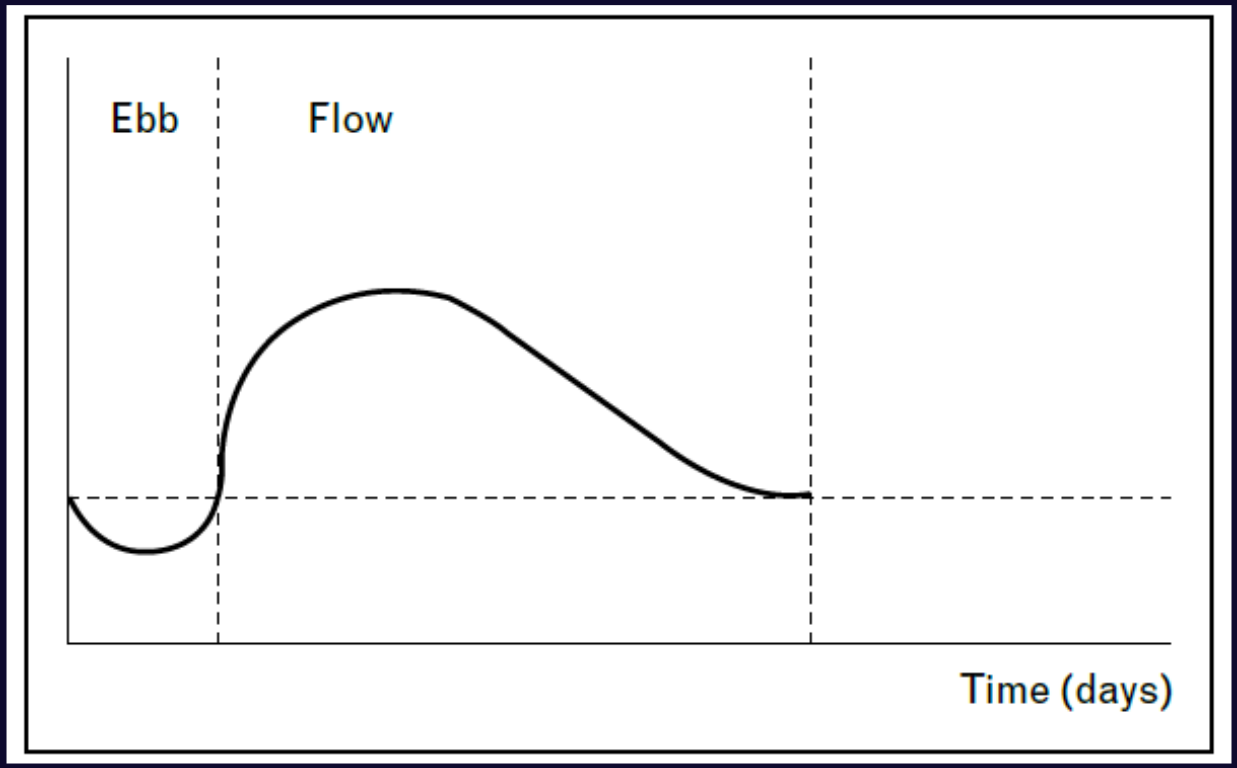
Department of Health Science,
Section of Anaesthesiology and Intensive Care
University of Florence

MASTER IN PAIN THERAPY AND PALLIATIVE CARE

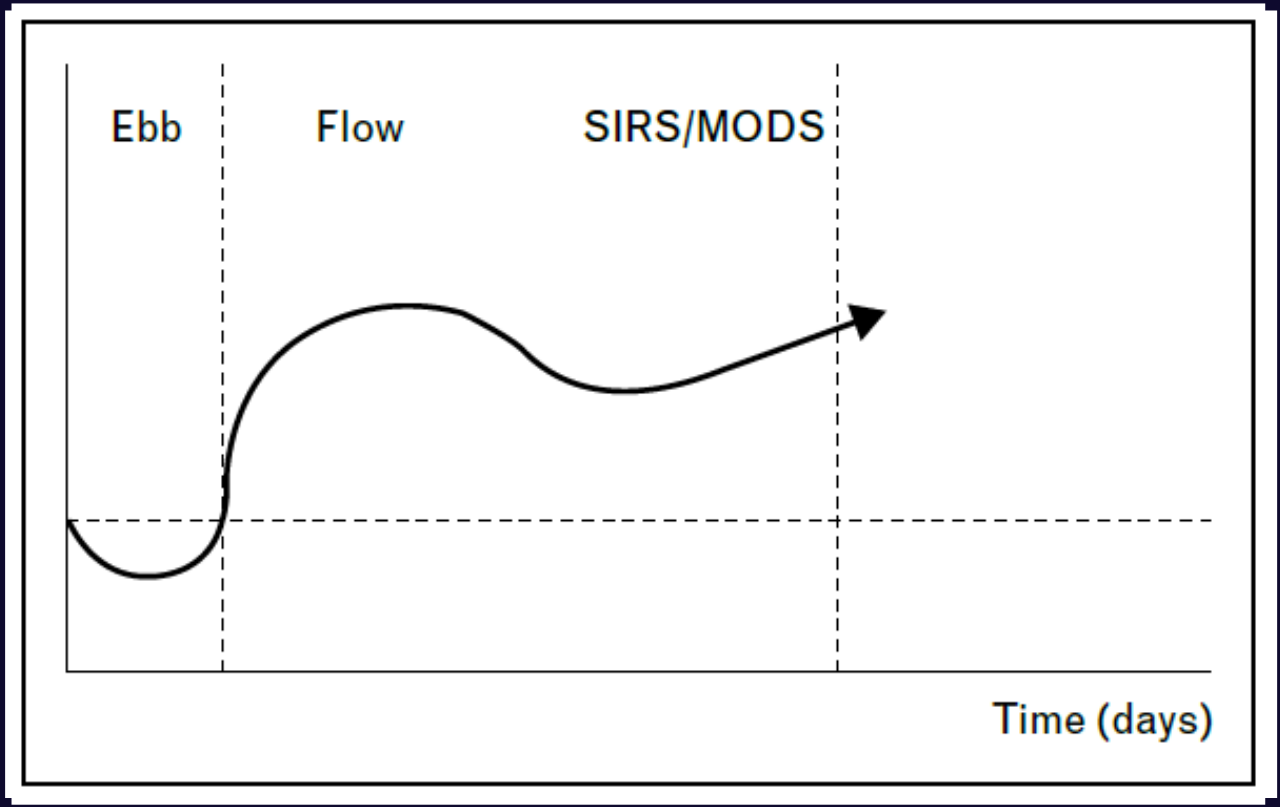
Insights for critical care patients

Gianluca Villa M.D.

