Dementia in Resuscitation Policy: A Prospective Study on a Psychogeriatric Ward in a Dutch General Teaching Hospital


Summary
Resuscitation decisions during the first 6 weeks were analysed for 97 admissions to a psychogeriatric ward of a general teaching hospital. Seventy-seven patients (79%) had a written ‘do not resuscitate’ (DNR) order on admission and 74 patients (87%) had a written DNR order after 6 weeks. Morbidity was assessed with a pre-arrest morbidity (PAM) index and a modified PAM index (MPI).

Dementia influenced the presence of a DNR order, both because lack of effectiveness of CPR and lack of quality of life. Age was related to a DNR order. The MPI was associated with the presence of a written DNR order, while the PAM score failed to reach significance. Six weeks after admission DNR orders were predictable by the four variables dementia, the use of antidepressants, age and PAM, in that order.

The association of the use of antidepressants with the presence of a written DNR order was surprising. The use of antidepressants is not the same as the diagnosis of depression. Because of the design, our results cannot permit any conclusion whether depression acts as an additional factor considered in decision-making in psychogeriatric patients. We suggest that depression and its correlates should be considered in discussions and studies about DNR.

Introduction
Severely demented patients respond poorly to cardiopulmonary resuscitation (CPR) [1], but physicians do not always regard CPR as futile for demented patients as the frequency of do not resuscitate (DNR) orders for demented hospitalized patients varies between 0 and 24% [2-4]. In contrast, most elderly non-demented patients and their families regard severe dementia as an exclusion criterion for CPR [5]. Because of the difference between the frequency of DNR orders and the wishes of elderly people, discussion between patients and physicians about preferences regarding life-sustaining therapies is required by law in the United States. In the United Kingdom, decision-making is taken by the medical team, on the basis of clinical judgement rather than on legal issues [6, 7]. On a somatogeriatric ward in The Netherlands, the resident decided the patient’s DNR status and discussed this decision with the patient or his or her family in only 24% of cases [8]. Thus, in the United Kingdom and in The Netherlands, the role of dementia in the process of DNR decision is not clear.

Two criteria which guide DNR orders are: ineffectiveness of CPR and poor quality of life before and after CPR [9].

Effectiveness of CPR: The pre-arrest morbidity (PAM) index of George et al. [10] has been developed for identifying patients in whom CPR may be ineffective [11, 12]. Short-term survival among patients with a PAM score of 0 was 51%, whereas no patient with a PAM score > 8 survived to discharge. Modifications of the PAM index may be needed, because George et al. did not consider the pre-arrest mental status of the patient. Based on a review of 32 CPR studies, we proposed a modified PAM index (MPI) [1]. In this MPI, the items dementia and age are included, but validation of this scale remains to be completed.

Quality of life: Dementia influences the quality of life. In 171 patients with a DNR order in a medical centre in Pennsylvania, 33% of the orders had been given because of poor quality of life [13]. The item ‘homebound lifestyle’ of the PAM score is an aspect of quality of life. For geriatric patients, however, items other than those more in the PAM index are apparently important in determining a DNR order. In a previous study, only 34% of the patients with a PAM score of 0 had a DNR order [14].

In order to determine the role of dementia in the process of DNR decisions, we studied which patient-related factors were associated with the presence of a DNR order in patients on a psychogeriatric ward of a
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Dutch general teaching hospital. By determining the relationship of the presence of a DNR order to comorbidity, the possible role of dementia in PAM and MPI was examined.

Methods

DNR decisions involving patients successively admitted to a Dutch psychogeriatric ward were described. The geriatric unit of the Slotervaart Hospital in Amsterdam includes 56 acute somato-geriatric beds and a ward of 24 psychogeriatric beds, serving an urban population of about 175,000 elderly persons. There are approximately 100 admissions annually to the 24 psychogeriatric beds. The patients are admitted to the psychogeriatric ward if they have cognitive disorders with associated serious behaviour or management problems or an acute medical disease, which complicates the symptom presentation and cognitive disorders.

