

## THE PENETRATING POINT

## Differentiating DNI From DNR: Combating Code Status Conflation

Anthony C. Breu, MD<sup>1,2\*</sup>, Shoshana J. Herzig, MD, MPH<sup>2,3</sup>

<sup>1</sup>VA Boston Healthcare System, West Roxbury, Massachusetts; <sup>2</sup>Harvard Medical School, Boston, Massachusetts; <sup>3</sup>Division of General Medicine and Primary Care, Beth Israel Deaconess Medical Center, Boston, Massachusetts.

Goals of care discussions, including those focused on code status, are meant to foster autonomous decision making. Unfortunately, these discussions often conflate decisions regarding the use of cardiopulmonary resuscitation for cardiac arrest and mechanical ventilation for prearrest respira-

tory failure. They also exclude discussions of outcomes, particularly those associated with prearrest respiratory failure. In doing so, they may fail in their intention of extending patient autonomy. *Journal of Hospital Medicine* 2014;9:669–670. © 2014 Society of Hospital Medicine

Since the introduction of defibrillation and closed chest cardiopulmonary resuscitation (CPR) in the 1950s, the ability to revive an arrested heart has been a realized possibility. Around the same time, endotracheal intubation with mechanical ventilation (MV) came into wide practice, allowing doctors to augment or even replace their patients' breathing. But just as the 1950s and 1960s saw the rise of these enhanced medical techniques, they also saw the increased importance of medical ethics—in particular, patient autonomy. A natural reaction to medicine's use of CPR and MV was the advent of advance directives and more specific do-not-resuscitate (DNR) and do-not-intubate (DNI) orders meant to protect a patient's ability to remain autonomous with their end of life decisions.<sup>1</sup>

Unfortunately, the code status discussions that lead to these orders often collapse cardiac arrest with prearrest respiratory failure and CPR with MV.<sup>2,3</sup> This is a problem for a number of reasons. First, cardiac arrest and prearrest respiratory failure are unique end points, and though their respective treatments (CPR and MV) are often required simultaneously for an individual patient, they are distinct medical interventions with different goals, indications, and associated disease states. Although MV is typically a part of the cadre of interventions meant to ensure continued tissue oxygenation in the setting of a cardiac arrest, this accounts for <2% of indications for MV.<sup>4</sup> The vast majority of MV is used to treat prearrest causes of respiratory failure, such as pneumonia, congestive heart failure, acute exacerbations of chronic obstructive pulmonary disease, and following surgery.<sup>4</sup>

We do not believe these differences are adequately reflected in typical code status discussions.<sup>2,3</sup> One study using audio-recorded admission encounters included transcripts of hospitalist-led code status discussions that all resembled the following: "Physician: [I]f an emergency were to happen...and your heart would (stop) or your breathing became so difficult that you needed to be attached to machines, would you want the nurses and doctors to attempt heroic measures to try to restart your heart and attach you to a breathing machine?"<sup>2</sup> It would come as little surprise if a patient hearing this assumed that just 1 question were being asked and that decisions relating to any cause of respiratory failure (including prearrest causes) were being made. In practice, many physicians then extrapolate DNR orders to other treatment decision (including MV) and interpret them as precluding intubation, even for prearrest states.<sup>5–7</sup>

A second issue is that the mortality associated with cardiopulmonary arrest requiring CPR and prearrest respiratory failure requiring MV are not equal. Though the mortality after in-hospital cardiac arrest has decreased over the last decade, it remains >75%.<sup>8</sup> The outcomes for MV for isolated respiratory failure, on the other hand, are not as grim; studies of the general population typically report mortality rates <40%. Despite this, descriptions of outcomes are often left out of goals of care discussions.<sup>9,10</sup> For example, Sharma et al. recently reported that only one-third of residents, including those who had undergone training on goals of care discussions, discussed outcomes.<sup>9</sup> And when outcomes are included, they are typically for CPR but not MV as an independent intervention for prearrest respiratory failure.<sup>10</sup> Given that many of the conditions that lead to respiratory failure are among the most common reasons for hospitalization,<sup>11</sup> distinguishing between decisions regarding CPR and prearrest MV with discussion of their associated outcomes is of particular importance to hospitalists. Failing to do so impedes patients from making informed autonomous decisions that incorporate an accurate understanding of the treatments being discussed.

\*Address for correspondence and reprint requests: Anthony C. Breu, MD, VA Boston Healthcare System, Medical Service (111), 1400 VFW Parkway, West Roxbury, MA 02132; Telephone: 857-203-5111; Fax: 857-203-5549; E-mail: anthony.breu@va.gov

Additional Supporting Information may be found in the online version of this article.

Received: March 14, 2014; Revised: May 29, 2014; Accepted: June 16, 2014

2014 Society of Hospital Medicine DOI 10.1002/jhm.2234

Published online in Wiley Online Library (Wileyonlinelibrary.com).