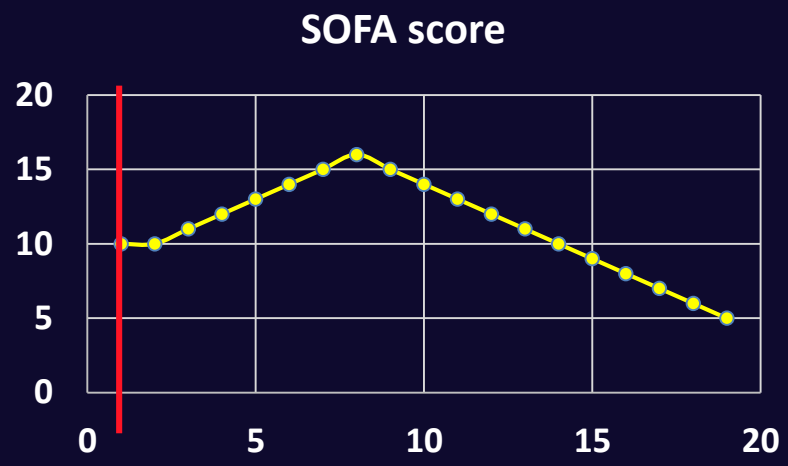
Metabolic responce to stress

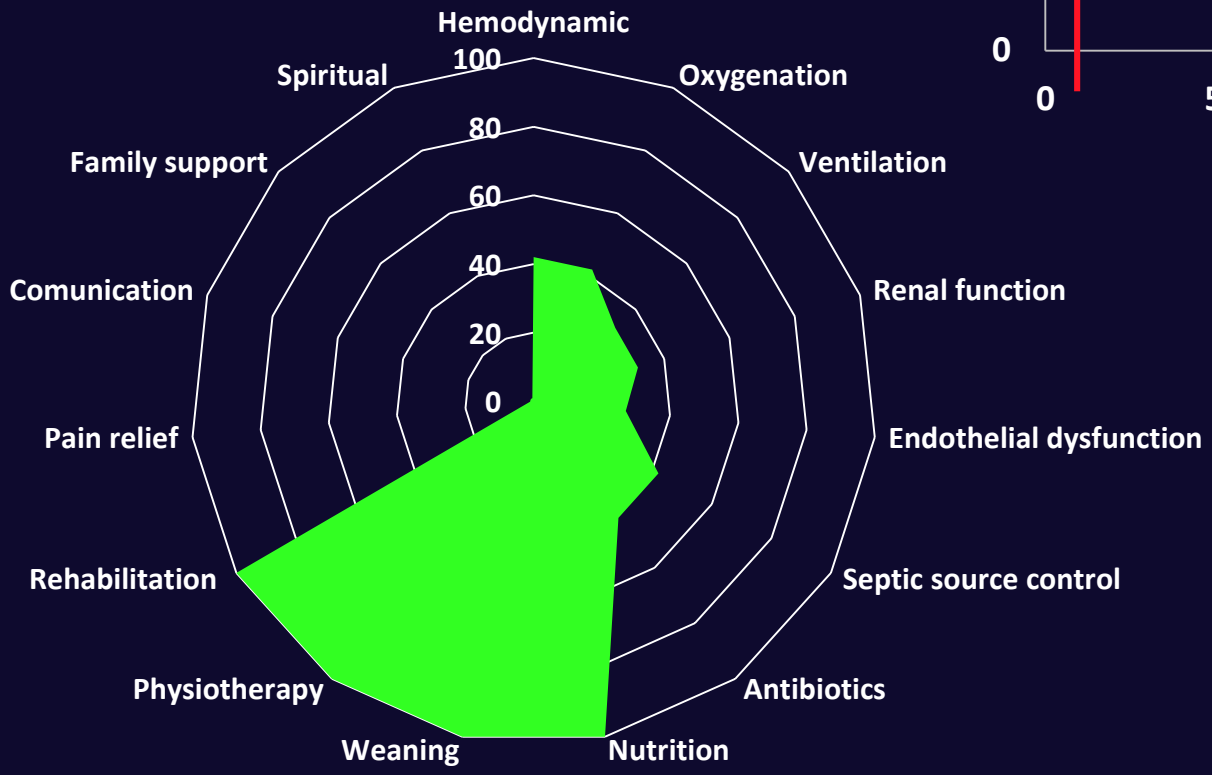


Metabolic responce to stress

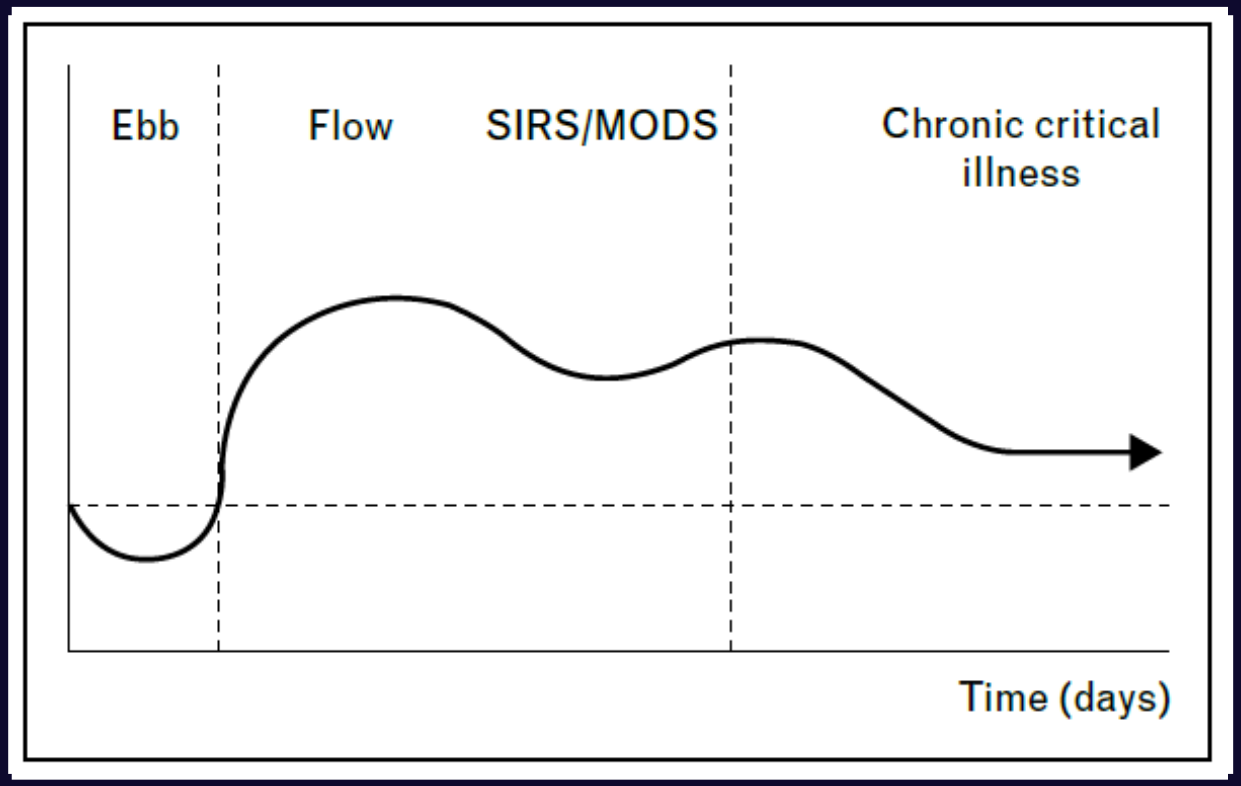


Critical care patients

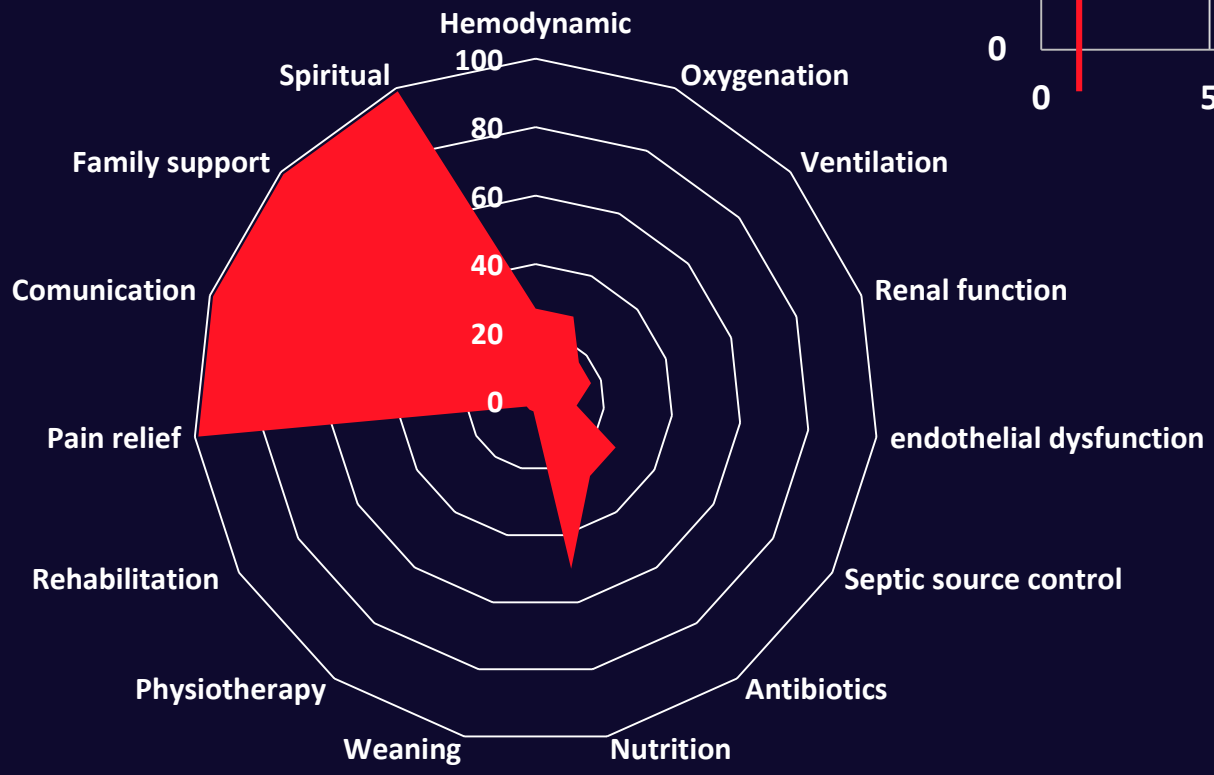


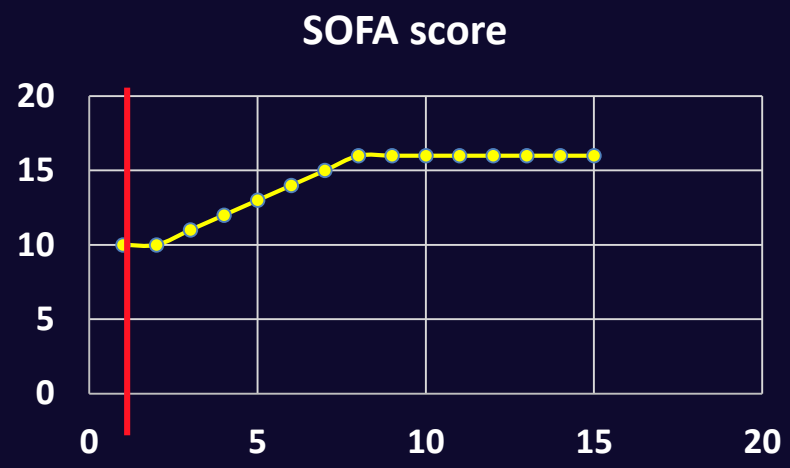


Critical care patients

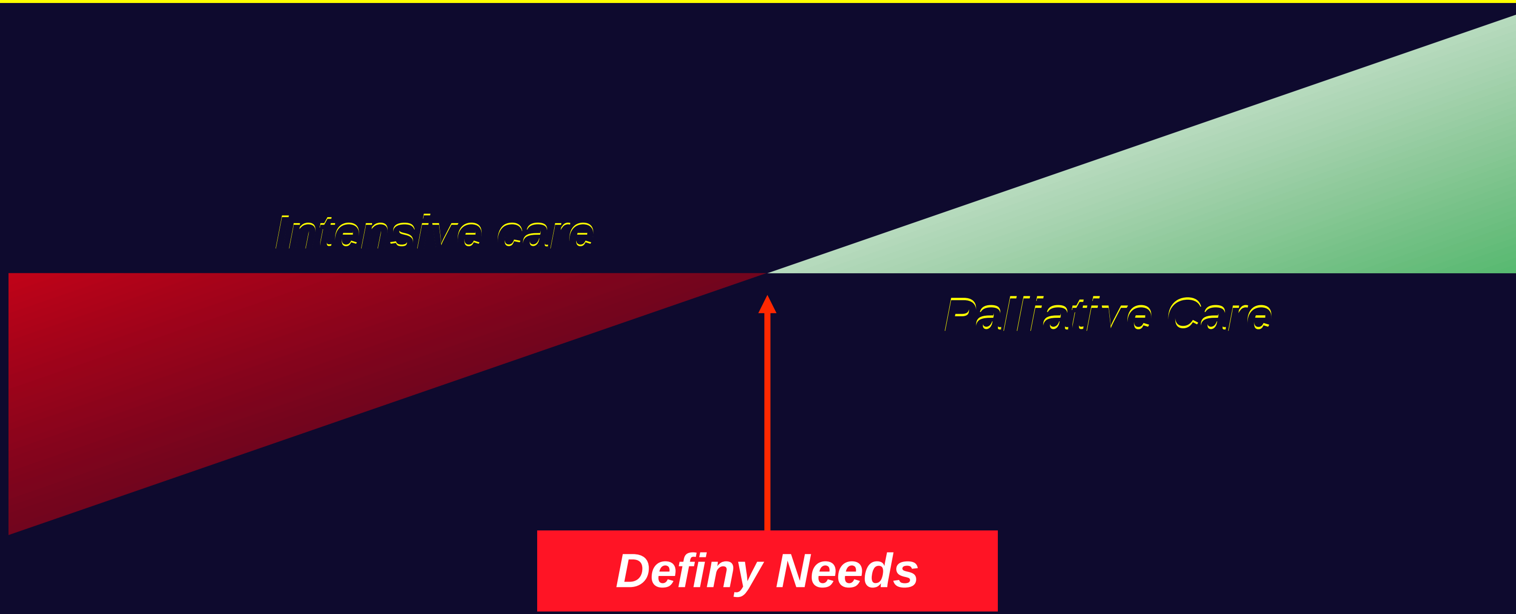


Critical care patients





Palliative care for critical care patients



What is adequate?

Evidence-based?

Which outcome?

How to quantify a qualitative end-point?

Aslakson R. et al. *Crit Care Med* **2014** 42(11):2418-28
Halpern SD. et al. *N Engl J Med* **2015** [illegible]

End-of-life care for critical care patients

End-of-life care

Palliative Care	Hospice Care
