

# Cardiopulmonary Resuscitation and Do-Not-Resuscitate Orders: A Guide for Clinicians

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## ABSTRACT

The do-not-resuscitate order, introduced nearly a half century ago, continues to raise questions and controversy among health care providers and patients. In today's society, the expectation and availability of medical interventions, including at the end of life, have rendered the do-not-resuscitate order particularly relevant. The do-not-resuscitate order is the only order that requires patient consent to prevent a medical procedure from being performed; therefore, informed code status discussions between physicians and patients are especially important. Epidemiologic studies have informed our understanding of resuscitation outcomes; however, patient, provider, and institutional characteristics account for great variability in the prevalence of do-not-resuscitate orders. Specific strategies can improve the quality of code status conversations and enhance end-of-life care planning. In this article, we review the history, epidemiology, and determinants of do-not-resuscitate orders, as well as frequently encountered questions and recommended strategies for discussing this important topic with patients.

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The do-not-resuscitate order can invoke strong emotions among patients and health care providers, yet the order and its implications are often poorly understood. A do-not-resuscitate order prohibits the use of resuscitation measures in the event of cardiopulmonary arrest and applies only to the unresponsive, clinically pulseless patient. Cardiopulmonary resuscitation is the administration of chest compressions, typically in combination with artificial respirations, cardiac defibrillations, and intravenous medications. The term "code status" refers to a patient's decision about whether to receive cardiopulmonary resuscitation after cardiopulmonary arrest.

Whereas it was once considered a natural occurrence, the dying process is now marked by medical intervention.<sup>1</sup> This cultural shift, along with the availability of medical ther-

pies and procedures, has rendered the do-not-resuscitate order particularly relevant to end-of-life care. In this article, we review the history, epidemiology, and determinants of do-not-resuscitate orders, as well as frequently encountered questions and recommended strategies for discussing this important topic with patients.

## HISTORY OF CARDIOPULMONARY RESUSCITATION AND DO-NOT-RESUSCITATE ORDERS

When introduced around 1960, cardiopulmonary resuscitation was used mainly for intraoperative rescue. Although primarily efficacious for ventricular arrhythmia arrest, cardiopulmonary resuscitation was soon applied to scenarios for which it provided unclear benefit. In 1974, the American Medical Association issued a recommendation that code status be documented in the medical record. The first hospital policies regarding do-not-resuscitate orders were established in 1976, heralding a new era in which cardiopulmonary resuscitation became the default standard of care after cardiopulmonary arrest unless a do-not-resuscitate order was written with the consent of the patient.<sup>2</sup> Notably, a do-not-resuscitate order is the only order that requires pa-

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tient consent to prevent a medical procedure (cardiopulmonary resuscitation) from being performed.

Today, all hospitals and medical institutions are required by the Joint Commission to have formal procedures for discussing, documenting, and implementing do-not-resuscitate orders. Some hospitals use standardized do-not-resuscitate order forms that include a menu of interventions for the patient to accept or decline. At the Mayo Clinic, a do-not-resuscitate order implements a decision to withhold all components of resuscitation from the unresponsive, clinically pulseless patient. Notably, a patient with a do-not-resuscitate order may undergo elective intubation for respiratory failure. The Mayo Clinic's institutional policy mandates that the primary staff physician or a delegated prescriber (eg, resident physician) discusses the patient's wishes regarding resuscitative procedures within the context of overall goals. Review of the code status is encouraged whenever a new episode of care is initiated, there is a transfer of care, the patient undergoes a surgery or major procedure, or there is a significant change in the patient's clinical status.

## EPIDEMIOLOGY OF CARDIOPULMONARY RESUSCITATION AND DO-NOT-RESUSCITATE ORDERS

The prevalence of do-not-resuscitate orders varies by setting and patient population (0%-90%);<sup>3</sup> approximately 70% of inpatients have a do-not-resuscitate order at the time of death.<sup>4</sup> However, many of these do-not-resuscitate orders are written within a few days before death, thus serving as a surrogate marker for impending death rather than the result of a planned decision.<sup>4</sup> Cardiopulmonary resuscitation is performed on approximately 1% of hospital admissions<sup>5</sup> and in 30% of in-hospital deaths.<sup>5</sup>

Multiple studies have shown limited survival after cardiopulmonary resuscitation. Of patients who undergo cardiopulmonary resuscitation in the hospital, approximately 4 in 10 will have a return of spontaneous circulation,<sup>6,7</sup> and approximately 1 in 10 will survive to hospital dismissal.<sup>6</sup> Of patients who are successfully resuscitated and discharged, approximately 1 in 4 survive more than 5 years.<sup>5</sup> Situations that carry a more favorable prognosis include a healthy baseline status, younger age,<sup>8</sup> witnessed arrest, initial rhythm of ventricular fibrillation,<sup>9</sup> cardiopulmonary resuscitation for less than 10 minutes,<sup>8</sup> and respiratory arrest (as opposed to cardiac arrest).<sup>9</sup> For patients who survive resuscitation, their functional status often remains acceptable and

is closely linked with their prehospital status.<sup>9</sup> Nevertheless, many cardiopulmonary resuscitation survivors who were previously independent are dismissed to rehabilitation or skilled nursing facilities and occasionally are profoundly disabled.<sup>10</sup>

