Indicazione al percorso riabilitativo in funzione di 4 indicatori prognostici

Dott.ssa Maenia Scarpino
AOU Careggi
IRCCS Don Gnocchi
Firenze

Scheda filtro per segnalazione pazienti con grave cerebrolesione acquisita

Da inviare al Coordinamento Dimissioni Complesse ai seguenti recapiti:
e-mail: dimissioni.casicomplessi@uslcentro.toscana.it
Fax 055 6933234

ESAMI (allegare copia referti)	
ESAMI OBBLIGATORI	**ESAMI/SCALE FACOLTATIVI O A GIUDIZIO DEL NEUROLOGO/NEUROFISIOPATOLOGO ESPERTO**
EEG standard (per pz non vigili)	EEG Video-Polisonnografia, V-PSG
PESS AASS (per pz non vigili)	BAEPs
TC CEREBRALE	PEV (flash, pattern)
RM CEREBRALE (in alternativa alla TC)	Potenziali Cognitivi (P300, MMN, Altro)
	CRS-R (riportare il punteggio):_____
	LCF (riportare il punteggio):_____
	Altro (specificare):

Reviewer 2:

I still don't understand **the rationale** for going through **all these investigations** for the **sole purpose of deciding rehabilitation status**.

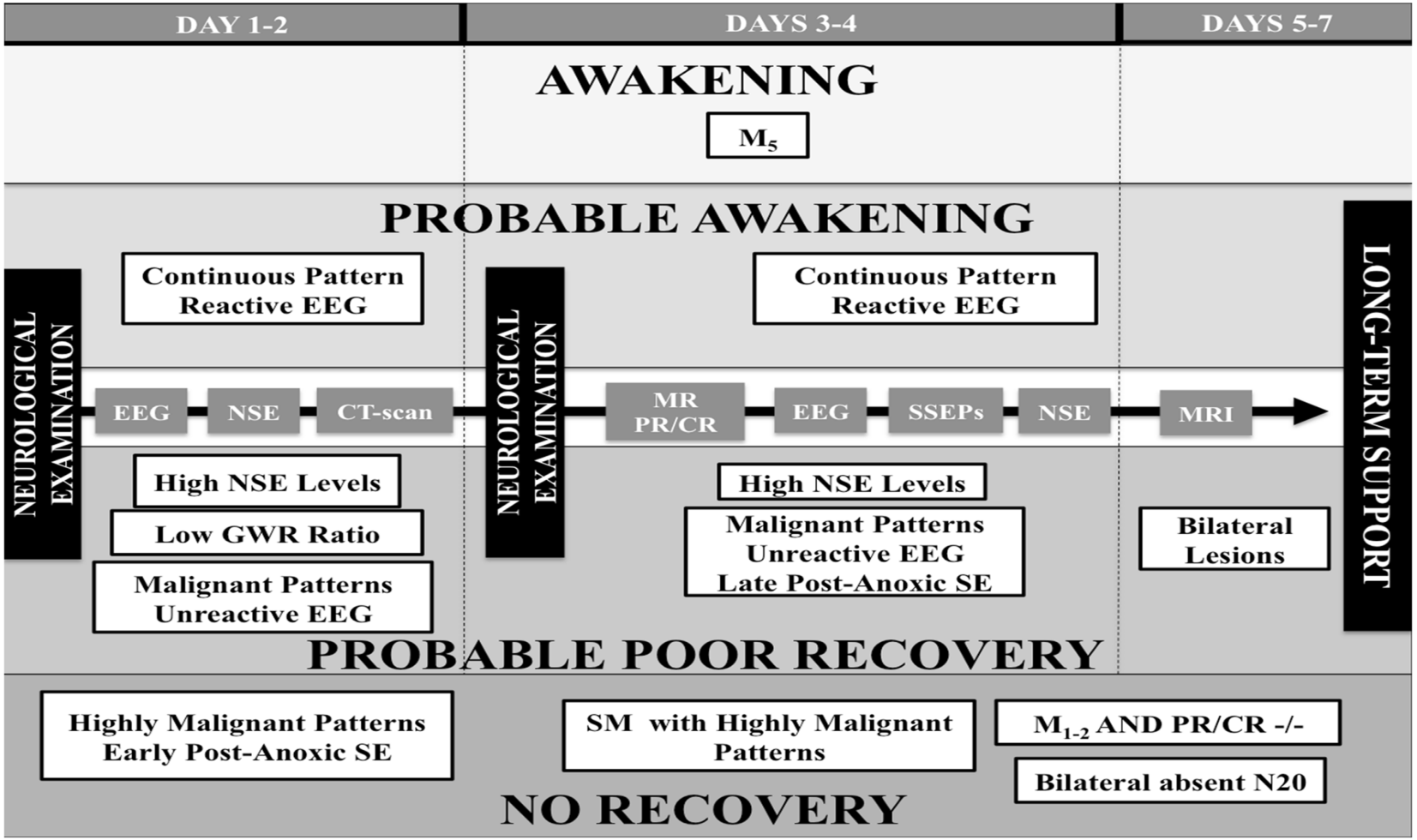
it's **hard to imagine the utility** of such an endeavor **under a hospital wide protocol.**

