CRNA awareness and experience with perioperative DNR orders

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Despite 2 decades of experience with do-not-resuscitate (DNR) orders, some controversy regarding their use still remains. By using a mailed questionnaire to a randomized sample of 500 active members of the American Association of Nurse Anesthetists, the present study explored the awareness, experiences, and opinions of nurse anesthetists regarding DNR orders for patients undergoing surgery. The purpose of the study was to evaluate the need for further education and discussion in this area. Of the 228 (45.6%) respondents, more than half had DNR policies at their facility, while the remainder reported no policy or were unsure whether a policy existed. Of those having policies, 67.2% indicated a policy of routine DNR suspension, approximately 20% had a policy of reevaluation, and the remainder were unsure of the type of policy. However, when asked what type of policy respondents thought was most appropriate, 54.2% favored a policy of reviewing the DNR order, with 95% advocating patient involvement in the reevaluation. Moreover, almost 90% of responding CRNAs indicated they would discuss DNR status with the patient before surgery. When a patient with a DNR order subsequently had an intraoperative cardiac event, 13% initiated resuscitation. Responding to a hypothetical question involving a patient with a DNR order, 42% to 48% of respondents indicated they would initiate resuscitative measures in such a situation depending on the cause of arrest.

Key words: Anesthesia, do-not-resuscitate, ethical issues, resuscitate.

Introduction
Since the inception of do-not-resuscitate (DNR) orders in the late 1970s, there have been many questions surrounding their use. During the last 2 decades, experiences with DNR orders have led to the development of protocols for their implementation and incorporation into overall standards of caring for patients. However, considerable ambiguity persists regarding DNR orders in the perioperative period. Views on this issue fall into 2 categories: one advocating automatic suspension of DNR orders during the perioperative period, and one supporting required review of the DNR order with suspension, revision, or retention based on collaboration with the patient and/or significant other(s). Some institutions have standardized policies regarding DNR orders during the perioperative period, while others do not. This has a direct impact on the nurse anesthetist and can be a source of confusion and controversy. A nurse anesthetist who does not agree with the policy from an ethical or legal standpoint may be in a potentially awkward position when faced with caring for a patient with an active DNR order. On the other hand, the nurse anesthetist may not be aware of the legal ramifications of the different...
types of policies and the subsequent impact of certain actions that could result in risk for charges of negligence or battery.

Only relatively recently have official recommendations been provided for the development of perioperative DNR policies by the American Association of Nurse Anesthetists (AANA)\(^{14}\) and the American Society of Anesthesiologists.\(^{15}\) Both support an individualized policy of required review.

The purpose of the present study was to determine nurse anesthetists’ level of awareness of their institution’s perioperative DNR policy and their experiences and opinions regarding surgical candidates with DNR orders.

**Method**

This study used a self-reporting method in the form of a 3-page, 19-item, self-administered questionnaire (Figure). The first 2 questions were designed to assess the nurse anesthetist’s level of awareness regarding the presence and type or absence of a departmental perioperative DNR policy. Questions 3 and 4 sought opinions about the different types of perioperative DNR policies. Questions 5 and 6 addressed the nurse anesthetist’s experiences caring for or refusing to care for patients with active DNR orders. Questions 7, 8, and 9 asked respondents to identify their beliefs about discussing and defining a patient’s perioperative DNR status and whether they would refuse to care for a patient with an active DNR order. Questions 10 and 11 addressed actual experience related to caring for a patient with an active DNR order. Some hypothetical situations were provided in question 12 to discern how the respondent would treat a patient with a DNR order who experienced cardiopulmonary arrest during surgery. Questions 13 through 19 pertained to demographics.

During the development of the tool used in the study, the survey studies of Clemency and Thompson\(^{16}\) and Franklin and Rothenberg\(^{13}\) were considered. Similar questions regarding the existence and type of departmental perioperative DNR policy,\(^{12}\) provision or refusal to provide anesthesia services to patients with active DNR orders, and actions taken during the arrest of a patient with a DNR order were included in the tool used in the present study.\(^{18}\) The tool used by Clemency and Thompson was 6 pages long. To optimize the response rate, the length of the tool used in the present study was limited to 3 pages.