### CLINICAL SIGNIFICANCE

- Do-not-resuscitate is the only order that requires patient consent to prevent a medical procedure from being performed.
- Regional, patient, and provider characteristics account for significant variation in the prevalence of do-not-resuscitate orders.
- Comprehensive code status discussions, when conducted in a sensitive manner and individualized to patient goals and prognosis, inform this important clinical decision.

## Knowledge of Cardiopulmonary Resuscitation and Do-Not-Resuscitate Orders

Knowledge of the likely outcomes of resuscitation enables physicians to better guide their patients in making code status decisions. However, physicians, patients, and the general public grossly overestimate the likelihood of survival after cardiopulmonary resuscitation.<sup>11,12</sup> Most patients cite television shows as their primary source of information about resuscitation,<sup>11</sup> and such programs usually portray unrealistically high survival rates after cardiopulmonary resuscitation.

Because physicians often cannot predict which patients will survive cardiopulmonary resuscitation,<sup>1,13</sup> mortality prediction indices have been developed.<sup>14</sup> Although the sensitivity of these models has been disappointing, scores above a given threshold are highly specific for mortality.<sup>14</sup>

Information about cardiopulmonary resuscitation outcomes can influence patients' decisions, because patients tend to base their decisions on potential outcomes rather than on specific interventions.<sup>15</sup> Indeed, patients who are informed about cardiopulmonary resuscitation procedures and outcomes are more likely to forgo cardiopulmonary resuscitation in various health situations.<sup>16</sup> Patients who feel vulnerable may be particularly willing to accept interventions,<sup>17</sup> and this sense of vulnerability may be one reason that patients with poor prognoses often continue to choose aggressive care. Patients with substantial medical comorbidities tend to overestimate their prognoses and might be more accepting of life with significant disability.<sup>15</sup> Ultimately, physicians and patients must balance clinical judgment with the individual patient's underlying functional status, comorbidities, and care goals to arrive at an appropriate code status decision.

## Determinants of Do-Not-Resuscitate Orders

Whether or not a patient has a do-not-resuscitate order is influenced by many factors. Do-not-resuscitate orders tend to be more common in the West and Midwest compared with the Northeast and South.<sup>18</sup> Do-not-resuscitate order rates are higher among rural<sup>18</sup> and not-for-profit institutions;<sup>19</sup> however, studies conflict regarding the association with community versus academic medical centers.<sup>19,20</sup>

Given the same clinical scenario, pulmonary critical care physicians are more likely than general internists, who are more likely than cardiologists, to recommend a do-not-resuscitate order.<sup>21</sup> Although resident physicians more frequently recommend a do-not-resuscitate order as they gain experience, senior faculty are less likely than junior faculty to make such a recommendation.<sup>21</sup> **Patient factors associated with having a do-not-resuscitate order include advanced age,<sup>1,3,18,22</sup> female sex,<sup>1</sup> white race,<sup>3,18</sup> reduced cognition,<sup>3,18</sup> and diagnosis, especially cancer.<sup>1</sup>** Patients with numerous or **severe comorbid conditions** are more likely to request do-not-resuscitate orders;<sup>23</sup> however, patients' beliefs about their prognosis and health are more influential than the presence of individual chronic diseases.<sup>22</sup> Patients who reside in a nursing home<sup>3</sup> are less physically mobile,<sup>18</sup> more dependent in activities of daily living,<sup>1,18</sup> and less likely to want cardiopulmonary resuscitation. Nursing home residents with family contact or a durable power of attorney for health care are more likely to have a do-not-resuscitate order.<sup>3</sup>

## Education Regarding Do-Not-Resuscitate Orders

To improve adherence to patient preferences, heightened attention has been given to educating physicians and patients about code status discussions. Medical trainees are often inadequately educated in end-of-life communication<sup>24-26</sup> and lack confidence in discussing do-not-resuscitate orders.<sup>27</sup> Despite their lack of training and preparedness, resident physicians frequently participate in code status discussions.<sup>28</sup>

Educational interventions such as administrative prompts and physician workshops have resulted in better documentation, but not in improved communication or higher do-not-resuscitate order rates.<sup>29</sup> Interventions that engage physicians in a formalized process, particularly in a skilled nursing facility, can dramatically increase the documentation of code status orders.<sup>30,31</sup> Programs with adequate intensity and community involvement can significantly increase advance care planning and decrease undesired medical interventions near the time of death.<sup>32</sup>