Acta Neurol Belg (2017) 117:3–15
DOI 10.1007/s13760-017-0755-1

CONSENSUS PAPER AND GUIDELINE

Neuroprognostication after adult cardiac arrest treated with targeted temperature management: task force for Belgian recommendations

Fabio Silvio Taccone[1] · Ingrid Baar[2] · Cathy De Deyne[3] · Patrick Druwe[4] · Benjamin Legros[5] · Geert Meyfroidt[6] · Michel Ossemann[7] · Nicolas Gaspard[5]



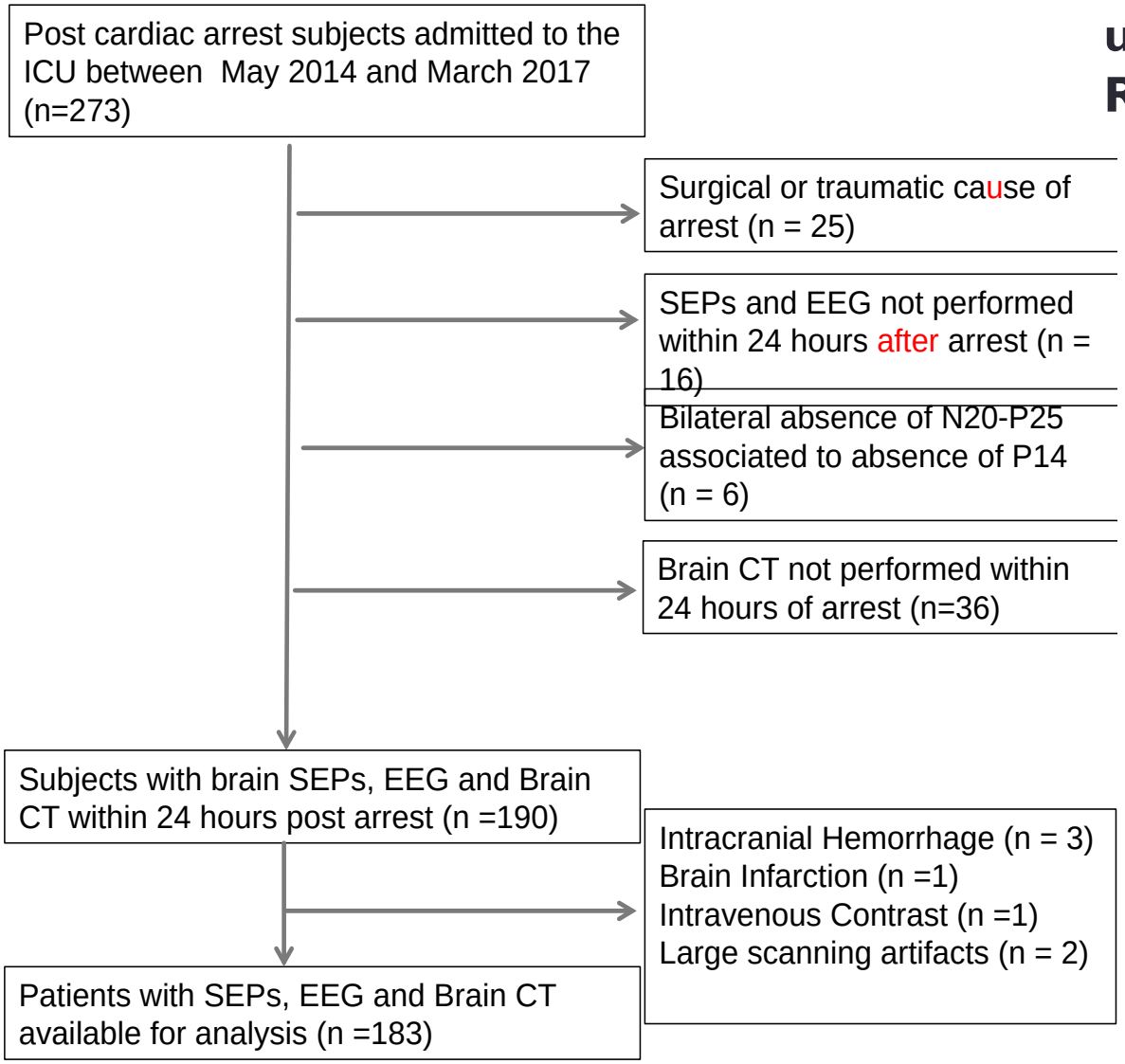
Neurophysiological and neuroradiological multimodal approach for early poor outcome prediction after cardiac arrest

