HERZ-KREISLAUF-ZENTRUM

Post-Intensive Care Syndrome (PICS)

July 8th: ICU Diary Conference: PICS and After care/follow-up

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There are no conflicts of interest

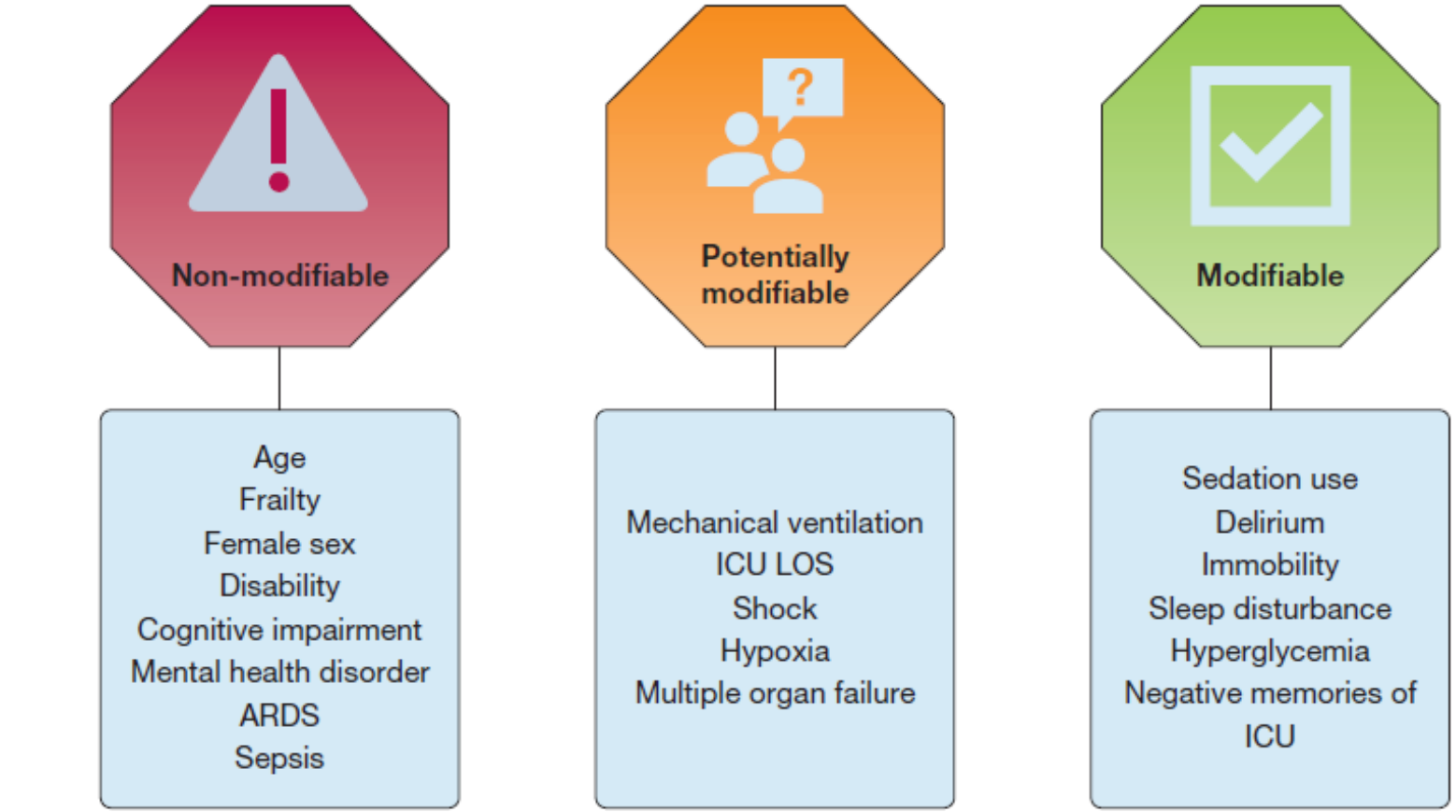
D G N R Deutsche Gesellschaft für Neurorehabilitation e. V.

