réanimation 2022
PARIS 22-24 JUIN
Palais des Congrès de la Porte Maillot, Paris

SKR
Société de Kinésithérapie de Réanimation

Province de HAINAUT
HAUTE ÉCOLE CONDORCET

ICU Recovery Network

Controverse
Mobilisation très précose: oui

Laboratoire de l'effort & du mouvement
TOURNAI-BELGIUM

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PARIS 22-24 JUIN
Palais des Congrès de Paris
Porte Maillot
srlf
SOCIÉTÉ DE RÉANIMATION DE LANGUE FRANÇAISE
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☑ Je n'ai pas de lien d'intérêt potentiel à déclarer

Very early mobilization?

Is it really needed?

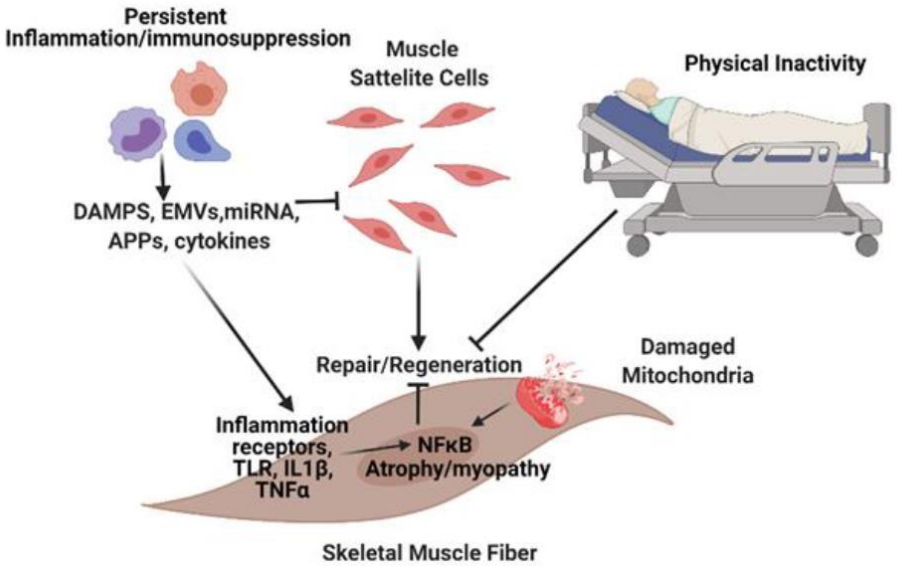
Is it really useful and safe?

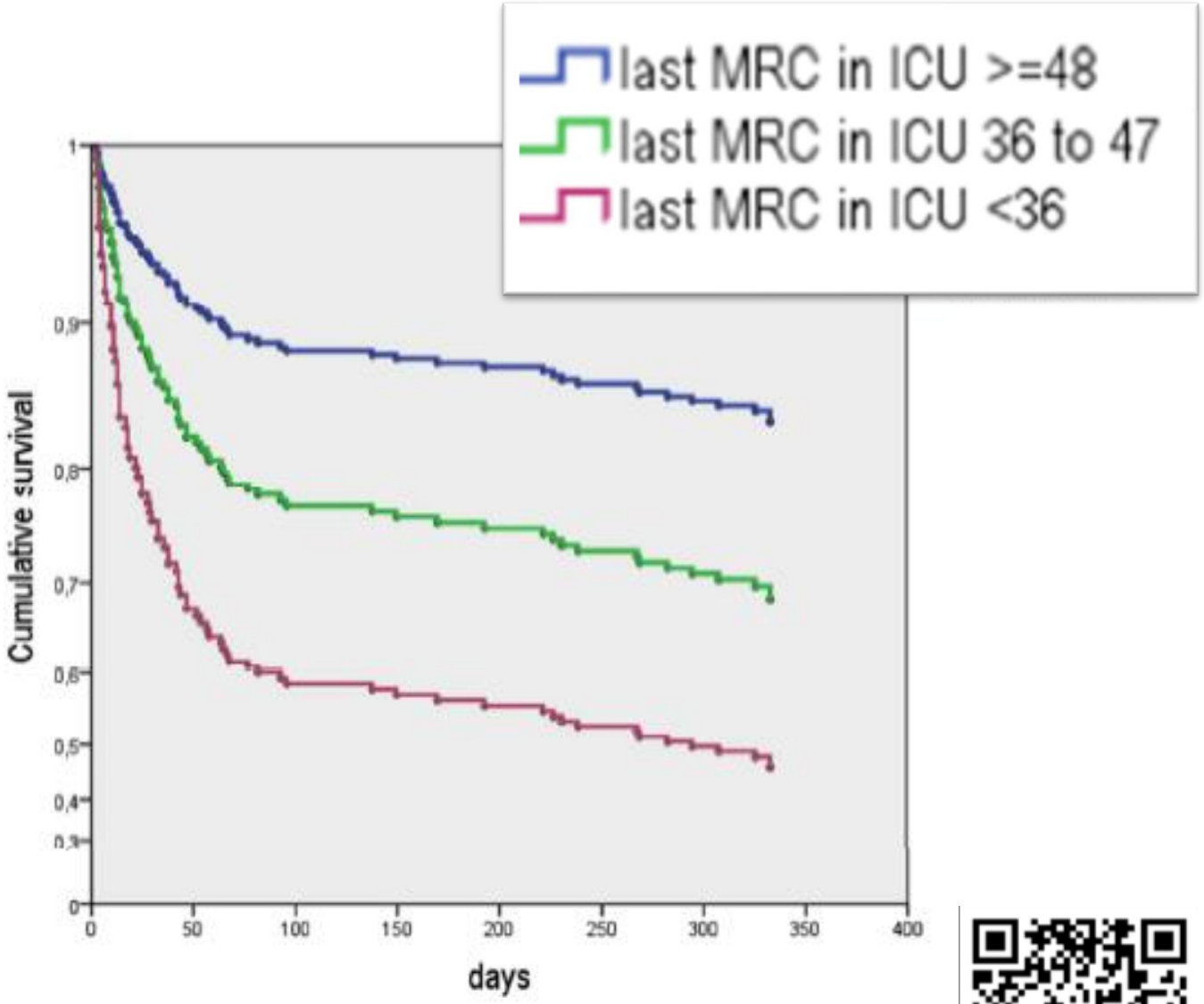
Is it really possible?

“SURVIVORS of CRITICAL ILLNESS: VICTIMS OF OUR SUCCESS?”

