

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

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INTRODUCTION

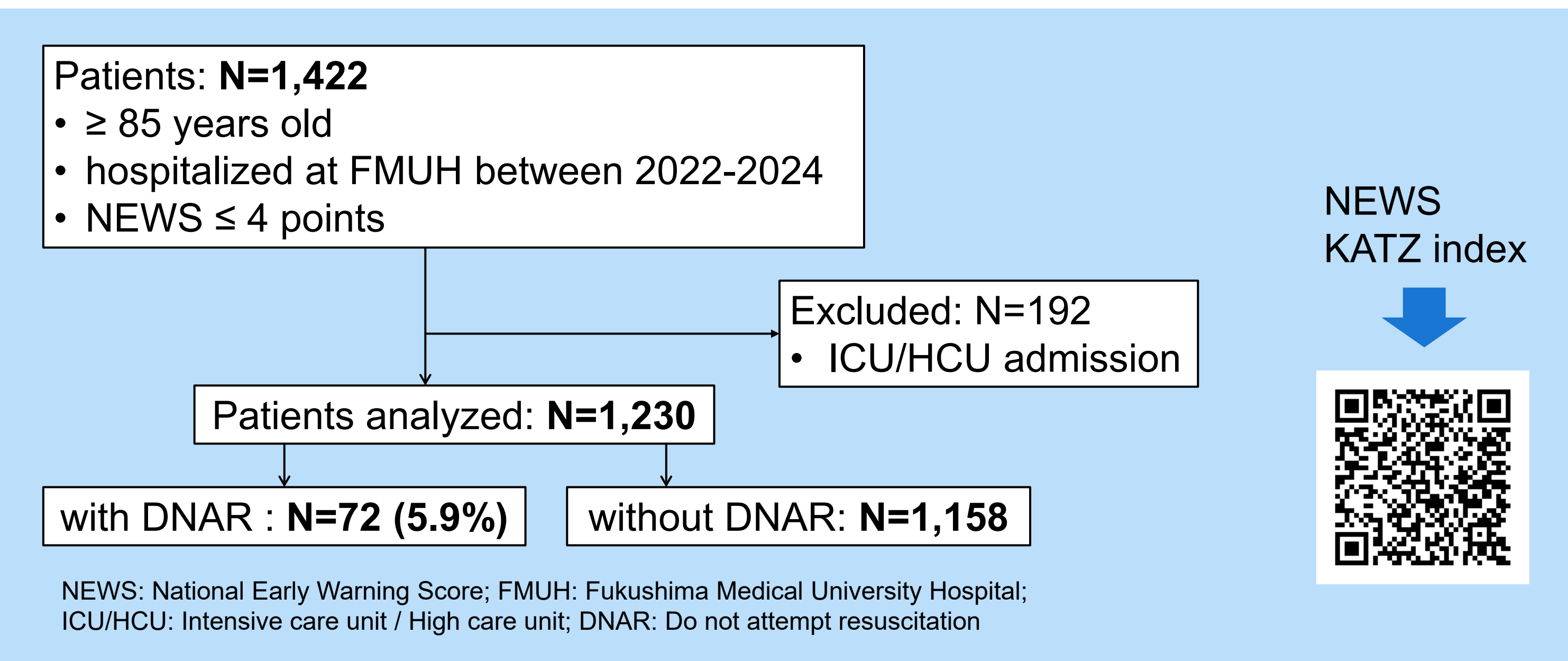
- A “do-not-attempt-resuscitation (DNAR)” order is a medical directive that withholds cardiopulmonary resuscitation in the event of cardiac arrest, respecting the patient’s wishes and clinical judgment.
- Such orders are commonly issued for critically ill patients but are sometimes applied routinely to non-critical, particularly extremely elderly, patients to reassure staff or avoid confusion during sudden deterioration.
- However, little is known about the characteristics of such patients.

OBJECTIVE

- To describe the clinical characteristics and outcomes of non-critically ill patients aged ≥85 years who had DNAR orders.