Definition of PICS

- PICS is defined “as new onset or worsening of impairment(s) in physical, cognitive, and/or mental health that arise after the ICU and persist beyond hospital discharge” *(Needham DM, Davidson J, Cohen H, et al. Improving long-term outcomes after discharge from intensive care unit. Crit Care Med. 2012;40(2):502–9.)*

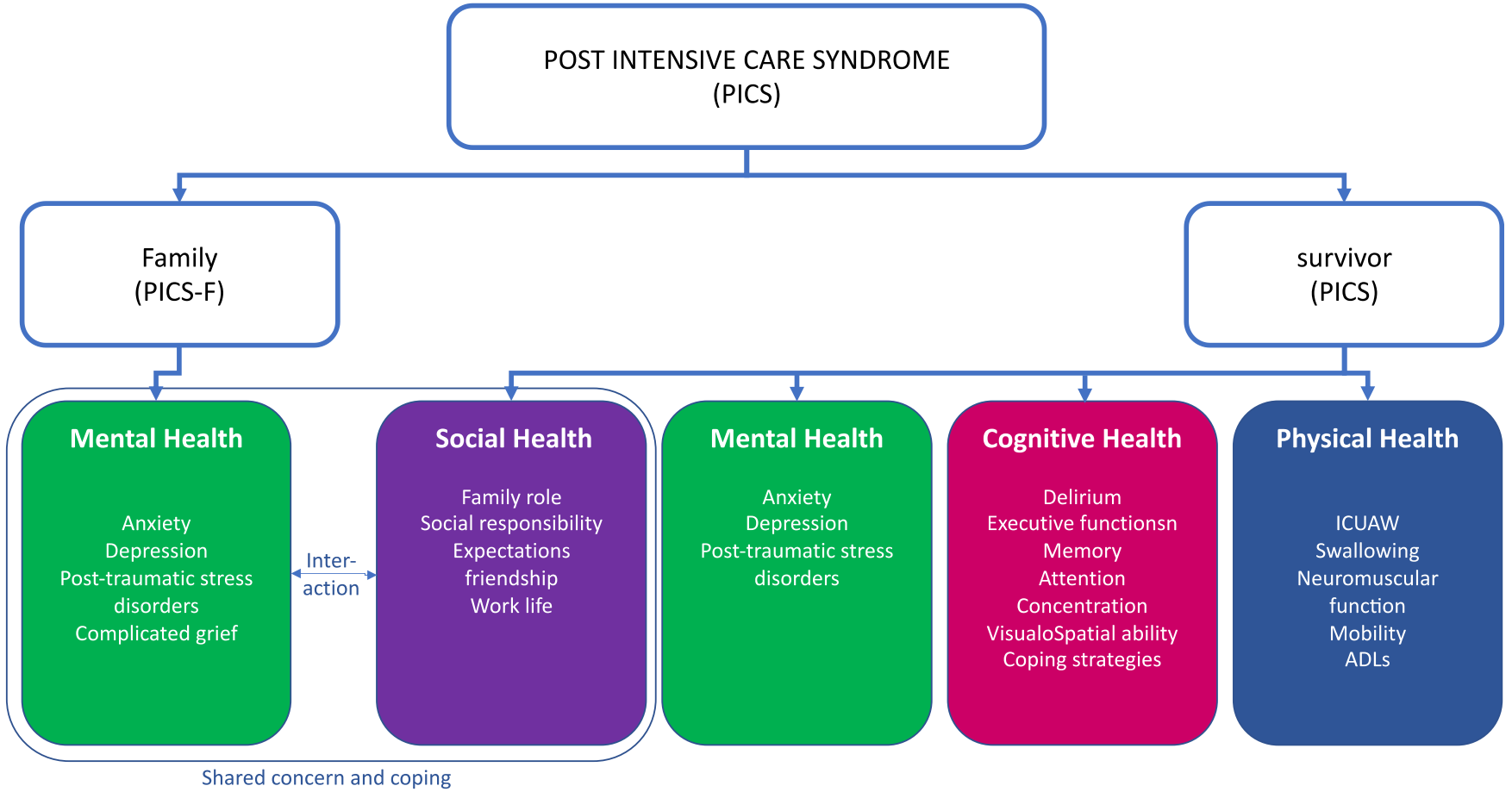
Risk factors for PICS

B



Survival ≠ Recovery, Schwitzer, Emily et al. CHEST Critical Care (2023), Volume 1, Issue 1, 100003

Impact of the Post-Intensive-Care-Syndrom (PICS)



According to: Vester LB, Holm A, Dreyer P. Patients' and relatives' experiences of post-ICU everyday life: A qualitative study. Nurs Crit Care. 2021 Jul 13

