

PARIS 12-14 JUIN

Prévention et traitement du

PICS par le kiné

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DÉCLARATION DE LIENS D'INTÉRÊT



Marianne DEVROEY, Bruxelles

☑ Je n'ai pas de lien d'intérêt à déclarer





Co-occurrence of Post-Intensive Care Syndrome Problems Among 406 Survivors of Critical Illness





Marra et al. Crit Care Med. 2018; 46 (9): 1393-1401

BRIEF REPORT

Open Access

Time in ICU and post-intensive care syndrome: how long is long enough?





ICU LoS vs Impairment at 6 months



Many patients (17%) with an ICU LOS < 72 h are reporting post-ICU impairment 6 months after leaving ICU.

This is a population often excluded from studies and interventions.

Flaws et al. Crit Care. 2024; 28 (1): 34

Return to Work After Critical Illness: A Systematic Review and Meta-Analysis



réanimation 2024

PARIS 12-14 JUIN

Kamdar et al. Thorax. 2020; 75(1): 17-27

Post-intensive care syndrome follow-up system after hospital discharge: a narrative review





Nakanishi et al. Journal of Intensive Care. 2024; 12:2



Nakanishi et al. Journal of Intensive Care. 2024; 12:2



Nakanishi et al. Journal of Intensive Care. 2024; 12:2

Guideline on multimodal rehabilitation



Background Intensive Care Unit (ICU) survivors often experience several impairments in their physical, cognitive, and psychological health status, which are labeled as post-intensive care syndrome (PICS). The aim of this work is to develop a multidisciplinary and -professional guideline for the rehabilitative therapy of PICS.

Guideline on multimodal rehabilitation



Background Intensive Care Unit (ICU) survivors often experience several impairments in their physical, cognitive, and psychological health status, which are labeled as post-intensive care syndrome (PICS). The aim of this work is to develop a multidisciplinary and -professional guideline for the rehabilitative therapy of PICS.

Methods A multidisciplinary/-professional task force of 15 healthcare professionals applied a structured, evidencebased approach to address 10 scientific questions. For each PICO-question (Population, Intervention, Comparison, and Outcome), best available evidence was identified. Recommendations were rated as "strong recommendation", "recommendation" or "therapy option", based on Grading of Recommendations, Assessment, Development and Evaluation principles. In addition, evidence gaps were identified.

 Table 2
 Summary of the statement, 12 recommendations, and four therapy options for the rehabilitation of critically ill patients with post-intensive care syndrome

Statement

It is important to screen critically ill patients with a length of stay \geq 48 h for risk factors to develop PICS and symptoms of PICS during the stay in intensive care, after discharge, during and at the end of rehabilitation, as well as in out-patient care. The choice of the optimal assessment depends on various factors such as the phase of the disease, the setting, the symptomatology, risk factors of the patient and the availability of further diagnostics

Recommendations and therapy options for PICS Rehabilitation

Rehabilitation of physical health

- 1. Early mobilization ought to be started within the first few days in the ICU, adapted to the patient's resilience and general condition. (A)
- 2. Supplemental use of ergometers (bed cycling) in addition to early mobilization can be considered. (0)
- 3. Wheelchair cycle ergometer training can be used in addition to the standard physical therapy to improve muscle strength and cardiovascular fitness. (0)
- 4. Strength training can be used as an adjunct to standard physical therapy to increase walking speed. (0)
- 5. Electrical stimulation of the ventral thigh musculature can be used to strengthen the muscles. (0)
- 6. Training of the inspiratory muscles using an inhalation trainer should be used to increase the strength of the inspiratory muscles and the quality of life in the short term as an adjunct to standard physical therapy. (B)
- 7. As dysphagia is frequent in patients with tracheostomy, standardized swallowing assessment should be performed before oral nourishment is initiated. (B)

Rehabilitation of cognitive health

8. Computer-based learning of attention functions and/or therapy aiming at improvement of cognition should be performed with critically ill patients and in further rehabilitation. (B)

9. Interventions for delirium prophylaxis ought to include multimodal sensory, cognitive and emotional stimulation (mobilization, purposeful stimulation and engagement, aids for orientation, contact to family members). (A)

10. Interventions for stress reduction (pain, anxiety, sleep, noise), improvement of communication and family care should be applied. (B)

11. A prophylactic treatment with Haloperidol for ventilated patients should not be implemented, as there is no effect in comparison to placebo regarding the incidence, severity, duration or outcome of delirium. (B-)

