularly updated, this problem has not received much attention in Switzerland.<sup>13 14</sup> The political and public debate mainly focuses on passive and indirect active euthanasia, and physician assisted suicide. The use and implication of DNR orders in hospitals has never attracted the attention of the media and is a topic generally ignored by the public. The Swiss Academy of Medical Sciences, which established medicoethical guidelines regarding end of life care in 1995 and ethical problems in intensive care units (ICUs) in 1999, makes no mention of DNR until 1999 and has never specifically defined the use and implication of DNR orders when giving recommendations regarding the withholding or withdrawing of treatments.<sup>15 16</sup> Furthermore, although many hospitals have developed their own guidelines about DNR orders, we are aware of only one Swiss study which has assessed their use in a tertiary hospital.<sup>17</sup>

We therefore decided to assess the understanding of DNR orders and their application by young physicians in a Swiss community hospital. Special attention was given to the involvement of patients in the decision.

We hypothesised that ignorance and lack of familiarity with the ethical component of DNR orders rather than predetermined attitudes were the basis of ethically incorrect behaviour on the part of these young physicians. Therefore, we expected that an intervention aimed at explaining and clarifying these various aspects of DNR would improve their use.

## METHODS

We conducted a prospective clinical intervention on written DNR orders in the internal medicine department (70 beds) of the hospital of La Chaux-de-Fonds, a community, teaching, university linked hospital serving a population of 60 000 people in West Switzerland.

The intervention took place during two five month periods, before (P1) and after (P2) the intervention, between October 1996 and September 1997. All patients who stayed more than 24 hours and those who were given a DNR order were included.

The DNR patients were identified by examining thrice weekly the nurse files. Age, sex, marital status, and medical diagnosis were abstracted from the medical records. A Mini-Mental State Examination (MMSE) was done on 80% of the patients during their stay.<sup>18</sup> Oral consent was requested. Patients with a MMSE  $< 24$  were considered to be mentally impaired.<sup>19</sup> The remaining 20% were dead, discharged, unable or unwilling to answer. Those patients had, however, the same demographic and medical characteristics as the others. One of us (NJP) collected all the data.

Nine physicians, three women and six men in their first to fifth year of postgraduate training, were evaluated during the two periods. For every DNR patient they anonymously answered a questionnaire consisting of seven items: type of DNR order; definition of DNR order (five possible answers were offered); time of the decision; assessment of the mental competence of the patient; kind and number of persons involved in the decision (patient, family, nurse, family doctor, staff); expected survival, and if the DNR decision was based on their subjective assessment of the quality of life and life expectancy of the patient.

After P1, detailed information was given to all physicians in the department about the meaning of a DNR order, its ethical dimension, the right of patients to make their own decision (respect for autonomy), and the concept of medical futility. Ethical aspects addressed only CPR/DNR measures and did

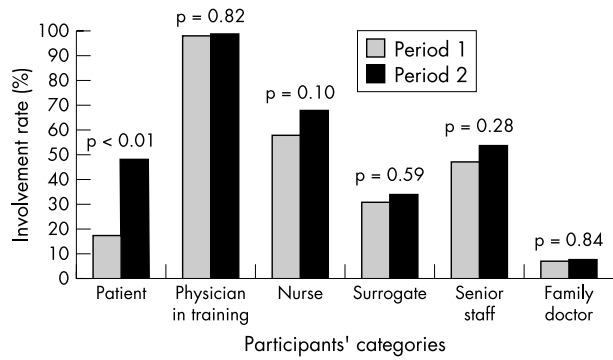
**Table 1** Demography and medical diagnosis of do not resuscitate patients

| Variables, categories | Period 1<br>n=140 |             | Period 2<br>n=115 |             |
|-----------------------|-------------------|-------------|-------------------|-------------|
|                       | n                 | %           | n                 | %           |
| Age (years)           |                   |             |                   |             |
| ≤65                   | 26                | 18.6        | 34                | 29.6        |
| 66 to 80              | 61                | 43.6        | 46                | 40.0        |
| >80                   | 53                | 37.9        | 35                | 30.4        |
|                       |                   |             | p=0.108*          |             |
| Sex                   |                   |             |                   |             |
| male                  | 77                | 55.0        | 52                | 45.2        |
| female                | 63                | 45.0        | 63                | 54.8        |
|                       |                   |             | p=0.12*           |             |
| Marital status        |                   |             |                   |             |
| single                | 8                 | 5.7         | 10                | 8.8         |
| married               | 77                | 55.0        | 53                | 46.5        |
| widowed               | 44                | 31.4        | 34                | 29.8        |
| divorced/separated    | 11                | 7.9         | 17                | 14.9        |
|                       |                   |             | p=0.202*          |             |
| Medical diagnosis     |                   |             |                   |             |
| cancer                | 23                | 6.4         | 16                | 13.9        |
| metastatic cancer     | 27                | <b>19.3</b> | 49                | <b>42.6</b> |
| cardiac disease       | 27                | 19.3        | 15                | 13.0        |
| others                | 63                | 45.0        | 35                | 30.4        |
|                       |                   |             | p<0.01*           |             |