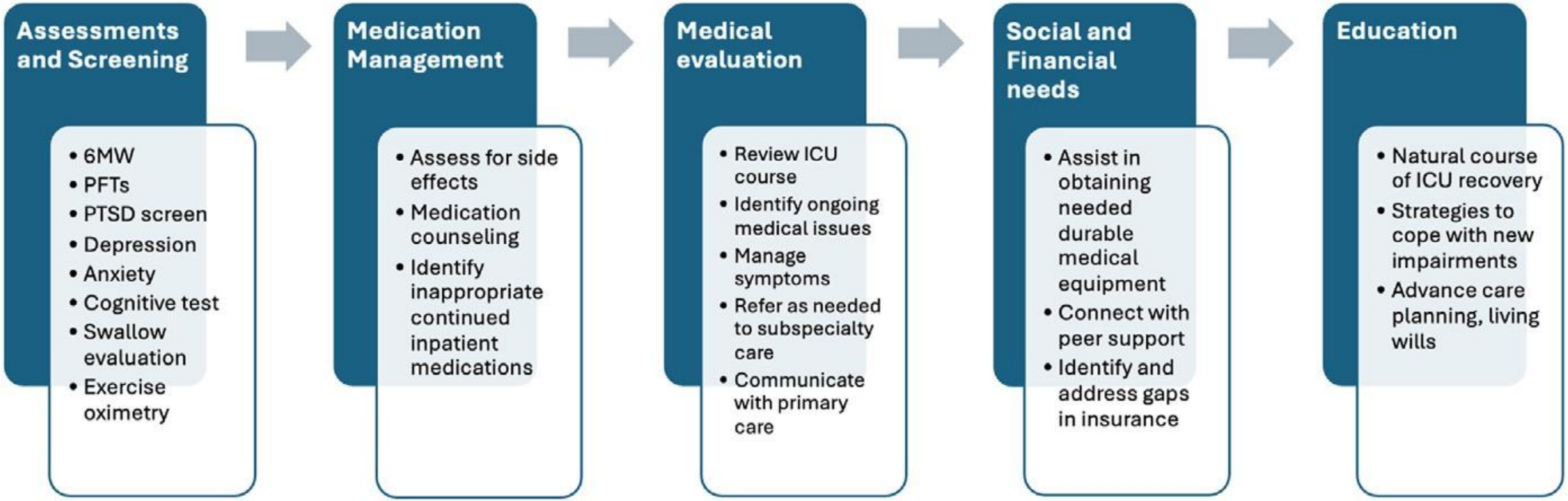
Phase of Critical Illness	 Acute Illness	 Hospital Recovery	 Early Post-discharge Recovery	 Late Post-discharge Recovery
Desired Outcome:	Survival	Discharge Home	Stay Home and Improving	Return to Baseline
Examples of impediments to desired outcome:	• Late antibiotics or source control for sepsis • Hospital-onset infection (e.g., ventilator-associated pneumonia) • Lack of venous thromboembolism prophylaxis • High-tidal volume ventilation for ARDS	• Immobility • Delirium • Lack of rehabilitation • Polypharmacy • Prolonged catheterization • Disruption of circadian rhythms	• Post-Intensive Care Syndrome • Caregiver misinformation • Fragmented care or inadequate follow-up • Vague or incomplete discharge instructions • Inadequate medication reconciliation • Missing DME • Inadequate rehabilitation • Lack of subspecialist follow-up • Polypharmacy	• Post-Intensive Care Syndrome • Inadequate vocational rehabilitation • Disrupted employment • Socioeconomic barriers to care (insurance, transport) • Patient and family financial burden • Fragmented or inadequate family support • Polypharmacy
Location:	ICU	Hospital ward	Home	Home
Supervising clinician:	Intensivist	Hospitalist	PCP	PCP
Timeframe:	Days to weeks	Days to weeks	Months	Years
Rehabilitation	**Acute Phase -Early Rehab**	**Post-Acute Phase - In-Patient Rehab**	**Outpatient-Rehab / Chronic Phase**	

Phases of Critical Illness

- According to Brown, S. M., et al., Approaches to Addressing Post-Intensive Care Syndrome among Intensive Care Unit Survivors. A Narrative Review. Annals of the American Thoracic Society, 16(8), 947–956.
- **There are no phase- specific manifestations of PICS**

Multidisziplinary Concept of „ ICU recovery clinics“

- Mandatory steps



Nicole Paige Herbst et al.,
Multidisciplinary Team Approaches to Assessing and Addressing Post Intensive Care Syndrome,, Critical Care Clinics, Volume 41, Issue 1, 2025

Positive Evidence for the Benefit of Rehabilitation:

Rahmel T, et al. (2020) Long-term mortality and outcome in hospital survivors of septic shock, sepsis, and severe infections: The importance of aftercare. PLoS ONE 15(2): e0228952.

