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End-of-life issues experienced by the nurse-led rapid response team: An analysis of extent and experiences

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ABSTRACT

Objectives: To examine the frequency, clinical characteristics and nurse-led rapid response team experiences of calls that involve end-of-life issues.

Research methodology and design: The study consisted of two parts: 1) a retrospective journal audit of registered rapid response team calls for 2011–2019 that involved end-of-life issues, and 2) interviews with intensive care rapid response team nurses. The quantitative data were analysed with descriptive statistics and the qualitative data with content analysis.

Setting: The study was conducted at a Danish university hospital.

Results: Twelve percent (269/2,319) of the rapid response team calls involved end-of-life issues. “No indication for intensive care therapy” and “Do not resuscitate” were the main medical end-of-life orders. The patients had a mean age of 80 years, and the main reason for the calls was a respiratory problem. Ten rapid response team nurses were interviewed, and four themes evolved from the analysis: “Uncertain roles for the rapid response team nurses”, “Solidarity with ward nurses”, “Lack of information” and “Timing of decision-making”.

Conclusion: Twelve percent of the rapid response team calls involved end-of-life issues. The main reason for these calls was a respiratory problem, and the rapid response team nurses often found their role uncertain and experienced lack of information and sub-optimal timing of decision-making.

Implications for clinical practice: Intensive care nurses working in a rapid response team often face end-of-life issues during calls. Therefore, end-of-life care should be included in training for rapid response team nurses. Furthermore, advanced care planning is recommended to secure high-quality end-of-life care and to decrease uncertainty in acute medical situations.

Introduction

In 2006, the “5 Million Lives Campaign” was launched at a United States National Forum on Quality Improvement in Health Care. The goal of the campaign was to save five million lives in the U.S. in a period of two years (IHI, 2006). Some interventions in reaching this goal involved preventing deaths from heart attack by delivering reliable evidence-based care for acute myocardial infarction and deploying rapid response teams (RRTs) (IHI, 2006), also known as medical emergency teams or critical care outreach teams. Staffing of the teams varies, but the most common staffing consists of critical care nurses with a back-up from an intensive care unit (ICU) physician (Maharaj et al., 2015). The main purpose of the RRT is to enable early detection of critical illness, and RRTs have been found to significantly reduce the number of cardiac arrests and hospital mortality (Maharaj et al., 2015). However, studies have shown that for up to 30% of RRT calls, the main issue is the level of treatment and palliation rather than active treatment (Silva et al., 2016, Jones et al., 2012, Tan and Delaney, 2014, Pattison et al., 2015). The benefits of involving an RRT in decisions about the level of treatment are the possibility of identifying dying patients and improving palliative care (Hilton et al., 2013, Bouley, 2011, Pattison et al., 2018). However, the validity of decision-making about the level of treatment based on the
RRT’s suggestions can be affected because the RRT staff does not have knowledge of the patient’s full medical history (Hilton et al., 2013). Likewise, inclusion of the patient in decision-making is often compromised due to the patient’s deteriorating medical status, which activated the RRT call (Pearse et al., 2019, Pattison et al., 2015).

In 2010, a Danish hospital implemented an RRT consisting of nurses from the ICU. As in other countries (Silva et al., 2016, Pattison et al., 2015), some RRT calls have not involved active treatment but instead palliative issues. Likewise, the RRT has experienced that treatment level and end-of-life (EOL) decision-making have often not been clarified before the RRT but are brought up in connection with the call. However, little is known about how often these calls involve EOL issues, the clinical characteristics, and which role the RRT plays in connection with these patients. Therefore, the aim of the study was to examine the frequency, clinical characteristics and RRT experiences of calls that included EOL issues.

**Methods**

**Design**

The study consisted of two parts planned together: a quantitative part with a retrospective journal audit of all registered RRT calls that involved EOL issues and a prospective, qualitative part with interviews with RRT nurses.

