

APPROPRIATEZZA, QUALITÀ E SOSTENIBILITÀ
DEL PERCORSO ORTOGERIATRICO

Perugia, 19-20 gennaio 2024

Il delirium: sindrome geriatrica e indicatore di qualità assistenziale

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My talk today

- Delirium
- Impatto prognostico del delirium nel paziente con frattura di femore
- Delirium come indicatore di qualità assistenziale

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Delirium

- Il delirium è una sindrome neuropsichiatrica caratterizzata da un cambiamento acuto delle performances cognitive (con particolare riferimento alle capacità attentive e alla consapevolezza di se nell'ambiente), un alterato «arousal» e una tendenza alla fluttuazione dei sintomi
 - Acute Brain Dysfunction
- Tre sottotipi: ipercinetico, ipocinetico e misto

Multifactorial model of delirium in older people

Predisposing factors or vulnerability

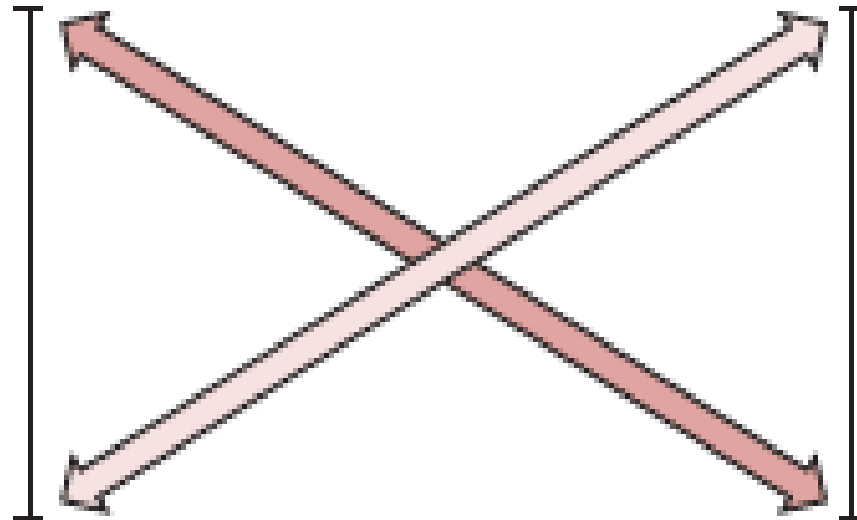
Precipitating factors or insults

High vulnerability

Noxious insult

Low vulnerability

Less noxious insult



Evidence-based and consensus-based statements regarding risk factors in elderly surgical patients

Predisposing factors

- Cognitive impairment
- Reduced functional status and/or frailty
- Malnutrition (low serum albumin)
- Sensory impairment

Precipitating factors

- Time to surgery
- Depth of anesthesia
- Intraoperative blood loss
- Uncontrolled pain
- Medical complications
- Inappropriate drug prescription
- Lack of protocols to prevent delirium

4AT istruzioni per l'uso

1] VIGILANZA/AROUSAL

Sopore/agitazione-iperattività durante test.

Osservare il paziente. Se dorme, provare a risvegliarlo, richiamandolo, o con un leggero tocco sulla spalla. Chiedere al paziente di ripetere il proprio nome e l'indirizzo della propria abitazione.

- Normale (vigile, non agitato/soporoso) =0
- Sonnolenza <10" dopo risveglio, poi normale =0
- Chiara

2] AMT4

Età, data di nascita, luogo (nome dell'ospedale e dell'edificio), anno corrente

- Nessun errore = 0
- 1 errore = 1
- =2

3] ATTENZIONE

Chiedere dell'anno e del mese in cui si dice

domanda, è consentito inizialmente questo suggerimento: "qual è il mese prima di dicembre?"

- è in grado di ripetere senza errori >7 mesi =0
- Inizia ma riporta < 7 mesi/ rifiuta di iniziare =1
- non effettuabile (assonnato o disattento) =2

4 o più: possibile delirium +/- deterioramento cognitivo (necessarie informazioni più dettagliate);
1-3: possibile deterioramento cognitivo (altri test necessari);
0: improbabile delirium o deterioramento cognitivo (ma delirium può essere presente se il punto 4 è incompleto)

alla comprensione o altre funzioni cognitive-comportamentali (ad esempio ossessioni e/o allucinazioni) con esordio nelle ultime 2 settimane e ancora presenti nelle ultime 24 ore.

- No =0
- SI =4



National Hip Fracture Database (NHFD)

Annual report September 2018
(Data from January to December 2017)



Key performance indicator 5

Not delirious when tested after operation

Delirium is the commonest complication of all forms of surgery and anaesthesia in older people, but the condition is still poorly recognised by some staff looking after these patients.

NHFD have therefore adopted the 4A test (4AT) ([Bellelli 2014](#)) as a simple measure that will encourage routine assessment, and improve our understanding of a complication that can dominate patients' hospital stay and recovery, as discussed in [Section 1](#) at the end of this report.

NHFD asks for 4AT to be performed in the week following surgery, and over 80% of people were screened for postoperative delirium using the 4AT score in 2017.

In some units a large number of patients were not assessed so it is inappropriate for us to report rates of delirium for different units. Instead we will report on the '*proportion of patients who did not have delirium when tested after operation*' – so that a failure to test will be reflected in this indicator.

In 2017 we found that 62.3% of patients were successfully tested and found not to have delirium. This figure ranged from 0% to over 90%, and units at either extreme of this distribution should review the way in which this crucial patient assessment is being performed.

Among those patients who were tested, a quarter (24.9%) were identified as having 'possible delirium' with a score of 4+. These people were twice as likely to die as inpatients, three times more likely to need placement in a residential home and four times more likely to need placement in a nursing home.

Recommendation 5 Clinical teams must review the new key performance indicator '*proportion of patients not delirious when tested after operation*' for their unit. If dashboards and benchmarking tables highlight poor performance then multidisciplinary clinical governance meetings must consider, discuss and develop plans to improve the perioperative care they are providing to their patients.