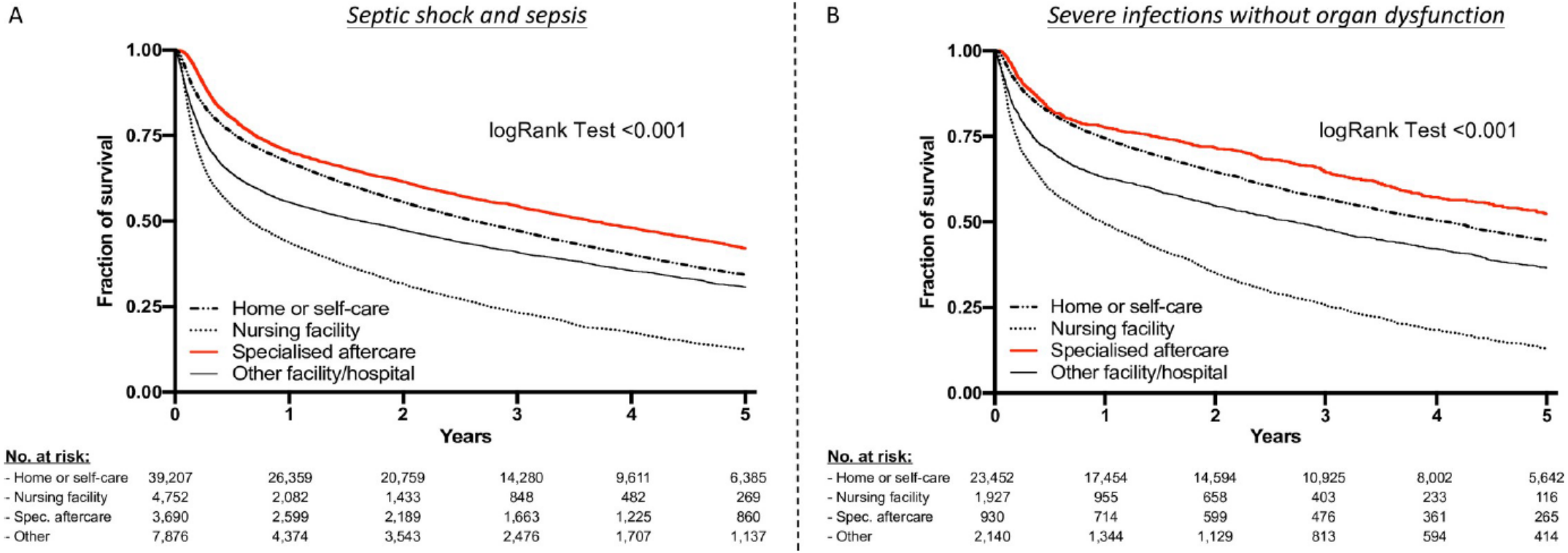


Fig 4. 5-year survival of A) septic shock and sepsis and B) severe infections without organ dysfunction stratified for their discharge destination. Unmatched hospital survivors are included in analysis. Kaplan-Meier estimates were used to calculate probabilities of 5-year survival based on discharge to home or self-care, nursing care facility, rehabilitation facility, and other facilities. 5-year survival was significantly greater in patients transferred to rehabilitation facilities.

Renner *et al. Critical Care* (2023) 27:301
https://doi.org/10.1186/s13054-023-04569-5

Critical Care

GUIDELINE Open Access

Guideline on multimodal rehabilitation for patients with post-intensive care syndrome

Caroline Renner[1], Marie-Madlen Jeitziner[2,3], Monika Albert[4], Sabine Brinkmann[5], Karin Diserens[6], Imanuel Dzialowski[7], Maria-Dorothea Heidler[8], Martina Lück[9], Ricki Nusser-Müller-Busch[10], Peter S. Sandor[11], Andreas Schäfer[12], Bettina Scheffler[13], Claus Wallesch[14], Gudrun Zimmermann[15] and Peter Nydahl[16,17*]

Objective

Develop ***evidence-based*** multimodal rehabilitation concepts to optimize rehabilitative therapies during ICU care, early neurological rehabilitation as well as during post-acute and ambulatory care.

Recommendation	Discription	Plain language
A/A-	clearly favors therapy	ought to/ ought not to
B/B-	favors therapy somewhat	should /should not
0	does not favor or discourage use of therapy	can

Methods

multidisciplinary task force

10 scientific questions (PICO)

Patient population (adult patients that exhibited at least one symptom in one of the three domains after critical illness and/or 48 h stay on the ICU, any gender), therapeutic intervention, comparison of intervention with no intervention or standard therapy and outcome