Rehabilitation of psychological health

12. Critically ill patients with adaptation disorders such as anxiety and depression benefit from psychological interventions. These should be offered already in the ICU and/or early rehabilitation and if possible also to relatives. (B)

13. Post-traumatic stress reactions should be treated by interventions such as psychoeducation and psychotherapy. (B)

14. Access to professional support and aftercare should be offered in the first 12 months after discharge aiming at mental stabilization. (B)

15. ICU diaries ought to be implemented for reducing the risks of symptoms of anxiety, depression, and PTSD in critically ill patients after discharge from the ICU. (A)

16. In post-ICU care, ICU diaries ought to be worked on with health care professionals. (A)

Grade of recommendations: (0): therapy option, can be considered; (B)/(B-): recommendation, should, should not; (A)/(A-): ought to ought not to

Renner et al. Critical Care. 2023; 27:30

Physiotherapist

Speech Therapist

Psychologist & Psychiatrist



Imation 2024

Recommendation 1 Early mobilization ought to be started within the first few days in the ICU, depending on the patient's resilience and general condition.

Grade of recommen- dation: A	Level of evidence: OECBM 1	Quality of evidence: High Selected refer- ences:				
	Talto et	al. PLoS ONE. 2018; 13, e0201292				
	Eggmann et	al. PLoS ONE. 2018; 13, e0207428				
	Fuke	e et al. BMJ Open. 2018; 8, e019998				
	Wri	ght et al. Thorax. 2018; 73: 213-221				
	Takaoka et al.Ann A	Am Thorac Soc. 2020; 17: 1289-307				
	Waldauf et a	I. Crit Care Med. 2020; 48:1055-65				
	Wang et al. Front Med (Lausane). 2020; 7: 5					
	Be	rney et al. Thorax. 2021; 76: 656-63				
	Wal	dauf et al. Thorax, 2021: 76: 664-71				



Early rehabilitation to prevent postintensive care syndrome in patients with critical illness: a systematic review and meta-analysis

Improved short-term physical-related outcomes:

- ICU-acquired weakness
 - 0R 0.42, 95%Cl 0.22 to 0.82, p=0.01
- MRC
 - SMD: 0.38, 95% CI 0.10 to 0.66, p=0.009

No difference in:

- Cognitive-related delirium-free days
- Hospital Anxiety and Depression Scale score

1. Physical-related outcomes A Incidence of ICU-AW

	Earl	y reha	abilitati	ion	Contr	lo		Odds Ratio	Odds Ratio
Study or Subgroup	E E	vents	1	Total	Events	Total	Weight	M-H, Random, 95% Cl	M-H, Random, 95% Cl
Hodgson 2016		7		29	10	21	30.8%	0.35 [0.10, 1.17]	
Schweickert 2009		15		49	27	55	69.2%	0.46 [0.20, 1.02]	
Total (95% CI)				78		76	100.0%	0.42 [0.22, 0.82]	•
Total events		22			37				
MRC		-		End	and a bottle	-For		Pid Manage Differences	
MRC Study or Subgroup	Co	ntrol SD	Total	Early	rehabilit SD	ation Tota	Weight	Std. Mean Difference IV. Random, 95% CI	Std. Mean Difference IV. Random, 95% Cl
MRC Study or Subgroup Hodgson 2016	Co Mean 50.4	ntrol SD 7.5	Total 29	Early Mean 45.2	rehabilit SD	ation Tota 21	Weight 24.8%	Std. Mean Difference IV, Random, 95% CI 0.50 (-0.07, 1.07)	Std. Mean Difference IV, Random, 95% Cl
MRC Study or Subgroup Hodgson 2016 Kayambu 2015	Co Mean 50.4 51.9	ntrol SD 7.5 10.5	<u>Total</u> 29 19	Early Mean 45.2 47.3	rehabilit <u>SD</u> 13.2 13.6	ation Tota 21 23	Weight 24.8% 21.5%	Std. Mean Difference IV, Randorn, 955 Cl 0.50 (-0.07, 1.07) 0.37 (-0.25, 0.98)	Std. Mean Difference IV, Random, 95% Cl
MRC Study or Subgroup Hodgson 2016 Kayambu 2015 Schweickert 2009	Co Mean 50.4 51.9 52	7.6 9.3	Total 29 19 49	Early Mean 45.2 47.3 48	rehabilit SD 13.2 13.6 14.5	ation Tota 21 23 55	Weight 24.8% 21.5% 53.7%	Std. Mean Difference IV, Randorn, 95% Cl 0.50 (-0.07, 1.07) 0.37 (-0.25, 0.90) 0.33 (-0.06, 0.72)	Std. Mean Difference IV, Random, 95% Cl
MRC Study or Subgroup Hodgson 2016 Kayaambu 2015 Schweickert 2009 Total (95% CI)	Co Mean 50.4 51.9 52	7.5 8.3	Total 29 19 49 97	Early Mean 45.2 47.3 48	rehabilit 5D 13.2 13.6 14.5	ation Tota 21 23 55	Weight 24.8% 21.5% 53.7%	Std. Mean Difference IV, Random, 95% Cl 0.50 (-0.07, 1.07) 0.37 (-0.25, 0.96) 0.33 (-0.06, 0.72) 0.38 (0.10, 0.66)	Std. Mean Difference IV, Random, 95% Cl
MRC Study or Subgroup Hodgson 2016 Kayambu 2015 Schweickert 2009 Total (95% CI) Heterogenety Tau*=	Co Mean 50.4 51.9 52 0.00, Ch	7.5 10.5 8.3 11 ² = 0	Total 29 19 49 97 23, df =	Early Mean 45.2 47.3 48 2 (P =	rehabilit SD 13.2 13.6 14.5 0 89) 1 ⁸	ation Tota 21 23 55 99 = 0 %	Weight 24.8% 21.5% 53.7%	Sid. Mean Difference IV, Random, 955 (1 0.50 [-0.07, 1.07] 0.37 [-0.25, 0.98] 0.33 [-0.06, 0.72] 0.38 [0.10, 0.66]	Std. Mean Difference IV, Random, 95% C1