To enhance the reliability of this instrument, all questions were close-ended, and there was only 1 data interpreter. A response option of “other” with a request for a description was included in 4 questions. Evidence of content-related validity was obtained from a panel of experts in the field of nurse anesthesia. A pilot test was undertaken during the month of October 1995 to ensure clarity and completeness of the tool.

The survey sample consisted of active certified and active recertified members of the AANA. Three identical copies of randomized mailing labels of 500 members were obtained from the AANA free of charge. Each selected member received a questionnaire (Figure) and cover letter. In an attempt to maximize the response rate, a stick of chewing gum was provided as a gift to the respondents with the cover letter, as well as a preaddressed stamped return envelope. In addition, the mailing labels and preaddressed return envelopes were correspondingly identified by number so that a follow-up mailing could be performed. To maintain anonymity, there were no identifying marks on the questionnaire itself. The questionnaires and return envelopes were separated when opened, and the return envelopes were discarded once the corresponding address labels had been eliminated from the follow-up mailing list.

Of the 500 surveys that were distributed, 230 were returned and 2 were eliminated for a response rate of 45.6% (n = 228). A subsequent mailing was not performed owing to monetary restraints.

Nonparametric statistical analysis of the data was performed using frequency and percentage distributions. Available membership data from the AANA for fiscal year 1995 are presented with the survey data for age, sex distribution, and type of nurse anesthesia program attended.

**Results**

The following data are based on the number of appropriate responses for each question, not necessarily on the total number of surveys returned. The demographics of the respondents are summarized, followed by descriptive analysis of each question.

Age and sex distributions for the sample population and the AANA membership are displayed in Table 1. Responses to questions about the practice setting are given in Table 2. Participants were asked how long they had been practicing as nurse anesthetists. Results are given in Table 3.

The type of nurse anesthesia education program attended is given in Table 4, which compares the survey results with demographic information.
Please mark the choice that best matches your response in the context of your role as a nurse anesthetist.

1. Does your anesthesia department/institution have a policy addressing DNR orders in the perioperative period?
   ___ Yes   ___ No   ___ Unsure

2. If your answer to question #1 was yes, please describe this policy, otherwise skip to question #3.
   ___ Routine suspension, patient informed   ___ Required review, patient involved
   ___ Routine suspension, patient not informed   ___ Required review, patient not involved
   ___ Unsure   ___ Other (please describe)

3. Describe the perioperative DNR policy you believe to be the most representative of the standard of practice in healthcare institutions nationwide:
   ___ Routine suspension, patient informed   ___ Required review, patient involved
   ___ Routine suspension, patient not informed   ___ Required review, patient not involved
   ___ Unsure   ___ Other (please describe)

4. Describe the perioperative DNR policy you believe to be the most appropriate:
   ___ Routine suspension, patient informed   ___ Required review, patient involved
   ___ Routine suspension, patient not informed   ___ Required review, patient not involved
   ___ Unsure   ___ Other (please describe)

5. Have you ever cared for a patient with an active DNR order?   ___ Yes   ___ No

6. Have you ever refused to care for a patient with an active DNR order?   ___ Yes   ___ No

7. Would you (in the future) refuse to care for a patient with an active DNR order?   ___ Yes   ___ No

8. Who do you believe should be responsible for defining a patient’s DNR status in the preoperative period?
   (Check all that apply.)
   ___ Surgeon   ___ Primary Care Physician   ___ Anesthesiologist
   ___ Nurse Anesthetist   ___ Patient   ___ Other (please specify)

9. Would you discuss a patient’s perioperative DNR status (active or suspended) directly with the patient (or their surrogate if the patient lacks the capacity to make his or her own healthcare decisions) prior to providing anesthesia services?
   ___ Yes   ___ No

10. Have you ever provided anesthesia services for a patient with an active DNR order who went into cardiopulmonary arrest?
    ___ Yes   ___ No

   If your answer to question #10 was no, please skip to question #12.

