The Asia-Pacific Early Mobilization Network

The Japanese Society of Early Mobilization

The 9th Asia Pacific conference on Weaning and Early Mobilization for Critically ill patients in Tokyo 2025

Conference Book

Premium Lecture
May 31 (Sat)

The Premium Lecture agenda

	Premium Lecture	Workshop
14:00-14:10	Opening Remarks	
14:10-14:30	Why is Early Mobilization of Critically Ill Patients Important?– Dale Needham (USA)	Reservation required 14 : 00～15 : 20 Work Shop 1 A Collection of Airway Clearance Techniques from Around the World Balachandran (Singapore)
14:30-14:50	Expert-Recommended Methods for Evaluating Physical Activity and Tips for Scoring Nobuto Nakanishi (Japan)	
14:50-15:10	Foundations for successful mobilization — Patient Criteria, Sedation, and Automatic Order Systems — Chi Ryang Chung (South Korea)	
15:10-15:30	Cognitive and Mental Impairments in Critically Ill Patients — Strategies for Improving Long-Term Outcomes — Yusuke Kawai (Japan)	
15:30-16:00	Break	
16:00-16:20	How to Develop a Mobilization Protocol? — The Key to Goal Setting with Interdisciplinary "Collaboration" — Thomas Rollinson (Australia)	
16:20-16:40	Safety Patrient Handling for Mobilization Balachandran (Singapore)	
16:40-17:00	Occupational Therapy in the ICU Innovative Approaches to Improve Cognitive Function and ADLs Mari Yasuoka (Japan)	Reservation required 16 : 30～18 : 00 Work Shop 2 Tips for Airway Suctioning during Mobilization with Peter Nydahl Peter Nydahl (Germany)
17:00-17:20	Break	
17:20-17:40	Insights for treatment of post-extubation dysphagia: A path forward? Martin Brodsky (USA)	
17:40-18:00	Nurse-Driven Mobilization Evidence Based Implementation and Future Kate Tantam (UK)	
18:00-18:20	Electrical stimulation, In-Bed Cycling, and Vibration Therapy? Updates from Recent Research Kim Leong (Malaysia)	Break
18:20-19:00	Break	18 : 20～19 : 00 Reservation required Work Shop 3 Preventing falls using virtual sensation Safety Mobilization with Cutting-Edge Technology Keisuke Shima (Japan)
19:00-19:40	Meet Expert Live Conference Panel Discussion Clinical Perspective from World Experts	

The main conference agenda

Main Conferenve
June 1 (Sun)

SL: Key Note Lecture　SP: Focused Symposia　AS: Academic Session

	Main hall	Second hall
10:10~10:30	**SL Key Note Lecture** •Latest Updates in ICU Rehabiltation: Key Issues & Future Directions	
10:30~11:10	**SP-1 Focused Symposia** Muscle Assessment using Ultrasound – Where is the Best Measurement Point? –	**SL** 10:40~11:00 •Long-term Outcomes after Critical Illness – What Strategies are Important for Recovery?
11:10~11:30	Q&A•Break	
11:30~12:30	**AS-1 Academic Session** What is the appropriate dose of Early Mobilization? – Latest research regarding Frequency, Intensity, Duration and Timing •Early Mobilization in Mechanically Ventilated, Critically Ill Patients -The Next Steps derived from Mobilization Dose- •Optimal Mobilization Dose derived from Biomarkers in Heart Failure Patients •The Best Approach for Acute Phase Stroke Patients based on the Latest Evidence of Mobilization Dose Open call oral presenters	**AS-2 Academic Session** Optimal Approaches for Weaning and Respiratory Management in Critically Ill Patients? •Non-sedation Management for Successful Weaning and Early Mobilization in ICU •Ventilator Management Strategies for Adults with ARDS •Respiratory Muscle Assessment and Training in Patients with Weaning Difficulties •Best Nutritional Approach for Weaning Difficulties with Mechanical Ventilation Open call oral presenters
12:30~13:50	Lunch Break and Poster Viewing	
13:50~14:50	**SP-2 Focused Symposia** The Forefront of PICS – What is the best approach for improving physical, cognitive and mental function? – •Prevent muscle loss in the ICU! Understanding nutrition therapy and mobilization •Don't overlook Delirium, Depression, and PTSD! – Strategies for preventing cognitive and mental health disorders •Implementation Challenges for Preventing PICS-F Open call oral presenters	**SP-3 Focused Symposia** Changing Culture! Team Collaboration to Maximize the effectiveness of Mobilization •Teamwork Makes the Dream Work! Collaboration between Physiotherapists, Nurses, and all others. •What is the best way to engage the Multidisciplinary Team? - "Active Tips" learned from Successful Clinical Achievements - •"Humanizing Intensive Care" for Patient Centered Mobilization Open call oral presenters
14:50~15:20	Q&A•Break	
15:20~16:20	**AS-3 Academic Session** Latest Approaches for Mobilization and Rehabilitation of Critically Ill Patients ① •Mobilization in the "Evening" - Importance and Tips for Clinical Implementation - •Telerehabilitation for ICU survivors - Tips for Regular Exercise after Hospital Discharge - •Practical Application of Belt - Type Electrical Stimulation for Preventing Muscle Atrophy in the ICU - Open call oral presenters	**AS-4 Academic Session** Latest Approaches for Mobilization and Rehabilitation of Critically Ill Patients ② •Next-day Discharge for THA and TKA patients - Successful Rehabilitation Before and After Discharge - •Association Between Peak Oxygen Uptake and Major Adverse Cardiovascular Events Incidence Among Valvular Heart Disease- Utilizing Virtual "Wall-Touch Sensation" •Past Achievements and Future Perspectives of Early Mobilization Using Mobile Patient Lifts Open call oral presenters
16:20~16:40	Closing Remark•Award	

Myokines secretion and their role in critically ill patients. A scoping review

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【INTRODUCTION】
Muscle weakness affecting both respiratory and peripheral muscles is a key contributor to disability following critical illness. ICU-acquired weakness has been associated with delayed weaning from mechanical ventilation (MV), longer ICU and hospital stays, and increased mortality.
The negative consequences of ICU-acquired muscle weakness are thought to be partially avoided through muscle contraction, whether by active or passive physical mobilization, or even neuromuscular electrical stimulation (NMES). Muscle contraction, by any means, may prevent local muscle wasting and induce a systemic effect through a range of cytokines and chemokines secreted by myocytes during muscle stimulation—referred to as myokines.
Myokines can modulate the function and metabolism of distant organs and may promote protection against the development of various ICU complications, making them useful not only for preventing local muscle wasting. However, the evidence regarding these systemic effects in critically ill patients is scattered and minimally explored.

【OBJECTIVE】
This review aims to summarize the available evidence on myokine secretion and its potential local and systemic effects in critically ill patients.

【METHODS】
A scoping review was conducted based on Joana Briggs Institute recommendations. A systematic search of MEDLINE (Ovid), Embase (Ovid), CENTRAL, CINHAL (EBSCOhost), WoS, and Scopus was performed up to February 2023. The review included primary studies involving critically ill adults that evaluated myokine secretion or concentration induced by physical rehabilitation interventions. Two independent reviewers performed study selection and data extraction.

【RESULTS】
Seventeen studies, published between 2007 and 2023, were included. Most of the studies were randomized clinical trials (47%). Some reports included patients within 48-72 hours from intubation and mechanical ventilation initiation while other authors focused on the chronic critically ill scenario (patients with 10 days on MV). The physical rehabilitation interventions included in the studies were NMES and passive and active mobilization. These interventions were delivered alone or in combination, in a single session or one to two sessions daily. The duration of the rehabilitation sessions ranged from 20 to 60 minutes. Twelve (70%) studies evaluated IL-6. Other myokines frequently studied were IL-10, TNF- α , IL-8, and Myostatin. Method and timing of myokine evaluation varied widely between studies. Thirteen (76%) studies reported changes in myokine secretion or gene expression. Most of them reported no consistent change regarding IL-6. Concentration of myokines related to muscle protein synthesis/breakdown, such as Myostatin, seem to potentially protect from muscle wasting and consequent weakness.

【CONCLUSIONS】
Myokine dynamics in critically ill patients may play a role in the potential systemic impact of physical rehabilitation beyond its well-known local effects. In the past decade, this complex and emerging field has seen a growing interest, holding a great potential for research development. However, challenges such as study design, small sample sizes, and variations in physical therapy protocols and methods of myokine evaluation across clinical trials add difficulties in understanding myokine responses and their potential effects.

【Impact statement】
The study of myokine dynamics in critically ill patients underscores the significance and potential systemic impact of physical rehabilitation, extending beyond the local and traditionally recognized effects.

A Qualitative Study on the Rehabilitation Experiences of Intensive Care Unit Patients and Families: Journey from Survival to Living

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This study explored the essence and meaning of rehabilitation as experienced by intensive care unit (ICU) patients and families, addressing the research question: "What is the experience of ICU rehabilitation?" Nine patients and their families who underwent ICU rehabilitation participated in this qualitative study. The overarching theme identified was "Journey from Survival to Living," wherein patients transitioned from merely surviving through "critical care" to returning to daily life through "rehabilitation." ICU rehabilitation providers would benefit from understanding patients' and families' subjective experiences when delivering appropriate interventions.

