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DNR in the OR

A Goal-directed Approach

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IN 1993, the American Society of Anesthesiologists (ASA) adopted "Guidelines for the Anesthesia Care of Patients with Do Not Resuscitate Orders or Other Directives that Limit Care."§ Although these guidelines emphasize the need for review and reconsideration of orders to limit resuscitation before anesthesia or surgery, they fail to provide the anesthesiologist with guidance in how to counsel the patient in determining the most appropriate treatment choices or in how to document the decisions reached. As a result, the feasibility and usefulness of the ASA Guidelines remains limited. Our purposes are to provide a framework for guiding the negotiations between the patient and the clinicians and to suggest practical options for the management of do-not-resuscitate (DNR) orders during anesthesia and surgery. We believe this is essential if the ASA Guidelines are to acquire more widespread acceptance and implementation.

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§ American Society of Anesthesiologists: Ethical Guidelines for the Anesthesia Care of Patients with Do Not Resuscitate Orders or Other Directives that Limit Treatment. Approved by the House of Delegates, October 13, 1993.

‖ American College of Surgeons: Statement on Advance Directives by Patients: Do Not Resuscitate in the Operating Room. ACS Bulletin, September 29, 1994.

Background

The operating room continues to be a difficult environment for implementation of DNR orders, primarily because of the intimate relationship between the practice of anesthesia and resuscitation itself. Unlike any other hospital setting, in the operating room it is virtually impossible for the anesthesiologist to provide even routine anesthetic care if all procedures that are generally considered as "resuscitation" are prohibited.

Despite these concerns, commentators in the literature have expressed the virtually unanimous view that automatic suspension of DNR orders cannot be justified for patients who require a surgical procedure.[1–5] For example, the ASA Guidelines state, "Policies automatically suspending DNR orders . . . prior to procedures involving anesthetic care may not sufficiently address a patient's rights to self-determination in a responsible and ethical manner . . . Such policies . . . should be reviewed and revised." In other words, although it did not specify which resuscitation procedures should be withheld from patients with a DNR order, the ASA did state that it was mandatory for the order to be reconsidered and that automatic suspension was not appropriate. The American College of Surgeons has echoed these views: "An institutional policy of automatic cancellation of the DNR status in cases where a surgical procedure is to be carried out removes the patient from appropriate participation in decision making. Automatic enforcement without discussion and clarification may lead to inappropriate peri-operative and anesthetic management."‖

What effect have these guidelines had on practice? A 1991 study found that only ~ 50% of the anesthesiol-

ogy residency programs that responded to a survey had a policy for the management of DNR orders, and of these, 81% mandated suspension of the order.[6] A follow-up survey performed in late 1996 and early 1997 found that 71% of the anesthesiology residency programs that responded had a policy, and of these only 26% mandated suspension. Despite this trend toward compliance with professional standards, it is disturbing that of the 14 programs that stated they automatically revoke DNR orders for anesthesia, 5 implemented their policy after the ASA Guidelines were adopted.#

For the most part, the discussion and debate have developed in the context of little information about patients with DNR orders who undergo anesthesia and surgery. Recently, however, Wenger *et al.*[7] published a study that shed light on the circumstances and outcomes of surgery on these patients. They performed a subanalysis on the SUPPORT study database, which included detailed information on 4,301 seriously ill adults. Of this cohort, 745 patients underwent a surgical procedure, and 57 of these had a DNR order. The most commonly performed operation in these patients with DNR orders was tracheostomy, but the surgeries ranged from relatively minor procedures (such as placement of vascular access) to major procedures (such as liver transplantation and grafting of coronary artery bypass).

Of the 57 patients with a preexisting DNR order, 20 had notes in the chart effectively reversing the DNR order for the surgical procedure (10 had documentation in the medical chart that the orders were to be disregarded, 9 had the DNR order reversed preoperatively, and 1 had a note indicating that resuscitation was to be used, but the order was not reversed). Three patients (5%) had an intraoperative cardiac arrest, two of whom had had their DNR order reversed and who received resuscitation and the other for whom the DNR order was not reversed and who died without an attempt at resuscitation. The two patients who received resuscitation died, 1 and 5 days postoperatively. Overall, 31 (54%) of the patients with DNR orders who underwent surgery survived to leave the hospital, and 30% survived at least 4 months.

Data presented by David Waisel at the 45th Annual Meeting of the Society of Air Force Clinical Surgeons, San Antonio, Texas, April 7, 1998.