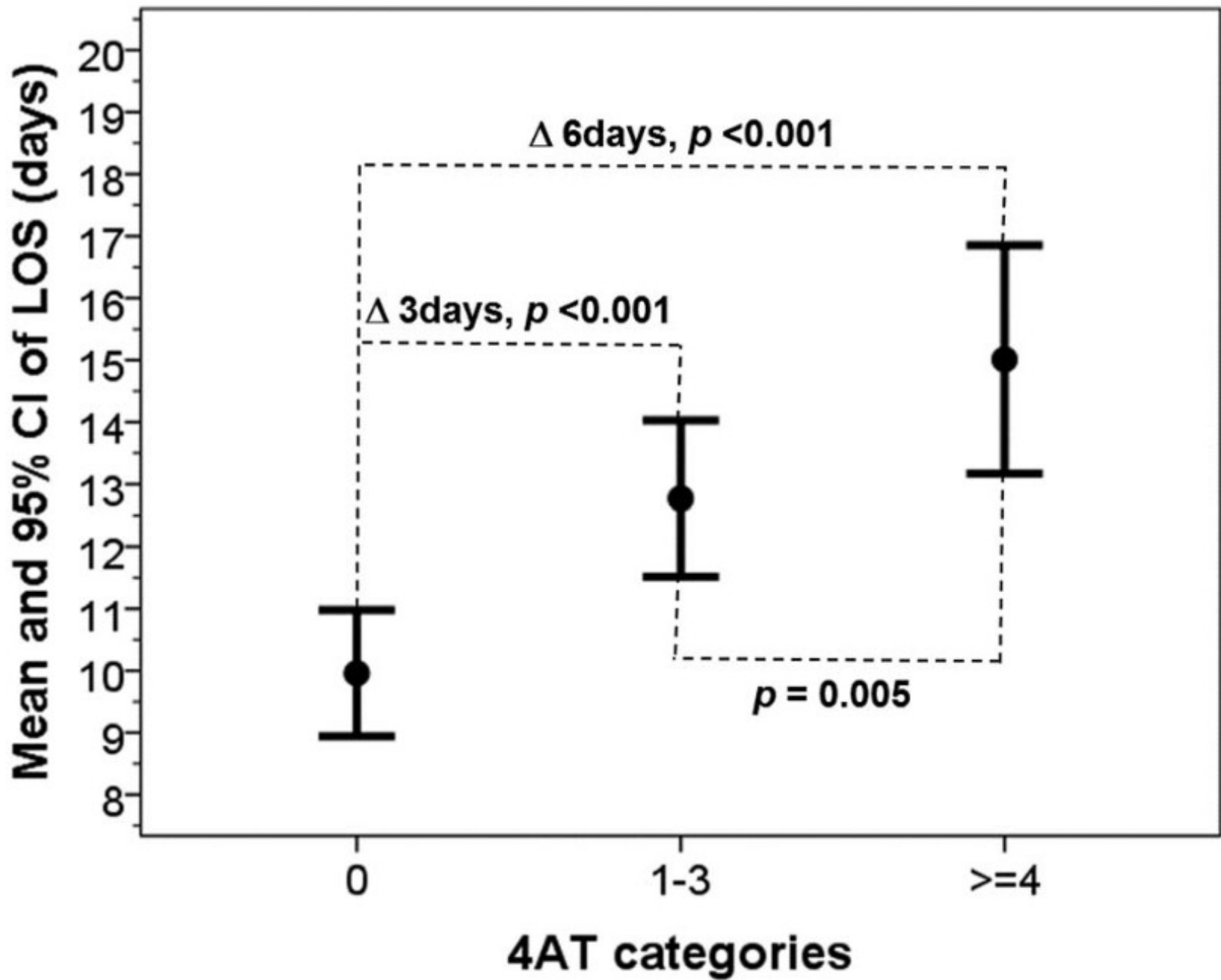
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Associations of 4AT with mobility, length of stay and mortality in hospital and discharge destination among patients admitted with hip fractures

RADCLIFFE LISK¹, KEEFAI YEONG¹, PETER ENWERE², JOSIE JENKINSON³, JONATHAN ROBIN⁴, MELANIE IRVIN-SELLERS⁵, DAVID FLUCK⁶, AHMAD OSMANI¹, RIFAT SHARMIN¹, PANKAJ SHARMA^{7,8}, CHRISTOPHER H. FRY⁹, THANG S. HAN⁷