Changes of intensive care physiotherapy practices in Chile during the COVID-19 pandemic.

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【Background】
The COVID-19 pandemic reshaped intensive care unit (ICU) practices worldwide, modifying physiotherapy interventions. Understanding these changes is essential to optimize physical and respiratory care in future healthcare crises.

【Purpose】
To assess changes in physiotherapy practices in Chilean ICUs during first year of COVID-19 pandemic.

【Methods】
A nationwide longitudinal study was conducted by surveying one representative physiotherapist from each of 130 ICU sites. Data were collected at four time-points: March 2020 (retrospective pre-pandemic, P1), July 2020 (P2), October 2020 (P3), and March 2021 (P4). Interventions were categorized into respiratory physiotherapy interventions, physical therapy interventions, and team-based clinical/non-clinical activities. Frequency and percentage of sites that implemented those interventions were measured. Significance was determined by chi-square tests ($p<0.05$).

【Results】
Of 111 ICU sites agreeing to participate, 84 (76%) completed all four surveys. Among 32 physiotherapy interventions analysed, 13 (40%) showed significant increases, 7 (22%) initially decreased and later increased, and 12 (38%) remained unchanged. In the respiratory domain, high-flow nasal cannula operation increased from 51% at P1 to 98% of sites at P4. Similarly, interventions related to ventilator and airway management increase significantly ($p\leq0.018$), with the proportion of sites implementing these practices — including invasive mechanical ventilation setup, recruitment manoeuvres, ventilatory parameter adjustments and intubation/extubation assistance — increased from baseline levels of 77–87% in P1 to 96–98% in P4. In contrast, non-invasive ventilation management remained unchanged above 90% across all time-points ($p=0.072$). Moreover, lung-expanding breathing exercises and aerosol therapy showed a significant decrease at P2 before recovering at later time-points ($p<0.001$). Physical therapy interventions remained unchanged, with in-bed mobility and active-passive exercises consistently exceeding 90%, although out-of-bed mobility experienced a non-significant decrease (96% at P1 to 90% at P4, $p=0.65$). In-bed cycling increased significantly (20% at P1 to 32% at P4, $p=0.013$), while chair cycling and neuromuscular electrical stimulation did not change. In the domain of team-based activities, the proportion of sites performing prone positioning assistance (83% at P1 to 99% at P2, $p<0.001$) and intrahospital transport assistance (56% at P1 to 89% at P4, $p<0.001$) increased significantly, while participation in cardiopulmonary resuscitation exceeded 92% at all time-points. In contrast, in-person non-clinical activities — specifically, clinical meetings and teaching sessions — decreased from 77% and 62% at P1 to 13% and 10% at P2, respectively, before partially recovering at P4 ($p<0.001$).

【Conclusions】
This study demonstrates significant changes in ICU physiotherapy practices in Chile during the first year of the COVID-19 pandemic. The substantial increase in respiratory interventions underscored the evolving role of physiotherapists in ventilatory management, while physical therapy practices remained consistently high. The disruption and subsequent partial recovery for in-person non-clinical activities reflected the impact of early pandemic infection control measures.

【Implications】
These findings suggest that physiotherapy practices in Chilean ICUs require a comprehensive scope review. Emphasis on adaptative protocol, interdisciplinary coordination, and innovative clinical training should be included into national guidelines to better address evolving clinical demands during crises.

【Ethics】
Committee of the Clínica Alemana Universidad del Desarrollo, Santiago, Chile. #2020-93 (August 31, 2020).

Outcomes in functional dependence and sensorium in a patient with encephalitis under the early rehabilitation in the intensive care unit program: a case report

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Encephalitis is a diffuse inflammation of the brain parenchyma that significantly impacts functional independence and sensorium. Studies show that patients with encephalitis who undergo in-patient rehabilitation gain improvements in functional independence. For patients admitted to the intensive care unit, potential benefits of participating in early rehabilitation in the intensive care unit (ERICU) include improved physical function and sensorium and reduced hospital length of stay. This is seen in a 53-year-old Filipino male, managed as a case of encephalitis and was admitted to the ICU. After meeting the criteria for ERICU, he was referred to Physical Medicine and Rehabilitation (PM&R). A comprehensive assessment was then performed by a physiatrist, who created an individualized in-patient physical therapy and occupational therapy program. Functional Independence Measure (FIM) scores and Richmond Agitation Sedation Scale (RASS) scores were taken upon referral. After 6 days of rehabilitation, the patient showed improvements in FIM and RASS scores upon discharge by the 10th hospital day. Encephalitis management guidelines state that once stabilized, referral to brain rehabilitation specialists is beneficial to functional recovery. However, currently, there is a lack of prospective reports on the impact of early rehabilitation within the realm of an ERICU program and managed by a physiatrist on functional independence and sensorium of encephalitis patients. Hence, the purpose of this report is to discuss a patient with encephalitis managed by a physiatrist, who showed improvements in functional independence and sensorium after going through an ERICU program.

Optimizing Rehabilitation Services: The Role of Human Resource Management in Improving Patient Outcomes Across Multiple Care Wards

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Background

In Japan, the number of emergency transports involving elderly patients is increasing, prompting ongoing research into the provision of rehabilitation services in intensive care units (ICUs) and emergency critical care wards aimed at improving patient outcomes. Rehabilitation services in Japan are regulated in 20-minute increments called one unit of rehabilitation, and in hospitals with multiple functions, allocating human resources to emergency and acute care often creates a trade-off, reducing the available time for patients in the recovery phase. Addressing such organizational trade-offs requires managerial interventions grounded in an operational vision.

However, there are few researches on efficient allocation strategies for limited rehabilitation staff in multifunctional hospitals in Japan. Furthermore, few studies have explored the relationship between human resource management aligned with organizational vision and functional outcomes. While the importance of rehabilitation in acute care is increasingly recognized, the principles of human resource management expected of department heads remain unclear.

Purpose

This study aims to evaluate the effectiveness of human resource management strategies implemented in the rehabilitation department at NHO Kanmon Medical Center, a facility with multiple functional wards including the intensive and critical care, acute, and recovery ward. By aligning staffing methods with the department's operational vision, the study investigates whether strategic allocation of limited personnel resources can contribute to improved patient outcomes across different care phases.

Method

The rehabilitation department at NHO Kanmon Medical Center formulated a hypothesis on human resource management based on its operational vision and implemented a managerial intervention over a defined period. The intervention was carried out from July 2023 to July 2024. To evaluate patient outcomes, changes in Functional Independent Measure (FIM) score were compiled and conducted statistical test. The daily rehabilitation intervention rate (DRIR) was calculated. Managerial efficiency was assessed using two key performance indicators (KPIs), average time per rehabilitation unit (TRU) and average amount per rehabilitation unit (ARU). Labor management status was measured by the average monthly overtime hours worked.

The core hypothesis of the intervention was that three interrelated strategies would contribute to improved patient outcomes: (1) identifying target patients for focused rehabilitation interventions in the acute care ward; (2) operationally separating and consolidating the rehabilitation staff assigned to the recovery ward to increase specialization; and (3) promoting transparency of operational information through regular interviews and KPI disclosure.

Result

Regarding patient outcomes, no significant difference was observed in FIM scores at the time of transfer from the acute care ward to the recovery ward among patients with disuse syndrome. However, significant improvement was observed in FIM scores at the time of discharge (FIM score, 85.8 ± 18.0 vs 93.4 ± 17.3, $p<0.05$). DRIR was increased from 58% to 89% after the intervention. TRU slightly increased (33.0 ± 1.3 to 35.4 ± 0.47 minutes/unit), while ARU improved to 103.3% compared to the pre-intervention baseline. Average monthly overtime hours decreased (18.8 to 17.9, per staff).

Conclusion

The influence of strategic human resource management on patient outcomes in the recovery ward and operational vision were partially clarified.

Optimizing ICU Recovery: An OT Perspective on the A to F Bundle

Daisuke Shimmyo

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Abstracts
Recent advancements in critical care medicine have markedly improved survival rates among critically ill patients, leading to the emergence of a growing population of so-called "ICU survivors." However, survival alone does not equate to full recovery. A substantial proportion of these individuals experience enduring physical, cognitive, and psychological impairments, collectively referred to as Post-Intensive Care Syndrome (PICS). These sequelae pose significant barriers to reintegration into daily life and can severely impact long-term quality of life.

Emerging evidence underscores the importance of initiating therapeutic interventions during the ICU stay as a means of mitigating the development and severity of PICS. In response to this need, the "A to F Bundle" has been proposed as a comprehensive, evidence-based framework aimed at enhancing ICU care and reducing the incidence of PICS. While the Bundle delineates essential elements for routine clinical practice, it lacks explicit guidance on the role delineation of each healthcare discipline, thereby contributing to variability and ambiguity in its implementation across care settings.