Based on need: For people with serious and complex illness, regardless of prognosis	Based on prognosis: For people expected to live ≤ 6 mo
Can be provided together with appropriate restorative or life-sustaining treatment including intensive care therapy. No limitation on cardiopulmonary resuscitation status or life support is required	Strongly encourages the patient to forego restorative treatment and have concurrent care limitations, such as do-not-resuscitate and no transfer to ICU directives
Provided by ICU team and/or palliative care consultant to primary team	Hospice team assumes primary care responsibility

Aslakson R. et al. *Crit Care Med* 2014 42(11);2418-28

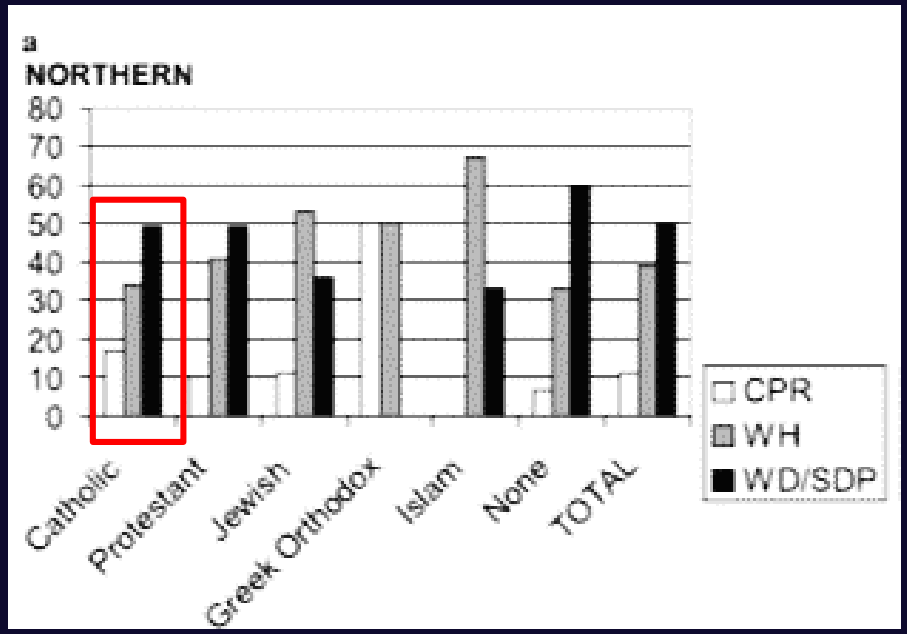
Palliative care for critical care patients