2. Cognitive-related outcome

Delirium-free days

	Early re	habilita	tion	C	ontro	1		Std. Mean Difference	Std. Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% CI	IV, Random, 95% Cl
Brummel 2014	26.5	8.5	14	28	51	12	7.9%	-0.20 [-0.98, 0.57]	
Morris 2016	2	0.9	150	2	12	150	92.1%	0.00 [-0.23, 0.23]	-
Schweickert 2009	11.5	3.2	49	8.9	17	55		Not estimable	
Total (95% CI)			164			162	100.0%	-0.02 [-0.23, 0.20]	+
Heterogeneity: Tau*=	0.00; Chi ^a	= 0.24	df=1 (P = 0.83	2); * =	: 0%		/si	
Test for overall effect	Z=0.14 (P = 0.88	0						Favours [control] Favours [early rehabilitation

3. Mental health-related outcome Incidence of HAS/HADS

	Early rehabil	litation	Cont	rol		Odds Ratio	Odds Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI	M-H, Random, 95% CI
Kayambu 2015	e	28	8	24	63.3%	0.60 [0.17, 2.09]	
Jones 2015	4	22	З	20	36.7%	1.26 [0.24, 6.47]	
Total (95% CI)		48		44	100.0%	0.79 [0.29, 2.12]	-
Total events	10		11				
Heterogeneity: Tau ² =	= 0.00, Chi ² = 0	.50, df = 1	(P = 0.4)	8); f ² =	0%	1	
Test for overall effect	Z = 0.47 (P = 0	1.64)					Esuors early rehabilitation, Esuors control

)∩ 2024

Early rehabilitation to prevent postintensive care syndrome in patients with critical illness: a systematic review and meta-analysis



Long-term outcome

1 Health-related QOL scores

	Early re	habilita	tion	C	ontro	I		Std. Mean Difference		Std.	Mean Differen	nce	
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% CI		IV,	Random, 95%	CI	
3.4.2 EQ5D													
Brummel 2014	80	7.9	14	75	72	12	47.4%	0.64 [-0.16, 1.43]			-		
Hodgson 2016 Subtotal (95% CI)	61	19	21 35	68	19	16 28	52.6% 100.0%	-0.36 [-1.02, 0.30] 0.11 [-0.86, 1.09]			-		
Heterogeneity: Tau ² :	= 0.36; Chi ^a	= 3.61,	df = 1 (P = 0.01	5); IZ:	= 72%							
Test for overall effect	Z=0.23 (F	P = 0.82	2)										
Total (95% CI)			35			28	100.0%	0.11 [-0.86, 1.09]			+		
Heterogeneity: Tau* =	= 0.36; Chl ^a	= 3.61,	df = 1 (P = 0.0	5); I * =	= 72%			10	-		-	
Test for overall effect	: Z = 0.23 (F	P = 0.82	2)						-10	-D Eavore o	ontrol Equars	c obstant	noitetilion
Test for subgroup dif	ferences: N	lot appl	licable							1 40010 0	onnor Pavore	, sany renar	madon