11. Please indicate any actions taken, that were not already implemented, in response to the arrest: (Check all that apply for the type of anesthetic that was provided.)

<table>
<thead>
<tr>
<th>Vasoactive drug administration</th>
<th>MAC*</th>
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<td>Positive pressure ventilation</td>
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<td>Cardioversion/defibrillation</td>
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12. In the future, if you had agreed to provide anesthesia for a patient with an active DNR order who went into cardiopulmonary arrest during surgery, which of the following actions do you believe would be appropriate to perform that had not already been implemented for each of the following situations? (Check all that apply for each type of anesthetic.)
**a**) The cause of the arrest is due to the anesthetic:

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- Vasoactive drug administration
- Positive pressure ventilation
- Endotracheal intubation
- Chest compression
- Cardioversion/defibrillation

**b**) The cause of the arrest is due to something other than the anesthetic:

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- Vasoactive drug administration
- Positive pressure ventilation
- Endotracheal intubation
- Chest compression
- Cardioversion/defibrillation

**c**) The cause of the arrest is unknown:

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- Vasoactive drug administration
- Positive pressure ventilation
- Endotracheal intubation
- Chest compression
- Cardioversion/defibrillation

**Demographics**

13. **Age:**
   - 20-29
   - 40-49
   - 60-69
   - 30-39
   - 50-59
   - 70+

14. **Gender:**
   - Male
   - Female

15. **Practice Setting:**
   - **a** Urban
   - Rural
   - **b** Teaching
   - Nonteaching

16. **Institution Sponsorship:**
   - Private
   - Federal government
   - State/county/city government

17. **How many years have you practiced as a nurse anesthetist?**
   - < 2 years
   - 2-5 years
   - 5-10 years
   - 10-20 years
   - 20-30 years
   - > 30 years

18. **Does your practice setting have any of the following? (Check all that apply.)**
   - Nurse anesthesiology program
   - Anesthesiology residency program
   - Anesthesia assistant program

19. **Type of anesthesia program attended: (Check all that apply.)**
   - Certificate
   - Baccalaureate
   - Master’s

*Thank you for your time and consideration. Please return your completed questionnaire in the envelope provided.*

*MAC indicates monitored anesthesia care; GETA indicates general endotracheal anesthesia.*
obtained from the AANA. Goodness of fit testing showed a significant difference between the survey population and AANA membership ($P<.05$). Therefore, the results of this study cannot be considered representative of the population of nurse anesthetists based on type of nurse anesthesia program attended.

The level of awareness regarding perioperative DNR orders was explored in survey questions 1 and 2. When asked whether their department or institution had a policy addressing DNR orders in the perioperative period, 228 participants responded as follows: yes, 127 (55.7%); no, 49 (21.5%); and unsure, 52 (22.8%).

The subsequent question was intended for participants who answered yes to question 1 in an attempt to obtain information about the type of policy. Those who responded yes to question 1 were directed to identify in question 2 the type of policy in place (Table 5).

Question 3 asked respondents to choose the perioperative DNR policy they believed to be the most representative standard of practice in healthcare institutions nationwide. Routine suspension with the patient being informed had the highest response rate; the perioperative DNR policy that respondents believed was most appropriate, however, was required review with patient involvement (see Table 5).

When asked in question 5 whether they had ever cared for a patient with an active DNR order, 203 (89.0%) of 228 responded yes, and 25 (10.9%) responded no. Only 5 (2.2%) of 228 respondents had refused to provide anesthesia services to a patient with an active do-not-resuscitate order.
patient with an active DNR order. Slightly more, 22 (9.7%) of 226, would refuse to provide anesthesia services to a patient with an active DNR order in the future.

Respondents were asked in question 8 to denote any individual they believed should be involved in defining the patient’s DNR status during the perioperative period. Of 225 respondents, 165 (73.3%) indicated the surgeon should be involved; 150 (66.7%) indicated the surgeon should be involved; 145 (64.4%) indicated the primary care physician should be involved; 124 (55.1%) indicated the anesthesiologist should be involved; and 114 (50.1%) indicated the nurse anesthetist should be involved. Of the respondents indicating “other,” 44 (19.7%) specified family. The clergy or pastoral care, the hospital ethics committee, or hospital administration were also specified in the “other” category by a small number of respondents.

