

Care of Elderly Patients with DNR Orders in Singapore – A Descriptive Study

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ABSTRACT

Objective: To describe the demographic profile of a cohort of elderly patients with a 'do-not-resuscitate' (DNR) order at death and to study the specific supportive measures instituted or withdrawn during the DNR period and those in force at the time of death.

Methods: The case notes of patients who died between October 1996 and March 1997 in the Department of Geriatrics, Alexandra Hospital were studied retrospectively by a single observer.

Results: Only 95 out of an eligible 102 patients' case notes could be retrieved. Seventy-two (75.8%) patients had a DNR status at death. The racial distribution was as follows: 90.3% Chinese, 5.6% Indians, 2.8% Malays and 1.4% Others while their pre-admission domicile were: own home 79.2%, nursing home 19.4% others 1.4%. Those bedbound constituted 48.6% of the cohort while 29.2% had dementia and 43.1% were totally dependent for their activities of daily living. The commonest cause of death was pneumonia while the average duration patients were on the DNR status was 5.1 days before death. The commonest measures instituted during DNR period were as follows: oxygen therapy (38.9%), nasogastric tube insertion and feeding (30.6% and 33.3% respectively), intravenous fluid administration (33.3%), blood investigations (33.3%), opioid use (33.3%) and antibiotic use (29.2%). Measures withdrawn were intravenous fluid administration (36.1%), hourly monitoring of parameters (22.2%), antibiotics (13.9%), high dependency care (12.5%) and nasogastric tube feeding (6.9%).

Conclusion: The DNR status is decided late in the course of a patient's illness when he may have been too ill to partake in the decision making process. Even if a DNR status was ordered, a patient might still be subjected to CPR at death.

Keywords: conservative management, end-of-life issues, palliative care, dying

INTRODUCTION

The "do-not-resuscitate" (DNR) order has been in existence for the past 20 years. Many groups have proposed guidelines for the use of DNR orders⁽¹⁻⁴⁾

including one by Sahadevan et al⁽⁵⁾ which proposed a policy for its use in Singapore. Numerous studies have been carried out to identify the rate of use of the DNR order in various settings, the attitudes of patients, relatives and physicians towards the DNR order, the circumstances leading to a DNR order and the quality of care resulting from a DNR order⁽⁶⁻⁸⁾.

Very few studies however, have looked into the specific interventions and supportive measures instituted or withdrawn during the period of the DNR order⁽⁹⁾. When the DNR order is instituted, the doctor intuitively knows what he or she should not do, ie. to institute cardiopulmonary resuscitation or to afford extraordinary life-sustaining treatment when the patient collapses. However, the specific and 'active' measures considered appropriate in the management of these patients are still not clearly defined. Some physicians consider nasogastric tube feeding and intravenous fluids as unnatural life-sustaining measures and as such, should not be instituted in patients with the DNR status.

Before proposing specific guidelines as to what can be considered supportive measures or interventions, it would be prudent to first look at the current practice in the management of patients annotated the DNR status.

The primary aims of this study were therefore twofold. Firstly, it was to describe a group of elderly patients who were designated DNR status in terms of demographic profile, premorbid status, domicile before admission, duration of admission and duration on conservative management before death. Secondly, it was to describe the current practice in the management of these patients by way of looking at the specific supportive measures instituted or withdrawn during the period leading up to their deaths. The secondary aim of this study was to see if there was any difference in the premorbid condition, mean age, cause of death and measures/interventions instituted in patients designated DNR status and those not designated so.

METHODS

The study population consisted of patients who had died between October 1996 and March 1997 in the Geriatric Department of Alexandra Hospital, a 400-bedded district general hospital which is managed by

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the Ministry of Health of Singapore. The admission criteria for the Geriatric Department itself is age-based with the cut-off age being 75.

The names of these patients were obtained from the list of the weekly mortality round of the department. Their case records and charts were then studied retrospectively by a single observer. During the pilot study, we noted that several surrogate terms were frequently used to denote a DNR status. These included the following: conservative management, not-for-active resuscitation, not for intubation, supportive management, not for any antibiotics, comfort measures and palliative care. Although these phrases form a rather disparate group, they had a common point, ie. that the patient was not to be actively resuscitated when he or she collapses in the ward. For purposes of simplicity, we will use the terms DNR and conservative management interchangeably throughout this article.

