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1 Letter to the Editor

2Q2 A case series of patients who were do not resuscitate 3 but underwent cardiopulmonary resuscitation

4 *To the Editor*

5 Some patients wish to forgo cardiopulmonary resuscitation (CPR) should 6 they have a cardiac arrest. Unfortunately, there have been instances of 7 CPR being performed despite a documented decision of do-not-8 resuscitate (DNR),[1,2] but few studies have discussed why this occurs.

9 A retrospective chart review was completed on all adult patients 10 who had a cardiac arrest with CPR done between January 2012 and 11 December 2018 at the Minneapolis Veteran Affairs Health Care 12 System. A total of 327 patients underwent CPR during that timeframe. 13 Nine (2.8%) were identified as undesired administration of CPR 14 (Table 1). Seven (78%) patients had return of spontaneous circulation 15 (ROSC), but only 3 (43%) survived more than 24 h post resuscitation.

16 *Case 1*: Cardiac arrest occurred after tracheostomy dislodgement, 17 CPR started despite treatment team's awareness of DNR status.

18 *Case 2*: Patient elected to remain DNR when discussed prior to 19 procedure. Cardiac arrest occurred after moderate conscious 20 sedation administered and CPR started.

21 *Case 3*: Patient brought in by paramedics and cardiac arrest 22 occurred. CPR started, but stopped after Physician's Order for Life 23 Sustaining Treatment (POLST) was found in the ambulance.

24 *Cases 4–9*: The remaining cases of cardiac arrest occurred in the 25 inpatient setting, with the responding provider unaware of the patient's 26 DNR status. Five of these cases had a documented DNR order in the 27 chart, while in the remaining case it had not yet been ordered. In three 28 of the cases, DNR status was discovered during course of CPR and 29 compressions were terminated.

30 In our study, factors that contributed to undesired CPR include: 31 physicians overriding code status, failure to effectively disseminate and 32 honor advanced directives, and unawareness of a patient's code status. 33 Cases 1 and 2 describe instances where physicians attempted 34 resuscitation despite previously discussed DNR wishes. This may occur 35 if physicians believe the arrest was due to physician error or procedural 36 complication, and not all potential scenarios can be discussed. A survey 37 found that 29% of physicians "certainly would" override a DNR order in the 38 case of a complication leading to cardiac arrest and 69% would in the 39 case of a physician error.[3] Even if a resuscitation is thought likely to be 40 successful, seeking to correct the error can lead to further interventions 41 and harms without the ability of the patient to provide informed consent. 42 Another reason patients receive undesired CPR is unawareness or 43 feeling uncomfortable honoring life sustaining treatment decisions made 44 through outpatient documents (advance directive or POLST). Moreover, 45 POLST or advanced directives may not always accompany patients. 46 Several of our cases illustrate examples of undesired CPR due to 47 unawareness of patient's DNR status. This mistake can occur given the 48 multiple hand-offs each day between different teams of medical staff and 49 often the resuscitation team is not familiar with the patient. Studies have 50 found more than a 10 % discordance between an ordered code status 51 and sign-out documentation and between patient reported and physician 52 ordered resuscitation preference.[4,5] More studies are needed to devise 53 better methods of communicating code status at the bedside in a discrete 54 but quickly accessible manner.

Table 1 – Description of nine DNR patients who underwent CPR. Q1

Case No	Age (years)	ROSC (achieved)	Time survived	Location	Reason for CPR
Case 1	73	Yes	Several hours	ICU	Physician overrides code status
Case 2	80	Yes	<1 h	IR suite	Physician overrides code status
Case 3	74	No	–[a]	ED	Not aware of POLST until later
Case 4	67	Yes	<1 h	Floor	Unaware of DNR status
Case 5	66	No	–[a]	Floor	Unaware of DNR status
Case 6	63	Yes	11 months	Floor	Unaware of DNR status
Case 7	81	Yes	Several hours	Floor	Unaware of DNR status
Case 8	67	Yes	3 days	Floor	Unaware of DNR status
Case 9	66	Yes	4 months	ICU	Unaware of DNR status

ROSC = return of spontaneous circulation, ICU = intensive care unit, IR = interventional radiology, ED = emergency department.
[a] Did not survive cardiac arrest.

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