Respondents were asked in question 9 whether they would discuss a patient’s perioperative DNR status directly with the patient (or the patient’s surrogate) before providing anesthesia services. Of 224 responding, 200 (89.3%) responded yes, while only 24 (10.7%) responded they would not.

Nurse anesthetists were asked in question 10 whether they had ever cared for a patient with an active DNR order who experienced cardiopulmonary arrest. Of the 225 respondents who answered this question, 31 (13.8%) answered yes, while 194 (86.2%) answered no. Participants who responded positively were asked to indicate the actions taken in response to the arrest in question 11. This data comprised a total of 31 respondents describing 48 events (Table 6).

Question 12 requested participants to consider a hypothetical situation in which they were
providing anesthesia services for a patient with an active DNR order who went into cardiopulmonary arrest under 3 circumstances:

1. The cause of the arrest was the anesthetic.
2. The cause of the arrest was something other than the anesthetic.
3. The cause of the arrest was unknown.

Data obtained for each of these scenarios are given in Table 7.

In Tables 6 and 7, no data are given under general endotracheal anesthesia for positive pressure ventilation and endotracheal intubation. A plan for general endotracheal anesthesia would include endotracheal intubation with or without positive pressure ventilation. The intent of question 12 presumed the anesthetic was already in progress (the arrest occurred during surgery), and, therefore, a patient receiving general endotracheal anesthesia already would be intubated. Whether the patient receiving general endotracheal anesthesia also received positive pressure ventilation was not specified in the question. Since it is difficult to reliably analyze these results due to variable interpretation in these particular areas, these data were excluded from analysis.

### Discussion

Question 1 of the survey requested respondents to indicate whether their anesthesia department or institution had an established perioperative DNR policy. Simply by observing the percentage distribution for responses to this question, it would seem a need exists for further education about this topic. Little more than half of the respondents (55.7%) indicated their department or institution had an established perioperative DNR policy, leaving 21.5% without a policy and 22.8% unsure. These results are similar to those of Franklin and Rothenberg who attempted to assess the policy and practice of anesthesiology departments in regard to
management of the presurgical patient with a DNR order. They found only 50% of respondents (university hospitals with anesthesia residency programs, n = 104) had a DNR policy specifically for the presurgical patient.

While DNR orders for the surgical candidate are not referred to specifically in federal guidelines and accreditation requirements, their language would suggest that a mechanism be present so patients could be involved in this area of decision making. The Joint Commission on Accreditation of Healthcare Organizations’ standards regarding DNR orders specifically address the institution’s responsibility to establish mechanisms so the patient may be involved in all aspects of care, including decisions to withhold resuscitative services and decisions relative to care and treatment at the end of life.7,18

The law that governs DNR orders in New York took effect in April 1988 as New York State Public Health Law, Article 29-B.19 It addresses all aspects of DNR orders, including definitions; decision making by adults, surrogates, and on the behalf of minors; dispute mediation; and nonhospital DNR orders. The purpose of this law is to “clarify and establish the rights and obligations of patients, their families, and healthcare providers regarding cardiopulmonary resuscitation and the issuance of orders not to resuscitate” (§2960). This legislation, however, is not enforced proactively.

A more actively enforced law is US Code §1395cc, subsection f,20 which requires institutions to have written policies and information regarding the right of the patient to refuse treatment and formulate advanced directives, although DNR orders are not referred to specifically to receive Medicaid reimbursement. The original statute for this law came from the Omnibus Budget Reconciliation Act of 1990; the pertinent section is often referred to as the Patient Self-Determination Act.