We then studied the patients in terms of the following:

- 1) demography, domicile before admission, premorbid condition and duration on conservative treatment before death,
- 2) the specific supportive measures or interventions that were instituted or withdrawn during the conservative treatment period and those that were in force or in-situ at the time of death for patients with a DNR status. We also looked at the measures that were instituted 5 days before death in non-DNR patients.

The data were collected using the Microsoft Access software and analysed with the SPSS software programme.

The tests used to compare those who were and those who were not conservatively managed were the Student's *t*-test for mean age and Fischer's exact test for differences in the cause of death, the premorbid condition of the patients and the measures instituted before death.

RESULTS

One hundred and two patients were entered into the study. We were however, only able to retrieve and study 95 of these patients' case notes. Seventy-two (75.8%) patients had a DNR or conservative status recorded in their case notes before their deaths.

1) *The DNR or conservative group*

This group consisted of 30 (41.7%) men and 42 (58.3%) women. The mean and median ages were 83.6 and 83 years respectively. Chinese made up 90.3% of this group while Malays made up 2.8%, Indians 5.6% and Others 1.4%. Most of these patients came from their own homes (79.2%) although a sizeable proportion (19.4%) of them were admitted from a nursing home. Only 1 patient came from another hospital. Of these 72 patients, 48.6% (35) were bedbound, 29.2% (21) had a diagnosis of dementia and 43.1% were totally dependent on others for their activities of daily living prior to admission.

Duration of admission before death is shown in Table I. The mean duration of admission before death was 9.9 days whereas half (47.2%) of the patients died within the first 5 days of admission. The average duration patients were on conservative management was 5 days while the median duration was 4 days.

It can be seen from Table II that the commonest cause of death was pneumonia (48.6%) followed by stroke (12.5%) and septicaemia from bedsores (9.7%).

2) *Supportive measures/interventions instituted or*

Table I – Duration of admission before death for those with a DNR status

No. of days	Male (%)	Female (%)	Total (%)
1 – 5	12	22	34 (47.2)
6 – 10	2	6	8 (11.1)
11 – 15	10	6	16 (22.2)
16 – 20	2	3	5 (6.9)
21 – 25	1	3	4 (5.6)
> 25	3	2	5 (6.9)
Total	30	42	72(100.0)

Table II – Cause of death in those with a DNR status

Cause of death	No.	%
Pneumonia	35	48.6
CVA	9	12.5
IHD	9	12.5
Cancers	2	2.8
Sepsis from bedsores	7	9.7
Sepsis from UTI	5	6.9
Others	5	6.9
Total	72	100.0

withdrawn during conservative management and those in force or in-situ at the time of death for the DNR group

The results for the above are summarised in Table III. The last column of the table shows the supportive measures in force and lines, catheters and tubes in-situ at the time of death. The figures actually reflect those measures which were instituted before as well as during the conservative period that were not withdrawn or removed up to the time of death.

3) *Comparison between the conservative and non-conservative groups*

There was no significant difference between the mean age of those with a DNR status and those without. When comparing the premorbid condition between the two groups, we found the number of patients who were bedbound or totally dependent on others for their activities of daily living, to be significantly higher for the conservatively treated group. In the case of dementia there was no significant difference.

Similarly, there was no significant difference in all causes of death except for cancers which was more common in the conservatively treated group.

Table IV shows the measures that were instituted

Table III – Supportive measures/intervention instituted/withdrawn during conservative management and those in force or in-situ at the time of death

Interventions	Instituted (%)	Withdrawn (%)	At death (%)
NGT insertion	22 (30.6)	2 (2.8)	37 (51.4)
NGT feeding	24 (33.3)	5 (6.9)	34 (47.2)
Urinary catheterisation	14 (19.4)	1 (1.4)	23 (31.9)
Intravenous fluids	24 (33.3)	26 (36.1)	28 (38.9)
Antibiotics	21 (29.2)	10 (13.9)	46 (63.9)
Inotropic support	5 (6.9)	1 (1.4)	7 (9.7)
MICU care	0 (0)	2 (2.8)	0 (0)
HD care	7 (9.7)	9 (12.5)	9 (12.5)
Intubation	2 (2.8)	2 (2.8)	2 (2.8)
Chest X-ray	5 (6.9)	NA	NA
12 lead ECG	3 (4.2)	NA	NA
Blood investigations	24 (33.3)	NA	NA
CPR	7 (9.7)	NA	7 (9.7)
Nebulised salbutamol	4 (5.6)	2 (2.8)	12 (16.7)
Oxygen therapy	28 (38.9)	1 (1.4)	51 (70.8)
Hourly parameters	14 (19.4)	16 (22.2)	16 (22.2)
Opioids	24 (33.3)	0 (0)	27 (37.5)