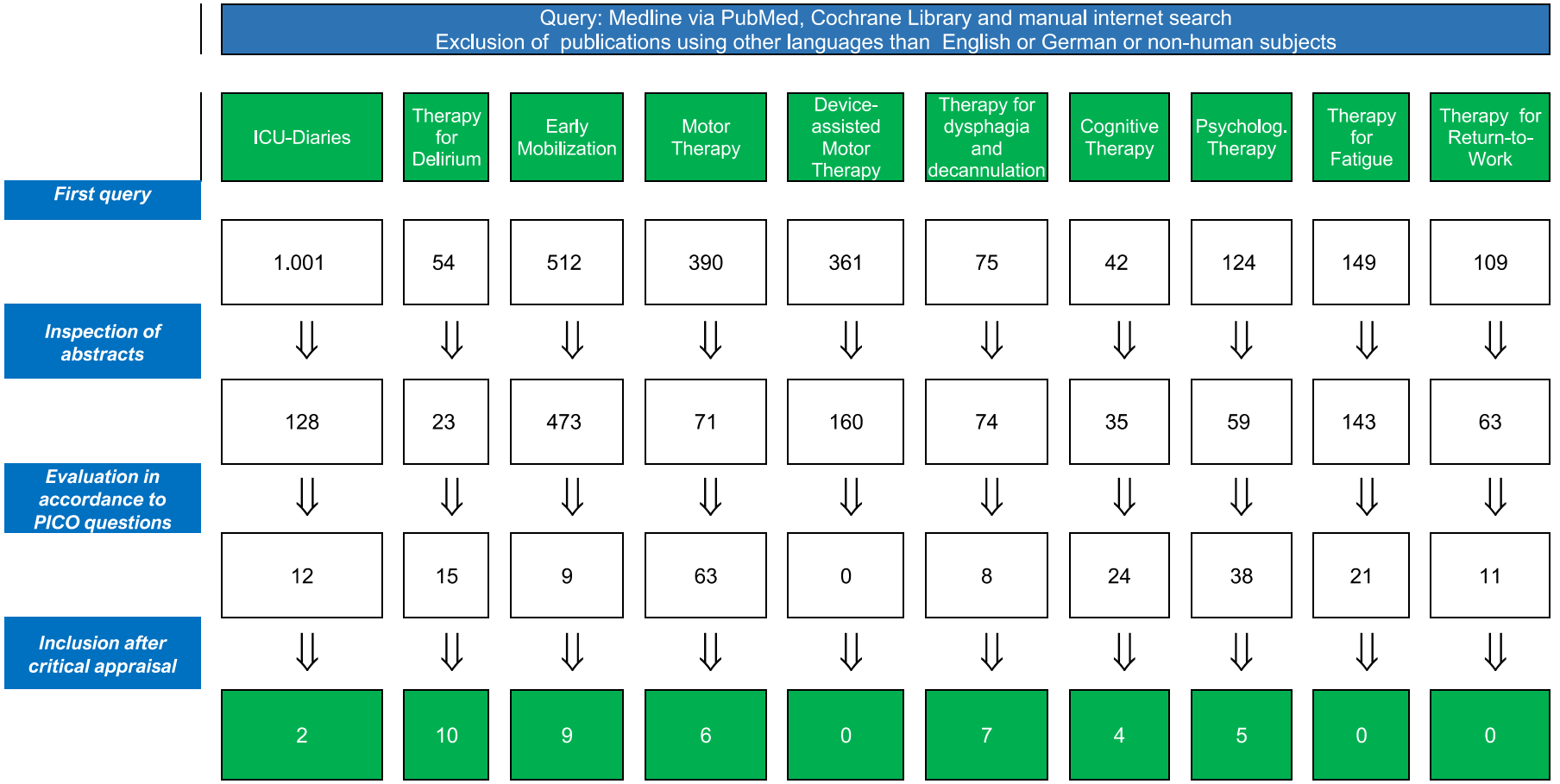
Conducted a systematic search

Evaluated the literature regarding its internal validity, clinical relevance, practicability

Synthesizied evidence and developed

recommendations According to „GRADE “

Results


Query: Medline via PubMed, Cochrane Library and manual internet search
Exclusion of publications using other languages than English or German or non-human subjects
ICU-Diaries
Therapy for Delirium
Early Mobilization
Motor Therapy
Device-assisted Motor Therapy
Therapy for dysphagia and decannulation
Cognitive Therapy
Psycholog. Therapy
Therapy for Fatigue
Therapy for Return-to-Work
First query
1.001
54
512
390
361
75
42
124
149
109
Inspection of abstracts
128
23
473
71
160
74
35
59
143
63
Evaluation in accordance to PICO questions
12
15
9
63
0
8
24
38
21
11
Inclusion after critical appraisal
2
10
9
6
0
7
4
5
0
0

Sayde, G.E., Stefanescu, A., Conrad, E., Nielsen, N., Hammer, R. (2020). Implementing an intensive care unit (ICU) diary program at a large academic medical center: Results from a randomized control trial evaluating psychological morbidity associated with critical illness. *General Hospital Psychiatry* (6), 96-102.