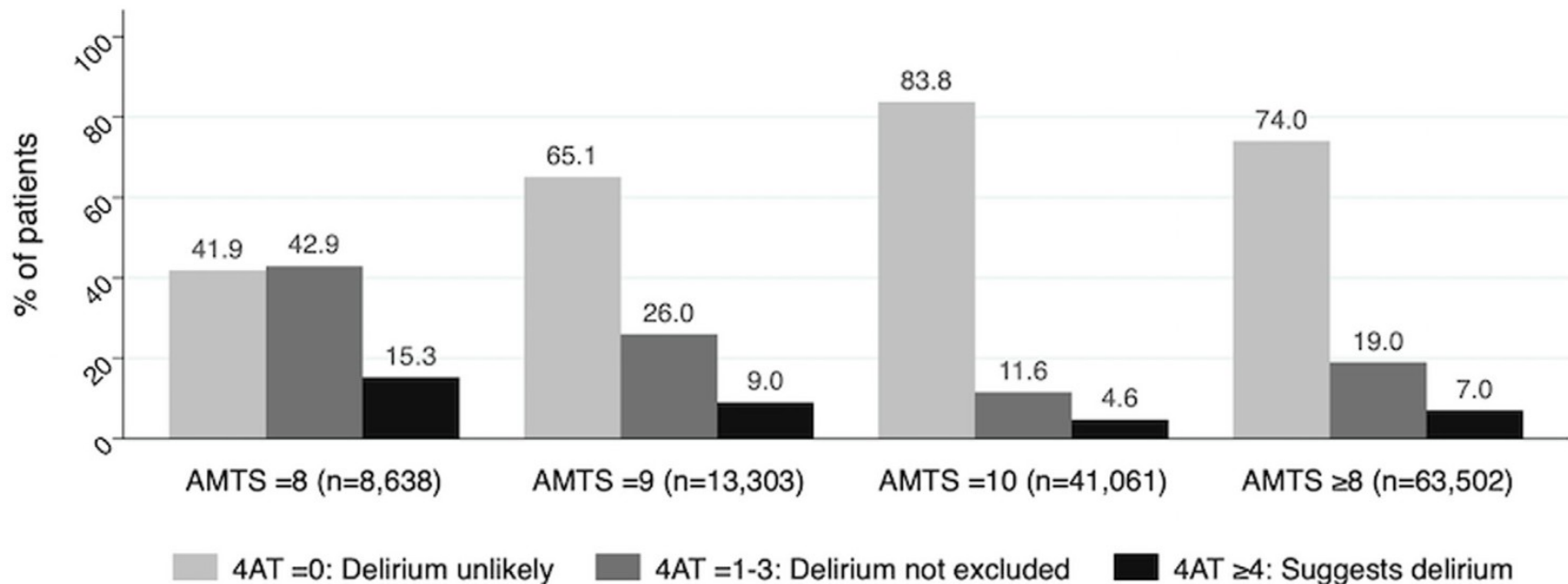
National Hip Fracture Database; single hospital Jan 2018-June 2019
From 537 (392 women, 145 men: mean = 83.7 ± 8.8 years)
consecutive patients, 522 completed the 4AT;
The 4AT was performed within 1 day after hip surgery.



Risk Factors and 120-Day Functional Outcomes of Delirium After Hip Fracture Surgery: A Prospective Cohort Study Using the UK National Hip Fracture Database (NHFD)

Samuel Hawley DPhil, MSc^{a,*}, Dominic Inman MB ChB, FRCS^{b,c}, Celia L. Gregson FRCP^a, Michael Whitehouse PhD, FRCS (Tr&Orth)^{a,d}, Antony Johansen MA, MB, BChir^{c,e}, Andrew Judge PhD, MSc^{a,d}

- National Hip Fracture Database; 2018-June 2019
- All patients with hip fracture in England, excluding those with abnormal cognition [AMTS < 8] on presentation.
- 63,502 patients (63%) had a preoperative AMTS >8, in whom a postoperative 4AT score >4 was seen in 4454 (7%) patients.



Associations Between Postoperative 4AT Assessment of Delirium and 120-Day Functional Outcomes


	Number Included in Analysis	Number (%) Achieving Outcome	Age and Sex Adjusted			Fully Adjusted*		
			OR	Lower 95% CI	Upper 95% CI	OR	Lower 95% CI	Upper 95% CI
Return to own home[†]								
4AT = 0	14,672	13,718 (93.5%)	ref			ref		
4AT = 1-3	2989	2520 (84.3%)	0.43	0.38	0.49	0.60	0.52	0.68
4AT ≥4	1058	857 (81.0%)	0.33	0.28	0.40	0.46	0.38	0.55
Return to outdoor mobility[‡]								
4AT = 0	13,027	10,071 (77.3%)	ref			ref		
4AT = 1-3	2382	1419 (59.6%)	0.46	0.42	0.51	0.64	0.57	0.71
4AT ≥4	829	489 (59.0%)	0.46	0.39	0.54	0.63	0.53	0.75

*Adjusted for: age, sex, prefracture mobility, presurgery AMTS, fracture type, ASA grade, preadmission residence, nutritional assessment, surgery delay with reason, postadmission nerve block, anesthetic type, operation type, NICE-compliant surgery, surgeon grade, anesthetist grade, IMD quintile, admission day and time of day, season, admission year.

[†]Return home analysis only conducted among those admitted from their own home or sheltered accommodation. Patients not surviving 120 days excluded.

[‡]Mobility analysis conducted only among those with outdoor mobility (with or without aid(s)/frame) before hip fracture. Patients not surviving 120 days excluded.