NGT – nasogastric tube
 MICU – medical intensive care unit
 HD – high dependency unit
 CPR – cardiopulmonary resuscitation
 NA – not applicable

Table IV – Measures instituted in non-DNR patients 5 days before death

Interventions	Instituted (%)
NGT insertion	5 (21.7)
NGT feeding	4 (17.4)
Urinary catheterisation	7 (30.4)
Intravenous fluids	12 (52.2)
Antibiotics	13 (56.5)
Inotropic support	4 (17.4)
MICU care	2 (8.7)
HD care	5 (21.7)
Intubation	9 (39.1)
Chest X-ray	18 (78.3)
12 lead ECG	15 (65.2)
Blood investigations	20 (87.0)
CPR	21 (91.3)
Nebulised salbutamol	6 (26.1)
Oxygen therapy	15 (65.2)
Hourly parameters	9 (39.1)
Opioids	0 (0)

NGT – nasogastric tube
 MICU – medical intensive care unit
 HD – high dependency unit
 CPR – cardiopulmonary resuscitation

5 days before death in those patients who were not on conservative treatment. The measures instituted that were found to be significantly more common in the non-conservative group were: the use of antibiotics, the administration of CPR and the number who were intubated. Investigations performed, the use of oxygen and the use of nebulised salbutamol were also significantly more common in the non-conservative group. The other interventions were found to be not significantly different between the two groups.

DISCUSSION

Cardiopulmonary resuscitation (CPR) was introduced into medical practice some 30 years ago. It was originally designed for patients suffering an acute insult such as drowning, electrical shock, acute myocardial infarct, etc. The “do-not-resuscitate” (DNR) order came into use some 15 to 20 years later⁽¹⁰⁾.

In the Singapore context, the ‘DNR’ term is not as often used as in the West. Instead, many ‘surrogate’ phrases are in use to denote a ‘DNR’ status. While the phrase ‘DNR’ quite obviously means that the patient should not be actively resuscitated when he or she collapses, nonetheless there is some element of uncertainty as to what specific measures should be instituted, withheld or withdrawn when a patient is labelled ‘DNR’⁽⁹⁾. It is recommended that consideration be given at the time of writing a DNR order as to what other specific support measures that will or will not be instituted as a result of the DNR status^(11,12).

Our study population was made up of elderly patients. Thus the majority of them (75.8%) actually had a DNR status at the time of death. This high percentage is not unexpected since age is known to be positively correlated with DNR orders^(13,14). This high figure could also be due to the fact that the premorbid status of a large proportion of our patients was severely compromised to start with and a poor premorbid state is also associated with an increased likelihood of a DNR order⁽¹³⁾.

The racial distribution of the conservatively treated patients showed a predominance of the Chinese (90.8%). This was followed by the Indians (5.6%) and Malays (2.8%).

The majority of our conservatively treated patients were domiciled in their own homes. However, nearly 20% of them came from nursing homes and it was this group of patients who had the poorest premorbid condition. A proportion of these patients could have actually been left to spend their last few days in a nursing home rather than be sent to an acute hospital where the management would still have been palliative in nature⁽¹⁵⁾.

The mean number of days that our patients were on conservative management was 5.1 days. Most studies looked at the DNR order in terms of days after admission rather than number of days before death. Their results ranged from 7 to 9 days after admission^(9,12). The point that can be inferred from our study is that the DNR order is instituted rather late in the course of the patients’ illnesses. We can further extrapolate that these patients would be too debilitated by then to discuss their preferences with regard to resuscitation and management when death becomes imminent. Therefore not uncommonly, the decision for the DNR order is made unilaterally by the physician in charge although occasionally, close family members are involved in the decision making process as well (only in 2 of our patients was it recorded that the DNR status was discussed with the family members). This observation is in keeping with that seen in previous studies^(9,16) but may be at variance

with the guidelines set out by various groups where patient participation in the decision making process is emphasised^(1-5,17). This problem is slowly being redressed as seen by the practice of some geriatric centres in the West where all patients who are admitted are given a 'resuscitation status' within a day or two of admission regardless of their medical status. This is done in conjunction with the relatives and the patients themselves. In fact, the discussion of the patient's resuscitation status might even have taken place far in advance of the DNR order itself and not uncommonly, this might take the form of an advanced medical directive or living will.