Did not improve health related quality of life (EQ5D) or functioning (SF-36)

2 SF-36PF

	Early re	ehabilita	tion	C	ontrol			Std. Mean Difference	Std. Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% CI	IV, Random, 95% CI
Kayambu 2015	81.8	22.2	11	60	29.4	19	49.6%	0.78 [0.01, 1.56]	-
Morris 2018	55.9	3	82	43.8	3.1	79	50.4%	4.01 [3.47, 4.56]	-
Total (95% CI)			93			98	100.0%	2.41 [-0.75, 5.58]	
Heterogeneity: Tau ² =	5.10; Chi	² = 45.08	3, df = 1	(P < 0.0	00001)	; 17 = 98	3%	H	
Test for overall effect:	Z=1.49 (P = 0.14)						Favours control Favours early rehabilitation

Fuke et al. BMJ Open 2018;8



Therapy Option 1: Supplemental use of ergometers (bed cycling) in addition to early mobilization can be considered.

Grade of recom- mendation: 0	Level of evidence:	OECBM 1	Quality of evidence: High Selected refer-
			ences:

Berney et al. Thorax. 2021; 76: 656-63 Waldauf et al. Thorax. 2021; 76: 664-7



Therapy Option 1: Supplemental use of ergometers (bed cycling) in addition to early mobilization can be considered.

Therapy Option 2: Wheelchair cycle ergometer training can be used in addition to standard physical therapy to improve muscle strength and cardiovascular fitness.

Grade of recom-	Level of evidence:	OECBM 1	Quality of evidence:
mendation: 0			High Selected refer-
			ences:

Berney et al. Thorax. 2021; 76: 656-63 Waldauf et al. Thorax. 2021; 76: 664-7

Therapy Option 3: Strength training can be used as an adjunct to standard physical therapy to increase walking speed.

Grade of recommen-	Level of evidence:	Quality of evidence:
dation: 0	OECBM 2	Low
		Selected reference:

Veldema et al. Acta Neurol Scand. 2019; 140: 62-71

Renner et al. Critical Care. 2023; 27: 301

Grade of recommen-
dation: **0**Level of evidence:
OECBM 2Quality of evidence:
Low
Selected reference:

Veldema et al. Acta Neurol Scand. 2019; 140: 62-71



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Level of evidence:

OFCBM 2

Grade of recom-	Level of evidence:	OECBM 1	Quality of evidence:
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			ences:

dation: 0

Grade of recommen-

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Berney et al. Thorax. 2021; 76: 656-63 Waldauf et al. Thorax. 2021; 76: 664-7

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		Selected reference:

Veldema et al. Acta Neurol Scand. 2019; 140: 62-71

Renner et al. Critical Care. 2023; 27: 301

Veldema et al. Acta Neurol Scand. 2019; 140: 62-71

Therapy Option 4: Electrical stimulation of the ventral thigh musculature can be used to strengthen the muscles.

Grade of recommen-	Level of evidence:	Quality of evidence:
dation: 0	OECBM 2	Low
		Selected reference

Chen et al. Respir Care. 2019; 64: 262-71

Recommendation 2 Training of the inspiratory muscles using an inhalation trainer should be used to increase the strength of the inspiratory muscles and the quality of life in the short term as an adjunct to standard physical therapy.

Grade of recommen-	Level of evidence:	Quality of evidence:
dation: B	OECBM 2	Moderate
		Selected reference:

Bissett et al. Thorax. 2016; 71 (9): 812-9



Recommendation 3 As dysphagia is frequent in patients with tracheostomy, standardized assessment of swallowing function should be performed before oral nourishment is initiated.