Imagine you are caring for a 75-year-old man with a history of coronary artery disease and congestive heart failure now admitted with pneumonia. Given his age, admitting diagnosis, and comorbidities, you feel it would be appropriate to engage him in a discussion of goals of care. His chances of survival with near return to baseline after a cardiac arrest requiring CPR are not the same as his chances of surviving an episode of worsening pneumonia requiring MV. To discuss cardiac arrest and prearrest respiratory failure in the same breath, without acknowledging the differences, is misleading. Based on his goals and values, this patient may see a trial of MV as acceptable. One recent study supports this hypothesis, as 28% of hospitalized patients with a combined DNR/DNI order would accept a trial of MV for pneumonia.<sup>12</sup> If the genesis of these orders was our desire to ensure that patients' autonomous preferences are respected, we must actually know those preferences, and those preferences should be based on adequate information about the expected outcomes, highlighting the differences outlined above.

Some may consider separating CPR from MV—therefore allowing for more clearly separate DNR and DNI orders—problematic, as it may result in a “menu” of choices for patients. However, although CPR and MV may be performed at the same time for the same patient, they do not overlap in 100% of their occurrences. This is conceptually different from discussing whether to use epinephrine versus vasopressin, for example, or offering options such as chest compressions alone. More clearly separating CPR from MV would not be dissimilar to what is done with renal dialysis; a patient may wish to be DNR while still electing to undergo dialysis for failing kidneys. Though the discussions surrounding renal dialysis are less urgent, this alone does not adequately explain why the topic is not routinely collapsed into the discussion of CPR. Instead, renal dialysis is an intervention with unique indications, goals, and outcomes; this is what prompts the separation. The same is true of MV.

No matter the situation, code status discussions should focus on determining an individual patient's values and goals of care and should guide physicians in provision (or omission) of certain interventions. For the patient with pneumonia described above, his goal may be to promote quality of life over extension of life. Although this may prompt a recommendation to forego CPR, (if it were felt that his quality of life, even after successful return of spontaneous circulation, would be low), it may not be inconsistent for him to accept a trial of MV were his pneumonia to get worse (if it were felt that he could quickly improve

and return to a quality of life close to what he experienced before the episode of pneumonia). We recommend that when discussing options with patients, the indications for and outcomes of CPR and MV be more clearly separated. It may be as simple as saying, “there are 2 different situations I would like to discuss with you,” followed by a discussion of the associated scenarios and likely outcomes in the best judgment of the care team. For a hospitalist, framing the discussion of MV around anticipated causes of pre-arrest respiratory failure (eg, pneumonia, acute pulmonary edema) is essential.

In conclusion, if DNR and DNI orders are going to meet their promise of ensuring patients make informed decisions congruent with their goals, then the discussions from which they follow will need to more clearly acknowledge the important differences in indications and outcomes. Although a patient's goals should still be the framework upon which decisions regarding interventions are made, an important distinction should be made between cardiopulmonary arrest and prearrest respiratory failure, with a more explicit accompanying discussion of how the corresponding interventions fit within the patient's overall goals of care.

#### Acknowledgements

The authors thank Rafael Campo, MD, and Sharon H. Chou, MD, for their suggestions and critical reading of this manuscript.

Disclosures: Dr. Herzig was funded by grant number K23AG042459 from the National Institute on Aging.

#### References

1. Rabkin MT, Gillerman G, Rice NR. Orders not to resuscitate. *N Engl J Med*. 1976;295(7):364–366.
2. Anderson WG, Chase R, Pantilat SZ, Tulskey JA, Auerbach AD. Code status discussions between attending hospitalist physicians and medical patients at hospital admission. *J Gen Intern Med*. 2010;26(4):359–366.
3. Tulskey JA, Chesney MA, Lo B. How do medical residents discuss resuscitation with patients? *J Gen Intern Med*. 1995;10(8):436–442.
4. Esteban A, Anzueto A, Frutos F, et al. Characteristics and outcomes in adult patients receiving mechanical ventilation: a 28-day international study. *JAMA*. 2002;287(3):345–355.
5. Beach MC, Morrison RS. The effect of do-not-resuscitate orders on physician decision-making. *J Am Geriatr Soc*. 2002;50(12):2057–2061.
6. Yuen JK, Reid MC, Fetters MD. Hospital do-not-resuscitate orders: why they have failed and how to fix them. *J Gen Intern Med*. 2011;26(7):791–797.
7. Sanderson A, Zurakowski D, Wolfe J. Clinician perspectives regarding the do-not-resuscitate order. *JAMA Pediatr*. 2013;167(10):954–958.
8. Girotra S, Nallamothu BK, Spertus JA, Li Y, Krumholz HM, Chan PS. Trends in survival after in-hospital cardiac arrest. *N Engl J Med*. 2012;367(20):1912–1920.
9. Sharma RK, Jain N, Peswani N, Szmuiłowicz E, Wayne DB, Cameron KA. Unpacking resident-led code status discussions: results from a mixed methods study. *J Gen Intern Med*. 2014;29(5):750–7.
10. Nicolasora N, Pannala R, Mountantonakis S, et al. If asked, hospitalized patients will choose whether to receive life-sustaining therapies. *J Hosp Med*. 2006;1(3):161–167.
11. Healthcare Cost and Utilization Project (HCUP). *HCUP Facts and Figures: Statistics on Hospital-Based Care in the United States, 2009*. Rockville, MD: Agency for Healthcare Research and Quality; 2011.
12. Jesus JE, Allen MB, Michael GE, et al. Preferences for resuscitation and intubation among patients with do-not-resuscitate/do-not-intubate orders. *Mayo Clin Proceed*. 2013;88(7):658–665.