Almost 75% of the admissions are of patients from home, and 25% are patients from nursing homes; only 1–2% are transferred from other inpatient wards. The mean number of diagnoses is four; 80% of the patients are demented, 15% are admitted with depression and 15% with delirium, hallucinations or paranoia. Apart from diseases related to cognitive disorder, the most common reasons for hospitalization are infectious diseases, typically a urinary tract infection (30%) or pneumonia (10%), followed by cardiovascular diseases (15%). The mean total length of stay is 82 days. Twenty per cent of patients are discharged to their homes, 60–70% to nursing homes, 2–5% to other wards and 10% die on the ward.

As elsewhere in the hospital, there are standard agreements on the studied ward concerning CPR policy and the management of cardiopulmonary arrests is by a special hospital CPR-team [15, 16]. For every patient without a DNR order CPR is obligatory. On the studied ward, there are approximately one to five resuscitations annually. No written agreement concerning DNR criteria exists.

Study sample: Demographic data including age, sex and marital status were collected for all patients admitted over a 1-year period, ending on 1 April, 1993. On two designated times, time I, on day of admission, and time II, 6 weeks after admission, the resident recorded the DNR status and the involvement of patient and family in any DNR decision. On admission, the PAM score was recorded by the resident and updated weekly, so that new health events could be included. After 6 weeks the MPI score was assessed [1]. After 2 weeks, dementia and cause of dementia were diagnosed according to DSM-III-R criteria [17]. This diagnosis was not completed for those who were discharged, transferred or died before 2 weeks. The assessment of cognitive disorder involved the Cognitive Screening Test (CST) [18]. The CST is an 18-item instrument with a maximum score of 20 (no cognitive failure).

In Dutch geriatric inpatients, the CST was found to be more reliable and the cut-off score of 12 was more specific with similar sensitivity for cognitive impairment when compared with the Mini Mental State Examination [19]. In double diagnosis, discrimination between the effects of dementia and depression is only possible after observation of the effect of antidepressant treatment. Therefore, the use of antidepressants, recommended by the supervising psychiatrist who routinely investigated all patients, was recorded. Throughout the study, the resident, the supervising geriatrician and the supervising psychiatrist involved on the ward remained the same.

The expected effectiveness of CPR was evaluated by the PAM and MPI score. Qualitative patient-related factors of DNR policy were evaluated by the relationship between DNR policy and dementia and the use of antidepressants. Non-patient related factors were studied through the involvement of patient and family in the DNR decision. Finally, the discharge status was recorded.

Statistical analysis: A cut-off score ≥ 3 was used for the analyses with the PAM and MPI Indices. The relationship between the demographic variables, length of stay, dementia, the use of antidepressants and the presence of a DNR order was determined; χ² and Student's t test were used with dichotomous and continuous variables respectively. For multiple variables a simple discriminant analysis was performed with written DNR order as the grouping variable. All levels for significance were set at 5%.

Results

Ninety-eight patients were initially included in the study. Data were incomplete for one subject. Within 42 days, six patients died and of these six, two had no DNR order. Only one CPR was unsuccessfully performed; the other patient was found dead in bed. Six patients were discharged and transferred within 42 days. At time II, 85 patients were on the ward. Table I shows the characteristics of the patients at both designated times. The frequency of written DNR orders at times I and II was 79% and 87% respectively. The presence of a DNR order was related to the percentage discharged alive (p = 0.001), mean CST (p = 0.004), mean MPI scores (p = 0.004) and age (p = 0.014). The DNR policy was not related to sex, marital status, length of stay or the cause of dementia.

Only one patient had a predetermined DNR order at admission. In cases of a written DNR order, four patients were involved in the decision. The family was involved in 67% of the DNR decisions. In 17% of the cases of a written DNR order, no family or friends were available. In 16%, the DNR order was not discussed with the family, although family or friends existed.