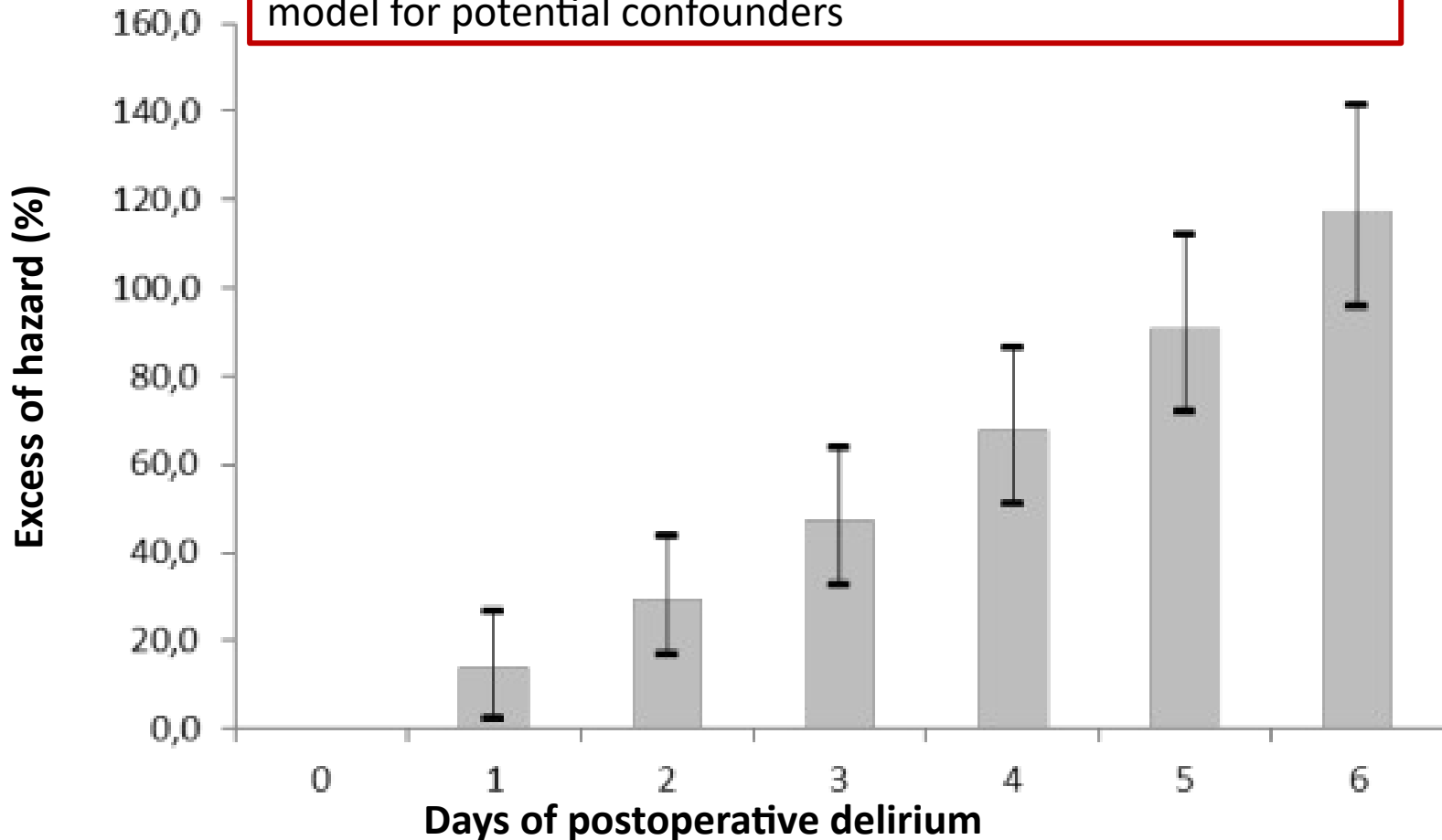
Frailty and post-operative delirium influence on functional status in patients with hip fracture: the GIOG 2.0 study

Chiara Maria Gandossi¹ · Antonella Zambon^{2,3} · Maria Cristina Ferrara⁴ · Elena Tassistro⁵ · Giuseppe Castoldi⁶ · Francesca Colombo⁶ · Chiara Mussi⁷ · Emilio Martini⁷ · Giuseppe Sergi⁸ · Alessandra Coin⁸ · Giovanni Zatti^{1,9} · Caterina Trevisan^{10,11} · Stefano Volpato^{10,11} · Andrea Ungar¹² · Giuseppe Bellelli^{1,13}  on behalf of GIOG 2.0 Study Group, Società Italiana di Gerontologia e Geriatria (SIGG)

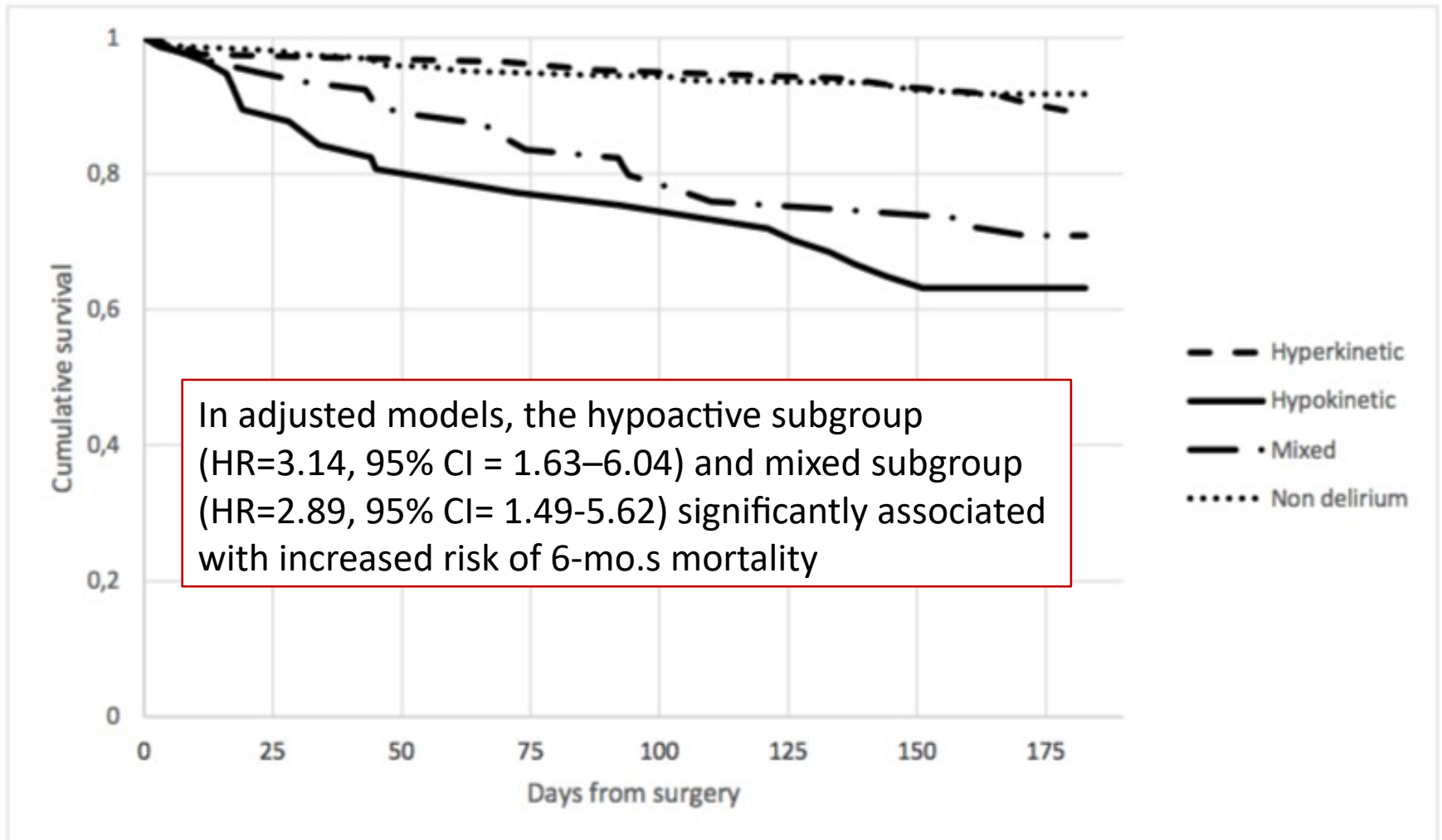
Variable	Panel A		Panel B	
	At discharge (N = 984)		At 4-month follow-up (N = 462)	
	RR (95% CI)	p value	RR (95% CI)	p value
Frailty index and post-operative delirium				
Frailty no/delirium no	1		1	
Frailty yes/delirium no	1.56 (1.19–2.04)	0.0012	2.38 (1.21–4.66)	0.0116
Frailty no/delirium yes	1.37 (0.92–2.02)	0.1197	0.22 (0.03–1.56)	0.1307
Frailty yes/delirium yes	2.57 (2.02–3.26)	< .0001	3.65 (1.85–7.2)	0.0002
Socio-demographic variables				
Age		0.0059		0.0039
Female sex		0.9465		0.4702
Fracture and intervention covariates				
Inter-trochanteric/subtrochanteric fracture		0.2304		0.5928
Other types of fracture		< .0001		0.4014
48-h delay in intervention		0.0946		0.5399
General anesthesia/Sedation		0.1821		0.2001