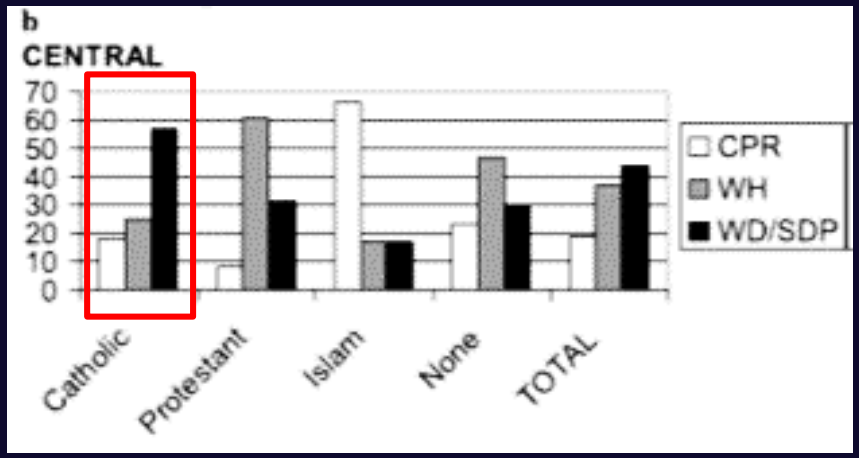
Palliative care is a rapidly growing interprofessional specialty as well as an approach to care by all clinicians who care for patients with serious illness. The key domains by patients and families as well as by expert consensus, include:

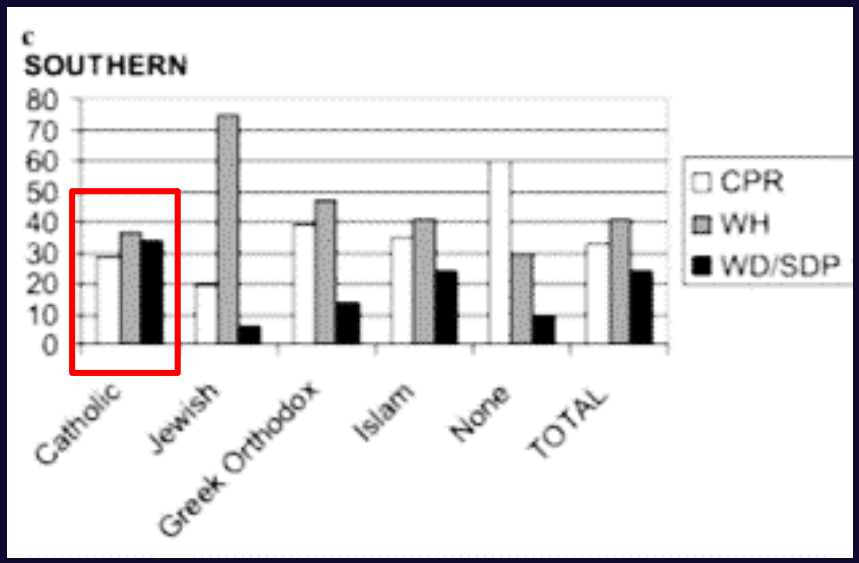
- Effective ***management of distress*** from physical, psychological, and spiritual symptoms;
- Timely and sensitive ***communication*** about appropriate goals of intensive care in relation to the patient's condition, prognosis, and values;
- Alignment of treatment with ***patient preferences***;
- Attention to ***families' needs*** and concerns;
- Planning for ***care transitions***;
- ***Support for clinicians***