Occupational therapists (OTs), by virtue of their holistic and interdisciplinary approach, are well-positioned to contribute meaningfully across multiple domains of the A to F Bundle. In critical care contexts, OTs are actively involved in early mobilization and non-pharmacologic delirium prevention, both central components of the Bundle. Furthermore, their expertise in addressing the interplay of physical, cognitive, and psychosocial domains enables them to support a wide range of interventions while fostering cohesive team dynamics and interprofessional communication.

This presentation seeks to elucidate the unique contributions of occupational therapists within the A to F Bundle framework through the presentation of targeted strategies and clinical examples. By articulating specific roles and collaborative practices, this work aims to advance role clarity, strengthen interdisciplinary collaboration, and contribute to improved patient outcomes in critical care settings.

In sharing these clinical insights and practical applications, this presentation endeavors to stimulate scholarly dialogue regarding the optimization of occupational therapy services in intensive care units, the routine operationalization of the A to F Bundle, and the promotion of favorable recovery trajectories for individuals affected by PICS.

All clinical practices and case examples presented in this study were carried out in accordance with the ethical standards set forth in the Declaration of Helsinki.

Feasibility and experience of Threshold IMT in post liver transplantation with tracheostomized patients

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-Background:
Threshold inspiratory muscle training (IMT) has been shown to enhance respiratory muscle strength and support ventilator weaning in critically ill patients. However, no established protocols exist for its use in liver transplant recipients, whose at high risk for postoperative respiratory impairment and chronic muscle weakness. These patients commonly present with diaphragmatic dysfunction, reduced lung volumes, and sarcopenia, highlighting the need for targeted respiratory rehabilitation.

Purpose:
This study aimed to evaluate the feasibility and appropriateness of threshold IMT in tracheostomized liver transplant patients, with the goal of developing a standardized protocol. We hypothesized that IMT would enhance respiratory muscle strength and play a role in removal of Tracheostomy and weaning mechanical ventilation during the tracheostomy period.

Methods:
A 2-week Threshold IMT program was implemented in the liver transplantation ward, consisting of five sessions per week. Training intensity progressed from 30% of maximal inspiratory pressure (MIP) in the first week to 50% in the second. Each session included five sets of six repetitions using a threshold-loading device. Eight tracheostomized liver transplant patients participated and completed the program without complications, yielding a 100% adherence rate. Outcome measures included MIP, maximal expiratory pressure (MEP), ICU Mobility Scale (IMS), patient satisfaction, and safety, assessed at baseline (T0), after five sessions (T1), and after ten sessions (T2).

Results:
MIP significantly improved from T0 to T1 (Δ 18.2 cmH_2O, $p = 0.012$), from T1 to T2 (Δ 12.7 cmH_2O, $p = 0.018$), and overall by 46% ($p = 0.018$). IMS scores increased from 4.1 at T0 to 7.3 at T2, indicating enhanced mobility. No major adverse events occurred. Four patients attempted tracheostomy plugging, and one successfully progressed to mechanical ventilation weaning during the program.

Conclusion:
Tailored threshold IMT based on individual MIP is a safe and effective intervention for tracheostomized liver transplant patients when it comes to increasing respiratory muscle strength. It improves respiratory strength and functional outcomes and may facilitate transitions to spontaneous breathing. In the absence of standardized rehabilitation protocols during the tracheostomy period, this approach provides a practical and clinically meaningful strategy for early postoperative care.

TANGIBLE BENEFITS, EFFECTIVENESS, AND SAFETY BY COMBINING WENGER PROTOCOL, ACSM RECOMMENDATIONS, AND BREATHING EXERCISES FOR PHASE 1 CARDIAC REHABILITATION: A CASE REPORT

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Background

Phase 1 cardiac rehabilitation (CR) plays a crucial role in promoting early mobilization and light physical activity, enabling patients to regain independence in activities of daily living (ADLs) more rapidly. In developing countries such as Indonesia, access to CR remains limited and is typically confined to tertiary healthcare facilities. Consequently, there is a pressing need for a CR program that is feasible, effective, and safe, that can be easily implemented at all levels of healthcare facilities.

Case description

A 51-year-old male was scheduled for aortic valve replacement due to severe primary aortic regurgitation. Preoperatively, the patient demonstrated impaired respiratory function, as indicated by low peak cough flow (PCF), reduced single breath counting, along with decreased muscle endurance and symptoms of depression and anxiety. CR focuses on preserving respiratory capacity, muscle strength, and emotional stability. Although the patient had no difficulties with mobilization or ADLs prior to surgery, postoperative functional decline underscored the need for early rehabilitation to prevent complications associated with hospitalization.

The therapy program combined Wenger protocol, American College of Sports Medicine (ACSM) recommendations, and breathing exercises, consisting of: (1) early mobilization, progressing from sitting and standing to hallway ambulation; (2) aerobic exercise using a leg ergocycle, conducted 2–4 times daily for 5 minutes per session with gradual increases in duration; and (3) breathing exercises, including deep breathing and incentive spirometry, performed 10–15 repetitions across 5 daily sessions. All interventions were adjusted to the patient's tolerance. Patient education covered the benefits of CR, sternal precautions, potential postoperative complications, lifestyle modifications, and strategies for continuing rehabilitation at home. Follow-up included respiratory assessments—PCF and single breath counting—as well as evaluations of emotional status using the Depression Anxiety and Stress Scale-21 (DASS-21) and functional independence through the Barthel Index.

During therapy, no barriers were encountered and the patient demonstrated strong motivation to participate. Based on the follow-up results after undergoing CR, the patient showed improvement in PCF, number of single breaths, muscle endurance, and emotional well-being, all of which returned to pre-surgery conditions. Additionally, the patient regained independence in mobilization and ADLs. These outcomes indicate that meaningful functional recovery is attainable, even after the physiological decline typically associated with cardiac surgery.

Discussion

This case report proves that the combined application of the Wenger protocol, ACSM recommendations, and breathing exercises in CR showed clear benefits: (1) feasibility, as the procedures are simple and easy to perform without the need for sophisticated rehabilitation facilities; (2) effectiveness, which has been proven as reflected by improvements in respiratory function, muscle endurance, mobility, ADLs, and emotional well-being; and (3) a good level of safety, with no events or complications reported during the intervention. Thus, the quality of life of patients will be improved, length of hospitalization and costs incurred will be reduced.

Conclusion

The implementation of the Wenger protocol, ACSM recommendations, and breathing exercises combination has proven tangible benefits as a feasible, effective, and safe program for phase 1 CR, making it suitable for implementation at various levels of healthcare facilities.

From Awareness to Action: A Multifaceted Approach to Post-Intensive Care Syndrome in Indonesia

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Currently, the number of ICU survivors is increasing along with the advancement of medical science and technology. Recent data at our hospital shows that the prevalence rate of ICU survivors is approximately 86% per year. Based on the results of the randomized survey distributed to 101 ICU survivors in 2023, it was found that 55% of survivors experienced limitations in daily activities and 27% of ICU survivors who had a job before becoming ill could not return to work. This survey was carried out 1 month after hospital discharge. These disabilities, encompassing functional impairments in the cognitive, mental, and/or physical domains following ICU care, are known as Post-Intensive Care Syndrome (PICS). However, the condition is often underdiagnosed by health care workers, including doctors who fail to recognize it. Therefore, it is crucial to begin from promotive aspect by increasing the awareness of the significant negative impact of PICS and early detection to overcome disabilities in ICU survivors. This should be followed by preventive measures, initiating PICS prevention management within the intensive care setting. Finally, the curative and rehabilitative aspect through assessment, management, and evaluation of PICS. It is important to note that each of these aspects still face challenges. In Indonesia, there are currently no standard screening tools for detection of PICS both at the primary and tertiary levels, nor are there standard medical service flow protocols for PICS assessment and management. Consequently, ICU survivors may not realize that the problems they experience after ICU care can still be medically addressed and optimized. The local guideline of prevention, assessment tools, and management of PICS has not been developed. To overcome these problems, we have generated a series of initial actions through making in-house training for the nurse, physician, and intensivist to increase PICS awareness; provide education materials about PICS to the ICU survivors; develop the prediction score as guideline for treatment decision; and finally, develop the screening tools for the primary care, alongside the future development of local PICS management guidelines.

Characteristics and Progression of Rehabilitation in Patients Undergoing ECMO: A Retrospective Analysis

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Background
Extracorporeal membrane oxygenation (ECMO) serves as a bridge to transplant for patients with severe cardiopulmonary failure. Rehabilitation during ECMO has gained attention as a means to preserve physical function and improve outcomes in critically ill patients. However, limited data remain on how rehabilitation is implemented across various ECMO populations and how patients respond over time.

Objective
This study aimed to evaluate the feasibility, intensity, and progression of rehabilitation therapy during ECMO, comparing clinical outcomes across ECMO-Transplant (ET), ECMO-Waitlist Death (EWD), and Non-Transplant ECMO (NTE) groups.