\*Comparison between periods 1 and 2. Bold characters are used for statistically significant differences.

not cover other measures such as life sustaining treatments. It was also stressed that a DNR decision should not be the only motive for a discussion with the patient but should be part of overall care planning after an exploration of the patient's expectations and desires in order to achieve common goals.

At the same time, new DNR guidelines were implemented by the head of the department, based essentially on those proposed by the American Medical Association's Council on Ethical and Judicial Affairs in 1991.<sup>13</sup> During P1, two DNR codes were used. Code B meant medication only without chest compression, intubation or defibrillation in the event of a cardiopulmonary arrest (limited code). Code C meant no resuscitation at all in the event of a cardiopulmonary arrest. During P2 only the DNR type C was used. None of these codes included the withdrawal or withholding of other therapeutic interventions. The guidelines highlighted the absolute right of mentally competent and informed patients to decide about their resuscitation. A DNR order could, however, be written by a physician after he or she had informed the patient that CPR was considered futile. In such a situation, gaining the patient's understanding and acceptance of the clinical condition seemed to us more important than offering choice when there



**Figure 1** Involvement rate of different participants in the Do Not Resuscitate (DNR) decision.

were no options. In cases where there was conflict, a second medical opinion was required. Medical futility was defined as a prolongation of suffering without any benefit, or restoration of vital parameters for only a very short period of time (hours or days), or no restoration at all. Main aims were first to assess the correct understanding of DNR definition by physicians and second to evaluate the patients' participation in the DNR decision before and after the intervention. The study protocol was approved by our local hospital directory committee.

The statistical significance of differences between P1 and P2 in answers for variables such as age, marital status, sex, diagnosis, and data pertaining to DNR orders was assessed by the  $\chi^2$  test p value < to 5%.

**RESULTS**

A total of 255 patients were given a DNR order, 140 during P1 and 115 during P2, representing 16% and 19% of medical admissions. Mortality of DNR patients was 29.3% during P1 and 26.1% during P2.

Except for metastatic cancer, no differences in socio-demographic and diagnostic characteristics existed between P1 and P2 patients (see table 1). During P1, when asked about what they meant by writing a DNR order, physicians differed noticeably in their definition of DNR orders (see table 2). They tended to include defibrillation in the limited DNR measures (code B) in 33.3% of the answers and mixed up no resuscitation in case of cardiopulmonary arrest (code C) with comfort therapy in 56.3% of the cases. During P2, after intervention and implementation of a single DNR code type C, 93% of the answers were correct (p<0.001). Physicians no longer considered comfort therapy or other treatments to be part of the DNR definition.

Figure 1 shows that the intervention increased the patients' participation in the DNR decision from 17.1% in P1 to 47.8% in

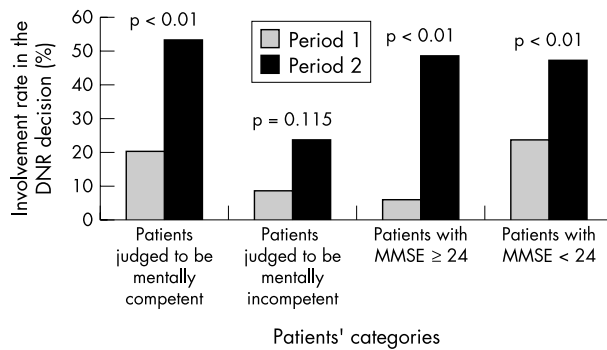
**Table 2** Distribution of physicians' answers when asked about what they meant by writing a DNR (do not resuscitate) order (five possible answers offered). During P1, B meant medication only without chest compression, intubation or defibrillation and C no resuscitation at all in the event of a cardiopulmonary arrest (CPA). During P2, DNR meant no resuscitation at all in the event of a CPA