Specification and Documentation of Do-not-resuscitate Orders

Similar to the evolution of DNR orders themselves, the process for specifying and documenting these orders has changed over time. Initially, decisions to limit the use of life-sustaining therapies often were not documented at all and were simply a matter of word-of-mouth communication between the clinicians involved in the care of the patient. This is still standard practice in several European countries.[8] In the United States, however, this practice came under intense criticism when the media uncovered covert decision-making about resuscitation status by hospital clinicians in New York. This episode led to legislation in that state requiring documentation of DNR status.[9]

Although documentation of DNR orders is now considered mandatory, the form and structure of these orders varies considerably. Perhaps the most commonly used method of documentation is simply the three letters themselves, followed by the physician's signature. Although straightforward and apparently economical, this approach is dangerously ambiguous. "Resuscitation" can reasonably be interpreted to refer to a broad spectrum of activities, ranging from the trivial (positioning of the head to open the airway) to the profound (open cardiac massage). The three-letter acronym simply cannot communicate the level and types of interventions that may be appropriate in any particular case. In one study, for example, even physicians on the same clinical team often disagreed about which specific procedures were meant to be withheld by a DNR order.[10] In addition, the literature reveals that many caregivers inappropriately interpret DNR orders as limitations to a variety of procedures in addition to resuscitation.[10–12]

In response to these deficiencies, many hospitals have turned to procedure-specific DNR forms. The form currently in use at Children's Hospital in Boston is typical of this approach (fig. 1). It is intended to provide guidance in the event of cardiopulmonary arrest, especially for those caregivers who are not intimately familiar with the patient and the conversations that led to initiation of the DNR order. As such, it appears at the front of the chart for easy accessibility.

Clarity is the greatest advantage of the procedure-directed DNR order. By focusing on procedures, the form addresses in concrete terms exactly what will or will not be done in the event of a cardiorespiratory arrest. Mittelberger *et al.*[13] found, for example, that the number of ambiguous DNR orders decreased from 88 to

Children's Hospital

PHYSICIAN'S ORDERS: DO-NOT-RESUSCITATE

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PT. NAME

DATE OF BIRTH

This order sheet will appear first in the Physician's Orders Section. Do-Not-Resuscitate Orders must be renewed weekly. See the House Officer's Manual for additional information.

In case of cardiopulmonary arrest: Call a code ☐ Yes ☐ No

Regarding the following interventions (mark all that apply)

___ No supplemental oxygen
___ No oral airway
___ No intubation
___ No needle thoracentesis
___ No venipuncture
___ No arterial puncture
___ No arrest medications (epi, atropine, $NaHCO_3$, calcium, fluid boluses)
___ No deep suctioning
___ No bag and mask ventilation
___ No chest compressions
___ No chest tube
___ No electrical cardioversion

Additional Instructions:

Children's Hospital, 300 Longwood Ave., Boston, MA 02115

Attending Physician Signature	Date/Time	RN Signature	Date/Time
Attending Physician	(Print Name)		
Renewal: Attending Signature	Date/Time	RN Signature	Date/Time
Attending Physician	(Print Name)		
Renewal: Attending Signature	Date/Time	RN Signature	Date/Time
Attending Physician	(Print Name)		
Renewal: Attending Signature	Date/Time	RN Signature	Date/Time
Attending Physician	(Print Name)		

Discontinuation: Specify date and time this order is rescinded:

Attending Physician Signature	Date/Time	RN Signature	Date/Time

Fig. 1. Do-not-resuscitate order form, Children's Hospital, Boston, Massachusetts.

7% after implementation of a procedure-specific DNR order form. Two other studies also documented improved communication among physicians and nurses after adoption of procedure-specific DNR order forms.[14,15] This approach to DNR orders appears to be particularly well suited for management of patients who are cared for on hospital wards, where clear communication between a relatively large number of caregivers is difficult yet crucially important.

Unfortunately, this gain in precision and clarity comes at a price. If, for example, a patient requests a DNR order out of fear of a long-term stay in the intensive care unit and a high likelihood of a poor quality of life after resuscitation, the procedure-directed DNR order may lead a clinician to forgo treatment of an unexpected but easily reversible event (such as a relative overdose of an opioid, which could be quickly treated and reversed with assisted ventilation, oxygen, and naloxone). This illustrates the point that "proper understanding or interpretation of a DNR order is impossible without knowing the rationale behind it."[16] Procedure-directed orders require patients and caregivers to anticipate the most likely origins for problems and suffer from limited flexibility when the situation is not the one expected. For the most part, this trade-off has been necessary to achieve successful implementation of DNR orders in situations in which the patient has multiple caregivers. Unfortunately, the literal nature of procedure-directed orders may lead some patients to request of caregivers, "Do what I *mean* (goals, values, and preferences), not what I *say* (specific procedures or interventions)."