McGovern M. et al. British Journal of General Practice, 2011

ICUAW and survival



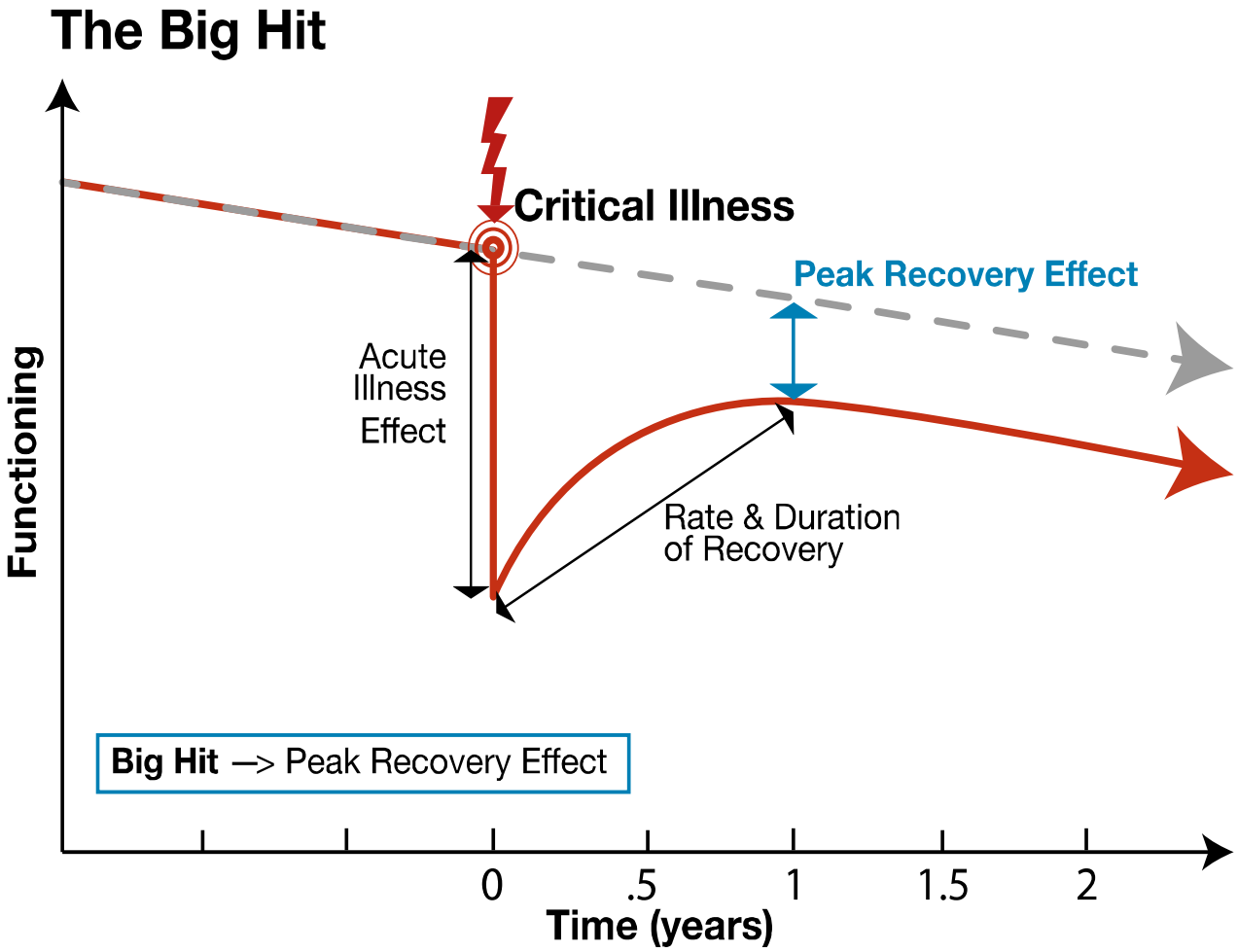


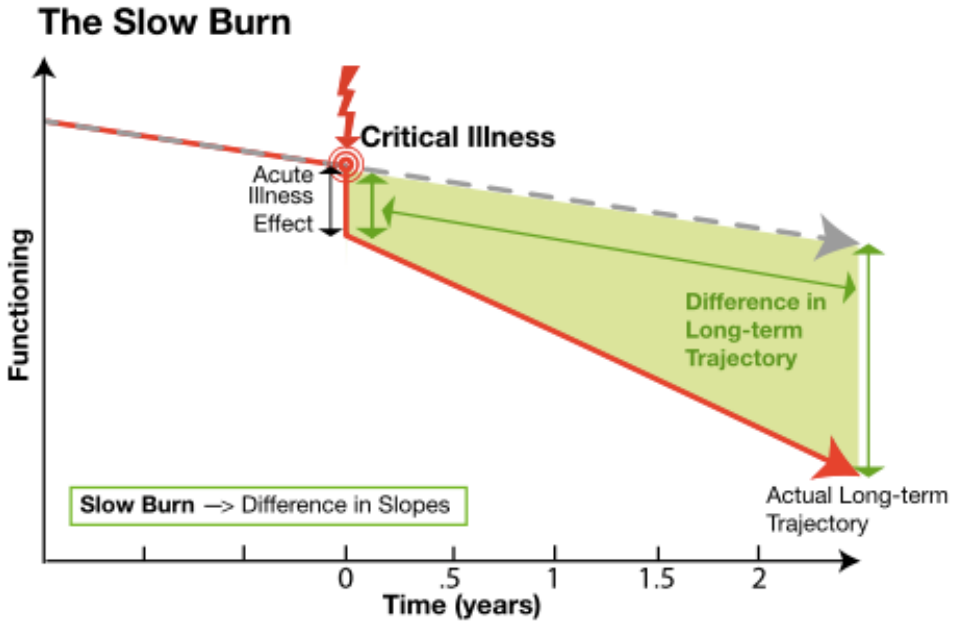
Mankowski et al. J Clin Med.2021

Hermans G. et al. AJRCCM 2014

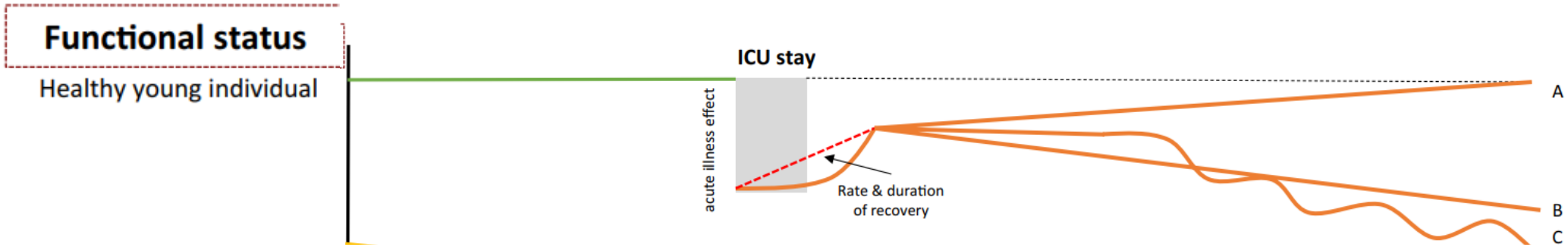