Ref. no.	Author, year, study type, evidence level	Intervention (Details, intensity, duration)	Control intervention (Details, intensity, duration)	Population (eligibility criteria and study population characteristics: n=?, Int/Con, age, sex, disease duration, severity)	Outcome measures (including ICF levels) Follow-up period	Main results (e.g. effect size [plus CI], significance)	Validity rating (++ + - --) (Q1-Q14)	Relevance for clinical practice (2,1,0,-1)	Conclusion / Comment (based on PICO; results, e.g. clinical relevance of outcome measure(s) and of magnitude of effect, benefit-harm ratio and acceptability; methodological weaknesses / risk of bias; relevance of findings for clinical practice)
	Sayde et al., 2020 **RCT** GRADE : low OCEBM Level of Evidence:3	bedside education for patients and families 2-3 times a week plus written instructions and personal encouragement to use an ICU-diary diary always present bedside for patient, family and staff	bedside education for patients and families 2-3 times a week	n = 18 diary n = 17 education-only age 31-51 sex 24 male ICU > 72h intubation > 24h no preexisting PTSD or neuro-cognitive impairment	IES-R PHQ-8 HADS GAD-7 at discharge week 4, 12 and follow-up at week 24	significant reduction of depressive symptoms in Controls over time significantly greater decrease in PTSD in Controls at week 4 Both study groups exhibited clinically significant PTSD symptoms at all timepoints after ICU discharge, with relevant increase of PTSD symptoms by week 12 in both groups no significant group differences in other measures, or at other follow-up intervals.	Q1:++ Q2:++ Q3:++ Q4:++ Q5:++ Q6:++ Q7:0 Q8:++ Q9:-- Q10:-- Q11:++ Q12:++ Q13:++ Q14:++	2	no benefit in using an ICU diary versus bedside education-alone

Sun, X., Huang, D., Zeng, F., Ye, Q., Xiao, H., Lv, D., Zhao, P., & Cui, X. (2021). Effect of intensive care unit diary on incidence of posttraumatic stress disorder, anxiety, and depression of adult intensive care unit survivors: A systematic review and meta-analysis. *J Adv Nurs*, *77*(7), 2929-2941.

Autor, Jahr, Evidenzgrad	Studienart, Anzahl der Studien, Anzahl der Teilnehmer	Suchdatum, durchsuchte Datenbanken, Suchalgorithmus	Population	Interventionen und Kontrollinterventionen	Ergebnis, Maßnahmen, Nachlaufzeit	Wichtigste Ergebnisse, Risiko der Verzerrung	Gültigkeitsbewertung	Relevanz für die klinische Praxis	Fazit
Sun et al. 2021 **OCEBM 1a / 2b (and case –controlled studies**	Systematic review and meta-analysis of prospective randomized controlled or case-controlled studies. 10 studies; -> 8 RCT, 2 case-controlled studies, N = 1210	1 January 2000–1 March 2020. Cochran Library, Pubmed, Embase, CINAHL, and ProQuest databases, China national knowledge infrastructure (CNKI) ((("Intensive Care Unit Diary" OR (ICU Diary") OR ("Diary Therapy"))) AND ((("Post Traumatic Stress Disorder", OR ("Psychological Disorder") OR ("Psychological Symptoms"))) AND (("ICU survivor" OR (“intensive care unit survivor”)) AND ("randomized controlled trial" OR "randomized controlled trial" OR "randomized*"))).	A systematic review and meta-analysis were conducted to evaluate the effect of ICU diary therapy on the incidence of PTSD, anxiety, and depression of adult patients after ICU stay and to provide an effective reference for the application of ICU diary in the field of ICU. (comprehensive ICU, cardiac and thoracic ICU).	Intervention group: ICU diary and routine care during ICU stay. Patients began to read their ICU diary after ICU discharge Control group: routine care during ICU stay ICU Follow-Up: 2-3 months after ICU discharge	Primary Outcome: incidence of posttraumatic stress disorders Secondary outcomes: anxiety and depression.	The results of this meta-analysis showed that the intensive care unit diary could reduce the incidence of posttraumatic stress disorder, anxiety, and depression.	Q1: + Q2: + Q3: - Q4: + Q5: + Q6: - Q7: + Q8: + Q9: + Q10: - Q11: + Q12: + Q 13: +	2	

Scientific Question :Using **ICU-Diaries**

- *Does the usage of ICU-Diaries compared to no ICU-Diaries reduce symptoms of anxiety, depression and/or PTSD in patients with PICS or at risk to develop PICS?*