Delirium duration & mortality

Each single day of post-operative delirium increased the hazard ratio of 6-month death by 17%, after adjusting the model for potential confounders



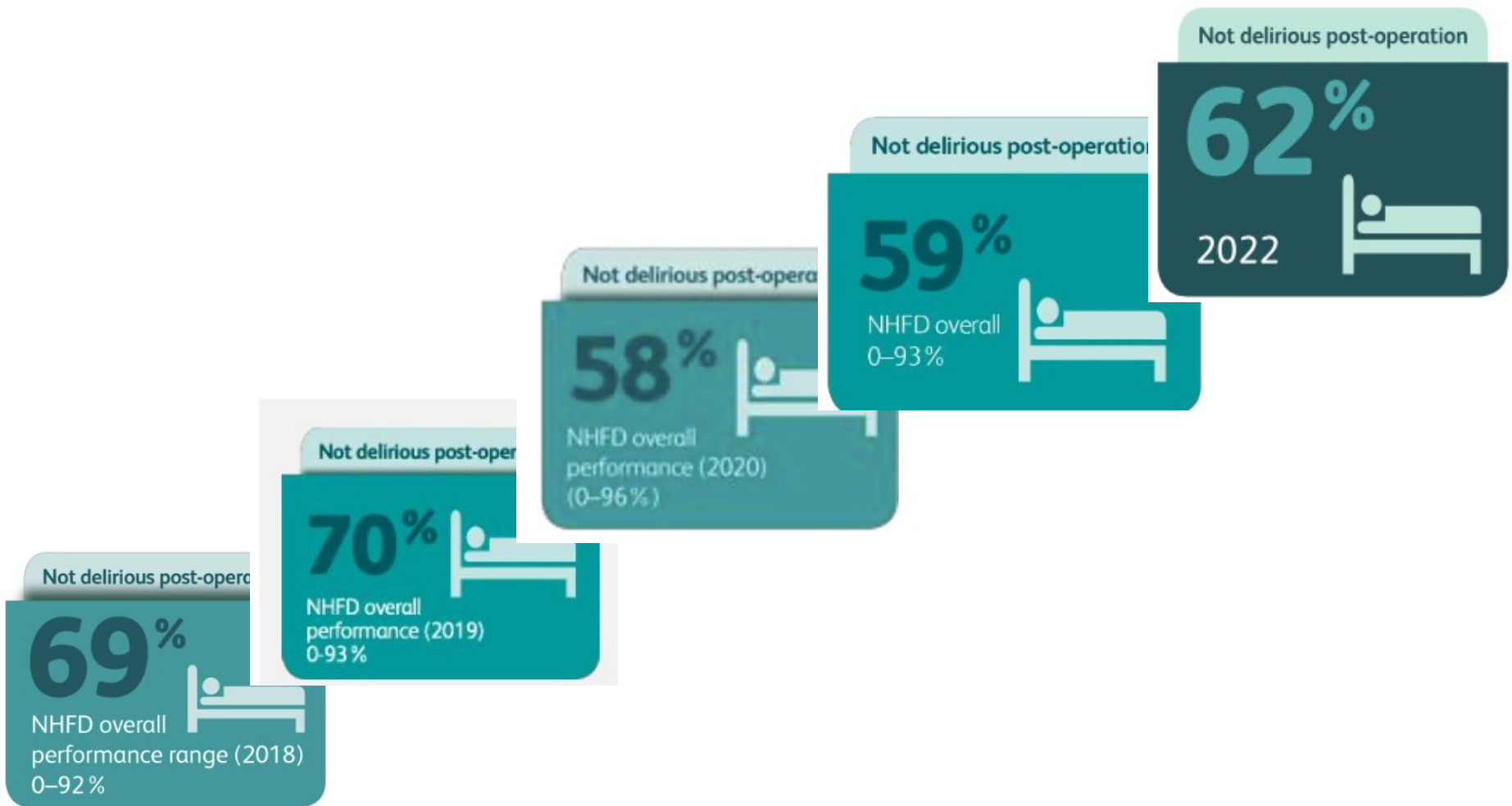
Kaplan-Meier survival curves for psychomotor subtypes and the no-delirium group