Scarpino M, Lanzo G, Lolli F, Carrai R, Moretti M, Spalletti M, Peris A, Amantini A, Grippo A.

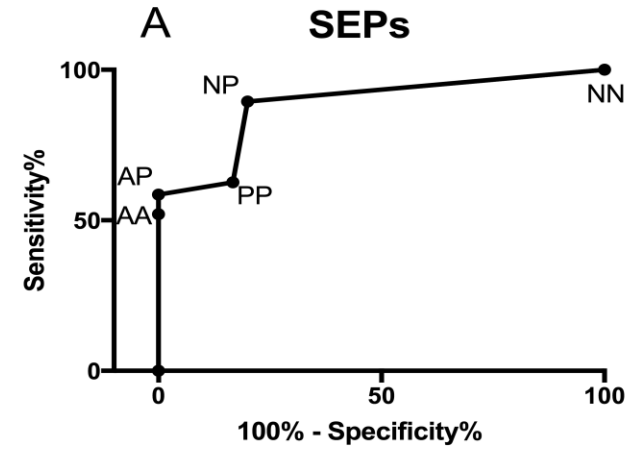
Under second review Resuscitation

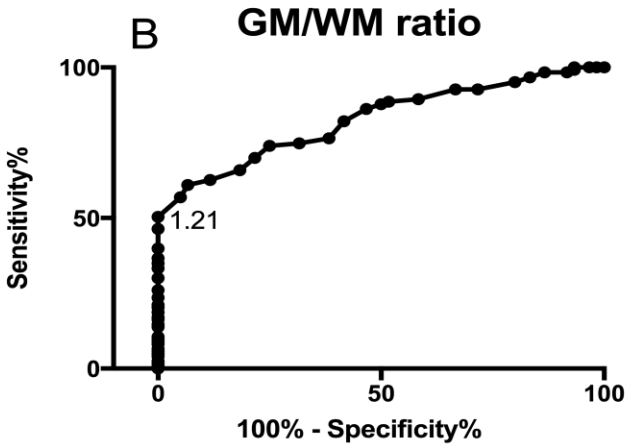
Neurophysiological and neuroradiological multimodal approach for early poor outcome prediction after cardiac arrest

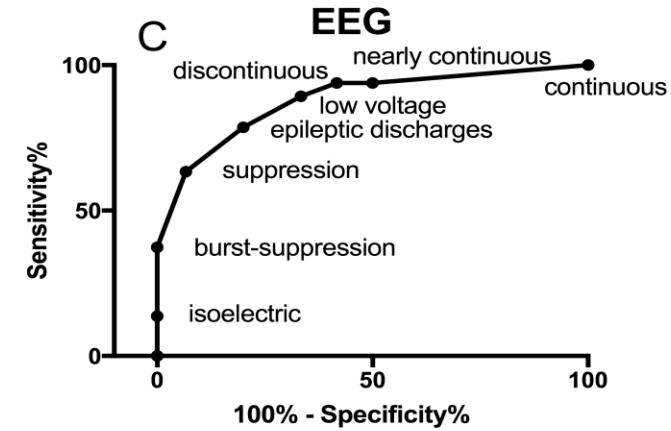
Scarpino et al., under second review Resuscitation