In question 2, participants who responded that there was an established perioperative DNR policy were asked to indicate the type of policy. A policy of routine suspension was indicated by 67.2% of respondents, with the patient being informed in 63 (77%) of 82 cases. Almost 19% indicated a policy of required review, with the patient being involved in 18 (78%) of 23 cases. For question 4, the majority of respondents believed a policy of required review was most appropriate (54.2%), and almost all (112/116 [96.6%]) believed the patient should be involved in this decision-making process. Of those who believed routine suspension to be the most appropriate, 77 (92%) of 84 indicated that the patient should be informed. When the results of questions 2 and 4 were compared, it was noted that some nurse anesthetists may be practicing under a policy with which they do not agree (routine suspension instead of required review), which could present a moral or ethical dilemma.

The relevance of this issue is reaffirmed by the fact 89.0% of respondents indicated they provided anesthesia services for patients with DNR orders. It would not be unreasonable to assume it is likely that nurse anesthetists will encounter this situation at least once during their careers. Therefore, it is important for nurse anesthetists to be aware not only of their institution’s policy, but also of the implications of the particular policy. For example, if a policy of routine suspension without informing the patient is in place, there is the potential for legal repercussions. If the patient were to arrest and be resuscitated, the institution, anesthesia provider, or both could potentially, although unlikely, be held liable for battery in a court of law by the patient or family regardless of the outcome.21 If there is no established policy, it would behoove the nurse anesthetist to initiate aid in the development of such a policy. Despite recommendations by the AANA and American Society of Anesthesiologists for policies of required review, survey data from the present study expose the apparent failure of anesthesia departments to adhere to guidelines set forth by their professional organizations.

Respondents were somewhat evenly split between preferring policies of routine suspension (84/214 [39.2%]) vs required review (116/214 [54.2%]). Anesthesia providers may prefer policies of routine suspension so they need not be faced with the decision of whether to provide services to a patient due to a personal moral conflict with a patient’s desires. Those favoring required review may prefer that the patient choose to suspend the DNR order but still believe the patient has the right to be involved in this decision-making process.

Question 8 asked participants to indicate who they believed should be involved in defining a patient’s DNR status before surgery. It is encouraging that 73.1% would include the patient in this decision-making process. This is relatively consistent with results from question 4 in that the majority (52.3%) of respondents chose a perioperative DNR policy of required review involving the patient as the most appropriate. If the respondents had been truly consistent, the percentages would be equal, because a policy of required review involving the patient is the only policy that
supports allowing patients to participate in defining their perioperative DNR status. This discrepancy is likely due to the difference in wording of the 2 questions.

More respondents believed the surgeon (66.1%) and the primary care physician (63.6%) should be involved in defining a patient’s DNR status before surgery than the anesthesiologist (54.9%) and nurse anesthetist (50.2%). The person who will provide anesthesia services may not meet the patient until just before the scheduled surgery. Therefore, some participants may prefer that the decision be made by those who will see the patient several times before surgery instead of leaving the patient’s DNR status undecided until that day. In departments of anesthesia where patients are seen before the day of surgery, it might be useful to have an established protocol for handling this issue.

While only 50.2% of respondents indicated nurse anesthetists should be involved in defining a patient’s DNR status before surgery, almost all (89.3%) would discuss patients’ DNR status (active or suspended) with them before providing anesthesia services.

Thirty-one respondents (13.8%) who reported they cared for a patient with an active DNR order who experienced cardiopulmonary arrest during the operative procedure were asked to indicate the actions taken in response to the arrest. Those who indicated actions were taken in response to cardiopulmonary arrest imply disregard for the DNR order. This question did not ask for clarification about who made the decision to initiate or who performed the resuscitative efforts, so it may not be the nurse anesthetist who pursued resuscitation. An explanation for the cause of arrest also was not requested, but this certainly may have affected the decision to overlook the DNR order and institute cardiopulmonary resuscitation. Perhaps the cause of the arrest was so obvious and easily reversible that the individuals involved in the case were unable to withhold treatment. Whatever the reason or intent, the fact remains that actions were performed when a specific agreement with the patient was in place clearly outlining the actions would not be performed, potentially leaving the practitioner(s) open to charges of battery regardless of the outcome.