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Changes over time in KPI 5 (assessing post-op delirium in hip fracture patients) in NHFD





GIOG 2.0



14
centri partecipanti



**+ 3 centri in attesa di
approvazione**

- GIOG-01** ASST Monza Ospedale San Gerardo, UOC Geriatria
- GIOG-02** ASST Vimercate Ospedale di Carate Brianza, UO Ortopedia
- GIOG-03** Policlinico S.Orsola-Malpighi, Bologna
- GIOG-06** Arcispedale Sant'Anna, Ferrara
- GIOG-07** AOU di Careggi - Firenze
- GIOG-08** Azienda UsI Toscana centro
- GIOG-09** Ospedale S. Agostino Estense - Modena Reggio Emilia
- GIOG-12** Ospedale Policlinico S. Martino, Genova
- GIOG-13** Ospedale Galliera, Genova
- GIOG-17** Azienda Ospedaliera di Padova
- GIOG-21** Azienda Ospedaliera S. Croce e Carle – Cuneo
- GIOG-22** Azienda Ospedaliera Universitaria integrata di Verona

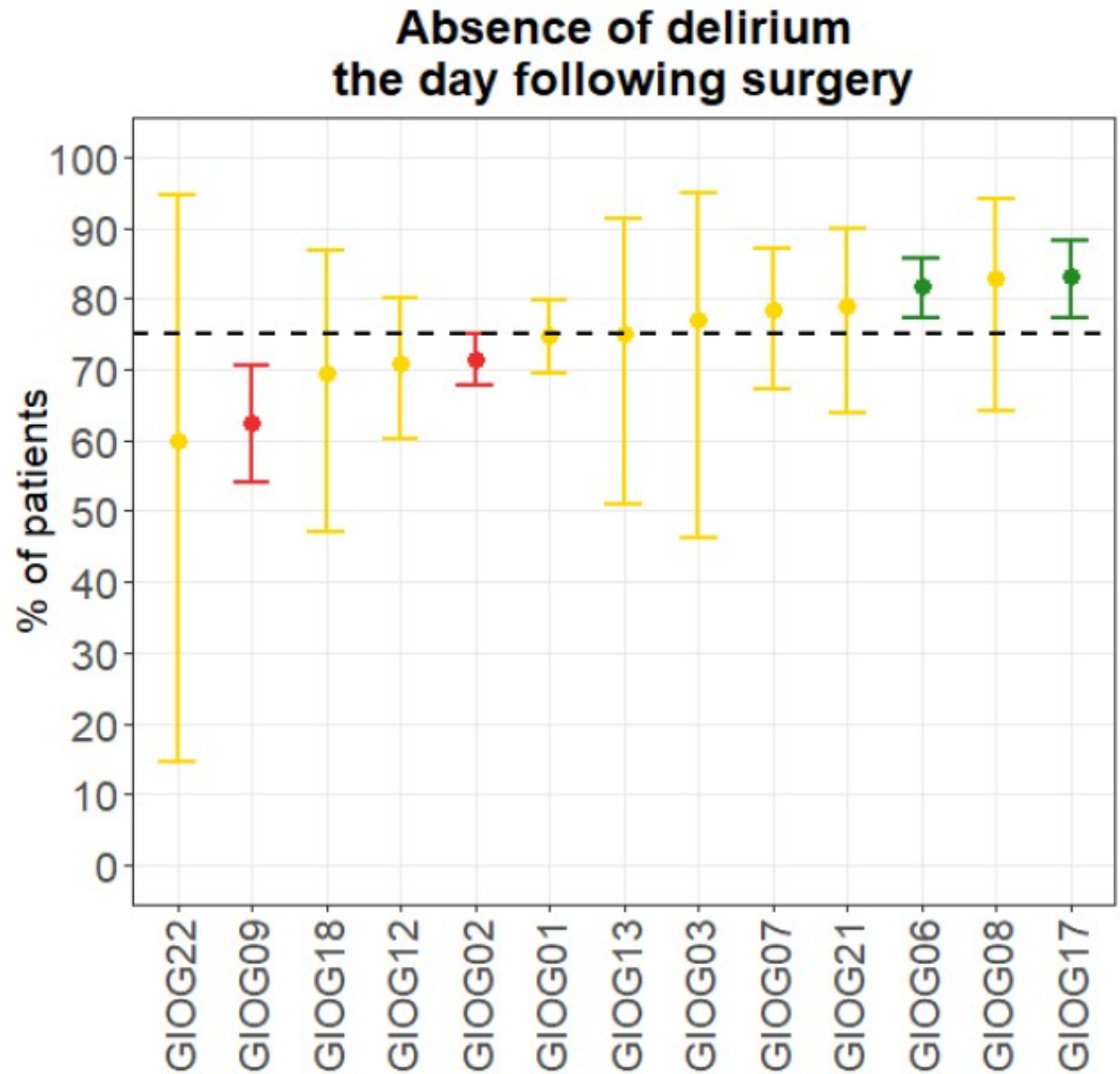
* GIOG 18 Policlinico Universitario Campus Bio-Medico Roma

Azienda Ospedaliera di Cosenza «SS. Annunziata»
Ospedale Cà Foncello Aulss 2, Treviso
Fondazione Policlinico Universitario Agostino Gemelli IRCCS