Methods
We retrospectively reviewed the records of 111 patients who received active rehabilitation during ECMO support in a tertiary medical ICU between May 2018 and November 2023. Rehabilitation data—including timing of initiation, highest stage achieved, and discontinued rehabilitation due to patient refusal or adverse events—were analyzed by ECMO week and across patient groups (ET, EWD, NTE).

Results
A total of 994 rehabilitation sessions were performed across 77 ET, 19 EWD, and 15 NTE patients over 12 weeks of ECMO. 82% of rehabilitation sessions were performed within the first 4 weeks of ECMO initiation. ECMO was successfully weaned off in all patients with ET, and in 6 of the NTE patients, while 28 patients died during ECMO. Weekly participation rates were 57.6% in week 1, 74.1% in week 2, 85.9% in week 3, and 83.7% in week 4. Discontinued rehabilitation rates were highest at 2.6% in week 1 and 4.1% in week 2, decreasing to less than 1% thereafter. Across most weeks, patients achieved sitting-level rehabilitation stages. The ET group showed statistically significant improvement in rehabilitation stages from ECMO initiation to ICU discharge and from pre-decannulation to discharge ($p<.05$). The NTE group showed a similar trend but without statistically significant differences.

Conclusion
Rehabilitation during ECMO is both safe and feasible. On average, patients were able to engage in sitting level activities during ECMO support, with physical function generally maintained throughout the ECMO period. These findings support the importance of implementing structured rehabilitation protocols during ECMO.

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The Light During Dark Times: AHMC Early Rehabilitation Program For Patients Diagnosed with Cardiovascular Disease in the Intensive Care Units (ICU)

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AHMC Rehabilitation Department analyzed physical therapy referrals in 2020 to 2021, revealing an average of length of stay forpatients in the Intensive Care Units is twenty-five (25) days.This long duration was attributed to limitedknowledge of ICU mobility culture and lack of standardized protocols,leading to unwanted patient outcomes such as ICU-acquired secondary complications, functional deterioration, and increased risk forcomplications. Research indicates that Early Mobilization is apromising interventionto mitigate these ICUcomplications. Approximately 20-50% of critically ill patients experience ICU-Acquired Weakness, and Early Mobilization serves a therapeutic strategy for its prevention.
In response, the department initiated to create the Early Rehabilitation Program (ERP) in the ICU, aiming to inspire hope to patients and demonstrate that a remarkable life post-ICU is achievable. The primary goal of this project is to reduce the patient' s length of stay (LOS) in the hospital while maintaining high- quality patient care.
The project progressed through several stages: gathering of baseline data, reviewing relevant literature to conceptualizing the standardization of the protocol, conducting brainstorming sessions with the multidisciplinary team, pilot testing, and making revisions aligned with the hospital' s standards, culminating in the institutionalization of the project.
A total of 61 stroke patients were the inclusion criteria in the project. In 2023 where ERP was not yet established, 31 patients received the regular rehabilitation therapy (RRT). In 2024 in the institutionalization of ERP, 30 patients were included. Patients with only RRT in 2023 had an average hospital length of stay of 33 days while patients who were part of ERP had an average of 23 days, which is 10 days or 32% reduction. In terms of ICU LOS, patients receiving only RRT in 2023 had an average length of stay of 17 days while patients in ERP only had an average of 10 days or a 44% reduction. Positive outcomes such as their functional independence measure (FIM) initial evaluation have increased greatly. Patients receiving RRT in 2023 has an average FIM of 28 in the initial evaluation and had a 41% increase in the 2024 average FIM scores of patients included in the ERP with 39 as their initial evaluation. The discharge FIM scores also increased by 50% with patients in 2023 with RRT having an average score of 36 to the 2024 patients included in the ERP with 54. Financially, patients who were receiving only RRT incurred an average hospital bill of Php 3.661 million while patients who received ERP incurred only an average of Php 1.919 million, representing a 48% reduction as value increase for our patients. This data suggest that ERP has a financial impact and overall patient outcome.

The department remains committed to provide quality care, emphasizing the importance of early intervention. Despite negative misconceptions associated with ICU admissions, this project aims to shift perspective, proving that lifeafter ICUis achievable. As one ERP patient success story quoted, "Rehab has been our light during dark times" . With this vision, the department hopes to continue illuminating many more lives.

Early Mobilization in the ICU: Efficacy, Challenges, and Future Directions for Neurological and Cardiopulmonary Patients

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Background: Early rehabilitation, particularly early mobilization (EM), has emerged as a critical intervention for critically ill patients in intensive care units (ICUs) with compromised neurological impairments or cardiopulmonary function leading to muscle disuse. Recent studies suggest that EM can mitigate ICU-acquired weakness (ICU-AW), reduce mechanical ventilation duration, shorten hospital stays, and enhance functional recovery. However, gaps in evidence regarding optimal timing, long-term outcomes, and tailored approaches for specific patient cohorts persist, alongside challenges in implementation due to safety concerns and resource limitations.

Objective: This review aims to synthesize recent research on early rehabilitation in ICU patients with cardiopulmonary or neurological impairments, summarize the types and findings of studies, identify gaps in current knowledge, and propose directions for future research to optimize clinical practice.

Methods: A comprehensive literature review was conducted, analyzing clinical trials, meta-analyses, safety studies, and implementation research published within the last decade, sourced from PubMed, ScienceDirect, and other relevant databases. Studies focusing on EM's efficacy, safety, barriers, and outcomes in ICU patients with compromised cardiopulmonary function or neurological impairments were prioritized. Key findings were categorized by study type, and gaps were identified through thematic analysis.

Results: Recent research demonstrates that EM significantly reduces ICU-AW, shortens mechanical ventilation and hospital stay, and improves functional outcomes (Wahab et al., 2024; Zang et al., 2020), with some studies reporting cost savings (e.g., over $2.3 million over 7 years for 1,000 ICU admissions annually). Clinical trials and meta-analyses confirm benefits in muscle strength and independence in activities of daily living (ADLs), while safety studies report low adverse event rates (e.g., 2% potential safety incidents in 13,974 mobilization sessions). However, implementation barriers—such as sedation practices, hemodynamic instability, resource constraints, and interdisciplinary communication gaps—limit widespread adoption. Evidence on long-term outcomes (e.g., quality of life, mortality) and optimal EM protocols for specific patient groups (e.g., severe neurological injury) remains inconclusive. Studies also highlight variability in EM timing and methods, with no consensus on best practices.

Conclusion: Early rehabilitation, particularly EM, offers substantial benefits for ICU patients with cardiopulmonary or neurological impairments, but its efficacy is hampered by inconsistent evidence and implementation challenges. Future research should focus on large-scale trials to establish optimal timing and methods, long-term outcome studies, tailored protocols for high-risk subgroups, and implementation strategies to overcome barriers. Economic evaluations and technology integration (e.g., wearables) could further support EM's integration into standard ICU care. This review underscores the need for a multidisciplinary approach to enhance patient outcomes and healthcare efficiency.

Prolonged Weakness and Dysphagia After Heart Transplantation: A Case of Critical Illness Polyneuropathy

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Background:
Critical illness polyneuropathy (CIP) is a frequent cause of neuromuscular weakness in patients with prolonged intensive care unit (ICU) stays, especially those requiring mechanical ventilation or extracorporeal life support. However, CIP has rarely been reported in patients following orthotopic heart transplantation (OHT). The study was conducted in accordance with the Declaration of Helsinki, and informed consent was obtained from the patient for publication of this case report.

Case presentation:
We report the case of a 53-year-old female with ischemic cardiomyopathy and severe coronary artery disease who underwent coronary artery bypass grafting (CABG). Postoperatively, she developed recurrent ventricular tachycardia requiring prolonged mechanical ventilation and initiation of veno-arterial extracorporeal membrane oxygenation (VA-ECMO), which was maintained for 33 days before undergoing successful OHT. After transplantation, the patient exhibited profound symmetrical weakness in all four limbs and absence of deep tendon reflexes. Despite early initiation of physical and occupational therapy, she showed minimal motor improvement, with marked proximal muscle wasting.
Two months post-transplant, electrodiagnostic studies were performed. Nerve conduction studies showed a diffuse reduction in compound muscle action potential (CMAP) and sensory nerve action potential (SNAP) amplitudes, with relatively preserved conduction velocities. Sensory responses were absent in the sural nerve bilaterally. Needle electromyography revealed reduced recruitment and fibrillation potentials across proximal and distal muscles of both upper and lower extremities, consistent with a generalized, symmetric, axonal sensorimotor polyneuropathy. Based on clinical and electrophysiological findings, CIP was diagnosed. Functionally, the patient retained fair distal motor power allowing selective movements of the hands and feet, but exhibited poor or trace strength in proximal muscles, resulting in inability to maintain unsupported sitting. Swallowing evaluation revealed severe dysphagia with markedly reduced laryngeal elevation, necessitating prolonged enteral feeding. Compared to typical post-transplant recovery trajectories, she demonstrated significantly delayed functional improvement and prolonged hospitalization.