RESULTS

Study flow



Characteristics of patients with or without DNAR orders

	Overall N=1230*		With DNAR N=72		Without DNAR N=1158		p-value
	n	(%)	n	(%)	n	(%)	
Age (median [IQR])	87.0	[86.0, 90.0]	90	[87.0, 93.0]	87	[86.0, 89.0]	<0.001
Female	641	(52.1)	38	(52.8)	603	(52.1)	>0.999
KATZ index* (median [IQR])	6	[2, 6]	0	[0, 2]	6	[3, 6]	<0.001

Primary diagnosis for admission							
Neoplasms	333	(27.1)	18	(25.0)	315	(27.2)	0.786
Cardiovascular diseases	249	(20.2)	6	(8.3)	243	(21.0)	0.015
Eye disorders	244	(19.8)	0	(0.0)	244	(21.1)	<0.001
Trauma / Orthopedic disorders	122	(10.0)	4	(5.6)	118	(10.2)	0.306
GI disorders	80	(6.7)	15	(20.8)	68	(5.9)	<0.001
Skin disorders	30	(2.4)	6	(8.3)	24	(2.1)	0.003
COVID-19	22	(1.8)	11	(15.3)	11	(0.9)	<0.001

Comorbid diseases							
Diabetes	167	(13.6)	10	(13.9)	157	(13.6)	>0.999
Chronic heart failure	164	(13.3)	5	(6.9)	159	(13.7)	0.143
Advanced cancer	39	(3.2)	9	(12.5)	30	(2.6)	<0.001
End-stage kidney diseases	33	(2.7)	4	(5.6)	29	(2.5)	0.238
Dementia	13	(1.1)	2	(2.8)	11	(0.9)	0.380

NEWS							
(median [IQR])	0.5	[0.0, 2.0]	1	[0.0, 3.0]	0	[0.0, 1.0]	<0.001

Laboratory tests (median [IQR])*							
Hemoglobin (g/dL)	12	[10.2, 12.6]	11	[9.1, 11.5]	12	[10.3, 12.8]	<0.001
Platelet (/mm ³)	200	[158, 257]	199	[154, 278]	200	[158, 253]	0.704
Albumin (g/dL)	3.6	[3.1, 3.9]	2.8	[2.4, 3.3]	3.7	[3.2, 4.0]	<0.001
CRP (mg/dL)	0.3	[0.03, 1.75]	5.4	[1.00, 9.81]	0.2	[0.02, 1.17]	<0.001