In their efforts to implement the ASA Guidelines for DNR orders during anesthesia and surgery, most hospitals have not surprisingly extended the procedure-directed DNR policies that are used elsewhere in the hospital into the operating room. Because these orders are designed to be implemented independent of the context and origin of the cardiopulmonary arrest, many anesthesiologists have complained that such orders lack sufficient flexibility and "tie their hands." In response, we suggest that the standard model for DNR orders should be expanded to an approach that protects the patient's autonomy and yet reflects the reality and unique aspects of the perioperative environment.

Goal-directed Approach to Do-not-resuscitate Orders

An alternative to the procedural approach is a goal-directed DNR order, which focuses on the patient's goals, values, and preferences rather than on individual procedures. The question of which procedures should be performed is left up to the judgment of the clinician at the time of cardiac or respiratory instability. This approach recognizes that patients are often less concerned with the technical details of the resuscitation than with more subjective and personal issues, such as "Will resuscitation be painful?" "Will I suffer severe neurologic damage if I survive?" "Will I require a long stay in the intensive care unit after resuscitation, with the need for mechanical ventilation, invasive procedures, and so forth?" Discussion of DNR status in terms of procedures rather than goals may be asking patients to think in a "foreign language" of terms that have little meaning or relevance for them. For example, many patients would be much less concerned with whether the physicians would treat severe hypotension with fluids, pressors, or neither, than with questions that reflect personal experience and outcome. This is particularly true when, in most cases, the procedures would be performed under anesthesia.

The goal-directed approach offers a number of distinct advantages for patients being cared for in the operating room. In the event of unexpected cardiac or respiratory instability, the anesthesiologist need not worry about having his or her hands tied, as long as the procedures chosen are consistent with the goals articulated by the patient before surgery. If the patient experiences an arrhythmia after receiving succinylcholine, for example, then several moments of chest compressions may be appropriate while the rhythm disturbance is corrected. If the patient suffers a cardiac arrest from a massive intraoperative myocardial infarction, however, then chest compressions may be inappropriate. The decision would be made by the anesthesiologist and surgeon at the time, based on intimate knowledge of the medical situation and the patient's values and goals.

Some anesthesiologists may be uncomfortable with the indeterminate nature of a goal-directed DNR order and may have ethical or legal concerns about having such important decisions rest solely on their best judgment at the time of the arrest. This is not a new problem, however, and is in fact commonly encountered in the operating room. For example, surgeons are often uncertain about what they will find during the exploratory portion of a procedure. Although they try to present the range of likely scenarios to the patient during the preoperative process of obtaining informed consent, the patient ultimately agrees to trust the surgeon to use his or her best judgment, depending on what is called for at the time

and in the particular circumstances. The goal-directed DNR order is a similar type of agreement applied to the possible occurrence of a cardiorespiratory arrest.

From a theoretical perspective, one could argue that goal-directed DNR orders should be recognized as the optimal approach for all settings. At a practical level, however, goal-directed DNR orders are likely to be feasible only when the caregivers who are immediately present for any adverse events are the same individuals who have had the in-depth discussions with the patient. This is almost never the case for patients cared for in intensive care units or on hospital wards, where the need for around-the-clock care requires a large number of physicians and nurses working in shifts. The risk of misinterpretation of the patient's goals at the time of an arrest is too great when this information is passed from caregiver to caregiver between shifts. Anything less than the immediate availability of caregivers with first-hand knowledge of the patient should be an indication for use of a procedure-directed order.

These relatively stringent requirements for the use of goal-directed DNR orders are often met during the perioperative period, however. The operating room is an environment in which a high priority is placed on an individualized and continuous approach to patient care. Surgeons and anesthesiologists who have intimate knowledge of the patient are continuously present. Other nonoperative situations in which goal-directed DNR orders may be effective may include interventional radiology settings or endoscopy suites.[17] Again, the necessary requirement would be for the immediate availability of physicians with intimate knowledge of the patient's goals and values. When this ideal situation is possible, then the flexibility and adaptability of the goal-directed consent may outweigh the clarity and specificity of the procedure-directed consent.