The following information was obtained from question 12. Despite the fact that this question specifically stated they would be caring for a patient with an active DNR order, more than 40% of respondents would perform every treatment listed for each type of anesthetic.

The responses to questions 11 and 12 indicate a need for further education regarding perioperative DNR orders. Administering resuscitation, particularly chest compressions, cardioversion, or defibrillation, to a patient with an active DNR order to the extent that survey participants did in question 11 implies a lack of awareness of or disregard for the potential consequences of this action. The fact that so many respondents would administer resuscitative measures to a patient with an active DNR order as evidenced in question 12 has similar implications.

When a competent patient chooses to refuse a treatment, the healthcare provider should comply with the patient’s wishes or facilitate transfer of care to a provider who will. It may be due to this lack of awareness that so few respondents (9.7%) reported that in the future they would refuse to care for a patient with an active DNR order. The consequences of intentional disregard of a patient’s express wishes to forego a potentially life-saving treatment must be considered seriously by the anesthesia provider before agreeing to provide care to a patient with an active DNR order. Understandably, this places the anesthesia provider in the difficult position of trying to honor patient autonomy and self-determination while using his or her own best professional judgment when evaluating and caring for a patient with a DNR order.

In evaluating the method for this study and the survey instrument, the following conclusions were made. A higher response rate might have improved the representativeness of the sample to the overall population. The availability of AANA membership demographics facilitated determination of representativeness based on sex, age, and type of nurse anesthesia education program attended, but the rest of the survey demographic information was not comparable with AANA data. It would have been more appropriate to have obtained the demographic information available from the AANA about the study population so that the same information could have been requested in the survey instrument for comparison.

The information obtained from question 12 regarding interventions for cardiopulmonary arrest was useful and elicited many worthwhile comments. It is a concern that such a large number of respondents would perform resuscitative actions when it was stated in the question they had agreed to honor the DNR. Some participants did not answer question 12, stating, for instance, that it was “too general a question.” Their comments were provocative, providing further insight into
Several respondents remarked that their actions for question 12 would depend on the directive discussed with the patient beforehand, the seriousness of the patient’s illness, whether the patient had a terminal illness, or the type of surgical procedure to be performed. One respondent wrote “my responses would not be automatic, rather they would be tailored to that individual’s needs and situation...I would confer with the surgeon on the degree of response.” A few participants commented that DNR orders in the operating room are “mutually exclusive” or “null and void” and, therefore, did not respond to the hypothetical situation provided or indicated that they would provide full resuscitative measures. The following comment was made: “If the patient wants to have surgery, the DNR should be suspended. Otherwise why do the surgery? If the patient does not want to stop the DNR, then don’t do the surgery.” This argument lacks consideration for patient autonomy. As stated by another participant, “In our OR [operating room], DNR orders are null and void—personally, I think it’s a terrible injustice to the patient!” To make decisions about patients’ care without involving patients or their surrogates or to coerce patients or surrogates into making the “desired” decision by threatening to withhold a treatment may not be ideal.

Recommendations for future study of perioperative DNR orders would include a follow-up survey of nurse anesthetists similar to the present study to assess whether level of awareness has increased and to determine further educational needs. The issue of perioperative DNR orders seems to be a current topic of interest in the literature. An improved level of awareness in future studies compared with this one could indicate that efforts to educate anesthesia providers via professional literature have been successful.

The results of the present study show a need for further education and discussion regarding perioperative DNR orders. The anesthesia provider must always take seriously any directives that might limit the provision of care to a patient. Routine suspension of DNR orders before surgery is not an ethically acceptable policy when patient autonomy and self-determination are considered. This does not mean that anesthesia providers must sacrifice their own moral views; they certainly may withdraw from the case if their views are irreconcilable with the patient’s. Communication with the patient, understanding among all parties involved, and detailed documentation of the subsequent agreement is essential before proceeding. An open collaborative arrangement such as this can only benefit the patient, family, and all healthcare providers involved in the patient’s care.

REFERENCES
(19) Orders Not to Resuscitate, Art 29-B, NYS Public Health Law 2960, 2970.

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