Grade of recommendation: **B** Level of evidence: OECBM 1

Quality of evidence: High Selected references:

Langmore et al. Dysphagia. 1988; 2: 216-9 Hales et al. Clin Otolaryngol. 2008; 33: 319-24 Warnecke et al. Crit Care Med. 2013; 41: 1728-32 Lynch et al. J Crit Care. 2017; 39: 143-8 Singh et al. J Intensive Care. 2017; 5: 38 Linhares et al. J Laryngol Otol. 2019; 133: 329-32 Skoretz et al. Crit Care Med. 2020; 48: e141-51



Physical Rehabilitation in the ICU: A Systematic Review and Meta-Analysis*



CONCLUSIONS:

Physical rehabilitation in the ICU improves physical function and reduces ICU and hospital length of stay. However, it does not appear to impact other outcomes.

Wang et al. Critical Care Medicine 2022; 50 (3):375-88

Effects of Mobilization within 72 h of ICU Admission in Critically Ill Patients: An Updated Systematic Review and Meta-Analysis of Randomized Controlled Trials



Initiating rehabilitation within 72 h of ICU admission in critically ill patients may improve physical and cognitive function, preventing PICS without increasing the rate of adverse events. The effect of early rehabilitation on mental functioning remains unknown based on the findings of the present study. Further large-scale studies with a low risk of bias are needed to clarify the impact of early rehabilitation on mental health.

Care intervention on psychological outcomes among patients admitted to intensive care unit: an umbrella review of systematic reviews and meta-analyses



Evaluated 8 interventions:

- Preoperative education
- Information intervention
- Communication & psychological support
- Alternative decision making
- Early rehabilitation
- Music therapy
- ICU diary

Care intervention on psychological outcomes among patients admitted to intensive care unit: an umbrella review of systematic reviews and meta-analyses



Most of the reviews were of « medium » to « high » methodological quality.

Each type of care intervention **can improve** the psychological outcomes of ICU patients.

Buth this finding was supported by evidence with low epidemiological credibility (small sample size and large heterogeneity).

Evaluated 8 interventions:

- Preoperative education
- Information intervention
- Communication & psychological support
- Alternative decision making
- Early rehabilitation
- Music therapy
- ICU diary

Optimal timing for early mobilization initiatives in intensive care unit patients: A systematic review and network meta-analysis



Main Outcome Measures

The primary outcome assessed was the incidence of intensive care unitacquired <u>weakness</u>. The secondary outcomes included: the <u>Medical Research</u> Council Score, the <u>Barthel Index</u>, duration of <u>mechanical ventilation</u>, length of <u>intensive care unit</u> stay, total length of hospital stay, mortality and incidence of intensive care unit-related complications.

Yu et al. Intensive and Critical Care nursing 2024; 82, 103607

Optimal timing for early mobilization initiatives in intensive care unit patients: A systematic review and network meta-analysis



Conclusion

In summation, early mobilization within 24–72 hafter admission to the ICU or initiation of mechanical ventilation seems essential in curtailing the incidence of ICU-AW and enhancing muscle strength. However, in terms of reducing the duration of mechanical ventilation and ICU stay, the optimal time appears to be within 24–48 h. In standard clinical practice, healthcare providers can determine personalized and early ICU activity initiation time based on the specifics of the patient's health...

Yu et al. Intensive and Critical Care nursing 2024; 82, 103607

✓ It is important to assess physical, cognitive, and psychological health functions of critically ill patients at risk for developping PICS during their stay in the ICU.





- ✓ It is important to assess physical, cognitive, and psychological health functions of critically ill patients at risk for developping PICS during their stay in the ICU.
- ✓ Physical health and motor function can improve through early mobilization, physical therapy, additional ergometer training (cycling) and neuromuscular stimulation.





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- Physical health and motor function can improve through early mobilization, physical therapy, additional ergometer training (cycling) and neuromuscular stimulation.
- ✓ Before initiating oral nutrition, a standardized swallowing test should rule out risks of dysphagia and aspiration.





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- ✓ Before initiating oral nutrition, a standardized swallowing test should rule out risks of dysphagia and aspiration.
- Psychological health can improve through integrating relatives into care, keeping ICU diaries, and psychological care (Hypnosis, Music Therapy).



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- Cognitive health can improve with prevention of delirium, early multimodal treatment of delirium, and/or attention training.





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- Cognitive health can improve with prevention of delirium, early multimodal treatment of delirium, and/or attention training.
- ✓ Health care professionals must be sensitized and trained to recognize PICS.





"L can't go back to yesterday

because, I was a different person then."

Merci pour votre attention

- ✓ It is important to assess physical, cognitive, and psychological health functions of critically ill patients at risk for developping PICS during their stay in the ICU.
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