Characteristics of DNAR Orders among Non-critically Ill, Extremely Elderly Patients admitted to a University Hospital in Japan

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Supplementary file

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National Early Warning Score (**NEWS**)
Scale for severity on admission

Points	3	2	1	0	1	2	3
Respiration rate	<8		9-11	12-20		21-24	>25
SpO2 (%)	<91	92-93	94-95	>96			
Supplemental oxygen		Yes		No			
Temperature (℃)	<35.0		35.1-36.0	36.1-38.0	38.1-39.0	>39.1	
Systolic BP (mmHg)	<90	91-100	101-110	111-219			>220
Pulse rate	<40		41-50	51-90	91-110	111-130	>130
Consciousness				Alert			Voice, Pain Unresponsive

Total score: estimated risk of short-term death or ICU admission

- 0-4 points: low risk (1-2%)
- 5-6 points: intermediate risk (5-10%)
- 7-20 points: high risk (>20%)

KATZ Index of Independence in Activities of Daily Living

	1 point	0 point
Activities	No supervision, direction or personal assistance	With supervision, direction, personal assistance or total care
Bathing	Bathes self completely or needs help in bathing only a single part of the body such as the back, genital area or disabled extremity	Needs help with bathing more than one part of the body, getting in or out of the tub or shower. Requires total bathing
Dressing	Gets clothes from closets and drawers and puts on clothes and outer garments complete with fasteners. May have help tying shoes	Needs help with dressing self or needs to be completely dressed
Toileting	Goes to toilet, gets on and off, arranges clothes, cleans genital area without help	Needs help transferring to the toilet, cleaning self or uses bedpan or commode
Transferring	Moves in and out of bed or chair unassisted. Mechanical transferring aides are acceptable	Needs help in moving from bed to chair or requires a complete transfer
Continence	Exercises complete self control over urination and defecation	Is partially or totally incontinent of bowel or bladder
Feeding	Gets food from plate into mouth without help. Preparation of food may be done by another person	Needs partial or total help with feeding or requires parenteral feeding

Total score, 6 points: fully independent, 0 point: fully dependent

Fine-Gray analysis for "**Discharge to home**"

(complete case analysis of 1109 cases)

Variables	SHR	95%CI
With DNAR	**0.26**	**0.17 - 0.41**
Basic status		
Age	**1.04**	**1.01 - 1.06**
Female	1.10	0.97 - 1.24
NEWS	0.97	0.91 - 1.03
KATZ index (1 point increase)	**1.20**	**1.16 - 1.24**
Primary diagnosis for admission		
Cancer	0.82	0.67 - 1.00
Cardiovascular disorders	**0.77**	**0.60 - 0.98**
Eye disorders	**1.95**	**1.56 - 2.45**
GI disorders	1.34	0.96 - 1.87
Trauma / Orthopedic disorders	**0.44**	**0.33 - 0.59**
COVID-19	0.70	0.33 - 1.45
Comorbid diseases		
Chronic heart failure	0.93	0.75 - 1.16
Advanced cancer	**0.72**	**0.53 - 0.99**
Dementia	0.56	0.23 - 1.39
End-stage kideny diseases	0.98	0.64 - 1.48

DNAR: Do-not-attempt resuscitation; SHR: Subdistribution hazard ratio; CI: confidence interval; NEWS: National Early Warning Score; GI: Gastrointestinal

Fine-Gray analysis for "**Death**"

(complete case analysis of 1109 cases)

Variables	SHR	95%CI
With DNAR	**9.04**	**3.17 - 25.79**
Basic status		
Age	0.94	0.83 - 1.06
Female	1.71	0.72 - 4.02
KATZ score (1 point increase)	**0.68**	**0.53 - 0.87**

DNAR: Do-not-attempt resuscitation; SHR: Subdistribution hazard ratio; CI: confidence interval; NEWS: National Early Warning Score

References

- **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 Jul;26(7):791-7. doi: 10.1007/s11606-011-1632-x.**

  DNR orders often fail to respect patient autonomy or prevent non-beneficial care. Discussions occur too late, and physicians provide inadequate information or misuse DNRs to limit other treatments. Systemic issues underlie these problems. The article urges reforms in hospital culture, policies, communication training, and incentives to improve end-of-life decision-making.