Aslakson R. et al. *Crit Care Med* 2014 42(11);2418-28

Palliative care for critical care patients



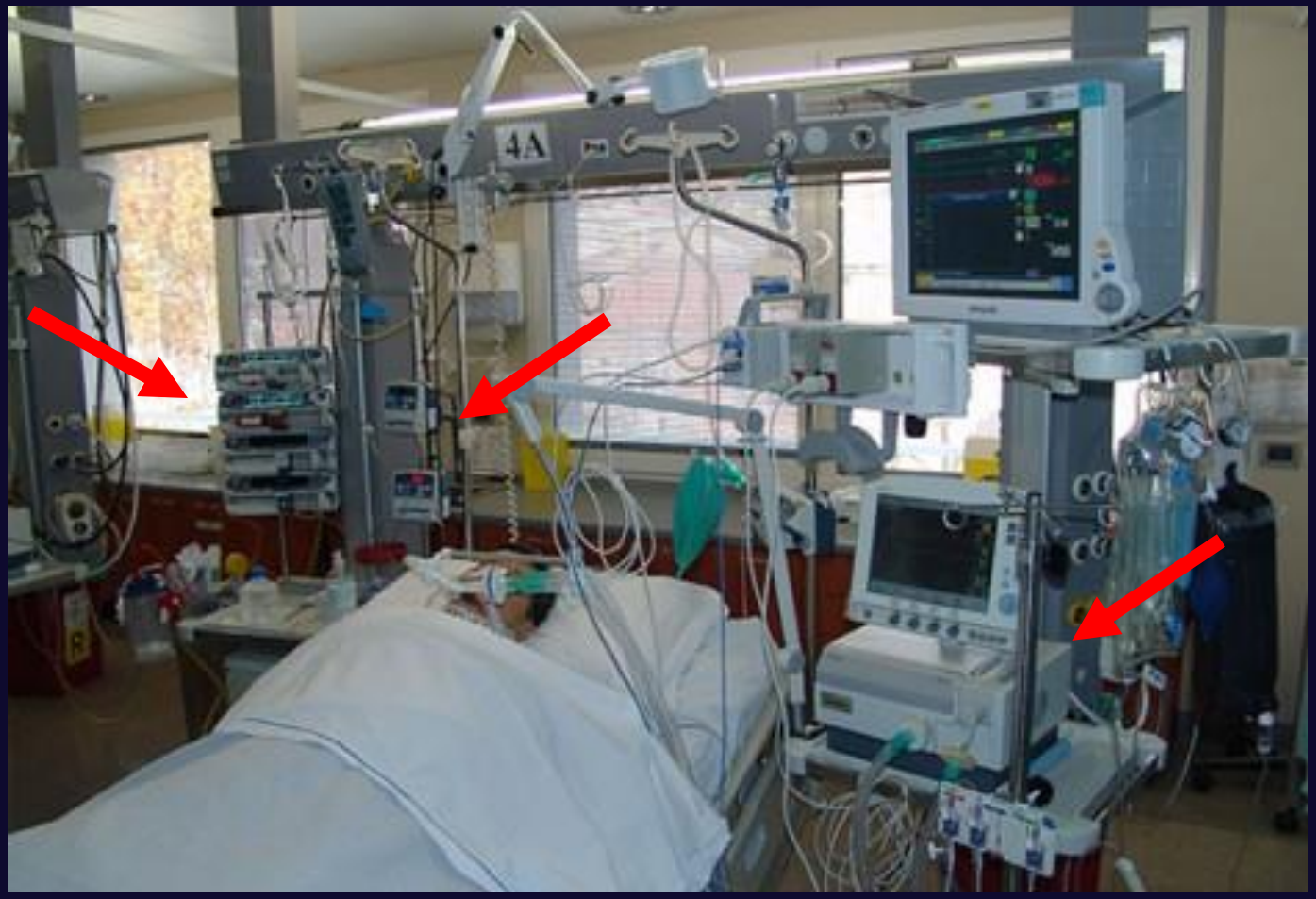




Sprung C. et al. *Int Care Med* 2007 33(10);1732-9

Surprise question

Would you be surprised if this patient died within the next 12 months?



Outcome prediction models

- In the last 10 years the international literature has identified a number of excellent mortality prediction models such as APACHE and SOFA.
- However, these models do not provide an accurate identification of patients that have been in the ICU for several days who are highly likely to die in the ICU. In particular, they are not useful in helping clinicians identify patients who have had an opportunity to respond to critical care but, despite this therapy, are highly likely to be dying.
- Moreover, usefulness of SAPS II and APACHE II is mainly validated at admission to ICU, when patients' responsiveness to intensive care is not clear yet.

Outcome prediction models

	Number of variables	Time of assessment	Predicted outcome	Discrimination (ROC-AUC)	Calibration (Hosmer-Lemeshow C statistic)
APACHE-I	34	First 32 hrs after admission	ICU mortality	NA	NA
APACHE-II	12	First 24 hrs after admission	Hospital mortality	0.85	209.20, p < .01
APACHE-III	17	First 24 hrs after admission	Hospital mortality	0.90	48.71, p < .01
APACHE-IV	21	First 24 hrs after admission	Hospital mortality	0.88	16.9, p = .08
SAPS 1	14	First 24 hrs after admission	ICU mortality	NA	NA
SAPS 2	17	First 24 hrs after admission	Hospital mortality	0.86	219.83, p < .01
SAPS-3	20	Prior to and within 1 h of ICU admission	Hospital mortality	0.84	NA
MPM_0-I	7	Prior to and within 1 h of ICU admission	Hospital mortality	NA	NA
MPM_0-II	15	Prior to and within 1 h of ICU admission	Hospital mortality	0.837	47.61, p < .01
MPM_0-III	16	Prior to and within 1 h of ICU admission	Hospital mortality	0.823	NA
Ranson's Criteria	11	First 48 hrs after admission	Hospital mortality	NA	NA
PRISM	14	First 24 hrs after admission	Hospital mortality	0.851	1.746, p = 0.627
PIM	8	First 24 hrs after admission	Hospital mortality	0.838	10.866, p = 0.028

Outcome prediction models

outcome prediction models

decisions on withholding or withdrawal of life-sustaining treatments

- a more appropriate use of ICU resources basing the clinical judgment on the patient's likelihood of benefiting from therapy.
- by orientating physicians towards the withdrawal or withholding of unnecessary treatments, these tools may have the potential to reduce the burdens of stress and suffering in end-of-life patients and family members.