Trajectories of recovery

Iwashyna TJ.
AJRCCM 2012



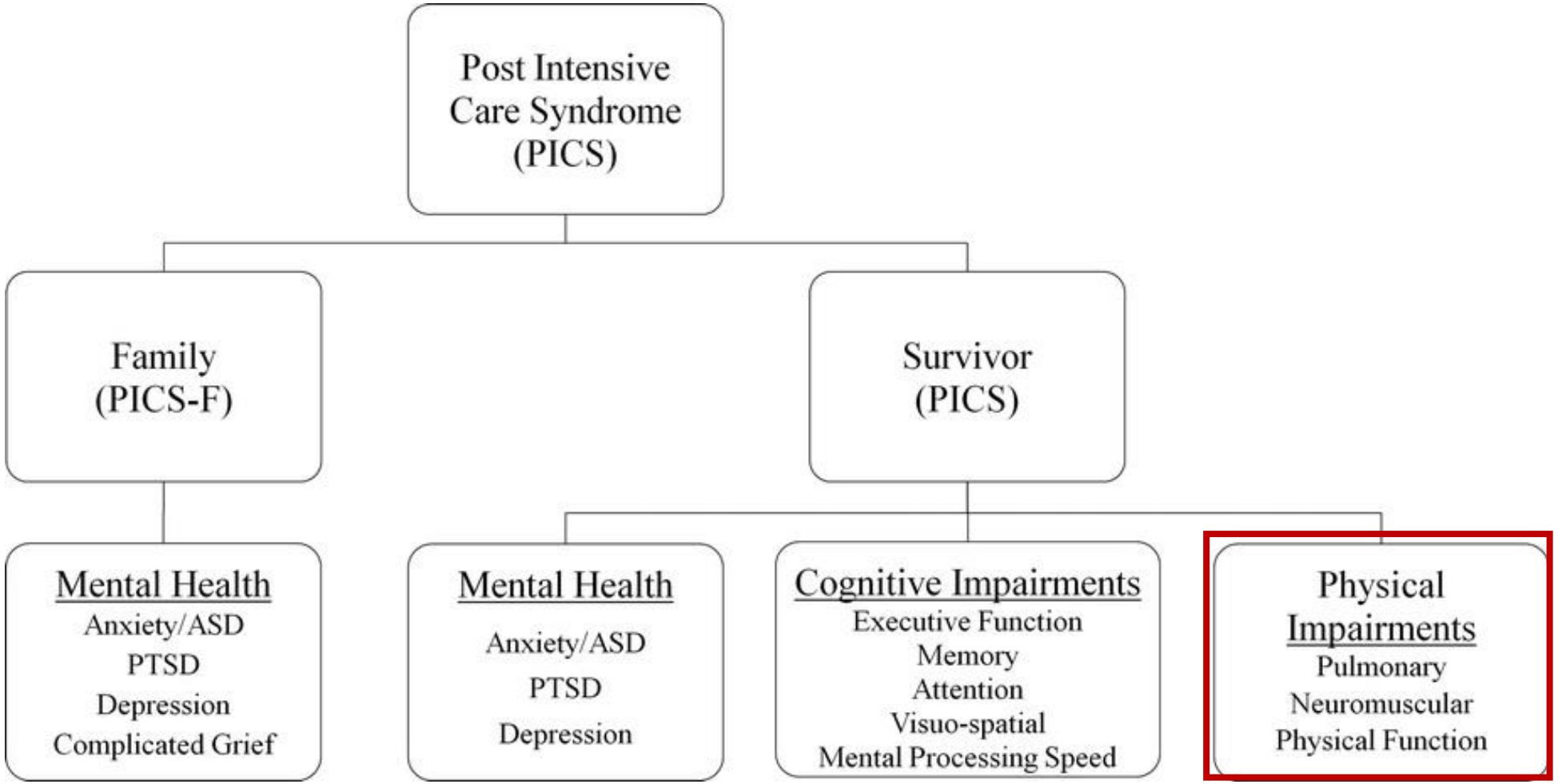


Impact of pre-ICU admission status



Latronico N. et al. Intensive Care Med.2017

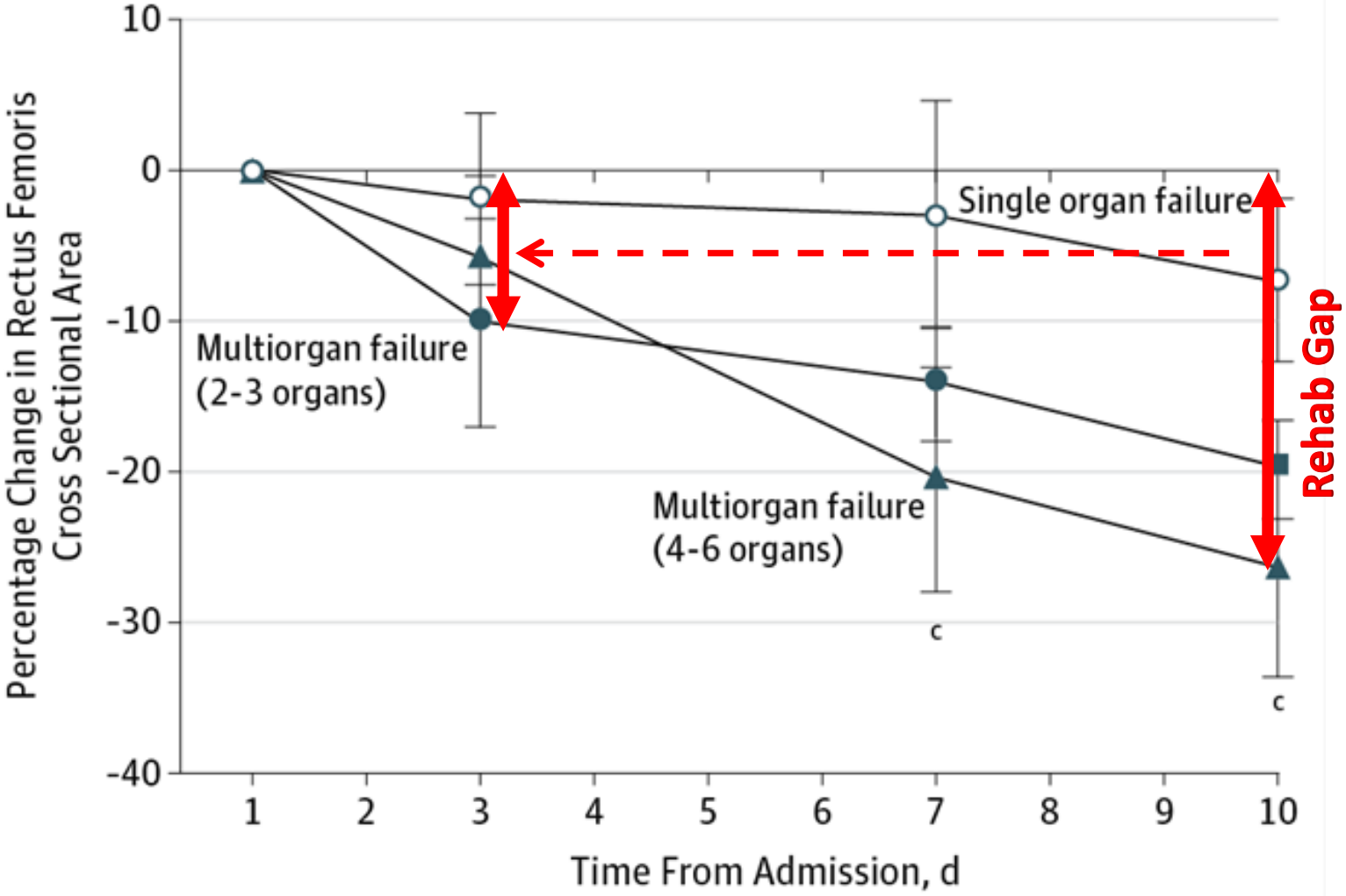
Post Intensive Care Syndrome (PICS)