| Definition of DNR orders   | Period 1 |             | Period 2 |             |             |             |
|--|----------|-------------|----------|-------------|-------------|-------------|
|  | B (n=69) |             | C (n=71) |             | DNR (n=115) |             |
|  | n        | %           | n        | %           | n           | %           |
| No resuscitation, comfort therapy                                  | 3        | 4.3         | 40       | 56.3        | 5           | 4.3         |
| No resuscitation if CPA  | 2        | 2.9         | 22       | <b>31.0</b> | 107         | <b>93.0</b> |
| Medication, defibrillation, no chest compression, no intubation    | 23       | 33.3        | 1        | 1.4         | 2           | 1.7         |
| Medication, no defibrillation, no chest compression, no intubation | 40       | <b>58.0</b> | 4        | 5.6         | 1           | 0.9         |
| Other  | 1        | 1.4         | 4        | 5.6         | 0           | 0.0         |

Bold characters are used for correct answers.

**Table 3** Physicians' judgment of the mental competence of the do not resuscitate (DNR) patients

| Mental competence of DNR patients | Period 1 |      | Period 2 |      |
|-----------------------------------|----------|------|----------|------|
|                                   | n        | %    | n        | %    |
| Absent                            | 35       | 25.0 | 21       | 18.3 |
| Present                           | 105      | 75.0 | 94       | 81.7 |
| p=0.195                           |          |      |          |      |

**Figure 2** Involvement rate of Do Not Resuscitate (DNR) patients in the DNR decision with respect to mental competence (clinical assessment) and mental state (measured by the Mini-Mental State Examination (MMSE) score).

P2 ( $p < 0.01$ ) whereas roughly the same percentage of patients were considered mentally competent during P1 and P2 (75% compared with 81.7% respectively) (see table 3). As the nine physicians answered all 255 questionnaires anonymously, we are not able to assess if the result is attributable to a few or all clinicians. Nurses participated in 57.9% and 67.8% of DNR decisions respectively in P1 and P2, and the family in 30.7% and 33.9%, independently of the mental competence of the patient or his diagnosis. Senior doctors were not often involved in DNR decisions: 47.1% during P1 and 53.9% during P2; the involvement of family doctors was minimal, being <8% in both periods. All these results did not statistically differ between the two periods.

In Figure 2 patients with a MMSE score  $\geq 24$  increased their participation from 6.1% in P1 to 48.5% in P2 ( $p < 0.01$ ) and patients with an MMSE <24 from 23.8% to 47.1% ( $p < 0.001$ ).

## DISCUSSION

Our study shows that a better understanding of the meaning of a DNR code by junior physicians and an increased participation of mentally competent patients can result from an explanation about the clarification of DNR definition and the ethical basis of a DNR order.

Introduction of a single code (DNR) with a clarification of its components (application only to a full cardiopulmonary arrest with withholding of all elements of CPR and no limitation of other therapeutic interventions) helped physicians to understand more accurately the definition of a DNR order. Indeed, only 31% of the answers given by physicians about what they meant by writing a DNR order (no resuscitation at all in the event of a cardiopulmonary event) were correct in the preintervention period according to DNR local hospital guidelines, versus 93% in the postintervention period. The main confusion lay between comfort therapy/no resuscitation versus no resuscitation at all. Several intervention studies which aimed at clarifying the procedures included in, and linked to, DNR orders as well as their documentation chose detailed treatment limitation order forms.<sup>5, 8, 20-22</sup> They all showed improvements in some aspects of DNR order

implementation: clarity of DNR documentation<sup>5, 20, 22</sup>; understanding of which treatments should be withheld after initiation of a DNR order<sup>5, 22</sup>; increased documentation of discussion with patients<sup>21</sup>; or reasons for DNR orders.<sup>8</sup> However, few assessed specifically the understanding among physicians. We can postulate, however, that unclear DNR order documentation reflected poor understanding of DNR order definition. La Puma *et al* showed that, within the same team, physicians differed markedly in their definition of their DNR order by including in various proportions different life saving therapies (43% for antiarrhythmics to 93% for no chest compression) in the DNR definition.<sup>1</sup> They also often disagreed on plans to withdraw or withhold life sustaining therapies. Mittelberger *et al* showed that 88% of DNR orders were not clearly documented before intervention.<sup>20</sup> Heffner *et al* reported that agreement among residents and attending physicians regarding the clinical setting to which DNR applied, the limited or full DNR status, and the limitation of other care was moderate to fair before intervention.<sup>22</sup>

Because we suspected ignorance about DNR issues among our junior doctors, we first aimed at clarifying DNR before addressing other complex issues such as the limitation of life sustaining interventions. Unlike other intervention studies, however, we preferred a single DNR code which included all aspects of no cardiopulmonary resuscitation to a detailed procedure specific DNR order form. We thought it would be difficult and unnecessarily distressing for all patients to discuss and understand the details and technical aspects of each item of cardiopulmonary resuscitation during the patient physician dialogue about resuscitation issues unless patients requested them. We believed that DNR orders should reflect patients' global expectations and desires relating to immediate life saving measures. Our intervention seems to work, since no other measures except those directly related to CPR were included in the DNR definition during P2.