**Setting**

The study was conducted at a Danish university hospital with acute care and trauma functions. The hospital has approximately 300 beds. The RRT can be called from the medical, neurological or surgical ward and offers interventions at the first signs of patient decline (IHI, 2006). A call to the RRT is triggered by basic observations of the patient’s vital signs and general health by using an early warning score (Skov et al., 2020). Additionally, the RRT can be called if the nurse in the parent ward is worried about the patient’s condition. A physician from the ward is expected to be present at the call. If further consultation is needed, an ICU physician can be called to the ward. The RRT nurse can provide clinical assistance and make recommendations but cannot make treatment decisions. If needed, the RRT can be called multiple times to the same patient. The RRT consists of ICU nurses with a two year specialisation on intensive care education and at least four years of nursing experience. In accordance with the general ICU staffing, 97 % of the RRT nurses are female.

**Journal audit**

In the retrospective part of the study, RRT journals from 2011 to 2019 were examined. The RRT was established in the study hospital in 2010, but data was only extracted from 1 March 2011, as this was the time when the RRT journal was fully developed. No major changes in the RRT set-up or in the RRT journal were made during the data collection period. To achieve quantitative data from a full eight years, data were included until 28 February 2019.

Journals where a medical order for withholding or withdrawal of life-sustaining treatment was made either before or during the call were included in the analysis. The registered limitations of treatments were “Do not resuscitate (DNR), “No indication for intensive care therapy” or “Other limitations of therapy”. Patient characteristics such as sex, age, reason for calling RRT, RRT interventions and status of the patient after interventions were also registered. Furthermore, the percentage of patients transferred to the ICU was registered. The total number of RRT calls (without follow-up calls) per year was recorded.

**Interviews**

To supplement the quantitative data, individual semi-structured interviews were conducted with RRT nurses, who encountered problematic clinical situations involving EOL issues (based on their own evaluation of a situation as “problematic”) during an RRT call (one interview per call). The interviews were conducted between 1 April 2018 and 30 November 2018 as soon after a call as possible (one to four weeks afterwards). The last author, female, who had a master’s degree in nursing science and was employed in the ICU both as a critical care nurse and as project leader, conducted the interviews. A pilot-tested semi-structured interview guide was constructed with open questions such as: “Will you please explain what happened on the RRT call?”, “Which problematic issues did you experience? – and why?” and “What could have been done differently?”. The interviews were conducted in an undisturbed ICU office, digitally recorded and transcribed verbatim. Furthermore, to nuance RRT calls including EOL issues, informal interviews were conducted with RRT nurses who had had unproblematic experiences with EOL issues during an RRT call. To achieve variation in experiences, ten interviews with problematic EOL issues and ten with unproblematic EOL issues were planned. All RRT nurses were informed verbally and in writing about the study and were asked to inform the project leader when they experienced EOL issues in connection to an RRT call. Presentation of method and findings conforms to the Consolidated criteria for reporting qualitative research Checklist (COREQ, 2015).

**Data analysis**

Quantitative data were analysed by descriptive statistics using the statistical software BE Stata 17.0. The qualitative data were analysed using content analysis (Graneheim and Lundman, 2004). Three of the authors took part in the qualitative analyses. The transcriptions were read several times, coded and condensed into meaning units and, through interpretation of the content, main themes were identified.

**Ethics**

Access to patient data without patient consent was granted by The Danish Patient Safety Authority (3-3013-1972/1), and the study was registered with the Danish Data Protection Agency (16/1586). According to Danish legislation, studies not involving experiments with participants do not need approval from ethics committees (Health, 2020). Therefore, this study which consisted of journal reviews and interviews with RRT nurses did not need permission from the Regional Committees on Health Research Ethics. All RRT nurses received verbal and written information about the study and were informed that participation in the study was voluntary and that data would be presented anonymously. All nurses were informed that their consent to participate could be withdrawn at any time until the data were analysed.