ASD: acute stress disorder, PTSD: post traumatic stress disorder

Needham DM
Crit Care Med 2012

The concept of early rehabilitation



Puthucheary ZA.
Jama 2013

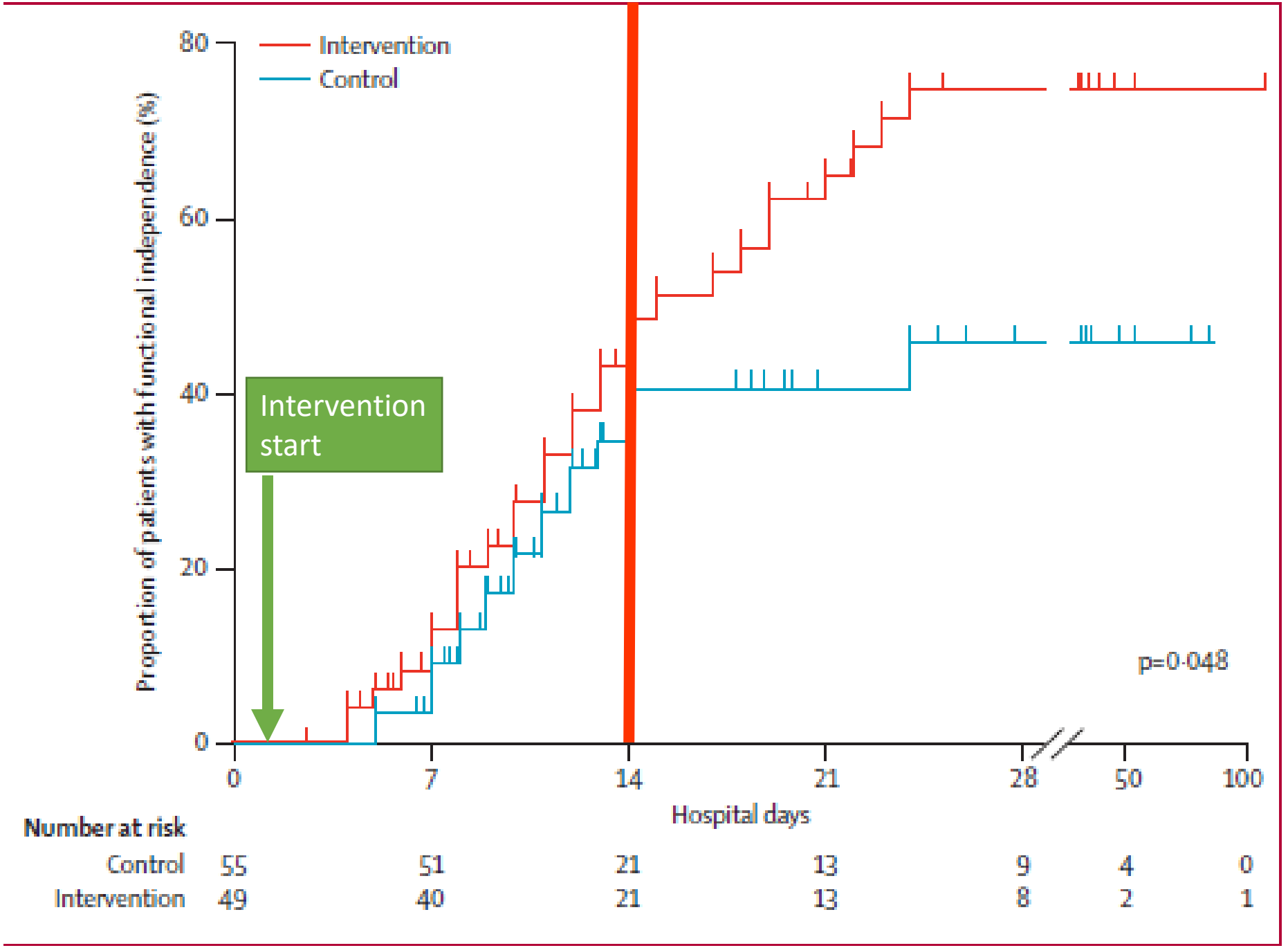
Benefices

- Decreased length of stay / Increased flow
- Cost savings
- Faster weaning
- Improved functional outcomes
- Reduced delirium
- Improved quality of life

Start:
median of 1.5 days (range, 1.0-2.1 days) after intubation.

Therapy was provided on 90% of MICU days during MV.

Schweikert WD. et al. Lancet 2009



Impact of Very Early Physical Therapy During Septic Shock on Skeletal Muscle: A Randomized Controlled Trial

Hickmann CE,
Crit Care Med
2019

n= 19 septic shock patients
Starting <72h sepsis onset
1h extra cycling / day
↓ sedation ICU practice

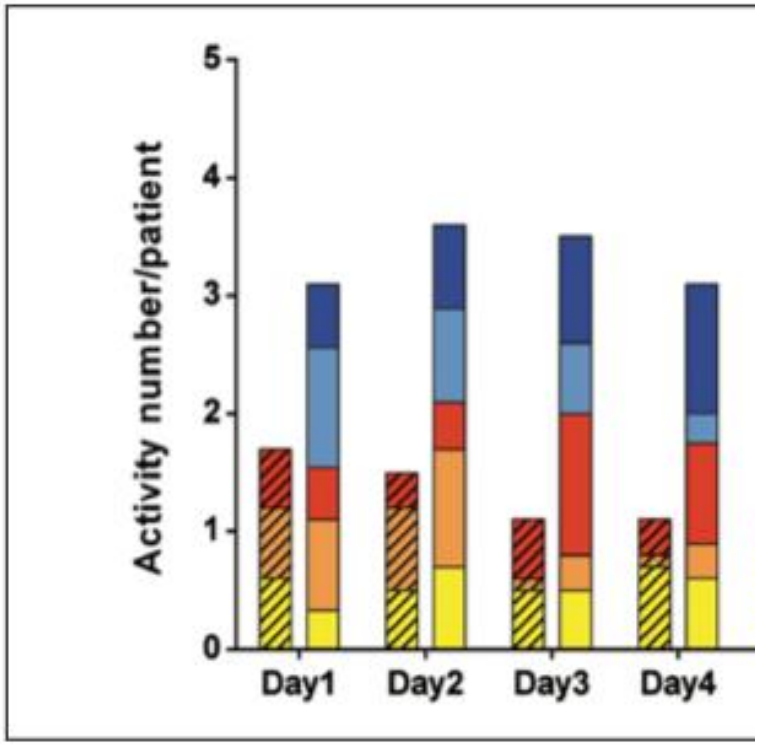


Figure 1. Amount of mobility activities perfor

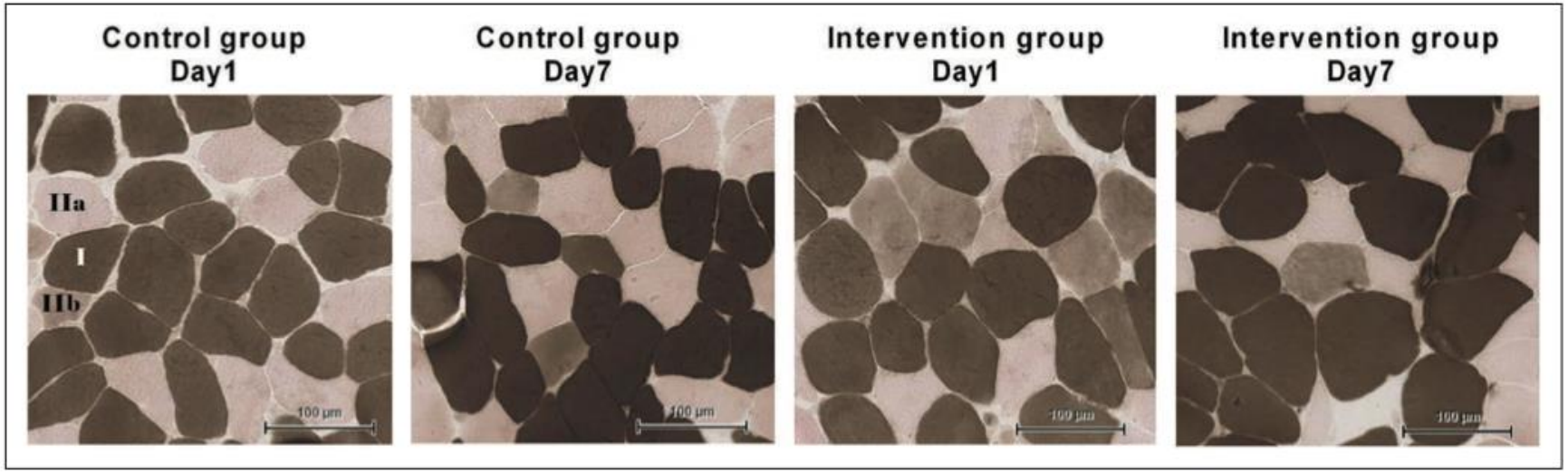


Figure 3. Muscle fiber cross-sectional area changes by group. Skeletal muscle sections stained with adenosine triphosphatase pH 4.50; *black* fibers correspond to type-I fibers; *gray* fibers are type-IIb fibers and; *pink* fibers correspond to type-IIa.

TABLE 2. Changes in Cross-Sectional Area by Groups

	Control Group ($n = 9$), Mean ± SD		Intervention Group ($n = 8$), Mean ± SD		
Fiber Type	Day 1	Day 7	Day 1	Day 7	p^b
All fibers types (µm²)	3,603 ± 1,284	2,629 ± 1,174[a]	3,448 ± 1,993	3,770 ± 1,473	0.01
Type I fibers (µm²)	4,236 ± 1,379	3,135 ± 1,103[a]	4,250 ± 1,977	4,678 ± 1,189	0.02
Type-IIa fibers (µm²)	3,949 ± 1,447	2,744 ± 1,260[a]	2,574 ± 856	2,920 ± 745	0.003
Type-IIb fibers (µm²)	2,624 ± 1,243	2,006 ± 1,286[a]	2,082 ± 1,083	2,576 ± 948	0.04

[a]Different than day 1 ($p < 0.05$).
[b]p of the difference between groups changes, no differences were detected between groups at day 1 in any fibers type.