Table II shows the supportive measures and interventions instituted or withdrawn during the DNR period and those that were in force or in situ at the time of death. It can be seen that physicians are less inclined to withdraw supportive measures if they were in force before the onset of the DNR order. The three measures most frequently withdrawn were intravenous fluids, hourly monitoring of parameters and antibiotics. Frequently, patients are weaned off intravenous fluids only to be put on nasogastric feeding. Doctors tend to view the latter as being better suited to meet the patients' nutritional needs right up to the last few days of their lives.

Surprisingly, a small but significant number of these patients were subjected to measures deemed inappropriate in the management of DNR patients. These measures included CPR 7 (9.7%), intubation 2 (2.8%), inotropic support 5 (6.9%) and high-dependency care 7 (9.7%). The provision of CPR is directly at tangent with the very essence of the DNR order. Obviously the doctors who had instituted CPR were not part of the regular team managing the patient in the day and were not aware of the DNR status of the patient. And these doctors probably subscribed to what Murphy described as the "medical last rites of the CPR" which every patient who collapses in hospital has to be subjected to^(18,19). It is possible too that documentation of the DNR status may not have been clearly highlighted in the case notes or that it was not communicated from the deciding physician through the health care team, including nurses to the doctor who finally performed the CPR.

The utilisation of nasogastric tubes and intravenous fluids feature prominently in the management of our patients. Some physicians regard these as extraordinary or artificial means of prolonging life and deem them inappropriate in managing patients who are hopelessly ill because they cause undue distress and discomfort to the dying patient. This latter view is still controversial and is currently being debated by specialists, ethicists and even theologians. The number of patients started on nasogastric feeding (33.3%) and intravenous fluid administration (33.3%) in our cohort of patients during the conservative period reflects this unresolved issue of whether it would be ethical to withhold feeding and hydration completely from patients with a DNR order, when death is near.

Investigations performed were mainly confined to blood tests although a small number also had electrocardiograms and chest X-rays performed.

It is heartening to note that opioids were used in 33.3% of patients prior to their deaths and 37.5% actually died with ongoing opioid treatment. These were used to control pain and breathlessness. One cannot overemphasise the importance of alleviating pain and suffering in dying patients where the goal of therapy is towards comfort and palliation rather than cure⁽¹¹⁾.

The common supportive measures in force at the time of death were as follows: oxygen therapy (70.8%), antibiotics (63.9%), nasogastric tube (51.4%), intravenous fluids (38.9%), urinary catheter (31.9%) and opioids (37.5%). A significant number of patients were subjected to rather 'aggressive' measures at death: CPR 7 (9.7%), high dependency care 9 (12.5%), inotropic support 7 (9.7%) and intubation 2 (2.8%). A proportion of patients (22.2%) were continued on hourly monitoring of parameters until their deaths. The 'parameters' that were usually monitored were the pulse rate, blood pressure and temperature. The most likely rationale for putting these patients on hourly parameters monitoring is to ensure that imminent death is detected early and that family members are duly informed and prepared for it. This is especially important if the family members had requested to be by the patient's side at the time of death. However, the common practice of monitoring all three of the above parameters may not be necessary. Perhaps, monitoring of a single parameter such as the pulse rate may suffice.

Finally, it is important to highlight a few limitations to this study. Firstly, there were many proxy or surrogate terms used to denote the DNR status. It is possible that they may have been mistakenly assumed to mean that the patient is not for active resuscitation. It is exquisitely difficult to fathom the exact meaning behind words, terms or phrases used in any form of communication. This is accentuated further in a retrospective study such as this. For example, when a doctor writes 'not for antibiotics', it may just mean exactly that and cannot be extrapolated to the resuscitation status of the patient.

The other problem with this study was the small number that was involved especially in the non-conservative group. This might have made comparison between the two groups inaccurate.

CONCLUSION

Therefore, one can summarise that the typical elderly patient with a DNR status would most likely be bedbound or totally dependent on others for his activities of daily living. The DNR status would have been instituted during his last admission, just 5 days before his death and he would not have partaken in the decision-making process because the physician in charge would have made it for him. Even if he had a DNR order, there is a small chance that he might still receive CPR and other inappropriate supportive measures at death.

Finally, the recommendations that can be made based on this study is that more patients should be involved in the decision-making process and this can only be done at an early stage of their illness. And when the decision for DNR has been made, it should be clearly written and displayed in the case notes and the exact measures instituted or withdrawn should be specified as such.

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