

## Supplementary Online Content

Huynh TN, Kleerup EC, Wiley JF, et al. The frequency and cost of treatment perceived to be futile in critical care. *JAMA Intern Med*. Published online September 9, 2013. doi:10.1001/jamainternmed.2013.10261

**eTable 1.** Combination of Reasons Why Patients Were Perceived to Be Receiving Futile Treatment

**eTable 2.** Multilevel Multivariate Probit Model of Predictors of Futile Assessment

This supplementary material has been provided by the authors to give readers additional information about their work.

**eTable 1. Combination of Reasons Why Patients Were Perceived to Be Receiving Futile Treatment**

Reason that treatment was perceived to be futile, patient level	Number of patients
Permanently unconscious	10
Burdens grossly outweigh benefits	9
Futile treatment on day transitioned to palliative care	9*
Burdens grossly outweigh benefits and Permanently unconscious and Treatment cannot achieve goal and Death is imminent	8
Burdens grossly outweigh benefits and Treatment cannot achieve goal	7
Burdens grossly outweigh benefits and Will never survive outside of an ICU and Permanently unconscious and Treatment cannot achieve goal	6
Burdens grossly outweigh benefits and Will never survive outside of an ICU and Permanently unconscious and Treatment cannot achieve goal and Death is imminent	6
Death is imminent	5
Burdens grossly outweigh benefits and Will never survive outside of an ICU and Treatment cannot achieve goal	4
Burdens grossly outweigh benefits and Permanently unconscious	4
Burdens grossly outweigh benefits and Death is imminent	4
Will never survive outside of an ICU	4
Treatment cannot achieve goal	4
Burdens grossly outweigh benefits and Will never survive outside of an ICU	3
Burdens grossly outweigh benefits and will never survive outside of an ICU and Permanently unconscious and Treatment cannot achieve goal and Death is imminent and Futile treatment on day transitioned to palliative care	3
Burdens grossly outweigh benefits and Permanently unconscious and Treatment cannot achieve goal	3
Burdens grossly outweigh benefits and Treatment cannot achieve goal and Death is imminent	3
Treatment cannot achieve goal and Death is imminent	3
Burdens grossly outweigh benefits and Will never survive out of the ICU and Treatment cannot achieve goal and Death is imminent and Futile treatment on day transitioned to palliative care	2
Burdens grossly outweigh benefits and Treatment cannot achieve goal and Death is imminent and Futile treatment on day transitioned to palliative care 1457	2
Treatment cannot achieve goal and Death is imminent and Futile treatment on day transitioned to palliative care	2
Burdens grossly outweigh benefits and Treatment cannot achieve goal and Futile treatment on day transitioned to palliative care	2
Death is imminent and Futile treatment on day transitioned to palliative care	2
Treatment cannot achieve goal and Futile treatment on day transitioned to palliative care	2
Will never survive out of the ICU and Treatment cannot achieve goal	2
Will never survive out of the ICU and Permanently unconscious and Treatment cannot achieve goal and Death is imminent and Futile treatment on day transitioned to palliative care	1
Will never survive out of the ICU and Permanently unconscious and Treatment cannot achieve goal and Futile treatment on day transitioned to palliative care	1
Burdens grossly outweigh benefits and Will never survive out of the ICU and Treatment cannot achieve goal and Futile treatment on day transitioned to palliative care	1
Permanently unconscious and Death is imminent and Futile treatment on day transitioned to palliative care	1
Will never survive out of the ICU and Death is imminent and Futile treatment on day transitioned to palliative care	1
Burdens grossly outweigh benefits and Death is imminent and Futile treatment on day transitioned to palliative care	1
Burdens grossly outweigh benefits and Treatment cannot achieve goal and Patient non-adherent to treatment	1
Burdens grossly outweigh benefits and Permanently unconscious and Futile treatment on day transitioned to palliative care	1
Will never survive out of the ICU and Death is imminent	1
Will never survive out of the ICU and Permanently unconscious	1
Burdens grossly outweigh benefits and Futile treatment on day transitioned to palliative care	1
No reasons listed	3

\*These 9 patients were perceived as probably receiving futile treatment or receiving futile treatment on at least one other day in addition to the day of transition to comfort care, although the only listed reason for perceived futile treatment was on the day of transition to comfort care.

**eTable 2. Multilevel Multivariate Probit Model of Predictors of Futile Assessment**

	b	LL	UL	p-value
Female vs. Male	-0.51	-0.94	-0.01	0.024
Age (in decades)	0.31	0.15	0.46	<.001
Patient Race (reference = White)				
Asian	-0.04	-0.84	0.83	0.937
African American	0.68	0.03	1.44	0.071
Other Race	-0.22	-1.14	0.71	0.623
Hispanic (reference = non-Hispanic)	-0.09	-0.71	0.58	0.787
Insurance (reference = Medicare)				
Medicaid	0.70	-0.12	1.54	0.093
Private/PPO	0.39	-0.39	1.18	0.327
HMO/MA	0.27	-0.30	0.82	0.333
Uninsured	-0.47	-1.77	0.74	0.467
Lives > 20 miles from hospital	0.22	-0.28	0.74	0.409
Source of Admission (reference = ER)				
Outpatient setting	-0.76	-1.42	-0.20	0.010
Transferred from outside hospital	0.28	-0.36	0.94	0.408
Transferred from SNF/LTAC	1.55	0.77	2.33	<.001
MS DRG Weight	0.01	-0.032	0.039	0.767
Day of futility assessment in relation to day of admission	0.24	0.19	0.29	<.001
Clinician Gender (Female vs Male)	0.54	-0.13	1.22	0.107
Clinician Age (in decades)	0.12	-0.25	0.48	0.502
Clinician Race (reference = White)				
Asian	-0.36	-1.05	0.31	0.276
Other	-0.34	-1.58	0.93	0.583
ICU (reference = Medical ICU)				
Neuro-ICU	-0.80	-2.39	0.75	0.315
Cardiac Care Unit	-2.43	-3.57	-1.34	<.001
Cardiothoracic ICU	-1.49	-2.44	-0.50	0.006
Community Hospital ICU	-0.08	-0.69	0.52	0.779
Random Effects:				
$\sigma^2_{\text{patient}}$	6.22	4.70	7.94	
$\sigma^2_{\text{clinician}}$	0.54	0.16	1.01	

Coefficients (b) are the posterior means. The lower and upper limits (LL, UL) form 95% confidence intervals. Random effects are the variability in the constant associated with patients and clinicians, respectively.