IQR: interquartile range; GI: gastrointestinal; CRP: C-reactive protein

* KATZ: N=1,109; Albumin: N=619; Hemoglobin: N=662; Platelet: N=662 CRP: N=651

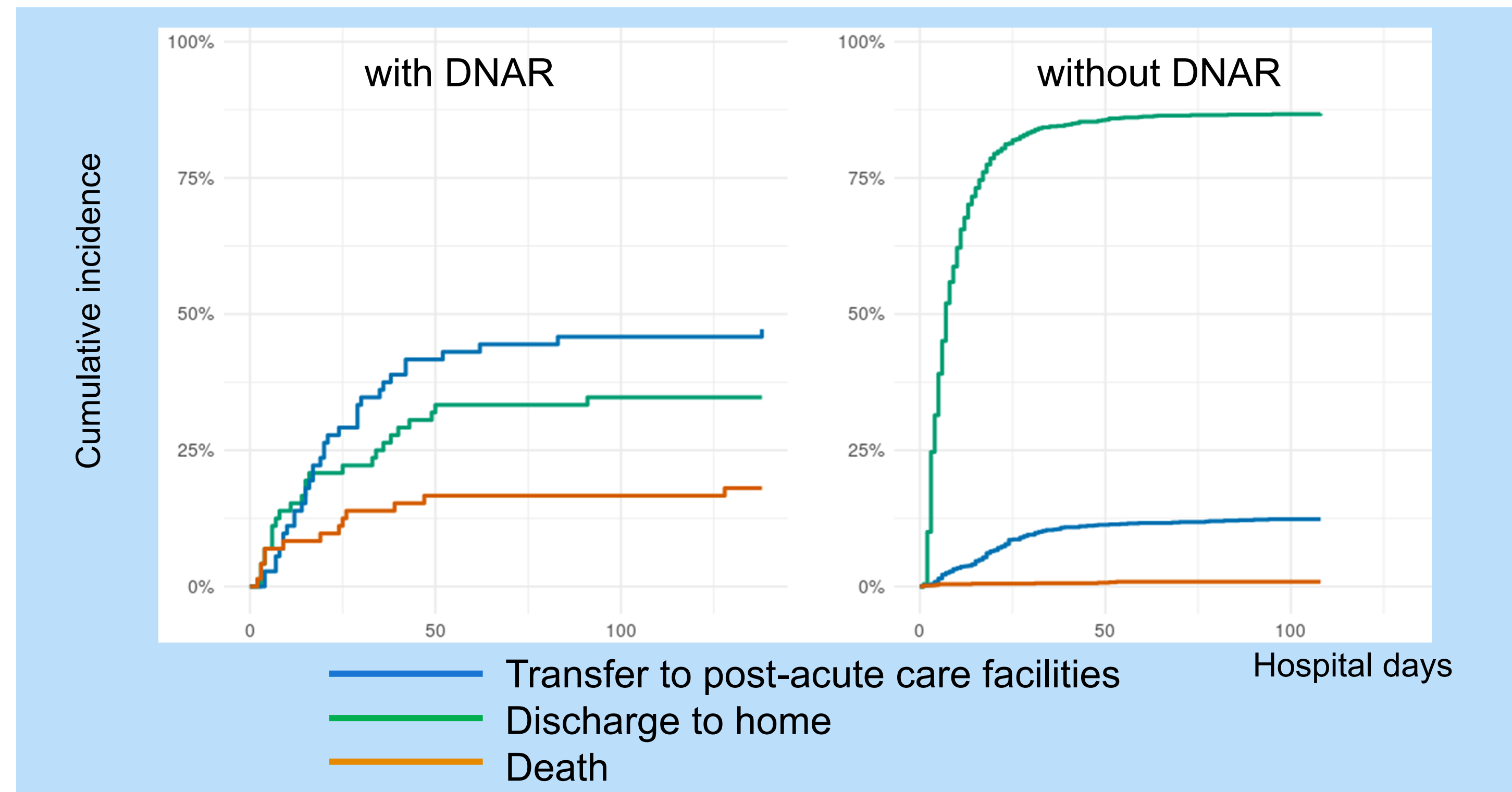
METHOD

- Electronic medical records: patients hospitalized between 2022 and 2024
- Fukushima Medical University Hospital: tertiary care, 778 beds, about 16,000 admissions/year
- Patients: aged ≥85 years, NEWS ≤ 4 points (non-critical)
- Exclusion: patients admitted in ICU/HCU
- Exposure variable: presence or absence of a DNAR order
- Variables: age, sex, NEWS, KATZ index (activities of daily living, ADL), primary diagnosis, comorbidities, laboratory results
- Outcome: transfer to post-acute care facilities, discharge to home, death
- Univariate: Wilcoxon rank sum test, Pearson’s Chi-squared test
- Competing risk analysis: Fine–Gray subdistribution hazard model

Outcomes by DNAR status

	Overall N=1230		With_DNAR N=72		Without_DNAR N=1158		p-value
	n	(%)	n	(%)	n	(%)	
Discharge to home	1,030	83.8	25	34.7	1,005	86.8	<0.001
Transfer to post-acute care facilities	177	14.4	34	47.2	143	12.3	<0.001
Death	23	1.9	13	18.1	10	0.9	<0.001
Length of stay (median [IQR])	7.0	[4.0, 15.0]	17.0	[7.8, 35.3]	7.0	[3.0, 14.0]	<0.001

Cumulative incidence functions by DNAR status



Fine-Gray analysis for “Transfer to post-acute care facilities” (complete case analysis of 1,109 cases)

Variables	SHR	95%CI
With DNAR		
Basic status		
Age	0.95	0.89 - 1.02
Female	0.70	0.48 - 1.03
NEWS	1.09	0.95 - 1.25
KATZ index (1 point increase)	0.70	0.64 - 0.76
Primary diagnosis for admission		
Cancer	1.01	0.57 - 1.80
Cardiovascular disorders	2.03	1.13 - 3.64
Eye disorders	0.08	0.01 - 0.61
GI disorders	1.32	0.62 - 2.81
Trauma / Orthopedic disorders	3.73	2.11 - 6.60
COVID-19	1.73	0.76 - 3.90
Comorbid diseases		
Chronic heart failure	0.89	0.54 - 1.47
Advanced cancer	2.07	0.99 - 4.35
Dementia	1.11	0.33 - 3.72
End-stage kidney diseases	1.18	0.67 - 2.10

SHR: Subdistribution hazard ratio; CI: confidence interval

CONCLUSIONS

- Among non-critical, extremely elderly inpatients, 5.9% had DNAR orders — older and having lower ADL than those without DNAR
- No consistent pattern in diagnoses and comorbidities, reflecting complex contexts in DNAR decisions
- Non-DNAR: shorter hospitalization, home discharge
- DNAR: associated with post-acute transfer, indicating composite care continuity factors

References & Contact