Discussion:
This case highlights the need for heightened clinical suspicion of CIP in post-OHT patients presenting with generalized weakness and ventilator dependence. Comprehensive electrodiagnostic evaluation, including both nerve conduction studies and needle EMG, is essential for accurate diagnosis. Early multidisciplinary rehabilitation remains critical, although functional recovery may be significantly prolonged in patients with severe CIP.

Clinical practices of muscle ultrasound among critical care professionals who received bespoke training: a mixed-methods study

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OBJECTIVE: To identify barriers and facilitators on muscle ultrasound in clinical, research, and academic practices among critical care professionals who received training in peripheral muscle ultrasound.

METHODS: This was a mixed-method, explanatory sequential study following Creswell's methodology. Two phases were conducted: (1) a quantitative stage through an online survey, and (2) a qualitative stage using semi-structured interviews. The survey collected data from sociodemographic characteristics, ultrasound-based muscle mass assessment, and barriers/facilitators for implementation. Qualitative stage followed the six-step thematic analysis based on Braun and Clarke's recommendations to explore professionals' experiences and perceptions regarding the implementation of ultrasound in their workplaces.

RESULTS: From 56 professionals eligible, 43 (77%) completed the survey with a median age of 33 [30–37] years (n=18, 42% women). Thirty (70%) reported using ultrasound as a tool for muscle assessment; of these, forty-two (98%) were physiotherapists, and most worked in clinical practice (n=32, 74%), followed by research (n=9, 21%), and teaching (n=8, 19%). Regarding professional practice, 61% (n=26) considered muscle ultrasound essential for monitoring muscle mass. Participants mostly worked in the private system (n=19, 44%), followed by the public system (n=17, 40%), and mutual health systems (n=3, 7%). As for perceptions of muscle ultrasound, 95% of respondents considered it a useful tool, 93% expressed interest in performing it, and 91% intended to pursue further training. However, only 5% (n=2) reported using it regularly during their workdays. The main barriers identified from the quantitative findings were workload (88%), equipment cost (72%), and insufficient training (72%). The qualitative analysis used the five barriers identified from the survey: insufficient training, equipment cost, tool reliability, workload, and lack of protocols. After 15 representative interviews, three main categories emerged that explained the challenges in implementing ultrasound: (1) equipment accessibility and organizational factors, (2) professional development, and (3) perceived benefit of use. Additionally, "motivation" was found to play a key role acting as a "stimulus" within facilitators and as a "personal disincentive" within barriers.

CONCLUSIONS: Healthcare professionals perceive muscle ultrasound as a useful and reliable tool for monitoring muscle mass in patients with critical illness. However, barriers persist that hinder its routine implementation, such as access to ultrasound equipment, lack of institutional support, the need for ongoing training, practical experience, and the absence of clinical protocols. Effective incorporation into clinical practice requires institutional strategies, structured training programs, and standardized protocols.

Application of Airway Clearance Techniques in Critical Care Rehabilitation: A bibliometrics Analysis

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Aims The rapid development of critical care medicine has markedly increased the survival rates of patients with acute conditions. However, these survivors may face pulmonary complications, such as pulmonary atelectasis, lung infections, and acquired muscle weakness, resulting from prolonged bed rest and immobilization. Airway clearance techniques (ACTs) are a group of externally assisted techniques employed to remove secretions from the airways, preventing or treating associated complications. ACTs plays a key role in the management of critically ill patients by effectively clearing airway secretions, preventing respiratory infections, and thereby improving respiratory function and oxygenation. Bibliometrics is a tool that analyzes literature both qualitatively and quantitatively, focusing on the system and metrics of literature. It can provide a holistic understanding of current research hotspots and trends by visualizing and analyzing data. Hitherto, numerous research papers focused on the application of ACTs in the intensive care unit (ICU) had published, but there is limited research reviewing the current state of this field, and its overall picture remains unclear. Therefore, this study aims to present an overview of current research on airway clearance techniques in the intensive care unit, summarize research hotspots, and identify future research priorities and directions by visualizing and analyzing publication data.

Methods Relevant publications in this field were systematically gathered from the Web of Science Core Collection before December 31, 2024. The robust CiteSpace VI(6.2.R3) and VOSviewer(1.6.19) software programs were employed for data analysis and visualization.

Results In total, 2,189 documents were identified, indicating a steady output in the literature. The majority of researchers are affiliated with institutions in North America and Europe, notably the United States and France. The University of Toronto emerged as the leading publishing institution, and Paolo Pelosi as the most prolific author. Key topics encompass mechanical ventilation, respiratory-distress-syndrome, injury, and COVID-19. In addition, this study offers a systematic description of research hotspots and future trends in this field.

Conclusions This study provides a basic knowledge map, identifies research hotspots, and outlines potential future directions for airway clearance techniques in critical care rehabilitation. It offers valuable insights for researchers focusing on the application of these techniques in this field.

Current status of research on diaphragmatic dysfunction: Visualization analysis based on bibliometrics

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Background
The diaphragm, a critical respiratory muscle, drives spontaneous breathing by creating negative pressure in the chest cavity. Diaphragmatic dysfunction, prevalent in critically ill patients after mechanical ventilation, affects 53% of patients within the first 24 hours of admission to the intensive care unit. This condition, marked by reduced inspiratory capacity and respiratory endurance, manifests as paralysis, weakness, or eventration, often resulting from severe infection or prolonged mechanical ventilation. Consequences include difficulties in weaning from ventilation, extended hospital stays, and increased medical costs. Symptoms like shortness of breath and paradoxical abdominal movement in patient with diaphragmatic dysfunction are common, particularly when bilateral diaphragm are involved. Bibliometric analysis, which uses econometric and informatics methods, evaluates literature systematically to identify trends, influential factors, and research developments. Despite the significance of diaphragmatic dysfunction, there is no comprehensive bibliometric analysis in this field published. This study aims to address this gap by analyzing literature on diaphragmatic dysfunction from 2004 onwards in the Web of Science Core Collection (WOSCC). Accordingly, we conducted a bibliometric analysis of diaphragmatic dysfunction to reveal the overall development of this disease.

Purpose
This study aimed to answer three major questions: What is the current basic knowledge map of diaphragmatic dysfunction? Where lie the hot topics of diaphragmatic dysfunction research, and what are the potential future research priorities and directions in this field?

Materials and Methods
Relevant publications in the field of diaphragmatic dysfunction were retrieved from the Web of Science Core Collection (WoSCC), with the search time frame set from January 1, 2004 to December 31, 2022. Visual analysis was conducted using CiteSpace (6.1.R6) and VOSviewer (1.6.19) software and an online literature analysis platform (https://bibliometric.com/).

Results
A total of 1262 articles and reviews were included in the analysis. The United States had the most contributors. Am J Respir Crit Care Med were ranked first within the co-cited journal, indicating its recognition in the field of diaphragmatic dysfunction. Keyword analysis identified clusters focused on pathological mechanisms, causes and treatments, diagnosis and prognosis, and assessment and prediction of diaphragmatic dysfunction. Recent research in diaphragm dysfunction highlights several key areas of interest, including the use of ultrasound for diagnosis, the predictive value of diaphragm dysfunction in weaning and extubation failure, and the potential of inspiratory muscle training to enhance function. Emerging trends include the exploration of new indexes and technologies, though controversies exist regarding the interpretation and timing of diaphragm ultrasound measurements..

Conclusion
We used bibliometric analysis to understand the research progress regarding diaphragmatic dysfunction. This study sheds light on the research progress regarding diaphragmatic dysfunction, highlighting key focus areas and future directions. The use of ultrasonography for diagnosis and predicting weaning outcomes emerges as a promising avenue for future research and clinical applications in rehabilitation. The results of our analysis can better provide new ideas for future research and clinical applications of diaphragmatic dysfunction in the field of rehabilitation.

Sarcopenia Assessment in an Elderly Post-ICU Patient with Intracerebral Hemorrhage: A Case Report

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Introduction: Sarcopenia, particularly in older adults, is a major contributor to Post-Intensive Care Syndrome (PICS) and a predictor of poor recovery following critical illness. Critically ill patients with neurological conditions are particularly vulnerable to rapid muscle wasting. Early detection of sarcopenia and multidisciplinary rehabilitation during acute phase improves patient outcomes. This case report describes an elderly patient with Intracerebral Hemorrhage (ICH) who developed severe sarcopenia and showed functional recovery through early multidisciplinary rehabilitation.