Day of admission, time I: For several combinations of

Table 1. Characteristics of psychogeriatric patients on admission (I), and 6 weeks after admission (II)

<table>
<thead>
<tr>
<th></th>
<th>I (n = 97)</th>
<th>II (n = 85)</th>
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<tbody>
<tr>
<td>Mean age (SD) years</td>
<td>82.8 (7.4)</td>
<td>82.4 (7.3)</td>
</tr>
<tr>
<td>Women, %</td>
<td>75</td>
<td>76</td>
</tr>
<tr>
<td>Spouse or partner, %</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>Dementia, %</td>
<td>67</td>
<td>69</td>
</tr>
<tr>
<td>Mean CST (SD)</td>
<td>9.1 (5.6)</td>
<td>8.8 (5.3)</td>
</tr>
<tr>
<td>Antidepressants, %</td>
<td>21</td>
<td>16</td>
</tr>
<tr>
<td>Mean PAM score (SD)</td>
<td>1.66 (1.93)</td>
<td>1.92 (2.44)</td>
</tr>
<tr>
<td>PAM &gt; 3 (n)</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Mean MPI score (SD)</td>
<td>-</td>
<td>3.65 (1.67)</td>
</tr>
<tr>
<td>Length of stay, days</td>
<td>61.6 (40)</td>
<td>66.9 (39)</td>
</tr>
<tr>
<td>% discharged alive</td>
<td>90</td>
<td>95</td>
</tr>
<tr>
<td>% DNR</td>
<td>79</td>
<td>87</td>
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PAM pre-arrest morbidity index [10]; MPI modified PAM index [1].
variables, DNR frequency was 100%. In those both with a PAM > 3 score and dementia, all the patients (n = 11) had a DNR order. The same was found for the patients with a PAM score > 3 and age > 83 years (n = 10) and for patients with dementia and the use of antidepressants (n = 5). Compared with other combinations of factors, the DNR frequency was lowest, 40%, in the group with PAM score < 4, where antidepressants were not used, dementia was absent and age < 84 years (n = 11).

*Period in between times I and II:* Within 42 days six patients left the ward and six patients died before discharge. Of the six who died, four had a written DNR order, four used antidepressants, three were demented and three had a PAM score > 4, one had a PAM = 3 and two had a PAM score of 0. Of those who were discharged alive within 42 days, five had a written DNR order, two used antidepressants, three were demented and one had a PAM score > 4 and 5 had a PAM score of 0.

*Time II, after 6 weeks:* Table II shows the changes of DNR decisions in a simulated decision tree with the smallest possible number of branches, noting the influence of the PAM score, the use of antidepressants, dementia and age. After 6 weeks, all patients (n = 15) with a PAM score > 3 had a DNR order. The same was found for the combination of a PAM score < 4 and the use of antidepressants (n = 9). Compared with other combinations of factors, the DNR frequency was lowest, 60%, in the group with PAM score < 4, where antidepressants were not used, dementia was absent and age < 84 years (n = 10).

*The MPI score:* After 6 weeks the MPI score was computed. Table III shows the distribution of the PAM and MPI scores. Using the cut-off point of PAM scores > 3 and MPI scores > 3, the MPI was significantly related to the presence of a DNR order (p = 0.03), while the PAM score failed to reach significance (p = 0.10) in its relation to DNR orders.

*Discriminant analysis:* Table IV shows the results of the discriminant analysis, with the DNR order as a grouping variable and CST, the use of antidepressants, age and the PAM and MPI scores presented with their standardized function coefficients on both designated times. At times I and II, a low CST score, suggesting cognitive failure, had the strongest relationship with the presence of a DNR order. On admission, the influence of the use of antidepressants and age were comparable. At both times, the PAM score had the lowest relationship with the presence of a DNR order. At time II, the use of antidepressants and the PAM score became more related with the presence of a DNR order. However, the MPI score had a slightly stronger relationship than the PAM score. After 6 weeks, the presence of a DNR order was more predictable.