Outcome prediction models

Generic

Heterogeneous population of patients treated in a particular setting

Disease specific

Homogeneous groups of patients who are categorized by clinical syndrome or by primary diagnosis.

Timely data

Clinicl decision making

…Although a number of ICU outcome prediction models have been identified in the published literature, none of them have actually provided physicians with enough information on the suitability of intensive care treatments for individual patients…

Adequate the treatment

Predictors	Interdisciplinary Family Meeting Conducted		Offer of Social Work Support	
	Adjusted Odds Ratio (95% CI)	*p*	Adjusted Odds Ratio (95% CI)	*p*
Patient age[c]	1.01 (0.98–1.03)	.633	0.99 (0.97–1.01)	.198
Female patient gender	0.53 (0.26–1.10)	.088	0.52 (0.29–0.93)	.026
Nonsurgical ICU diagnosis	0.72 (0.20–2.54)	.609	1.38 (0.48–3.98)	.548
Acute Physiology and Chronic Health Evaluation II score[c]	1.03 (0.98–1.08)	.269	0.99 (0.95–1.03)	.568
Charlson index[c]	1.17 (1.05–1.30)	.006	1.10 (1.00–1.21)	.043
ICU length of stay[c]	1.01 (0.98–1.04)	.605	0.99 (0.96–1.03)	.762
Female family gender	0.65 (0.31–1.37)	.255	1.07 (0.59–1.95)	.814
Family religion (reference = Protestant)				
Catholic	0.67 (0.19–2.28)	.517	1.86 (0.69–5.05)	.223
Jewish	0.66 (0.12–3.73)	.641	3.39 (0.62–18.52)	.158
Other	1.51 (0.50–4.57)	.465	2.68 (0.94–7.62)	.065
Family language: non-English vs. English	0.34 (0.06–1.95)	.226	0.29 (0.06–1.44)	.131
Family race (reference = White)				
Non-Hispanic black	0.75 (0.27–2.13)	.592	2.43 (0.92–6.45)	.074
Hispanic	0.48 (0.12–1.89)	.294	1.20 (0.36–4.04)	.769
Other	0.18 (0.02–1.85)	.149	0.55 (0.12–2.49)	.439
Family education level: some college vs. high school or less	0.54 (0.26–1.10)	.089	0.82 (0.47–1.45)	.502
Relationship to patient: not spouse/partner vs. all other	1.69 (0.83–3.45)	.149	1.75 (0.98–3.13)	.057
Family visited every day vs. at least once but not every day	1.64 (0.81–3.32)	.167	2.90 (1.62–5.20)	<.001

Penrod J. et al. *Crit Care Med* 2012 40(4);1105-12

END-of-Life ScorING-System, ENDING-s

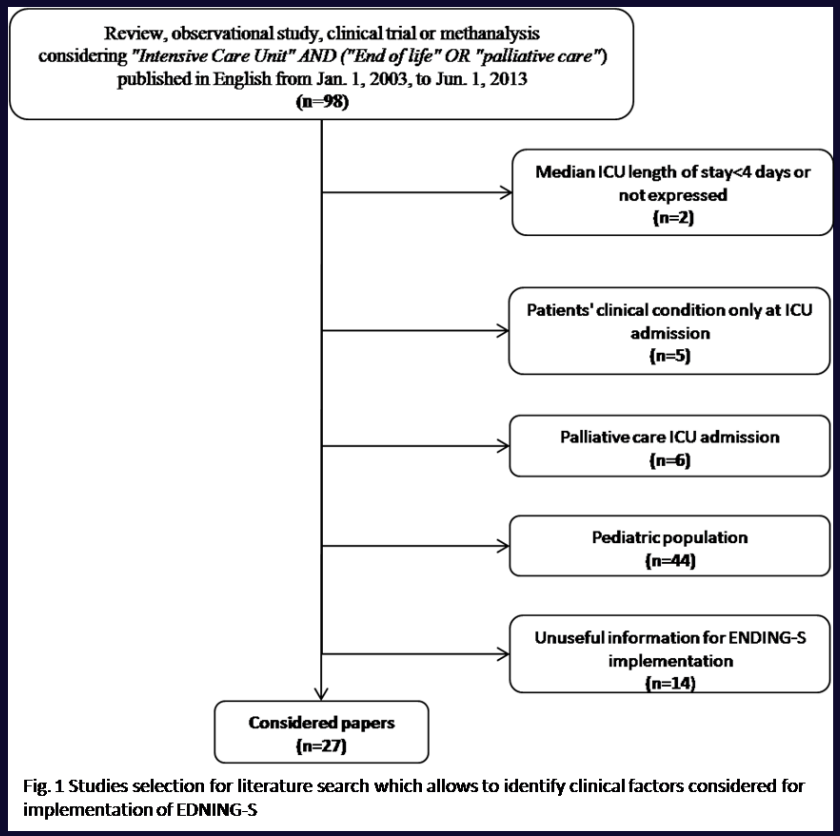


Fig. 1 Studies selection for literature search which allows to identify clinical factors considered for implementation of EDNING-S

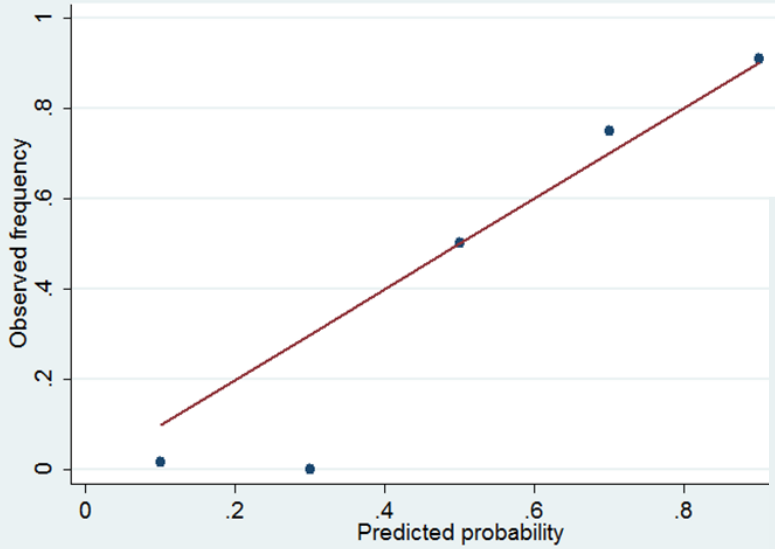
	p	Regression coefficient
Days of MV/ICU LoS	0.01	7.254994
Days of Vasoactive drugs/ICU LoS	0.03	10.45475
Sepsis	0.04	3.004746
ICU LoS	0.04	0 .300392