**Results**

**Quantitative RRT data**

From 1 March 2011 to 28 February 2019, 2,319 RRT calls to individual patients (excluding re-visits) were conducted (range 272–383 per year). Of these, 269 (12 %) had one or more EOL registrations made either before or during the call (i.e. “Do not resuscitate (DNR)”, “No indication for intensive care therapy” or “Other limitations of therapy”). The main EOL registrations were “No indication for ICU” (82 %) and “Do not resuscitate (DNR)” (69 %). The RRT calls with EOL issues were evenly spread over the different months of the year and during 24-hour periods with 39 % during dayshifts, 31 % during evening shifts and 31 % during night shifts. Patients came mainly from the medical (30 %), orthopaedic (24 %) and abdominal surgery (18 %) wards, which was in...
accordance with the distribution of the total number of RRT calls. The patients had a mean age of 80 years, and the main reason for calls was a respiratory issue (Table 1).

In 81% of the calls, at least one physician was present. In these, 68% of physicians came from within the ward, 30% from the Department of Anaesthesiology and Intensive Care and 2% from other specialities. The RRT suggested a number of different initiatives, with the main ones being oxygen and different medication, but there was also a substantial number of comments such as “Family is called”, “Do not want ICU treatment or resuscitation” or “Palliative care only”. For 49% of the calls, it was assessed that no further calls were needed; for 26%, a revisit was arranged; and for 25% other plans were made, mainly that the ward nurse could call the RRT again if necessary. Seven patients (3%) from the EOL registration group were transferred to the ICU compared with approximately 20% of patients from among the total number of RRT calls.

Interviews: problematic EOL RRT calls

Ten RRT nurses, all female with a median of 11 years of nursing experience (range 4–17), who had experienced problematic EOL issues were interviewed. None declined participation. For seven calls, no limitation of treatment decisions had been made prior to the call, and for three calls, a limitation of therapy had been made but was not adhered to. The interviews lasted an average of 6.5 min (range 3–12 min). Four themes evolved from the analysis: “Uncertain roles for RRT nurses”, “Solidarity with ward nurses”, “Lack of information” and “Timing of decision-making”.

Uncertain roles for RRT nurses

The nurses who responded to an RRT call where they experienced an EOL issue but where no clarification of the patient’s wishes or limitation of treatment decisions had been made often felt frustrated and powerless. The patients were seriously ill and very frail, and in the eyes of the RRT nurses, the level of therapy needed to be assessed.

The RRT nurses also experienced that the physicians who were present at the ward sometimes had not previously met the patient or did not have thorough knowledge of all the patient’s medical history. Consequently, no decision about the level of treatment was made, or only an overall decision such as “Do not resuscitate (DNR)” was made but without clear orders for what should be done in the current situation. The RRT nurses felt that they had a large responsibility for the patients, and they did not always know what to do. For example, an older patient had increasing respiratory problems after surgery. A DNR order had been issued, but no decisions had been made on the level of respiratory treatment. The ward nurses thought the patient should be transferred to the ICU for high-flow oxygen treatment, whereas the orthopaedic physician found the patient should just be optimised at the ward. The RRT nurse applied continuous positive airway pressure (CPAP) treatment, which only helped as long as it was provided. The nurse said:

“I found it hard to figure out what I should do, what my role was, because I didn’t find I could do anything that could improve this patient’s condition and it was why they had called me, but I couldn’t do anything that could help her” (I.2)

Another patient had had multiple visits from the RRT team due to respiratory problems with a need for frequent CPAP and suctioning, which the ward nurses could not provide. The RRT nurse experienced that the situation was untenable, but no physicians made decisions about whether to transfer the patient to the ICU or withdraw life-sustaining treatment. The patient died after 1.5 weeks.