ABCDEF bundle and selected evidence in support of each bundle element

Bundle Element		Evidence
A	**A**ssess, Prevent, and Manage Pain	Pain is a common memory of ICU survivors[8687] and increases risk for post-traumatic stress disorder[19,20]. When pain is routinely assess using a validated pain scale and controlled with intravenous narcotics, sedation can often be avoided[878840].
B	**B**oth Spontaneous Awakening and Spontaneous Breathing Trials	Spontaneous awakening and breathing trials are associated with shorter duration of mechanical ventilation, better psychological outcomes, and significantly improved 1-year mortality[66,67,68].

Prescott HC. Crit Care Clin. 2018

It is important to note that the main benefit of mobility interventions seems to be the prevention of acute muscle loss. Skeletal muscle wasting begins within 24 hours of critical illness[57], so mobility interventions must occur as soon as possible. Interventions that begin later in the ICU stay[58], after ICU discharge[59], or after hospital discharge[60] have generally not been successful.

E	**E**arly Mobility and Exercise	Skeletal muscle wasting begins within 24 hours of critical illness[5657]. Early mobility, including walking patients during invasive mechanical ventilation, has been shown to be safe and effective at reducing short-term physical disability associated with critical illness, as well as at reducing delirium[5354,5455].
F	**F**amily Engagement and Empowerment	Families are important supports for patients' recovery, also experience poor outcomes related to ICU care[6263]. Family presence on ICU rounds and open visiting hours are associated with improved satisfaction and communication[65 65,66].

NEUROLOGIC CRITICAL CARE

Early Neuromuscular Electrical Addition to Early Mobilization I Functional Status and Decrease Hospitalization Days of Criticall

Campos, Débora R. PT, PhD[1]; Bueno, Thatiana B. C. PT[1]; Anjos, Jackel PhD[1]; Dantas, Bruno G. MD[1]; Gosselink, Rik PT, PhD, FERS[2]; Guirro, Ri C. MD, PhD[1]

Author Information

Critical Care Medicine: July 2022 - Volume 50 - Issue 7 - p 1116-1126
doi: 10.1097/CCM.0000000000005557

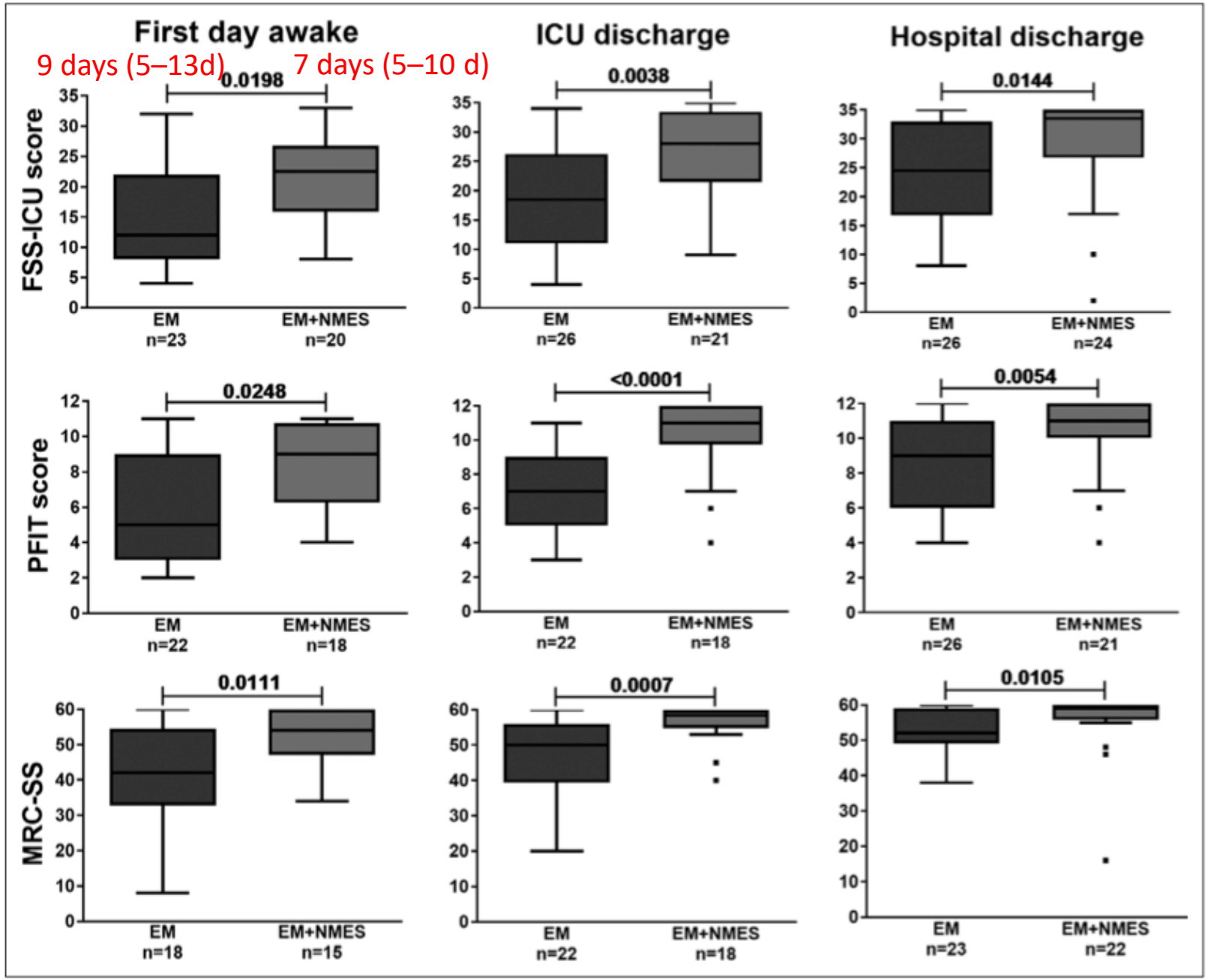


Figure 2. Boxplot of the functional status and muscle strength outcomes. EM = early mobilization, FSS-ICU = functional status scale in the ICU, MRC-SS = Medical Research Council Sum-Score, NMES = neuromuscular electrical stimulation, PFIT = physical function test in the ICU.