ENDING-S = (7.25 · *Days of MV/ICU LoS*) + (10.45 · *Days of Vasoactive drugs/ICU LoS*) + (3 · *Sepsis*) + (0.3 · *ICU LoS*)

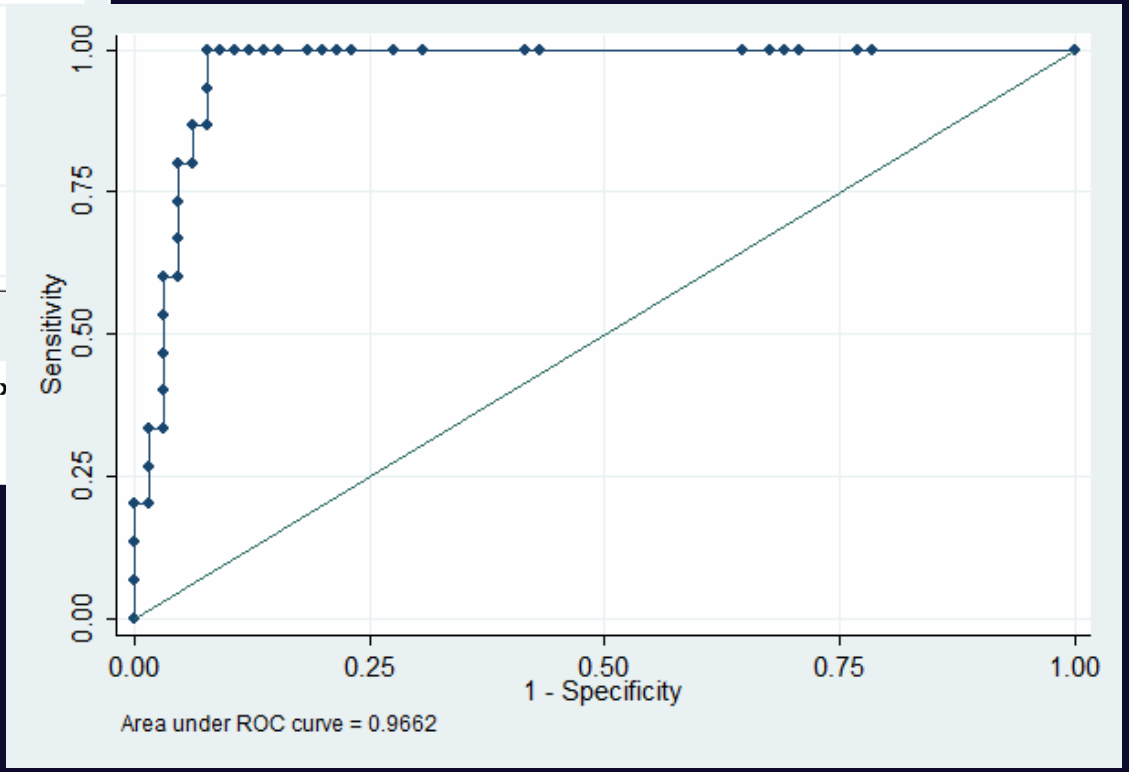
Villa G. et al. *Minerva Anaesth* 2015

END-of-Life ScorING-System, ENDING-s

Fig.2 Calibration curve for the clinical prediction model.

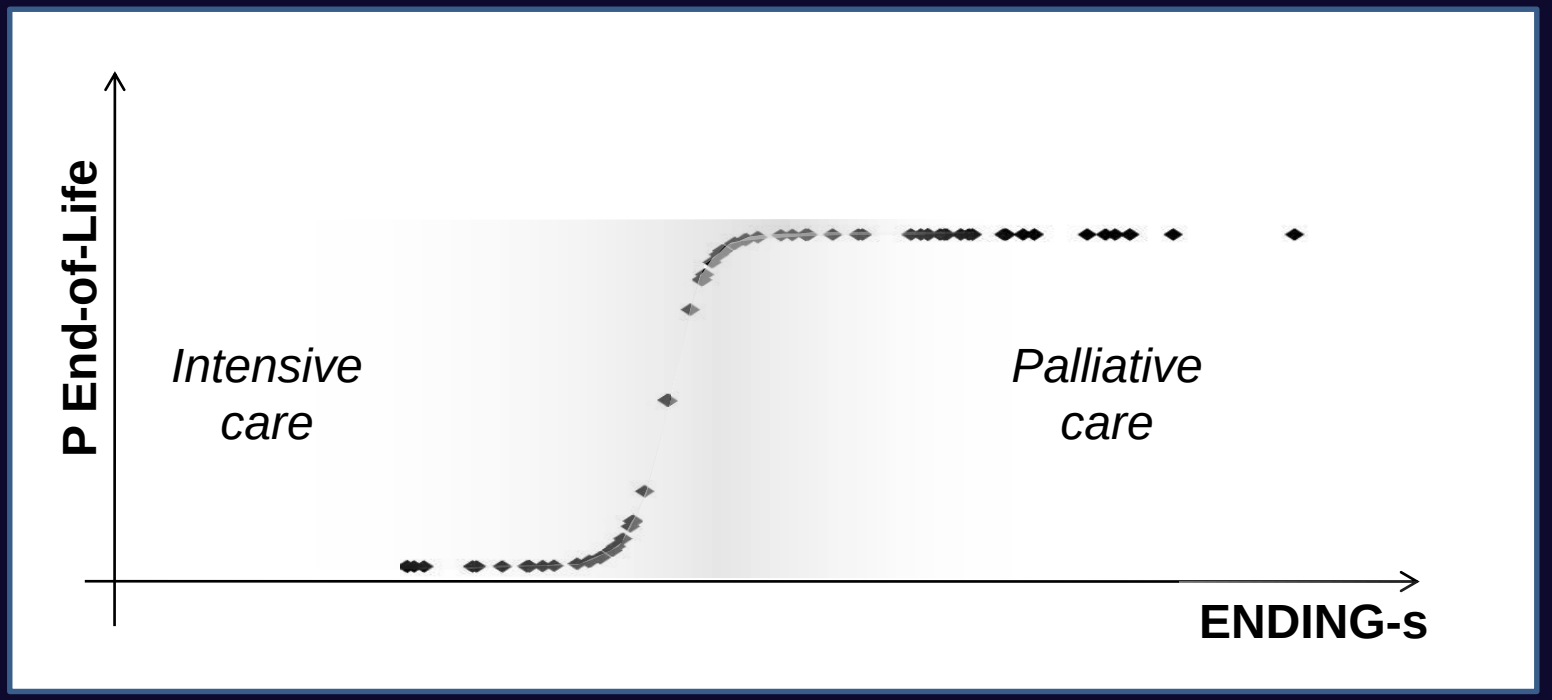


The figure plots the observed frequency of being at End-of-Life as a function o predicted probability of malignancy for patients in each quintile of predicted probability.