Case presentation: An 81-year-old woman with a history of diabetes, hypertension, and dyslipidemia, who had been independent in her activities of daily living, presented to the emergency department with acute left-sided weakness. Manual Muscle Testing (MMT) revealed grade 1-2 in left upper and lower extremities, and her Glasgow Coma Scale (GCS) score was 14, Brain Computed Tomography (CT) demonstrated a 5.2 x 3.9 cm hematoma in the right parietotemporal lobe. She underwent an emergency navigation-guided hematoma aspiration and received mechanical ventilation in the Intensive Care Unit (ICU) for 6 days. After stabilization, she was transferred to the general ward and, as she cannot walk independently, began multidisciplinary rehabilitation program with sarcopenia assessment according to Asian Working Group for Sarcopenia (AWGS) 2019 criteria. Initial sarcopenia evaluation revealed severe sarcopenia with a grip strength of 11.8 kg, Short Physical Performance Battery (SPPB) score of 2, and skeletal muscle mass index (SMI) of 5.1 kg/m^2. A structured physical and occupational therapy program targeting muscle strength and balance was implemented. At the 10-day follow-up, lower limb strength increased to grade 3-3+ on MMT, and she was able to ambulate with assistance. Sarcopenia parameters also improved: grip strength increased to 15.8 kg, SPPB score to 4, and SMI to 5.5 kg/m^2, indicating functional progress.

Conclusion: This case highlights the clinical utility of sarcopenia-specific assessment tools in the rehabilitation of critically ill older adults. Conventional neurological or functional measures may underestimate the extent of musculoskeletal decline, whereas sarcopenia criteria for post-ICU elderly provide quantifiable, sensitive metrics to guide rehabilitation planning and monitor progress. Early identification and multidisciplinary intervention based on these assessments can support meaningful functional recovery and reduce long-term disability in post-ICU elderly patients.

外傷後臥床期間の筋機能低下予防にベルト電極式骨格筋電気刺激療法が有効であった症例の検討

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はじめに

脊椎圧迫骨折は，受傷後の疼痛，医師の治療方針などにより安静臥床を必要とし，臥床期間に生じる筋機能低下により日常生活動作 (ADL) は低下する．内科疾患に伴う活動範囲の制限，ACL 再建術後など筋機能維持を目的に，ベルト電極式骨格筋電気刺激療法 (BSES) の有効性が報告されている．一方，脊椎圧迫骨折などの外傷後，臥床期間の BSES の効果について十分に明らかにされていない．外傷に伴う臥床期間の BSES によって筋機能の維持が可能であれば，早期離床を促すことができる．本研究は，外傷により安静臥床が必要とされた患者に対する BSES の有効性を検討した．

方法

症例は，内科疾患治療のためステロイドを内服中で要介護 2 の男性（80 歳代）であり，第 1 腰椎圧迫骨折を受傷後，骨脆弱性のため 3 週間の安静臥床が必要とされた．受傷 1 週後から 1 回 40 分，週 5 日の BSES を開始した．介入時より介入 4 週後まで 1 週毎に，膝伸展筋力および大腿直筋の筋厚を評価した．

結果

介入時，介入 1 週後 ,2 週後および 4 週後の右の膝伸展筋力は，8.1kgf，11.2Kgf，13.8Kgf および 17.7kgf であり，左は，7.5Kgf，10.8Kgf，12.9Kgf および 16.8kgf であった．大腿直筋の筋厚は，左右とも介入時 1.4cm であり，介入 4 週後まで変化は認められなかった．

考察

介入期間中，膝伸展筋力は上昇し，大腿直筋の筋厚は維持されたことで，離床開始直から歩行が可能であり，早期から病前 ADL の獲得が可能であった．その理由として，電気刺激による逆サイズの原理により速筋線維に加えて遅筋線維も刺激されたことが原因と考えられる．

結論

外傷により安静臥床を要する患者において，BSES は筋機能の維持および向上に活用できる可能性が示唆された．

倫理的配慮

ヘルシンキ宣言に基づき，得た情報を研究内で使用することを口頭で説明し，同意を得た．

COPD急性増悪患者の栄養と活動性の検討　～多職種連携～

定末令子

（背景）

本症例は SPO2 の計測困難にて救急搬送され、COPD 急性増悪による低酸素血症と診断。

（症例経過）

翌日からカニュラ 2L でリハビリ開始、SP02 は 96% 前後、呼吸数は 20 代で上部胸郭、呼吸補助筋優位の努力呼吸を呈し、聴診では水泡音、下葉 air 入り微弱、触診で右気管技中枢部ラトリング認めた。胸郭拡張差は上部胸郭 0.5cm 下部胸郭 1.5cm であった。

動作能力は端坐位が自立、馬蹄型歩行器軽度介助で 10m 程度可能も、呼吸数増加や SPO2 低下を認めた。

患者は病棟トイレでの排泄と座位での食事摂取を希望しリハビリ時トイレ歩行を試みた。

嚥下機能は年齢相応で普通食摂取可と判断されセッティング座位にて摂取した。

1 週間程度経過後、倦怠感や痰貯留が増悪、食事摂取量が入院当初の 7 割から 2 ～ 4 割に低下した。

（介入内容）

食事時の姿勢や呼吸状態を再評価すると、ムセはないが数回の咀嚼で呼吸切迫あり易疲労にて摂取量が得られず、軟らかい食材中心の摂取であった。

MNA-SF3、MWST2 、MUST 評価などから低栄養高リスクと判断。栄養摂取量拡大に向けカンファレンスを開き、倦怠感の強い時は尿器を利用するなど、一時的な活動内容制限と食形態変更を決定。軟飯中心に 1200kcal/ 日 + 補助食品を目指す方針を立てた。

（結果）

多職種による現状評価を持ち寄り、目標や目的を患者本人含めて共有することによりスムーズに変更出来、摂取量も 900kcal/ 日程度に改善。それに伴いリハビリ以外で自らトイレ歩行する場面や、日中座位で過ごす時間、発語量や表情変化が増加した。

食形態変更 1 週間後評価で体重などに大きな変化は認めなかったが、今後も継続した取り組みが必要と判断した。

考察では、COPD による運動耐容能低下と食事摂取量低下が長期的な低栄養状態に繋がることが示唆された。

（結語）

全職種によるカンファレンスが難しい急性期病院で、リハビリ職が架け橋となり進捗状況や摂取量、各種データなどを多職種で共有し個別性のある栄養療法と運動療法を確立し、社会復帰を支援していく。

術前呼吸リハビリテーションを実施したCOPD並存周術期胃がん症例の経過報告

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【背景】
呼吸機能および喀痰能力の低下は術後呼吸器合併症の発症率を高くし、生命予後にも影響を与える。特に胃や肝臓などの上腹部手術症例における術後呼吸機能低下は著しく術後7日経過しても術前値には戻らない可能性がある。周術期患者の呼吸機能を術前から向上させることは術後呼吸器合併症予防となり術前呼吸リハビリテーション（以下、リハ）は重要視されている。今回、術前呼吸リハを実施した慢性閉塞性肺疾患（以下、COPD）並存胃がん症例についての経過を報告する。

【症例紹介】
胃がんの診断にて術前呼吸リハ依頼があった79歳、BMI：25.5の男性。胆管炎および胆嚢摘出術にて2回の腹部手術歴あり。術前リハ開始前の呼吸機能はFEV1.0：1.17L（%FEV1.0：51.5%）とGOLD分類にてstage ⅡのCOPDあり。peak cough flow（以下、PCF）は230L/minと咳嗽力の低下を認めていた。6分間歩行距離（以下、6MD）は295mと中等度運動耐容能低下に値していた。

【介入方法】
手術日の1か月前より外来にてリハを開始。初日よりパンフレットを用いてオリエンテーションを実施。腹式呼吸や喀痰練習および筋力トレーニング指導を行い、運動習慣確立のためのチェックリストを配布した。外来リハは約週2回、胸郭拡張を呼吸介助および器具を用いた呼吸訓練、エルゴメーターを用いた有酸素運動を実施した。術後は段階的に離床を開始し歩行訓練中心に介入した。

【結果】
外来リハ開始～術前までの期間にてFEV1.0：1.34L（%FEV1.0：53.6%）向上し、PCF：330L/minと改善を認めた。6MDは300mと著変はなかった。術式は腹腔鏡下胃全摘術、術後翌日に縫合不全を認め再吻合術施行し、ドレーンが全て抜けるまでに術後42日要し、術後53日で自宅退院した。数日は疼痛増強により喀痰に苦労する様子もあったが経過とともに喀痰可能となり、呼吸器合併症は胸水由来の無気肺のみであった。

【結語】
手術部位関連合併症にて入院長期化はしたが、COPD並存周術期胃がん患者に対し術前呼吸リハにてFEV1.0およびPCFを向上させることができた。今後は手術部位感染予防のための栄養管理指導にも着目していきたい。

頸椎前方固定術後の食事形態変更に関連する因子の検討

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【目的】
臨床では，頸椎前方固定術後に，一過性の嚥下機能低下が生じ，食事形態の変更を要する例を経験する．術後の嚥下障害は全身状態およびQOLの低下に影響する可能性があり，術前に危険予測を行うことで，これらの低下を予防できる可能性がある．そこで本研究では，術後に食事形態の変更を要した患者の特徴を明らかにし，その予測因子を検討することを目的とした．