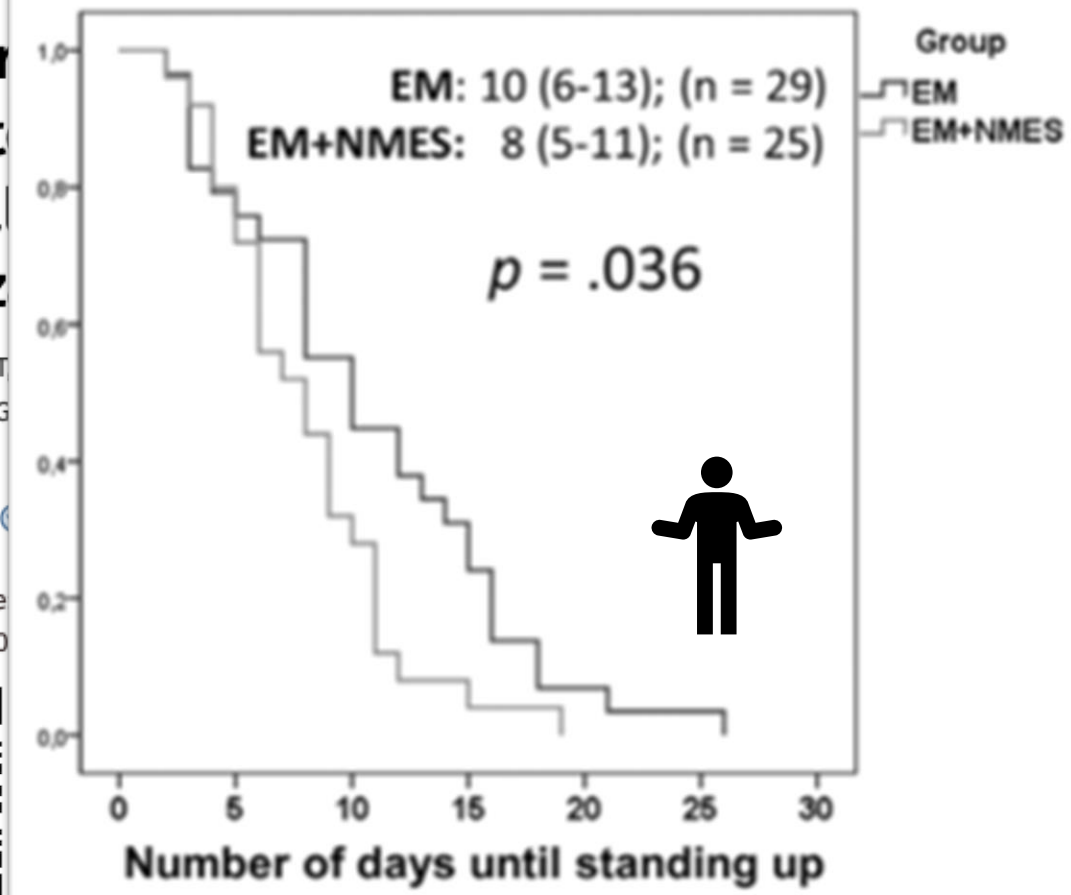
NEUROLOGIC CRITICAL

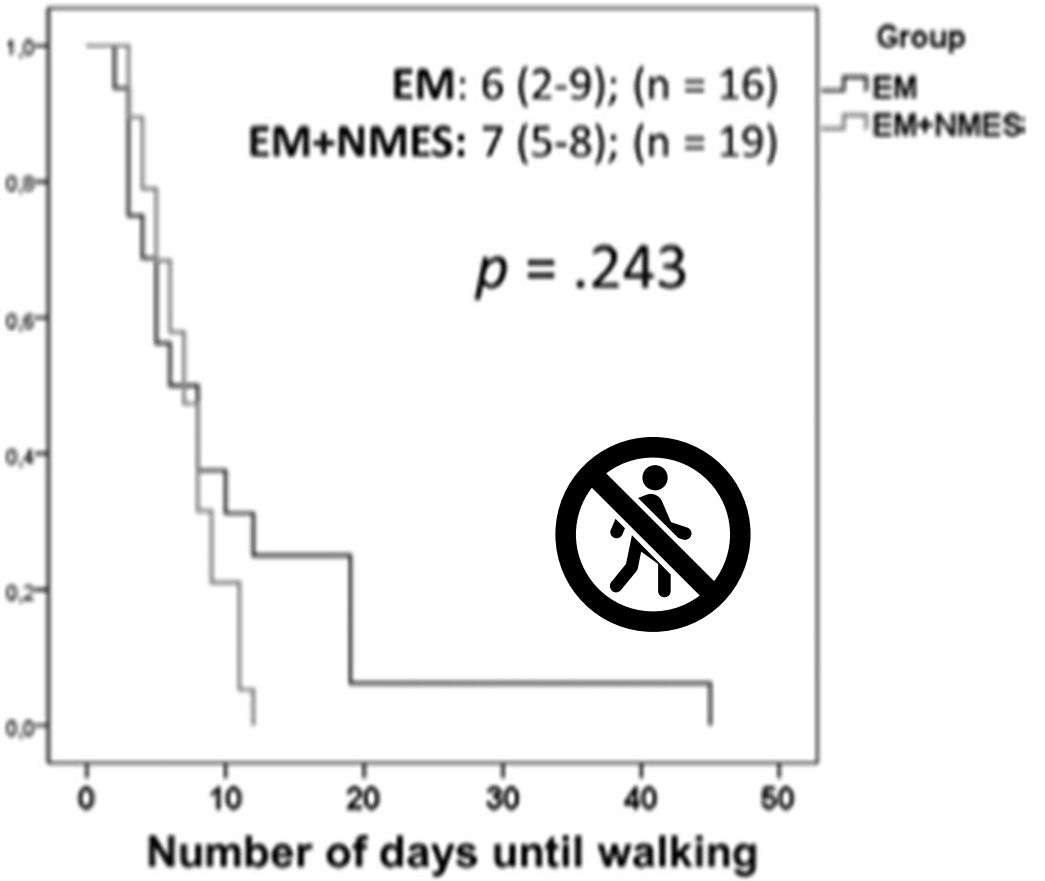
Early Neur
Addition t
Functional
Hospitaliz

Campos, Débora R. PT
PhD[1]; Dantas, Bruno G
C. MD, PhD[1]

Author Information(

Critical Care Medicine
doi: 10.1097/CCM.0000





Of note, hospital LOS was significantly lower in the EM+NMES group compared with the EM group: 18.5 (10–29) versus 30 (12–40), respectively, $p = 0.048$.

The EM group also had a higher frequency of ICU-AW when comparing with the EM+NMES group: 10 (45%) versus 2 (11%) patients; $p = 0.035$. Patients in

Negative studies

Moss M. Am J Respir Crit Care Med 2016

A Randomized Trial of an Intensive Physical Therapy Program for Patients with Acute Respiratory Failure

Delayed intervention >8 days

Marc Moss[1], Amy Nordon-Craft[2], Dan Malone[2], David Van Pelt[3], Stephen K. Frankel[4], Mary Laird Warner[4], Wendy Kriekels[2], Monica McNulty[5], Diane L. Fairclough[5], and Margaret Schenkman[2]

Denehy L. Critical Care 2013

Exercise rehabilitation for patients with critical illness: a randomized controlled trial with 12 months of follow-up

High levels of usual-care physiotherapy

Linda Denehy[1*], Elizabeth H Skinner[2], Lara Edbrooke[1], Kimberley Haines[2], Stephen Warrillow[3], Graeme Hawthorne[4], Karla Gough[5], Steven Vander Hoorn[6], Meg E Morris[7] and Sue Berney[2]

Wright SE, et al. Thorax 2018

Intensive versus standard physical rehabilitation therapy in the critically ill (EPICC): a multicentre, parallel-group, randomised controlled trial

Similar interventions in both groups

Delayed intervention >7 days

Stephen E Wright,[1] Kirsty Thomas,[2] Gillian Watson,[3] Catherine Baker,[2] Andrew Bryant,[4] Thomas J Chadwick,[4] Jing Shen,[4] Ruth Wood,[3] Jennifer Wilkinson,[3] Leigh Mansfield,[2] Victoria Stafford,[2] Clare Wade,[2] Julie Furneval,[5] Andrea Henderson,[6] Keith Hugill,[6]

Risks ?