	Patients Included n=183	Patients excluded n=52
Mean age (yrs) mean (SD)	66.0 (15.9)	66.5 (17.7)
Male (%)	120 (65.5)	29 (55.7)
Out-of-hospital arrest (%)	128 (69.9)	32 (61.5)
Witnessed arrest (%)	155 (84.6)	44 (84.6)
CA duration (min) median (IQR)	24.2 (14)	22.5 (14.1)
Initial rhythm		
VF/VT (%)	78 (42.7)	21 (40.3)
PEA/EMD (%)	47 (25.6)	14 (26.9)
Asystole (%)	38 (20.7)	13 (25.0)
Unknown (%)	20 (10.9)	4 (7.6)
Pupillary reflex at NPH evaluation (%)		
Yes	36 (19.6)	12 (23)
No	140 (76.5)	36 (69.2)
NA	7 (3.8)	4 (7.6)
GCS score at ICU admission		
Total median (IQR)	3.0 (0.0)	3.0 (0.0)
Motor median (IQR)	1.0 (0.0)	1.0 (0.0)
Verbal median (IQR)	1.0 (0.0)	1.0 (0.0)
Eyes median (IQR)	1.0 (0.0)	1.0 (0.0)
Hypothermia treatment		
No (%)	111 (60.6)	34 (65.3)
Yes (%)	63 (34.4)	15 (28.8)
Controlled temperature (%)	9 (4.9)	3 (5.7)
CPC score		
Discharge		
CPC 1, good recovery (%)	5 (2.7)	1 (1.9)
CPC 2, moderate disability (%)	12 (6.5)	2 (3.8)
CPC 3, severe disability (%)	33 (18.0)	11 (21.5)
CPC 4, unresponsive wakefulness (%)	72 (39.3)	20 (38.4)
CPC 5a, brain death (%)	34 (18.5)	9 (17.3)
CPC 5b, death for non neurological causes (%)	27 (14.7)	9 (17.3)
6 months		
CPC 1, good recovery (%)	9 (4.9)	3 (5.7)
CPC 2, moderate disability (%)	28 (15.3)	7 (13.4)
CPC 3, severe disability (%)	23 (12.5)	6 (11.5)
CPC 4, unresponsive wakefulness (%)	54 (29.5)	16 (30.7)
CPC 5a, brain death (%)	34 (18.5)	9 (17.3)
CPC 5b, death for non neurological causes (%)	35 (19.1)	11 (21.5)







SEPs: AA-AP

GM/WM ratio: <1.21

EEG: isoelectric/burst-suppression

Scarpino et al., under second review Resuscitation

Table 2 revised

Table 2. Single and multimodal approach-sensitivity and negative predictive values (at 100% specificity) for poor outcome prediction

Parameter	CPC 4-5a-5b "poor"	CPC 1-3 "good"	Sensitivity	NPV
Single Test			95% CI	95% CI
SEP				
Grade 2	72	0	58.5% (49.3-67.3)	54.0% (48.1-59.2)
Grade 1	51	60		
GM/WM ratio				
< 1.21	61	0	41.7% (33.6-50.2)	35.6% (32.5-38.8)
≥ 1.21	85	60		
EEG				
Malignant	53	0	43.0% (34.2-52.3)	46.1% (42.3-49.9)
Non Malignant	70	60		
Multimodal				
Different Combination of two tests				
Grade 2 SEPs or GW/WM ratio < 1.21	84	0	68.3% (56.7-74.1)	60.6% (52.7-64.6)
Grade 1 SEPs or GW/WM ratio ≥ 1.21	39	60		
Malignant EEG or GW/WM ratio < 1.21	81	0	65.7% (57.6-74-9)	58.2% (49.2-65.6)
Non Malignant EEG or GW/WM ratio ≥ 1.21	42	60		
Grade 2 SEPs and/or Malignant EEG	72	0	58.5% (49.3-67.3)	54.0% (48.1-59.2)
Grade 1 SEPs and/or Non Malignant EEG	51	60		
Combination of three tests				
One or more tests predicting poor outcome	88	0	71.5% (62.7-79.3)	63.1% (56.4-69.4)
No tests predicting poor outcome	35	60		

CPC: Cerebral Performance Categories; NPV: Negative Predictive Value; CI: Confidence Interval SEP: Somatosensory Evoked Potential; GW/WM: Gray Matter/White Matter

"Sensitivity"-oriented multimodal prognostic approach

- Having all the single tests suboptimal sensitivity, the availability of all the three in the same patient increased the identification of subjects with poor outcome at an early stage.
- **In case the clinician is confident in using only a single parameter for ominous outcome prediction,** and considering all the patterns of each instrumental test with a specificity of 100% for poor outcome (isoelectric/burst-suppression EEG patterns, AA-AP SEP patterns, GM/WM ratio <1.21), **it is possible to increase the sensitivity of ominous outcome prediction to 71.5%.**

"Reliability"-oriented multimodal prognostic approach

- the contemporary presence of at least **two patterns predicting poor outcome** in the same patient could **make the clinician more confident in an early (within 24 hours) ominous prediction**, albeit at the cost of a decrease in sensitivity (from 71.5% to 48%).
- The presence of **all three poor prognostic patterns** in the same subject occurred in a still smaller number of patients (28/123 with poor prognosis) 23%.