**Discussion**

In this group of psychogeriatric patients in a Dutch general hospital, admitted with cognitive disorders, associated with serious behaviour disorders, management problems, and complicated with an acute medical disease, a high number of DNR orders was revealed. Although DNR policy is not governed by law, in only a minority had no effort been made to involve the patients or their families in DNR decisions. In this study, in accordance with the results of others, the presence of a DNR order was associated with dementia [5, 8, 12]. According to Murphy most demented elderly people would not want ‘high-tech’, but ‘high touch’ and ‘...DNR should be the default decision for demented patients who enter nursing homes for the rest of their lives’ [20].

Dementia affects both the effectiveness of CPR and the patient’s quality of life. In a former study, a weighted score for dementia was proposed for the MPI simply because of its supposed contribution to the effectiveness of CPR [1]. Yet, in this study in the discriminant analysis, dementia still predicted the presence of a DNR order when the MPI score was accounted for. This persisting influence of dementia on the presence of a DNR order supports the hypothesis for a double motive for a DNR order in demented patients who enter psychogeriatric wards.
patients: both the effectiveness of CPR and quality of life before and after CPR. Adding dementia with a higher score in MPI would make this scale into a DNR scale more sensitive to quality of life issues. Validation of this scale, as distinct from discussion of its desirability, remains to be completed.

In some cases, dementia and depression coexist. In these cases, diagnosis is difficult and may need an observation period of more than 6 weeks. Because of the difficulties in reliability and validity of depression rating scales and criteria in the presence of co-existing dementia, psychiatrists have often diagnosed relevant depression in patients without using the scales (or criteria) usual in non-demented subjects [21]. Response to antidepressants has been used as a criterion for resolving the diagnosis. Surprisingly, we found an association between the use of antidepressants and the presence of a written DNR order. We do not know how this relationship occurred. As stated above, the rationale of DNR orders involved two factors, the ineffectiveness of CPR and poor quality of life. The influence of depression on the effectiveness of CPR is unknown. A persisting depression can severely reduce the quality of life. A poor quality of life might be a reason for a written DNR order, but most doctors and patients do not regard depression as a reason for DNR. Miller et al., however, showed that 98% of doctors working in a general hospital recommended CPR for patients with depression [22]. Also, of 248 healthy non-demented elderly people living at home (with a mean age of 73) 60% would wish CPR if they were to suffer from a severe depression in the future [23]. In this group of psychogeriatric patients, our results might be explained by the use of antidepressants for behaviour problems of demented patients. Unfortunately, we did not register these behaviour problems. Finally, the physical symptoms that may be caused by medical illness can increase the overall prevalence of depressive episodes [24]. In the discriminant analysis, however, the use of antidepressants showed a stronger relation with a written DNR order than did the PAM score. Despite this strong relationship, our results do not permit any conclusion on whether depression acts as an additional factor in decision-making. A replication is needed where the estimation of depression is more adequately differentiated.

This study has several limitations. The group of patients is from a psychogeriatric ward, having both serious physical and psychiatric morbidity. These results cannot be generalized to other settings or other specialities of medicine. Our results may be biased for two reasons: first, the PAM score was recorded by the resident, who also participated in the DNR decision; second, in two of three cases families were involved in the DNR decision and most families regard severe dementia as an exclusion criterion for CPR [5]. This may partly explain the low overall threshold for DNR. As it was not our aim to study depression, our methods were not valid for assessing the patients who used antidepressants. For example, we had no data on co-morbidity of severe and related diseases such as Parkinson's disease or stroke, or features of the depression history that might relate to DNR policy. Therefore, the role of depression remains uncertain. We suggest that data on depression and its correlates are considered for inclusion in discussions and studies about DNR. Finally, The Netherlands has different legal traditions from other nations [25]. Whereas Dutch courts have tolerated, but not legalized, physician-assisted death for three decades, foreign courts lack a similar precedent. Recently, the judges of De Hoge Raad added mental suffering to the reasons justifying request for physician-assisted death [26, 27] (Chabot's Case 21-6 1994). In the USA, Sullivan et al. stated that it is often valuable to diagnose and treat depression in the seriously ill patient, but sometimes it is valuable to accept in such patients their decision to die [28].

References


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