- **Wu CY, Jen CH, Chuang YS, Fang TJ, Wu YH, Wu MT. Factors associated with do-not-resuscitate document completion among patients hospitalized in geriatric ward. BMC Geriatr. 2021 Aug 25;21(1):472. doi: 10.1186/s12877-021-02407-3.**

  This study of 337 geriatric inpatients in Taiwan found that 66 signed DNR orders. Factors independently associated with DNR documentation included age ≥85, poor nutrition, low albumin, high comorbidity, and ICU transfer. These findings may help guide physicians and families in DNR and advance care planning discussions.

- **Dyer C. Some care home residents may have died because of blanket DNR orders, says regulator. BMJ. 2020 Dec 3;371:m4733. doi: 10.1136/bmj.m4733.**

  During the early COVID-19 pandemic, some UK care homes wrongly applied blanket DNACPR orders, leading to avoidable deaths. The CQC found decisions made without patient consent, confusion with hospital admission choices, and delayed care. The report urged person-centred, lawful advance care planning and condemned blanket approaches.

- **Cherniack EP. Increasing use of DNR orders in the elderly worldwide: whose choice is it? J Med Ethics. 2002 Oct;28(5):303-7. doi: 10.1136/jme.28.5.303.**

  Many elderly patients die with DNR orders, though many wish to be resuscitated but lack CPR knowledge. Physician preferences often dominate decisions, and patient involvement is limited. The article calls for earlier, broader end-of-life discussions and education for both patients and physicians to ensure informed, value-based decision-making.

References

- **Mori T, Mori K, Nakazawa E, Bito S, Takimoto Y, Akabayashi A. Characterizing patients issued DNR orders who are ultimately discharged alive: a retrospective observational study in Japan. BMC Palliat Care. 2020 Jun 9;19(1):82. doi: 10.1186/s12904-020-00588-z**

  Among 61,037 hospitalized adults in Tokyo, 2,997 had DNR orders; some were discharged alive. Early DNR issuance, non-cancer status, internal medicine admission, female sex, older age, and absence of life-sustaining treatment were linked to survival. Early DNRs in non-terminal patients suggest broader sociocultural or systemic influences.

- **Fritz Z, Slowther AM, Perkins GD. Resuscitation policy should focus on the patient, not the decision. BMJ. 2017 Feb 28;356:j813. doi: 10.1136/bmj.j813.**

  This article critiques current DNACPR practices, which often cause confusion, delayed discussions, and denial of appropriate treatments. It advocates shifting from isolated CPR decisions to patient-centered, holistic emergency care planning. Models like UFTO and ReSPECT integrate resuscitation choices within overall treatment goals, promoting shared, individualized decision-making and better communication.

- **Fukaura A, Tazawa H, Nakajima H, Adachi M. Do-not-resuscitate orders at a teaching hospital in Japan. N Engl J Med. 1995 Sep 21;333(12):805-8. doi: 10.1056/NEJM199509213331218.**

  In this 1995 study at a Japanese teaching hospital, DNR orders were issued for 72% of deceased patients, mostly based on family—not patient requests. Only 5% of patients participated in decisions. The study highlighted poor communication, lack of policy, and cultural tendencies limiting patient autonomy in end-of-life care.

- **Nakagawa Y, Inokuchi S, Kobayashi N, Ohkubo Y. Do not attempt resuscitation order in Japan. Acute Med Surg. 2017 Apr 2;4(3):286-292. doi: 10.1002/ams2.271.**

  A survey in Kanagawa Prefecture found DNAR orders practiced in about 90% of hospitals, yet only 30% had formal guidelines and 80% excluded patients from decisions. The absence of legislation causes confusion, especially in home arrests. The study urges local authorities to establish clear DNAR laws and guidelines.