## Conducting a Code Status Discussion

The code status conversation is an important and rewarding opportunity for physicians to communicate with their patients; however, the complexity and emotional elements of the topic also pose challenges.<sup>33</sup> Patients indicate that it might not be optimal to discuss code status and disclose a new diagnosis in the same conversation.<sup>34</sup> Nonetheless, code status discussions should occur promptly, before deterioration in clinical status precludes active patient participation.<sup>35</sup>

In **Figure**, we present guidelines to help providers achieve more thorough and meaningful code status conversations with their patients. When opening the conversation, physicians should be prepared to listen and maintain their

<p><b>Opening the conversation</b></p> <p>Focus on the patient and be ready to listen.</p> <p>Eliminate distractions (e.g. pagers) in a private and comfortable place</p> <p>Sit at eye level.</p> <p>Ask if the patient would like loved ones to be present.</p> <p>Establish trust.</p> <ul style="list-style-type: none"> <li>• Recognize and validate the patient's emotions.</li> <li>• Demonstrate appreciation for the patient's suffering.</li> <li>• Discern the patient's health care values and goals.</li> </ul> <p>Provide context.</p> <ul style="list-style-type: none"> <li>• Explain that discussion of code status is routine for all patients</li> <li>• Ask the patient to describe his or her medical condition.</li> <li>• Has the patient thought about what would happen if his or her condition deteriorated?</li> </ul> <p><b>Provide important content</b></p> <p>Describe procedures involved in CPR.</p> <ul style="list-style-type: none"> <li>• Chest compressions, defibrillations, intravenous medications, and artificial breathing</li> </ul> <p>Give likely outcomes of CPR.</p> <ul style="list-style-type: none"> <li>• 4 in 10 survive initial resuscitation</li> <li>• 1 in 10 survives to hospital discharge</li> </ul> <p>Ask about a health care surrogate decision-maker.</p> <p>Encourage the patient to discuss preferences with his surrogate.</p> <p><b>Check for comprehension</b></p> <p>Avoid vague and technical terminology.</p> <p>Use the ask-tell-ask technique.</p> <ul style="list-style-type: none"> <li>• Ask the patient to state her understanding, then reinforce or correct, and ask the patient again</li> </ul> <p>Ask "Why?"</p> <ul style="list-style-type: none"> <li>• Follow up patient decisions with questions to understand his or her values and reasoning.</li> </ul> <p>Respond to patient emotions.</p> <p><b>Closing the conversation</b></p> <p>Offer a professional recommendation.</p> <ul style="list-style-type: none"> <li>• Base recommendation on patient condition and priorities.</li> <li>• Clarify the difference between withholding CPR and withholding treatment.</li> </ul> <p>Establish a plan based on goals of care.</p> <p>CPR = cardiopulmonary resuscitation</p>
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**Figure** Communication tips for an effective code status discussion. CPR = cardiopulmonary resuscitation.

focus on the patient.<sup>36</sup> Sitting down in a private location without distractions can minimize the power imbalance between doctor and patient and facilitate a better discussion.<sup>34,37,38</sup> Patients might prefer that family or loved ones be present for the conversation.<sup>39</sup> The physician should use

behaviors that establish trust,<sup>34</sup> including recognition and validation of the patient's emotions,<sup>38</sup> appreciation for the patient's pain,<sup>37</sup> and discernment of the patient's health care values and goals.<sup>36</sup> By asking the patient to verbalize his or her own understanding of their condition, the physician can provide context for the conversation and an opportunity to correct misinformation.<sup>38</sup> A code status discussion should include patient-specific information regarding resuscitative procedures and anticipated outcomes. When providing such information, the physician should avoid medical jargon<sup>34</sup> and check for patient comprehension.<sup>40</sup> By responding to patients' emotions<sup>38</sup> and clarifying *why* they make specific choices, providers can elevate the conversation to a meaningful exchange rather than simply "going through the motions." Patients look to physicians for their professional advice, and doctors should be prepared to make a code status recommendation that is framed within the medical evidence and patient priorities. The code status conversation should close with an established plan of care<sup>41</sup> and an invitation for future discussions.

## ILLUSTRATIVE CLINICAL SCENARIOS RELATED TO DO-NOT-RESUSCITATE ORDERS

### Addressing Futility

A 67-year-old man with lung cancer develops widely metastatic disease despite appropriate treatment. The patient has poor oral intake and is admitted to the hospital with renal failure. His oncologist recommends palliative care. After a long and detailed discussion regarding code status, the patient indicates that he wants to remain full code.