【対象と方法】
当院で頸椎前方固定術を実施した50名（男性30名，女性20名，平均年齢60.8 ± 12.9歳）を対象とし，術後の食事形態変更の可否を従属変数に，年齢，多椎間手術の有無，手術時間，出血量，術後の咽頭痛の有無を独立変数としたロジスティック回帰分析を行った．その後，ROC曲線を用いAUCおよびカットオフ値を算出した．

【倫理的配慮】
対象者に研究内容を口頭説明した後，同意を得て開始した．

【結果】
術後に食事形態の変更を要したのは14名（28%）であった．ロジスティック回帰分析において，年齢のみ有意な関連性を認め（$p < 0.01$），オッズ比は1.100であった．その他の項目に有意な関連性は認められなかった．また，年齢のAUCは0.768であり，Youden indexに基づくカットオフ値は，63歳であった．

【考察】
年齢は頸椎前方固定術後の食事形態変更を予測する有効な因子であり，特に63歳以上の患者では，術後の嚥下機能評価を早期に実施することが重要と考える．今後は，術前の高齢患者に対して，嚥下機能評価を行うことで，術後の早期栄養介入を進め，誤嚥の危険性を低減出来る可能性がある．

横浜市立大学病院での集中治療における早期離床の取り組み

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医学の向上により重症患者の救命率が向上し，救急集中治療領域でも長期予後や後遺症に目が向けられるようになった．重症病態治療後の長期にわたる身体，認知，精神の障害は Post-Intensive Care Syndrome（PICS），特に身体障害は ICU-acquired weakness（ICU-AW）と呼ばれ，生存退院できたとしても寝たきりとなったり，元の仕事に復職できなかったりなど，患者の社会復帰を阻む大きな問題となっている．PICS や ICU-AW を最小限に抑え，患者の ADL を維持するため，早期からのリハビリテーションの有効性が明らかとなってきているが，急性期リハビリテーションの有効な dose や安全性は未だ不明な点が多い．超急性期の過度な運動は，有害事象の増加だけでなく，筋肉そのものに有害な可能性があるが，適度な範囲の運動は筋タンパク合成に有利に働き，筋肉のオートファジー調整などを介して損傷を回復する可能性が示唆されている．重症患者は人工呼吸器下による鎮静管理や，循環不安定による安静制限など，様々な障壁により早期リハビリテーションが不可能なことが多い．神経筋電気刺激療法（NMES）は意識がない状況でも運動誘発することができる理学療法の 1 つであり，特にベルト電極式骨格筋電気刺激法（Belt electrode-Skeletal muscle Electrical Stimulation：B-SES）は集中治療の状況下においても下半身全体の運動を一度に誘発することができる有効な NMES 形態の 1 つであり，非意識下にも一定強度の運動を行うことができる．また，NMES を含めた早期離床に加え，栄養療法を組み合わせることで運動効果を増加させるとの報告があるが，実際の臨床場面では目標投与エネルギーを達成できていないことが多い．離床やリハビリテーションにおいて適切な栄養療法の組み合わせは不可欠であり，当院では 2024 年 11 月から独自の栄養プロトコールを作成し，運用を行なっている．今回，当院 ICU での早期離床と栄養管理における介入を中心に紹介する．

自宅内車椅子生活となったが、訪問リハビリテーションによる運動機会の提供で、趣味活動獲得まで至った左視床梗塞の一症例

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【はじめに】
在宅生活での活動範囲の拡大、自宅内伝い歩き獲得に向けた訪問リハビリテーション（以下：訪リハ）の介入について、以下に報告する。

【症例】
左視床梗塞を呈した 70 歳代男性。キーパーソンの妻と二人暮らし。右 Br.stage 上肢Ⅱ下肢Ⅱ、表在・深部感覚軽度鈍麻。自宅内車椅子生活動作概ね修正自立だが、立位活動はトイレや移乗動作時など必要最低限。歩行は C.C.A.D 継手付プラスチック短下肢装具装着下で軽～中等度介助。粗大筋力右下肢・体幹 3/5 レベル。HDS-R26 点、高次脳機能障害（注意記憶機能低下）、趣味は彫刻・盆栽。

【説明と同意】
ヘルシンキ宣言に基づき、口頭にて発表の趣旨を説明し、同意を得た。

【経過】
発症後 150 病日で A 病院退院し、160 病日目に訪リハ (1 回 / 週) 開始。退院後 1 か月間で頻回に転倒があった為、移乗動作・立位課題、転倒時の動作指導を中心に介入を行った。車椅子生活動作安定後は、妻の介護負担軽減と離床機会増加を目的に、歩行訓練の頻度を増やすことで、耐久性が向上し、屋内短距離歩行獲得や屋外歩行が可能となった。機能レベルに大きな変化は無いが、400 病日には生活場面での活動量増大により右上肢の使用頻度も増加し、趣味の盆栽の再開、自宅内の車椅子が通らない箇所の伝い歩きが可能となり、妻の介助場面減少に繋がった。

【考察】
本症例は車椅子での自宅復帰となった症例であり、自宅内生活に制限が生じていた。高次脳機能障害や妻への易怒性から、介護負担も多かったため、安定した生活動作の獲得が必要であると考えた。自宅生活に沿った形で、基本動作訓練や歩行訓練、抗重力課題を提供したことで、生活場面への汎化が図れ、身体的負荷が軽減したと考える。自宅環境に合わせた介入を訪リハで継続したことにより、移乗の安定化、短距離伝い歩き獲得に繋がり、屋外歩行や趣味である盆栽活動実施まで至ったと考える。

作業療法士による急性大動脈解離の保存治療患者に対する毎朝のせん妄対策の効果

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【背景と目的】急性大動脈解離の保存患者では，急性期にせん妄が高頻度で発生する。当院では，せん妄の予防・早期発見，発症時の症状改善を目的に，2024 年 4 月より作業療法士（以下 OT）が毎朝，せん妄のリスク因子とせん妄の評価（ICDSC），集中ケア病棟のラウンドでベッドサイドでの臨床評価と ADL 評価・介入を行っている。また，他職種との情報交換や協議，せん妄の予防・症状の改善に向けた対策の立案・実践を行っている。先行研究では，OT による毎朝のせん妄対策が開胸術後患者の入院中のせん妄期間を短縮できる可能性があることを示唆する報告を行った。今回は，OT が大動脈解離の保存治療患者に対して行っている毎朝のせん妄対策の結果を調査することを目的とした。

【方法】対象は，急性大動脈解離の保存治療患者で 2022 年 4 月から 2025 年 3 月に集中ケア病棟に入室した 76 人から，死亡 2 人，切迫破裂 1 人，解離拡大後の手術適応 9 人，合併症あり 7 人を除外した 57 人とした。OT 非介入群は 2022 年 4 月から 2024 年 3 月の 36 人，OT 介入群は 2024 年 4 月から 2025 年 3 月の 21 人に分類した。診療録からの後方視的観察研究とし，集中ケア病棟の入室時・入室中・退室時と退院時のせん妄の有無と発症期間，入院後からせん妄の発症までの期間，入院前・集中ケア病棟の退室時・退院時の BI，集中ケア病棟の入室期間と入院期間の項目を SPSS で統計解析した。

【結果】せん妄の発症の有無と期間は 2 群間で有意差はなく，入院から OT 非介入群では平均 1.3 日，OT 介入群では平均 1.6 日でせん妄を発症していた。その他の項目も有意差はなかった。

【考察・結論】今回の研究では，OT による急性大動脈解離の保存治療患者に対する毎朝のせん妄対策の効果は明らかにならなかった。急性大動脈解離の保存治療患者は，急性期の安静中にせん妄を発症しやすい。せん妄の予防・症状改善にむけて，安静中の疼痛や苦痛の緩和，精神的ストレスへの対応についてさらに評価・検討することが必要と考える。

移乗支援機器の導入によるスタッフ負担軽減と業務改善に向けた取り組み

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【背景・目的】
病棟における移乗動作は、スタッフにとって身体的負担が大きく、特に腰痛の要因となっている。また、患者にとっても疼痛や恐怖を伴うことがある。本報告では、移乗支援機器（移乗シート・移乗ボード）を試験導入し、スタッフの身体的負担の軽減や業務の効率化、安全性向上につながるかを現場の声をもとに検証し、今後の活用に向けた課題を整理することを目的とした。

【実施内容】
A 病棟において移乗支援機器を試験的に導入。導入前にはスタッフの腰痛の有無や移乗動作に対する負担感などを Google フォームによるアンケートで把握し、導入後にも機器の使用感、使いやすさ、業務改善効果について同様にアンケートを実施した。各アンケート結果は、定量・定性的に分析を行った。

【結果】
導入前アンケート（n=28）では、スタッフの67.9％が「腰痛あり」と回答していた。導入後（n=30）では、「腰がとても楽だった・まあまあ楽だった」が 67.8％、「移乗動作が楽になった」と感じたスタッフが 83.3％、「使いやすい」と感じた割合は 90％以上であった。現場からは、「移乗がスムーズになり、患者の不安も軽減した」「今まで二人がかりだった移乗が一人でも対応可能になった」などの声が聞かれた。