Solidarity with ward nurses

The RRT nurses understood that the ward nurses often felt insecure and frustrated because they, in very busy shifts, had the responsibility for seriously ill patients without clear orders for the level of treatment. One RRT nurse was called to a patient she assessed as moribund. She said:

“I found it hard… it wasn’t really me who should come, but she [the nurse] had called me because she had no one else to call” (1.7)

For this patient, a withdrawal of treatment decision was made with the help of the ICU physician, the family was called, and the patient died.

In three cases, the ward physician was not present or had difficulty making a decision, and the RRT called an ICU physician to make a decision about the level of treatment. None of these patients were assessed as candidates for ICU or further treatment. Instead, they received palliative care in the ward.

Lack of information

An RRT nurse was called to one patient four times in one day, and only during the last call was it revealed that a decision on limitation of treatment had been made during daytime several hours earlier when the patient was deteriorating. The parent ward physician had not documented it in the journal.

In another case, a patient was transferred to the ICU for respiratory therapy because the RRT staff was informed that there was no limitation of treatment. However, when the patient was transferred and there was time to read the hospital record, it turned out that a decision on no ICU had been made. The nurse said:

Table 1

<table>
<thead>
<tr>
<th>Characteristics of RRT calls involving end-of-life issues</th>
<th>EOL calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of calls, n</td>
<td>269</td>
</tr>
<tr>
<td>EOL registration 1, n(%)</td>
<td>412</td>
</tr>
<tr>
<td>No indication for ICU</td>
<td>203</td>
</tr>
<tr>
<td>Do not resuscitate (DNR)</td>
<td>183</td>
</tr>
<tr>
<td>Other withdrawal of therapy</td>
<td>26</td>
</tr>
<tr>
<td>Patient age, mean(range)</td>
<td>80 (32–98)</td>
</tr>
<tr>
<td>Female, n(%)</td>
<td>133 (49)</td>
</tr>
<tr>
<td>Parent wards, n(%)</td>
<td></td>
</tr>
<tr>
<td>Medical</td>
<td>82</td>
</tr>
<tr>
<td>Orthopaedic</td>
<td>65</td>
</tr>
<tr>
<td>Abdominal</td>
<td>48</td>
</tr>
<tr>
<td>Other</td>
<td>74</td>
</tr>
<tr>
<td>Mains reasons for RRT calls 1, n(%)</td>
<td>557</td>
</tr>
<tr>
<td>Respiratory issues2</td>
<td>330</td>
</tr>
<tr>
<td>Staff worries</td>
<td>72</td>
</tr>
<tr>
<td>Other2</td>
<td>155</td>
</tr>
<tr>
<td>Initiatives1, n(%)</td>
<td>798</td>
</tr>
<tr>
<td>Oxygen</td>
<td>132</td>
</tr>
<tr>
<td>Elevation of headboard</td>
<td>88</td>
</tr>
<tr>
<td>Arterial blood gas</td>
<td>84</td>
</tr>
<tr>
<td>IV fluid</td>
<td>65</td>
</tr>
<tr>
<td>CPAP</td>
<td>82</td>
</tr>
<tr>
<td>Other4</td>
<td>249</td>
</tr>
<tr>
<td>Plan, n(%)</td>
<td></td>
</tr>
<tr>
<td>Stay at the parent ward</td>
<td>250 (93)</td>
</tr>
<tr>
<td>Transferral to the ICU</td>
<td>7 (3)</td>
</tr>
<tr>
<td>Transferral to other ward</td>
<td>11 (4)</td>
</tr>
<tr>
<td>Died</td>
<td>1 (0.4)</td>
</tr>
</tbody>
</table>

Numbers are presented as mean/range (age) and number/percentages.