Because individual and personal values influence code status decisions, physicians should always elicit their patients' opinions. Unilateral decisions are generally not acceptable, and "slow codes" (ie, a slow response to the need for resuscitation that allows death to occur) are morally indefensible.<sup>42</sup> Physician counseling is valuable because patients may not fully understand all variables relevant to do-not-resuscitate orders.<sup>43</sup>

In the above scenario, the physician should identify an appropriate time and confidential setting<sup>34,38</sup> to engage this patient in a meaningful discussion of his disease, prognosis, and specific goals of care. It can be helpful to invite other family members into the conversation and to have the patient describe his own understanding of his medical condition.<sup>38</sup> The physician should respond to the patient's emotions,<sup>38</sup> explore his beliefs and priorities,<sup>36</sup> and assess his understanding throughout the conversation.<sup>40</sup> A gentle physician recommendation for a do-not-resuscitate order is appropriate in this case, but must be given in a noncoercive manner. The discussion should close with a plan of care that balances clinical judgment with the patient's care goals and respects the individual's ultimate decision.<sup>41</sup>

### Boundaries of a Do-Not-Resuscitate Order

An 82-year-old woman with a history of diabetes mellitus and chronic kidney disease has an advance directive in which she indicated that she wants her code status to be do-not-resuscitate. The patient presents to the emergency department with dizziness and is found to be in atrial fibrillation with a rapid ventricular response. The patient consents to elective cardioversion to relieve her symptoms, but a physician questions carrying out this procedure for a patient with a do-not-resuscitate order.

Patients and clinicians sometimes interpret do-not-resuscitate orders to indicate a broader decrease in the intensity of care.<sup>44</sup> However, a do-not-resuscitate order does not imply that other medical procedures, including elective cardioversion, should be withheld.<sup>45</sup> Providers should be cognizant of patients' overall goals of care and recognize that patients who decline resuscitation also may want to forego other therapies, but such decisions should be discussed and made in concert with the patient.<sup>3</sup>

In the clinical scenario above, the patient's decision to pursue elective cardioversion should be verified with the patient and documented. Because do-not-resuscitate orders apply only when patients are unresponsive and pulseless, this patient's decision to receive cardioversion for atrial fibrillation does not conflict with her want for a do-not-resuscitate order in the setting of cardiac arrest. Her change in clinical status provides an opportunity to clarify the patient's care goals and to ask about a health care surrogate decision-maker.<sup>41</sup>

### Do-Not-Resuscitate Orders in the Operating Room and during Procedures

A 73-year-old woman with metastatic colon cancer is enrolled in hospice. She develops severe abdominal pain and is diagnosed with a large bowel obstruction for which she is offered a palliative diverting colostomy. The patient consents to the operation, but indicates that she prefers to maintain her do-not-resuscitate code status during surgery. The surgical team wants the do-not-resuscitate order suspended during the perioperative period.

Considerable controversy has surrounded the appropriateness of applying do-not-resuscitate orders to the operating room setting and during procedures that require sedation. Certain interventions that are used during cardiopulmonary resuscitation (eg, ventilatory support, vasoactive drugs) also are routinely used in the context of anesthesia. In addition, cardiopulmonary arrest in the operating room might be induced by anesthetics, and resuscitation generally has higher rates of success.<sup>46</sup> For these reasons, it is appropriate to reconsider do-not-resuscitate orders before operation.<sup>47</sup> Patients who choose to maintain their do-not-resuscitate status despite this information should have their decision respected.<sup>48,49</sup> However, do-not-resuscitate status in the operating room remains controversial with many providers, and a plan must be discussed in advance with the surgeon and anesthesiologist. If a patient chooses to suspend his or

her do-not-resuscitate order during operation, the specific time at which the do-not-resuscitate order is resumed should be clearly communicated and documented.

The goals of the surgery, anticipated procedures, and expected outcomes of cardiopulmonary resuscitation in the operative setting should all be discussed with the patient in this clinical scenario. The provider could explain that most patients choose to suspend a do-not-resuscitate order in the perioperative setting and explore reasons that she may want to maintain her current code status. The patient's ultimate decision should be respected, and a palliative surgery should not be withheld on the basis of a do-not-resuscitate order.

## CONCLUSIONS

The do-not-resuscitate order continues to raise questions and controversy nearly a half century after its introduction to the health care landscape. Epidemiologic studies have informed our understanding of resuscitation outcomes. Nevertheless, regional, patient, and provider characteristics account for great variability in the prevalence of do-not-resuscitate orders. Specific strategies can improve the quality of code status conversations and end-of-life care planning. By understanding the intent, definition, and boundaries of a do-not-resuscitate order, clinicians can navigate through common questions regarding its application. The do-not-resuscitate order carries clinical and ethical importance, and comprehensive code status discussions provide a rewarding interaction for both patients and physicians.

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