Furthermore, the increase in patients' participation is noteworthy and indicates that beside the fact that the physicians defined the DNR code better, they also integrated some ethical dimensions of DNR. The medical literature mentions patients' participation rates as being between 18% and 30%.<sup>5, 8, 20, 23</sup> Some intervention studies did not increase the patients' participation.<sup>5, 20</sup> It may be that the lack of familiarity of the Swiss physicians in training with DNR issues made them more amenable to an improvement in discussing these difficult matters with patients. Surprisingly, the increase in patients' participation in DNR orders was also obtained in patients with a MMSE <24 (half of them having a score between 20 and 23 (see figure 2)). Some recent studies suggest a positive correlation between patients' decision making capacity and MMSE scores, 23 or 24 being the threshold.<sup>24, 25</sup> Although MMSE was designed to evaluate cognitive disorders and not to assess decision making ability (it does not address the four skills pointed out by Appelbaum *et al*<sup>26</sup>: communicating choices, understanding relevant information, appreciating the consequences of a decision and manipulating information rationally), this result is confusing. Unfortunately, we do not know how physicians involved their patients in the DNR decision. That is to say we do not know whether they communicated the information so that patients were able to make informed decisions, or merely conveyed the decision to the patient. It may be less stressful to discuss such matters with patients suffering from a slight mental impairment. This result could also indicate, however, that physicians did not properly evaluate their patients' ability to make decisions and did not correctly apply DNR orders. Other actors (nurses, family) did not improve their participation rate after the intervention.

Our results indicate that, before the intervention, our physicians were mostly unaware of the definition and use of DNR orders. This situation can be explained by several factors. There is little or no training in medical ethics in the pregraduate years of Swiss medical studies. The Swiss Academy of

Medical Sciences, which regularly lists recommendations about medical ethics in Swiss medical journals, has never produced a clear statement about the definition and the use of DNR. Finally, use of DNR orders in Switzerland has only been assessed once until now.<sup>17</sup>

Improvement could be obtained at many level: first by introducing ethical seminars into medical studies; second by requiring that national medical authorities provide model guidelines for the correct ethical use of DNR orders; by encouraging hospitals to apply these guidelines, and fourth by conducting further studies on such issues. Although, to our knowledge, neither the media (unlike the UK) nor the courts in our country have been involved in issues regarding withholding or withdrawing therapies where the patient is ignorant of this, we should not wait for such events to happen before changing the present situation.

Some points deserve further discussion. The percentage of DNR patients in our study (16% and 19%) was unexpectedly higher than those mentioned in the literature (3% to 10% in studies excluding intensive care units).<sup>5 27-31</sup> Two explanations can be offered. First, the patients in our medical department may be older, more severely affected or with worse prognoses than those studied in previous reports. We lack data, however, to support this hypothesis. Second, those studies are exclusively American and attitudes towards life and death may be rather different, for cultural as well as judicial and insurance reasons. Furthermore, contrary to what happens in the USA, Swiss junior physicians occasionally involve senior physicians in the DNR decision who may be more restrictive in implementing DNR orders and deciding the patient's DNR status. Finally, the limited knowledge of DNR ethics may lead to more DNR orders being written and also may be responsible for physicians writing inappropriate DNR orders.

Our study has several limitations. We studied the effect of a single intervention, where repeated interventions may be warranted to test their impact in the long term. Moreover, P2 started only one month after the intervention, when the new information was still fresh in all physicians' minds. In other studies, the delay was longer.<sup>5 20</sup> Ideally, we should have randomised patients to an informed and an uninformed group of physicians. Our department is too small and the number of physicians in training too low to prevent sharing information between the groups. Finally, we did not assess the quality of DNR discussions between physicians and patients.

## CONCLUSION

The understanding and application of DNR orders depends on both a clear definition of DNR orders and information on the need to obtain patients' participation. In this way, our intervention was successful. The percentage of patients involved in the discussion is, however, still low. Improvement should take place at many levels and requires changes of attitudes from our medical schools, hospital directors, and national medical authorities.

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