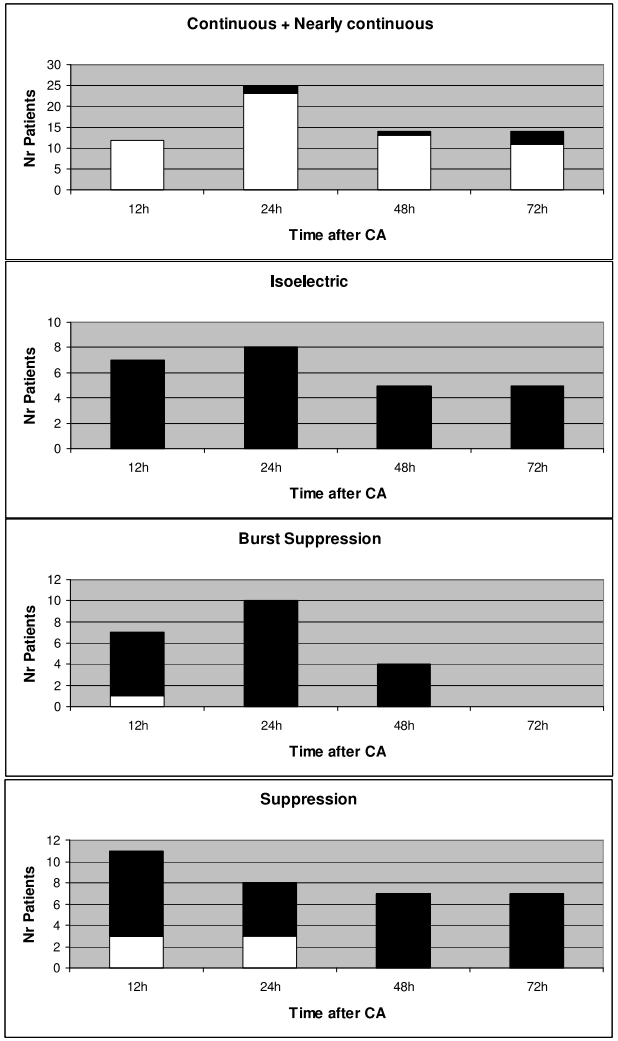
"Reliability"-oriented multimodal prognostic approach

Even if this association occurred **in a small percentage of our sample (23%),** it **could help deal with problematic management decisions, with more robust evidence,** obviously in addition to the clinical examination, performed at least 72 hours after CA, and in addition to the repetition of neurophysiological tests.

Scarpino et al., under second review Resuscitation

Solo Prognosi Sfavorevole?

INDICATORI DI PROGNOSI FAVOREVOLE



Spalletti et al., 2016

Use of brain diffusion tensor imaging for the prediction of long-term neurological outcomes in patients after cardiac arrest: a multicentre, international, prospective, observational, cohort study

*Lionel Velly, Vincent Perlbarg, Thomas Boulier, Nicolas Adam, Sebastien Delphine, Charles-Edouard Luyt, Valentine Battisti, Gregory Torkomian, Charlotte Arbelot, Russell Chabanne, Betty Jean, Carol Di Perri, Steven Laureys, Giuseppe Citerio, Alessia Vargiolu, Benjamin Rohaut, Nicolas Bruder, Nadine Girard, Stein Silva, Vincent Cottenceau, Thomas Tourdias, Olivier Coulon, Bruno Riou, Lionel Naccache, Rajiv Gupta, Habib Benali, Damien Galanaud, Louis Puybasset, for the MRI-COMA Investigators**

Implications of all the available evidence

Our results are relevant in the clinical setting because they might provide reliable outcome predictors and could possibly improve diagnosis of late awakeners in survivors after cardiac arrest who were still unresponsive to simple orders after 7 days. The findings of our study support the use of quantitative MRI (DTI) for proxy information and management of care withdrawal decisions in this selected population of patients with cardiac arrest.

CONCLUSIONI

L'OTTIMIZZAZIONE DEL PERCORSO DELLA FASE POST-ACUTA DEI PAZIENTI AFFETTI DA HIE, DEVE INIZIARE GIA' IN UNA FASE PRECOCE MEDIANTE UNA VALUTAZIONE STRUMENTALE MULTIMODALE, ASSOCIATA OVVIAMENTE SUCCESSIVAMENTE ALLA VALUTAZIONE CLINICA.

GRAZIE PER L'ATTENZIONE