Physiotherapy in intensive care is safe: an observational study

Zeppos L.
Aust J Physiother 2007

0.2% event rate

Very early passive cycling exercise in mechanically ventilated critically ill patients: physiological and safety aspects--a case series

Camargo Pires-Neto
PLoS One 2013

two minor adverse events

Feasibility and safety of in-bed cycling for physical rehabilitation in the intensive care unit

Kho ME.
J Crit Care 2015

0.2% event rate

Safety of physical therapy interventions in critically ill patients: a single-center prospective evaluation of 1110 intensive care unit admissions

Sricharoenchai T.
J Crit Care 2014

0.6% event rate

Physiological abnormalities and adverse events during physical therapy in the intensive care unit after cardiac surgery: A prospective observational study

Sousa MLA.
Br J Physical Therapy 2021

935 sessions
189 abnormalities/AE
132 chest PT
57 Early mobility

Teamwork enables high level of early mobilization in critically ill patients

Annals of intensive care 2016

Cheryl Elizabeth Hickmann, Diego Castanares-Zapatero, Emilie Bialais, Jonathan Dugernier, Antoine Tordeur, Lise Colmant, Xavier Wittebole, Giuseppe Tirone, Jean Roeseler and Pierre-François Laterre*

171 patients admitted at ICU

81% received early mobilization within 24 hours

0.8% interruption rate

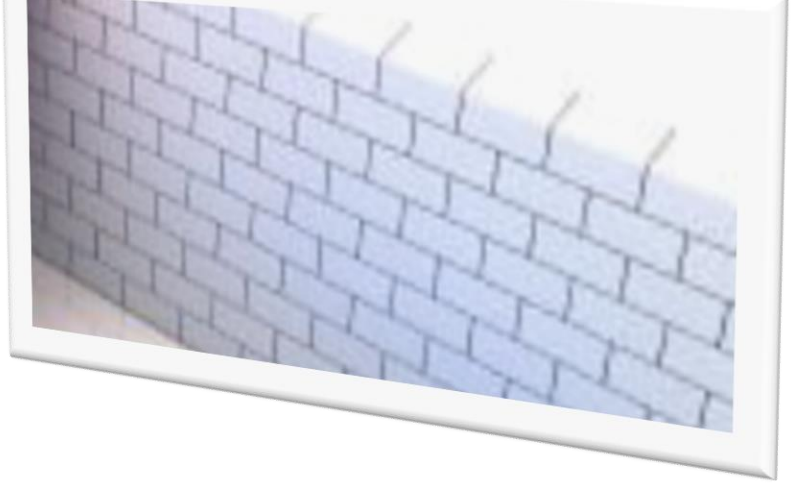
- Teamwork: safety profile for mobilization early after ICU admission even in patients supported with vasoactive agents, MV, or renal replacement therapy.

- In general, all activities were well tolerated, while patients were able to **self-regulate their active early mobilization**.
- Patients' subjective perception of physical therapy was reported to be **enjoyable** (8 ± 3) /10

Credits from UZLeuven (Belgium)

Credits from UZLeuven (Belgium)

High levels of early mobilization are frequently researched in highly specialized (university) centers



Ann Am Thorac Soc. 2016 May;13(5):724-30. doi: 10.1513/AnnalsATS.201509-586CME.

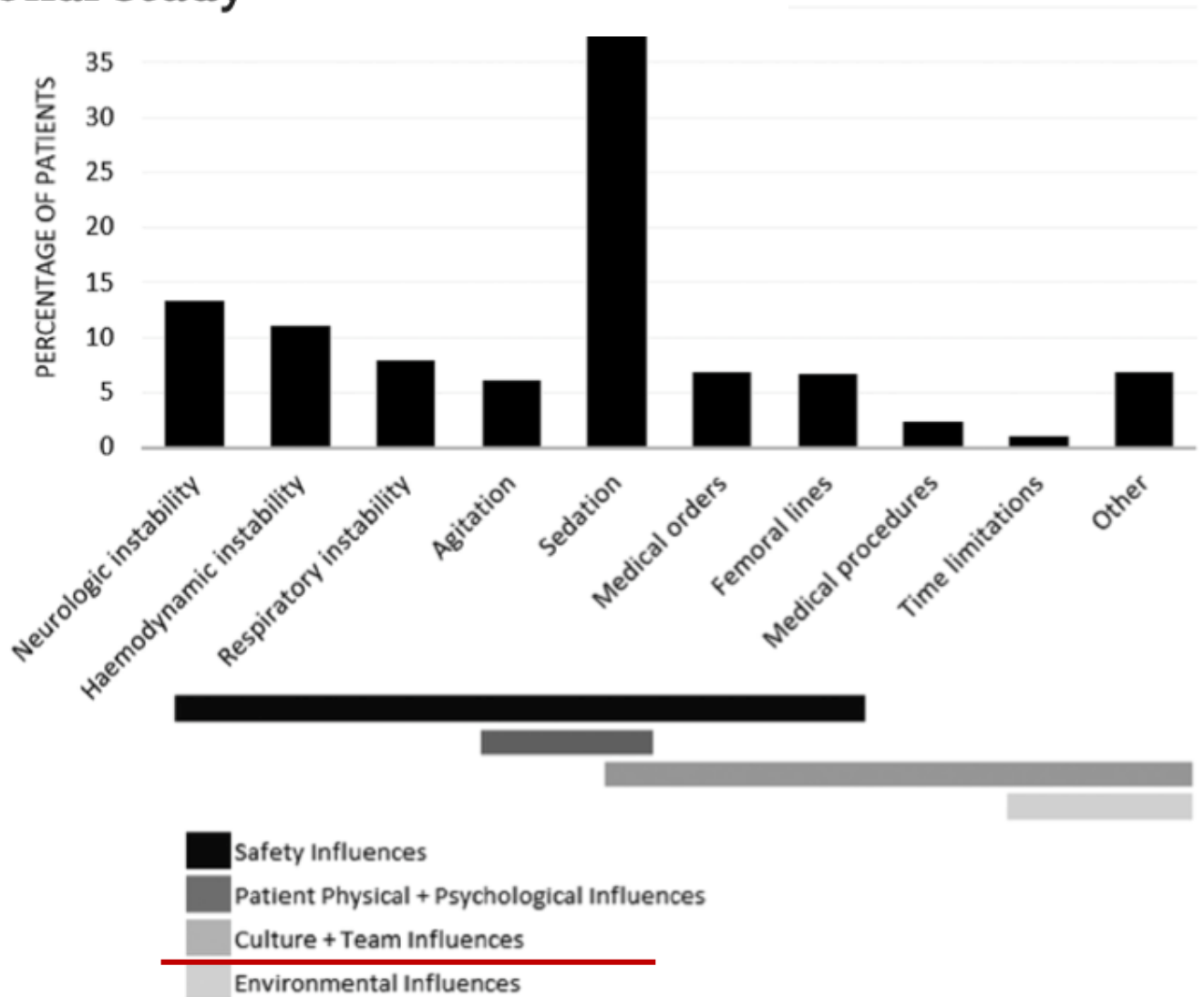
Barriers and Strategies for Early Mobilization of Patients in Intensive Care Units.

Dubb R[1], Nydahl P[2], Hermes C[3], Schwabbauer N[4], Toonstra A[5], Parker AM[6], Kaltwasser A[1], Needham DM[7].

- Over sedation
- Delirium
- Lack of staffing and equipment
- Safety considerations
- Teamwork and communication
- Lack of leadership
- Lack of knowledge and training
- Patient factors