- **Recommendations:**

1: ICU-Diaries ***ought*** to be implemented to reduce the risks for symptoms of anxiety, depression and /or PTSD. (A)

2: In post-acute care ICU-Diaries ***ought*** to be worked on with health care professionals. (A)

Scientific Question: **Psychological Therapy**

- *Does the use of psychological interventions reduce symptoms of anxiety, depression and/or PTSD in patients with PICS or at risk to develop PICS?*

- **Recommendations**

1. Patients surviving critical illness benefit from psychological interventions. These ***should*** already start during the acute phase. (B)
2. Symptoms of PTSD ***should*** be treated with psycho-educational and psychotherapeutic interventions. (B)
3. A professional follow-up-service ***should*** be offered 12 month after discharge for mental health stabilization. (B)

Scientific Question: **Cognitive Therapy**

- *Does the use of kognitive interventions reduce impairments of attention, memory, executive functioning and its sequelae in patients with PICS or at risk to develop PICS?*

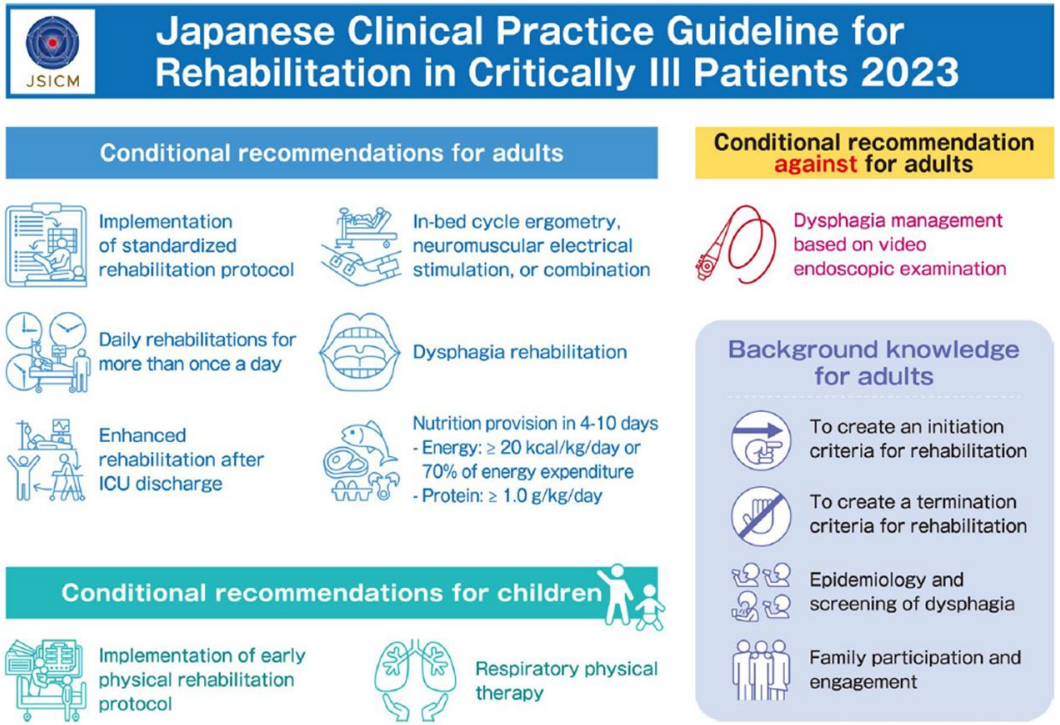
- **Recommendation**

1. Computer-based learning of attention functions and/or therapy to enhance cognitive performance ***should*** be provided to critcally ill and during further rehabilitation. (B)

Positive Evidence for the Benefit of Rehabilitation

Japanese Clinical Practice Guidelines for Rehabilitation in Critically Ill Patients 2023 (J-ReCIP 2023)

Takeshi Unoki[1*]. Kei Havashida[2]. Yusuke Kawai[3]. Shunsuke Taito[4]. Morihide Ando[5]. Yuki Iida[6]. Fumihito Kasai[7],



- A multidisziplinary approach,
- **But no referral to ICU-Diaries or psychological therapy**
- <u>Working Groups</u>

WG1. Exercise therapy in ICU (including respiratory physiotherapy).

WG2. Neuromuscular electrical stimulation and inbed cycle ergometer.

WG3. Dysphagia rehabilitation.

WG4. Standards for mobilization.

WG5. Nutritional therapy.

WG6. Rehabilitation for critically ill children.

WG7. Rehabilitation after ICU discharge.