1. For “EOL registration”, “Main reasons for RRT calls” and “Initiatives” it was possible to choose more than one option. The numbers are the total number of registrations and the percentages are based on the number of registrations.
2. Includes Respiratory rate < 8, respiratory rate > 30, respiratory insufficiency, wheezing, and SpO2 < 90 despite oxygen.
3. Includes Heart Rate < 40 or > 130, Systolic blood pressure < 90, diuresis < 50 ml/4 h, acute change of consciousness.
4. Includes suction, inhalation, airway, elevation of foot of bed, intravenous access, blood, stomach tube, blood samples for culture, tracheal secretion for culture, urinary catheter.
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The dilemma was …….. that they [the ward staff] kind of didn’t provide the information that was needed to be able to make a decision, and she [the patient] and her husband should not at all have been through all this hubbub. However, they were very anxious in the ward about her situation, and she was so racheted with pain and they didn’t really dare to give her any analgesics. So with hindsight…she was better off coming here [to the ICU].” (I.1)

The patient died in the ICU after a few days.

Timing of decision-making

The nurses often experienced more than one RRT call for the same patient within a short time. In one case, the RRT nurse succeeded in stabilising the patient at the first call, and the nurse asked the ward physician to consider the level of treatment. At the second RRT call a few hours later, the patient could not cooperate anymore because of carbon dioxide accumulation, and it was therefore no longer possible to ask for her opinion about the level of treatment. Both the RRT nurse and the ward nurses were frustrated because the physician had had the chance to consider the level of treatment. At the second RRT call a few hours later, the patient could not cooperate anymore because of carbon dioxide accumulation, and it was therefore no longer possible to ask for her opinion about the level of treatment. Both the RRT nurse and the ward nurse were frustrated because the physician had had the chance to attempt a dialogue with the patient, but he missed the opportunity and then it was too late.

In another case, the RRT nurse was called to a patient who for some days had had a decreasing level of consciousness. No change in treatment or decision on the level of treatment had been made prior to the call, and when the RRT nurse came to the ward, she assessed that death could be imminent if no life-sustaining treatment was provided. The ICU physician was called, and the patient was transferred to the ICU but died within a few hours. The RRT nurse felt that the patient could have had a better death if a decision of limitation of treatment had been made prior to the call.

“I found it somewhat unethical. You could say she [the patient] didn’t feel anything, because she was not awake, but it could have been terminated in a fine way at the parent ward with her family around her, if a decision had been made about where we are in this, or if the family had been told that it looks bad and that we think she is dying”. (I.5)

Interviews: unproblematic EOL RRT calls

Additionally, ten informal interviews were conducted with nurses who responded to RRT calls where limitation of treatment decisions had been made prior to the call. Here, the nurses found the calls quite peaceful, as the plan for treatment was clear and the RRT could concentrate on optimising the patient’s care. Often the purposes were palliative, and respiratory actions inhalation, suction and CPAP, diuretics or pain medication was provided. Additionally, the RRT provided sparring and support for the ward staff.

Discussion

Twelve percent of RRT calls involving EOL issues were registered, with no indication for ICU and DNR as the main medical EOL orders. The main reason for the RRT call was respiratory problems. During calls with EOL issues, RRT nurses often found their role uncertain, in part due to a lack of information and sub-optimal timing of decision-making, but they strived to help the patient in the best possible way and understood the ward nurses’ challenges.

The number of RRT calls with EOL issues in the current study is lower than those found in some other studies, where the percentage was reported to be as high as 30% (Jones et al., 2012, Silva et al., 2016). One of the reasons for the discrepancy may be that in the current study, EOL issues were only registered if a medical order for withholding or withdrawal of life-sustaining treatment was made either before or during the call. The interviews elucidate that the RRT nurses additionally experienced a number of calls where they assessed that the call included EOL issues, but where no medical order regarding the level of therapy was made.