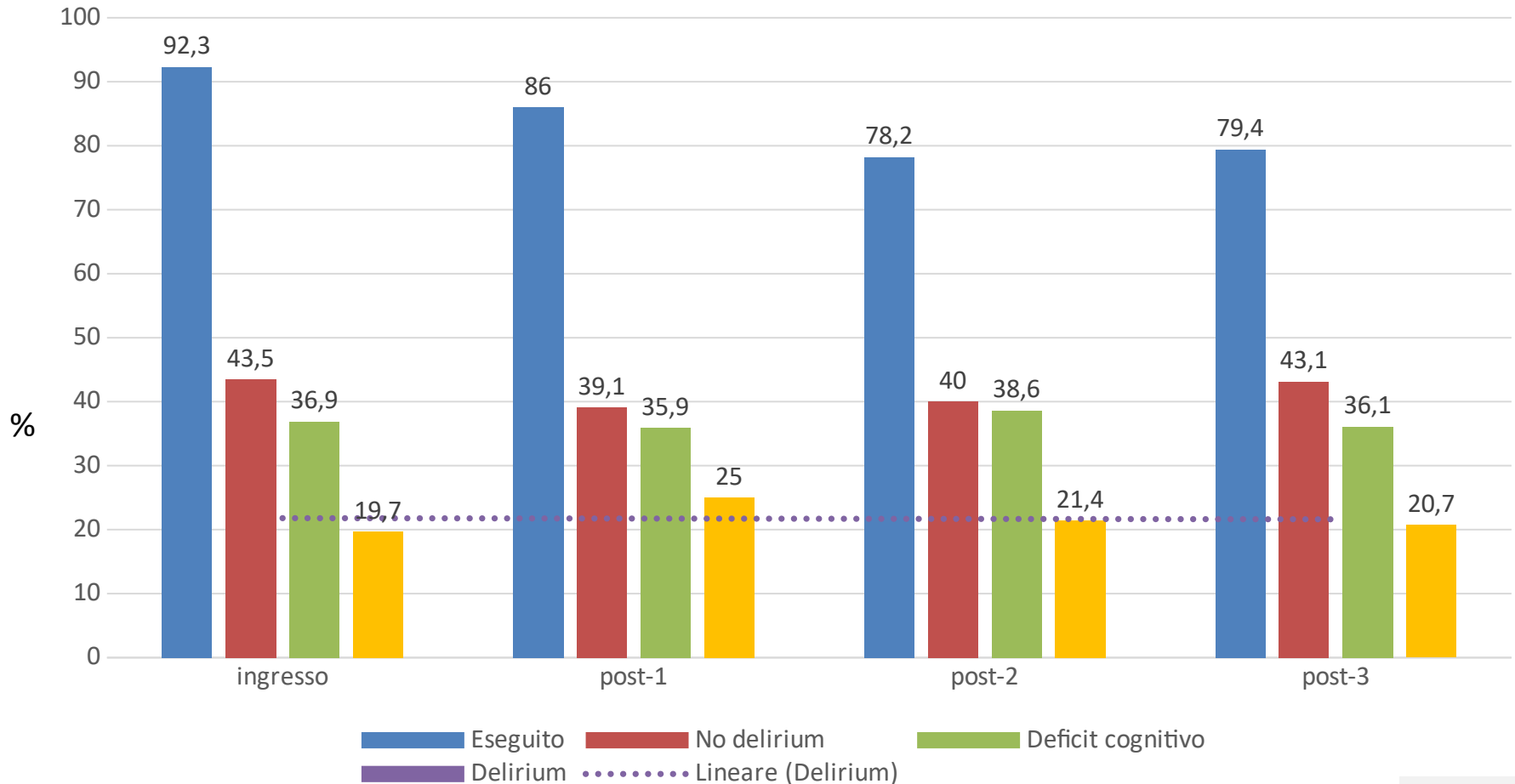
* **senza arruolamenti** (Aggiornamento
07/02/2023)

2261 patients at
9/8/2023

- 84 years (79-89)
- 76.6% females
- Charlson 5 (4-7)
- ADL 5 (3-6)
- No aids 38.9%
- Drugs 5 (3-6)
- CNS drugs 38%
- TTS 43 hrs (25-56)



Percentuali di somministrazione del 4AT e relativi score nel corso della degenza



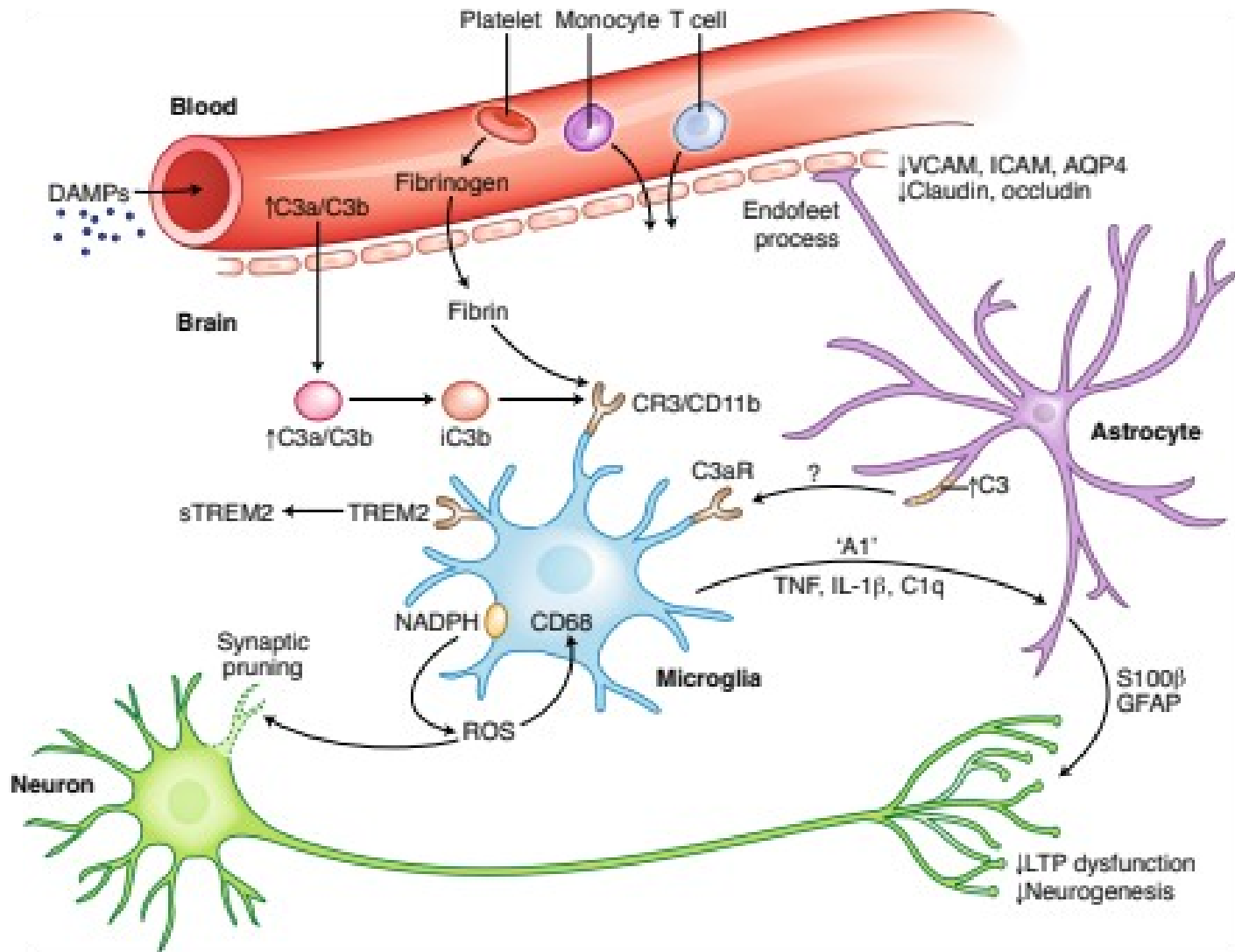
Association between delirium occurrence (single post-operative vs. repeated perioperative assessment) and poor function at discharge