The goal-directed approach does have some limitations that must be addressed. Despite the immediate availability of the caregivers in the operating room, an obvious concern of anesthesiologists and surgeons is that they often do not have an opportunity to acquire an intimate knowledge of their patients before surgery. Although anesthesiologists must take a central role in defining a patient's resuscitation status, primary care providers should also be involved in the discussions with the intraoperative clinicians. This approach seems to be preferred by most anesthesiologists, who in one study indicated a desire to take "an active role with the surgeon and the primary care physician in defining the patient's DNR status in the peri-operative period."[18]

Another concern that could be raised about the goal-directed approach is whether knowledge of the patient's goals is actually an accurate predictor of what the patient would want. Fischer *et al.* explored this issue in the context of advance directives and found that the best correlation between goals and procedures occurred when the goals were either to use every means to sustain life or to use only procedures that would promote comfort. Not surprisingly, when the goals were related to more ambiguous concepts like the quality of life, the correlation was less reliable.[19] For this reason, we suggest that anesthesiologists attempt to translate the patient's goals into an action plan that minimizes the requirements for subtle judgments and prognostication.

In keeping with the aim of minimizing ambiguity while ensuring flexibility, we propose an approach that is built on three alternatives for the patient with DNR status who requests anesthesia and surgery. Although we emphasize the value of the goal-directed approach, we recognize that this requires a high degree of trust between the patient and the clinicians. Unfortunately, for personal, cultural, and societal reasons, this level of trust is not always obtainable.[20] In these circumstances, the procedure-directed approach may be the only avenue available for reaching agreement and therefore needs to be included as an option alongside the goal-directed approach. In conjunction with the option of fully suspending the DNR order, we believe that one of these three choices will capture the desires and wishes of the patient and provide an acceptable resolution for the anesthesiologist and other clinicians. The three options are discussed subsequently.

Full Attempt at Resuscitation

The patient or legal representative may request the full suspension of DNR status during the operative and immediate postoperative period, thereby consenting to the use of any resuscitative procedures that may be appropriate to treat adverse clinical events that occur during this time.

Limited Resuscitation Based on Particular Procedures

The patient or legal representative may elect to refuse certain specific resuscitation procedures, such as chest compressions or defibrillation. The anesthesiologist must educate the patient or legal representative about which procedures are essential to the suc-

cess of the anesthetic agent and the proposed procedure (*e.g.*, intravenous fluids, or, in some cases, endotracheal intubation) and which procedures are not essential and may be refused. Patients do not have the right to demand surgery while simultaneously refusing procedures that are essential to standard medical practice and to the success of the surgery. For example, anesthesiologists should feel no obligation to comply with a request for surgery to relieve an acute small bowel obstruction from a patient who refuses to have intubation of the trachea.

Limited Resuscitation Based on the Patient's Values and Goals

The patient or legal representative may choose to trust the anesthesiologist and surgical team to use clinical judgment in determining which resuscitation procedures are appropriate in the context of the situation and the patient's stated values and goals. For example, some patients may want full resuscitation procedures to be used to manage adverse clinical events believed to be quickly and easily reversible but to refrain from treatment for conditions that are not likely to be successful or that are likely to lead to new and unacceptable burdens for the patient.

Whereas documentation of a procedure-directed DNR order is usually best accomplished with a checklist, the goal-directed order generally requires a narrative account that summarizes the discussions that have occurred between the patient and the caregivers and outlines the goals and preferences of the patient that form the basis for treatment decisions during anesthesia. For each of the three options listed here, the order should indicate when the original DNR order will be reinstituted (generally when the patient leaves the postanesthesia care unit or is no longer under the care of the anesthesiologist). Table 1 summarizes the differences between the procedure-directed and goal-directed approaches to DNR orders.

The ASA Guidelines have rightfully emphasized the importance of shared decision-making between the patient and clinicians around treatment limitations in the operating room. Translation of DNR practices from the hospital wards and intensive care units into the operating room has not been successful, however, because of a failure to appreciate the many important differences between these environments. By giving the patient and the clinicians the option of deciding among complete suspension of the DNR order, limitations based on procedures, or limitations based on goals, we believe that the ASA Guidelines could achieve greater acceptance and implementation.

Table 1. Goal-directed *versus* Procedure-directed Consents

Goal-directed Consents	Procedure-directed Consents
Operating rooms, interventional suites for radiological procedures, bronchoscopy, etc.	Hospital wards, ICUs, emergency departments
Small number of caregivers	Large number of caregivers
Short time-frame (hours)	Long time-frame (days to months)
Detailed knowledge of patient	General knowledge of patient
Caregiver response flexible	Caregiver response defined
Narrative documentation	Checklist documentation

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