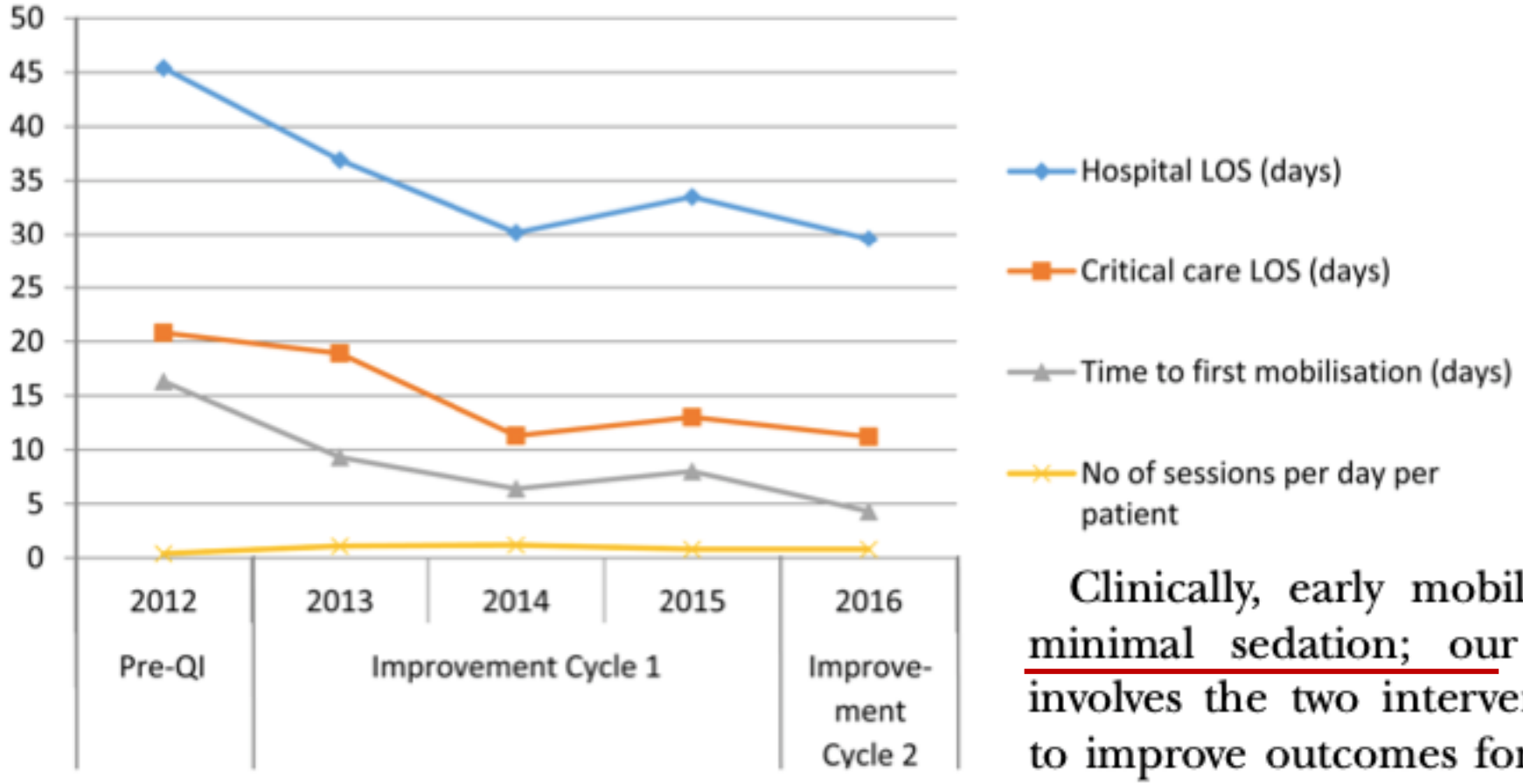
Barriers to implementing expert safety recommendations for early mobilisation in intensive care unit during mechanical ventilation: A prospective observational study

Capell EL. et al
Aust Crit Care
2019



Quality improvement: The delivery of true early mobilisation in an intensive care unit

Van Willigen Z. *BMJ Quality Improvement Reports* 2016

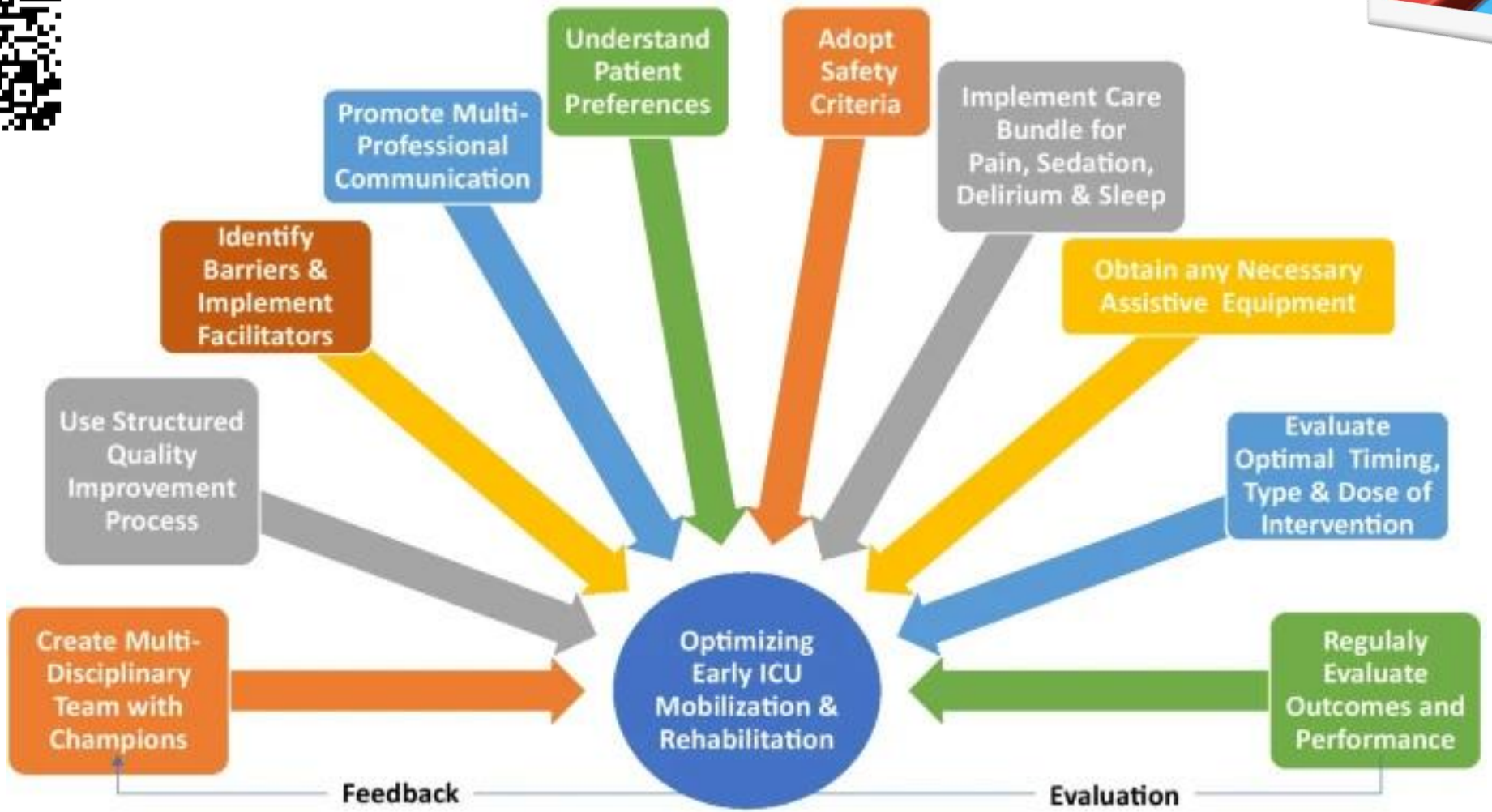


Clinically, early mobilisation is not possible without minimal sedation; our quality improvement project involves the two interventions being used concurrently to improve outcomes for a group of mechanically ventilated medical patients. It is unlikely that either individ-

Ten strategies to optimize early mobilization and rehabilitation in intensive care

Crit Care 2021

Carol L. Hodgson[1,2*], Stefan J. Schaller[3,4,5], Peter Nydahl[6], Karina Tavares Timenetsky[7] and Dale M. Needham[8,9]



Conclusions

Early initiation **<72h** is needed to improve functional outcomes.
Prevention

Teamwork (protocols) approach to overcome barriers ↓ **sedation**
Safety

Individualization of intensity and modality
Patient centered outcomes

Delayed intervention	Unsufficient workload	Sufficient workload	Ideal and safe workload	Maximal safe workload	Excessive/risked workload





Risks:
Bed rest harmful effects
(cardiovascular deconditioning, weakness, stiffness, skin damages…)
Increased sedation and confusion

Beneficial zone:
Adapted workload
Adequate modality
Comfort zone (motivation)

Risks:
Excessive load associated damage
Cardiovascular risk
Effort aversion (fear)

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