Variable	Single post-operative assessment		Repeated perioperative assessment			
	Delirium post-operatively ^a		POD ^b		PeD ^b	
Poor function at discharge	OR (CI 95%)	<i>p</i>	OR (CI 95%)	<i>p</i>	OR (CI 95%)	<i>p</i>
	1.45	0.087	1.65	0.244	5.00	0.003
	(0.95 – 2.22)		(0.71 – 3.84)		(1.75 – 14.34)	

adjusted for age, sex, comorbidities, functional status and surgery performed beyond 48 hours



Neuro-immune interactions after surgery



ADD-ON **ORTODEL – Italy (n=69)**
BIODEL – Spain (n=60)



Clinica



Plasma



Liquor

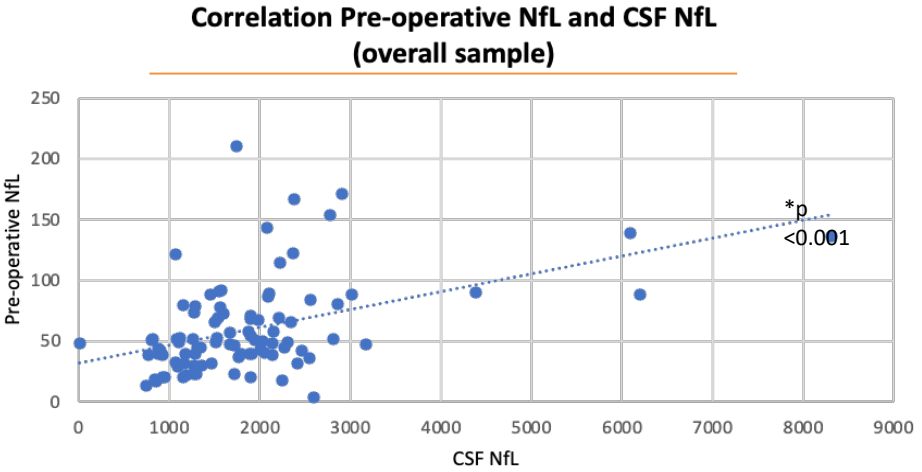
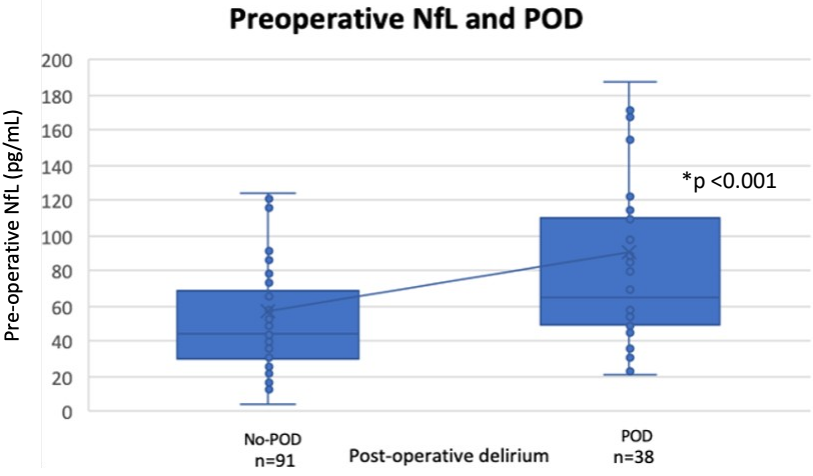


Table. Association between NfL and POD, adjusted for sex, age and anamnestic dementia

<i>Variables in the equation</i>	OR	95% C.I.		p-value
		Inferior	Superior	
Sex (female)	1.473	0.446	4.859	0.525
Age	1.083	1.010	1.161	0.024
Anamnestic dementia	5.894	1.858	18.696	0.003
Pre-operative NfL (> median)	2.996	1.177	7.626	0.021

Conclusioni

- Il delirium è una sindrome geriatrica molto comune nei pazienti con frattura di femore, gravato da elevati tassi di mortalità e outcome clinici sfavorevoli
- Per via di queste implicazioni il delirium dovrebbero essere considerato un indicatore di qualità delle cure negli ospedali
- Il delirium dovrebbe essere valutato non solo nel decorso post-operatorio ma lungo tutto l'arco della degenza in ospedale
- Sono allo studio dei biomarcatori che potrebbero aiutare a identificare precocemente le persone a rischio

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- Beatrice Arosio