Villa G. et al. *Minerva Anaesth* 2015

END-of-Life ScorING-System, ENDING-s



Villa G. et al. *Minerva Anaesth* 2015

Appropriatezza

TIME LIMITED TRIAL

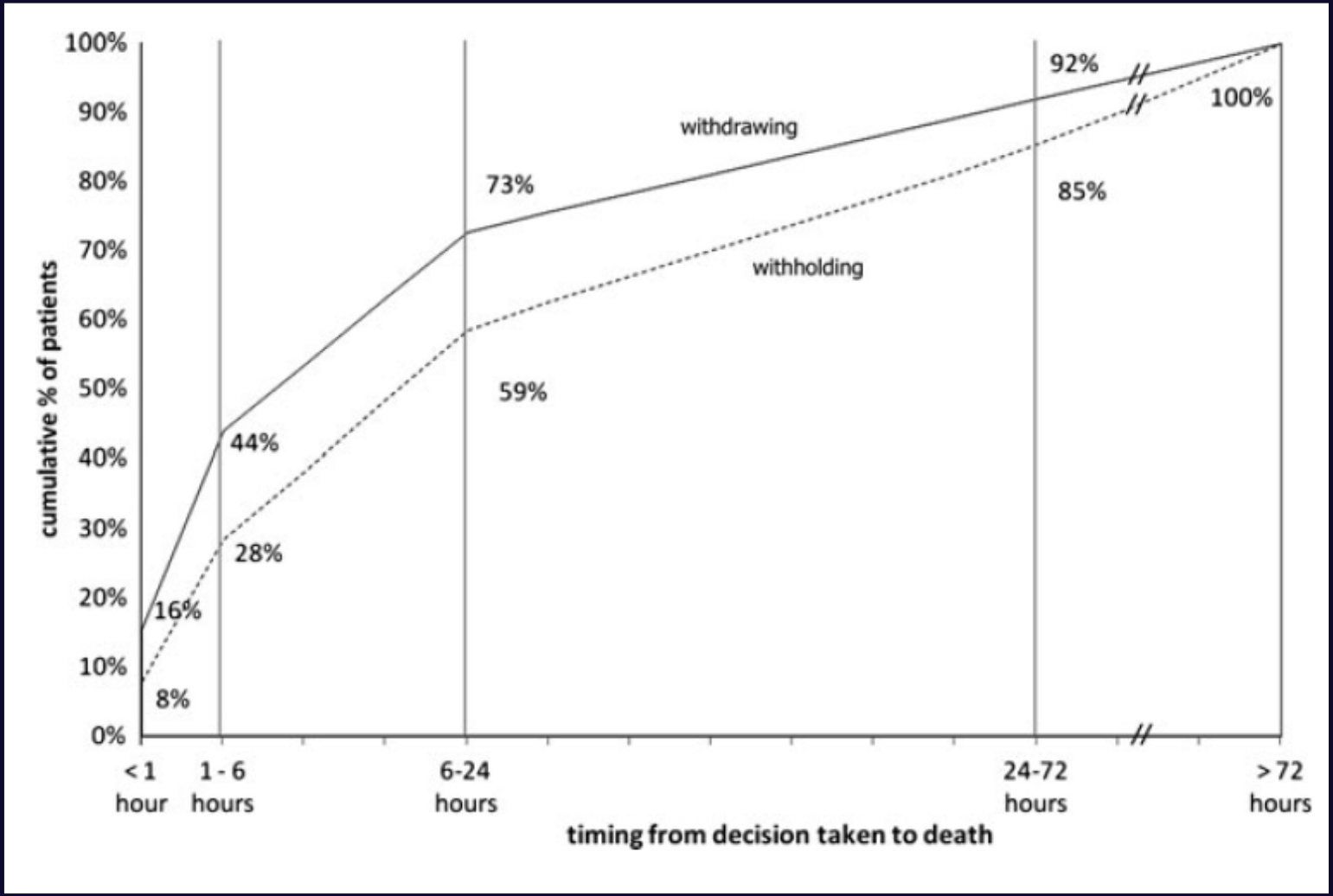
fissato un periodo di prova, si guarda la risposta del paziente e si decide l'utilità o l'inutilità del trattamento. Affinché ciò funzioni è necessario:

1)Condividere con le diverse figure professionali e, soprattutto, con paziente/famiglia la scelta e le **motivazioni** del trial.
2)Condividere e arrivare ad un accordo su quanto debba **durare** il trial ed il **timing** del monitoraggio.
3)Condividere e arrivare ad un accordo su quali **parametri** debbano essere monitorati.
4)Condividere e arrivare ad un accordo sulla **variazione** di questi parametri per definire il trattamento come utile o inutile.
5)Condividere ed essere sicuri che tutti abbiano **compreso** che, se al termine del trial la variazione di quel particolare parametro non abbia raggiunto il valore necessario per definire come utile il trattamento, il trattamento viene interrotto.

Appropriateness

	All patients (no. = 3,168)		Variability
	N	%	Median (%)
(a)			
Therapeutic support, without withdrawal/withhold decisions	1,189	37.5	30.3
Therapeutic support, without cardiopulmonary resuscitation (CPR) in case of cardiac arrest	894	28.2	26.2
Treatment limitation	1,085	34.3	40.6
(b)			
Decision to withhold	494	15.6	12.9
Intubation	85	17.2	26.8
Tracheotomy	40	8.1	25.0
Mechanical ventilation	68	13.8	21.4
Vasoactive drugs IV	269	54.5	69.2
Hemodialysis/hemofiltration	230	46.6	51.7
Surgery	68	13.8	25.0
Transfusions	78	15.8	28.6
Nutrition	41	8.3	20.0
Hydration	7	1.4	15.0
Decision to withdraw	541	17.1	20.0
Mechanical ventilation (terminal weaning without extubation)	154	28.5	32.3
Mechanical ventilation (terminal weaning with extubation)	27	5.0	13.4
Vasoactive drugs IV	377	69.7	66.3
Hemodialysis/hemofiltration	71	13.1	20.0
Transfusions	80	14.8	23.1
Nutrition	98	18.1	34.8
Hydration	22	4.1	17.1

Appropriateness



Appropriateness