WG8. Family visitation and family participation in rehabilitation.

Positive Evidence for the Benefit of Rehabilitation, but…

Neurologic Rehabilitation improves:

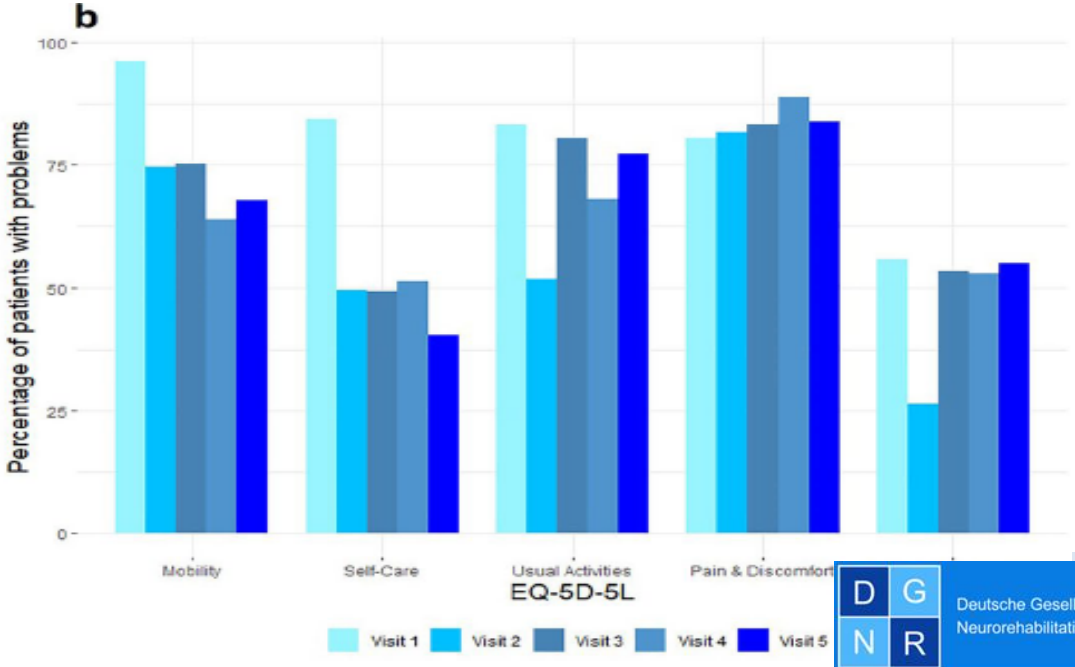
- Mobility
- Self care
- Usual activities
- Anxiety and depression

- → but there is the need of continous care

OPEN

Reduced health-related quality of life, fatigue, anxiety and depression affect COVID-19 patients in the long-term after chronic critical illness

Marion Egger[1,2✉], Corinna Wimmer[1,3], Sunita Stummer[1], Judith Reitelbach[1], Jeannine Bergmann[1], Friedemann Müller[1] & Klaus Jahn[1,3]



Statement: Screening/Assessment for PICS

Domain	Prior to ICU	Acute	Post-Acute	Chronic
Physical Health	CFS >5	- BMRC grading of muscle strength - Hand grip dynamometer	- Timed-Up-Go Test - 2-Minute-Walk-Test (2 mWT)	- WHO Disability Assessment Schedule (WHODAS 2.0)
Cognitive Health	MoCA <26	- MMSE - MiniCog	- Montreal Cognitive Assessmment (MoCA)	- Montreal Cognitive Assessmment (MoCA)
Mental Health	- Anxiety -Depression - Substance abuse	- Personal Health Depression Questionnaire (PHQ-4) - Hospital Anxiety and Depression Scale (HADS)	- PHQ-8 - Impact of Event Scale (IES-R) - Hospital Anxiety and Depression Scale (HADS)	- PHQ-8 - Impact of Event Scale (IES-R)

Conclusion

- PICS is a variable and complex syndrome that requires an individualized, continuous, multimodal and multiprofessional approach.
- Statement: A prerequisite for the adequate rehabilitation of PICS includes ***repeated*** assessments of all 3 domains of PICS up to one year after discharge from the hospital.
- **Strong recommendations:**

1 Early mobilization ***ought to*** be started within the first few days in the ICU, adapted to the patient‘s capacity and general condition.

2. ICU-Diaries ***ought to*** be established and reviewed by the patient **and** a health care professional the patient in the post-acute phase to reduce symptoms of anxiety, depression and /or PTSD.

3. Interventions for delirium prophylaxis ***ought to*** include multimodal sensory, cognitive, and emotional stimulation (mobilization, targeted stimuli, orientation aids, family contact)

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