For calls where an EOL registration was made, almost all patients stayed at the parent ward and received palliative care there, sometimes with repeated assistance from RRT nurses. The informal interviews showed that these calls were experienced as peaceful and unproblematic for the nurses. By contrast, the interviews showed that when a decision had not been made, was not documented or was not shared with the RRT, sup-optimal patient trajectories were experienced with a lack of quality palliative care and, for some patients, an unwanted transfer to an ICU shortly before death, meaning dying in a new environment with unfamiliar healthcare professionals. This may also be inappropriate use of ICU capacity (Rewa et al., 2018). Even though an ICU transfer close to death may turn out to be beneficial for the patient due to a higher quality of palliative care, admitting dying patients to the ICU for the sole purpose of providing palliative care is in most cases not a desired solution. Quality of dying and death is of huge importance, primarily for the patient but also for the family who needs to get the chance to say goodbye to their loved one (Kurkowski et al., 2020). Therefore, focus on the provision of high-quality palliative care in the parent ward, perhaps with the help of palliative care specialists and/or RRT nurses, is warranted (Pearse et al., 2019), and EOL care should be part of the curriculum for the training of RRT nurses (Tan and Delaney, 2014, Pattison et al., 2018, Zimlichman and Ehrenfeld, 2018).

To be able to provide this, advanced care planning is necessary, and wherever possible, decisions on the level of life-sustaining treatment should be made before an acute deterioration may occur (Pattison et al., 2015, Zimlichman and Ehrenfeld, 2018, Pearse et al., 2019). This will also increase the possibility of involving the patient so decisions are in accordance with the patient’s values and wishes (Douglas et al., 2019, Brighton and Bristowe, 2016, Pattison et al., 2015).

A decision about the level of treatment should be as specific as possible and, where relevant, cover more than just a DNR order. The findings from the current study showed that a respiratory problem was the main reason for most RRT calls, but when this was not easily solved, the uncertainty of what to do left RRT nurses feeling frustrated and powerless. Other studies have likewise found that RRT staff experience moral distress during calls related to uncertain EOL issues (Callahan et al., 2021, Rotherham et al., 2022) and in unclear medical situations in general (Bunkenborg et al., 2022). Even though RRT guidelines state that a physician from the parent ward should be present, the data from the current study show that either this was not always adhered to, or the physician present did not know the patient. This reinforces the burden on the RRT (Bunkenborg et al., 2022).

The main strengths of the study are the combination of quantitative and qualitative data, a long period of data collection and an experienced RRT.

Limitations

Limitations include the single-centre study and the retrospective data, where EOL issues may have been present without this being registered. Likewise, it is not possible to know from the registration whether a DNR order or a decision not to offer ICU treatment was in place before the RRT call or whether it was decided during the call. Finally, identifying nurses experiencing EOL issues during RRT calls was dependent on the RRT nurses reporting this to the study staff. Some calls were probably not reported, but this was most likely random and was therefore assessed as not leading to selection bias in interviewees.

Conclusion

Twelve percent of RRT calls were registered as involving EOL orders, with no indication for ICU and DNR as the main orders. The main reason for these RRT calls was respiratory problems, and RRT nurses often found their role uncertain and experienced a lack of information and sub-optimal timing concerning treatment limitations/palliative
measures. EOL care should be part of RRT training and, to secure high-quality end-of-life care, advanced care planning is recommended.

Funding

The study received no funding.

Ethical statement

Access to patient data without patient consent was granted by The Danish Patient Safety Authority (3-3013-1972/1), and the study was registered with the Danish Data Protection Agency (16/1586). According to Danish legislation, the study did not need permission from the Regional Committees on Health Research Ethics (Health, 2020). All RRT nurses received verbal and written information about the study and were informed that participation in the study was voluntary and that data would be presented anonymously. All nurses were informed that their consent to participate could be withdrawn at any time until the data were analysed.

CRediT authorship contribution statement

Hanne Irene Jensen: Conceptualization, Methodology, Formal analysis, Writing – original draft, Writing – review & editing. Christina Kirkegaard Rasmussen: Investigation, Writing – review & editing. Trine Nørskov Haberlandt: Formal analysis, Writing – review & editing. Sabrina Schnølser Jensen: Methodology, Investigation, Formal analysis, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.iccn.2023.103411.

References