【考察・今後の課題】
今回の取り組みにより、移乗支援機器はスタッフの身体的負担の軽減に加え、業務の効率化にも寄与することが示唆された。加えて、移乗時の患者の疼痛や恐怖の軽減、安全性の向上にもつながる可能性がある。一方で、機器の活用には継続的な周知やトレーニングが不可欠であり、今後は多職種連携による使用促進や他病棟への展開を見据えた体制づくりが求められる。

人工呼吸患者における離床プロトコルの有用性の検討:後視的コホート研究

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背景: 早期離床プロトコルは患者の早期離床を促進させるとされるが、早期離床プロトコルの導入が、早期リハビリテーション（以下リハ）開始に与える影響はまだ十分調査されていない。

目的：救急集中治療室における早期離床プロトコルの導入が、リハ実施に与える影響を検討する。

方法: 本研究は単施設後方視的コホート研究である。3 次医療機関の救急集中治療室（EICU, 8 床）に 48 時間以上滞在し、侵襲的人工呼吸管理を受けた患者を対象とした。患者背景から早期離床の適応がない患者は除外した。2024 年 10 月に導入された離床プロトコルを曝露とした。2024 年 6 月－9 月に入室した患者を対照群とし、2024 年 11 月－2025 年 2 月に入室した患者を曝露を受けた研究群とした。主要評価項目は入室日から 2 日以内のリハの実施とした。副次評価項目は入室日から初回リハ実施までの日数、入室日から端座位を達成できるまでの日数、入室日からリハ強度を上げられるまでの日数、初めてリハ強度を上げた日のリハ強度、退室時リハ強度とした。主要評価項目の比較は、共変量を年齢、性別、SOFA スコア、チャールソン併存疾患指数、主病名、入室日からリハ実施可能日までの日数として、Logistic 回帰分析で行った。副次評価項目の比較は、主要評価項目と同じ共変量を用いた重回帰分析で行った。

結果: 研究群に 68 名、対照群に 59 名を組み入れた。入室日から 2 日以内にリハが実施された割合は研究群 61 名 (89.7%)、対照群 51 名 (86.4%) であり、調整オッズ比は 5.29 (95% 信頼区間 0.61 to 46.00, p=0.13) と有意な差を認めなかった。副次評価項目のうち、「初めてリハ強度を上げた日のリハ強度」のみ有意な差を認め (β =-0.65, p<0.05)、その他は有意な差を認めなかった。
結論: 離床プロトコルの導入は入室 2 日以内のリハの実施に影響を与えず、また初めてリハ強度を上げた日のリハ強度が低い傾向にあった。

右大腿骨骨幹部骨折術後に骨粗鬆症による再骨折リスクの軽減を目指した症例

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【はじめに】
骨粗鬆症を有する右大腿骨骨幹部骨折術後の症例に対し , 再骨折予防を目的に , 免荷期の訓練を工夫したため以下に報告する .

【症例紹介】
年齢：60 歳代　性別：女性　BMI：19.3
既往歴：左右恥骨骨折 , 骨粗鬆症 ,L3 圧迫骨折 , 右大腿骨頸部骨折
現病歴：X 日に右大腿骨頸部骨折を受傷し , 人工骨頭置換術施行 . その後 , 歩行訓練中に右人工関節ステム周囲骨折を受傷し再手術 .2 か月後に自宅退院となるも , Y 日に右大腿骨骨幹部骨折を受傷し手術施行 (術後 6 週間免荷). 第 34 病日に当院へ転院し , リハビリ開始 .
デマンド：2 本足で歩けるようになりたい .
病前 ADL：夫と 2 人暮らし .ADL 自立 . 屋内伝い歩き , 屋外杖歩行 .

【説明と同意】
ヘルシンキ宣言に基づき , 口頭にて発表の趣旨を説明し同意を得た .

【経過】
初期評価時 , 病棟内ＡＤＬは車椅子使用し修正自立 . 身体機能は大腿骨骨密度 42.1%, 右下肢ＭＭＴ 2(股関節外転・外旋・伸展 , 膝伸展), 左下肢ＭＭＴ 3 以上 ,ROM は右股関節屈曲 90 度 , 右膝関節屈曲 60 度を認めた . 座位時は骨盤前傾 , 両股関節内転・内旋を呈した . 再骨折リスク軽減を目的に , 殿筋群に対して臥位・立位で筋力強化訓練を実施 . ROM は右股関節屈曲 110 度 , 右膝関節屈曲 95 度 , 右下肢 MMT3 へ改善した .

【考察】
本症例は , 歩行中に骨折を繰り返し受傷し , 免荷期より再骨折リスク軽減への介入が必要と考えた . 田中らは , 過度な股関節内転・内旋は骨折リスクを高めること , Tanski らは , 骨粗鬆症患者にとって殿筋群の筋力低下が大腿骨骨密度低下に寄与すると述べている . これらが再骨折リスクを高めている原因と想定し , 殿筋群の筋力強化が重要と考えた . 以上より , 殿筋群への筋力強化訓練を実施したことで股関節外転・外旋筋群の筋力向上とアライメント改善に繋がり , 再骨折なく自宅復帰した事から , 荷重後の再骨折リスク軽減を図れたと考える .

エアリーク症候群をきたしたawake ECMO患者のリハビリ選択

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背景：エアリーク症候群 (縦郭気腫や皮下気腫など) は気管・気管支周囲から空気が流出し、本来空気が存在しない部位で空気貯留が起こる現象とされる。神経筋電気刺激療法 (Electrical Muscle Stimulation: EMS) は筋萎縮予防な点で注目されている。今回、awake ECMO 管理を実施していた抗 ARS 抗体陽性間質性肺疾患（以下 ASS-ILD）患者に縦郭気腫が認められ、EMS を用いたリハビリを行うことで呼吸努力の誘発を回避し縦郭気腫の悪化を防いだ症例を経験したため報告する。

症例：40 代男性。感冒症状を契機に肺炎を発症し、前医検査で膠原病による間質性肺炎が疑われ当院救命センターに転院された。当院精査で ASS-ILD の診断となった。免疫抑制剤や抗生剤などの加療を行うも改善乏しく、入院 8 日目に Time-limited trail として気管挿管による人工呼吸器管理を開始した。胸部 CT で背側優位な無気肺、肺野全体の浸潤影の増悪を認め ARDS 合併と診断し腹臥位療法を 1 週間行った。しかし酸素化の改善が得られず入院 15 日目に VV-ECMO を導入した。元々の ADL や筋量からも awake ECMO 下の離床は順調である一方で呼吸努力は強かった。自発呼吸誘発性肺障害 (以下 P-SILI）を予防するために EMS を用いた筋量維持に努めた。その後胸部 Xp から縦郭気腫を認め、EMS を用いたリハビリをチーム全体に再周知した。1 週間で縦郭気腫は消失した。後方視的に診療記録を確認すると縦郭気腫を呈した前日に立位 / 足踏みを行った記録があった。

考察：VV-ECMO 中は肺保護換気であり、awake ECMO 中にエアリーク症候群を合併することは強い自発呼吸を伴ったことを裏付ける。これは P-SILI 予防の点で不適切である。晩期 ARDS は肺構造の変化のため早期 ARDS よりも気胸を合併しやすいとされる。本症例は、ARDS と診断してから 14 日後に縦郭気腫を認めた。長期化する ECMO 患者のリハビリにおいて、強い自発呼吸を認める場合は P-SILI を予防する上で EMS が有効な可能性があると考える。

心不全患者における入浴動作自立度に影響する因子の検討

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【目的】
一般的に，心疾患患者は健常人と比べて，低強度の動作であっても病態に影響する危険性があり，入浴動作は，日常生活動作において，酸素消費量が比較的高い．一方，心不全 (HF) 患者において，身体機能を含む患者特性が，入浴動作自立度に及ぼす影響について十分に明らかにされていない．そこで本研究では，HF 患者における入浴動作自立度に影響する因子を検討した．

【対象と方法】
当院に入院された 37 例の HF 患者を対象とし，段階的離床を実施した．また，退院時の入浴動作自立の可否について，Barthel Index の入浴項目を用いた．身体活動量の測定には 3 軸加速度計を使用し，1 日の 1 から 3METs の合計時間を算出し，下肢筋厚の測定には超音波画像診断装置を用い，利き足の大腿筋厚を測定した．その後，入浴動作自立の可否を従属変数に，身体活動量，大腿筋厚，および年齢を独立変数とした，ロジスティック回帰分析および area under curve (AUC) によるカットオフ値を算出した．

【倫理的配慮】
本研究は，対象者に研究内容を口頭および書面にて説明した後，同意を得て開始した．

【結果】
入浴動作自立可能が 16 例，要介助が 21 例であった．また，身体活動量，大腿筋厚，および年齢は，147.3 ± 89.6 分，2.2 ± 0.8cm，および 82.1 ± 10.4 歳であり，年齢のみ有意な関連性を認め ($p < 0.05$)，オッズ比は 0.823，AUC は 0.845，カットオフ値は 83 歳であった．

【考察】
HF 患者において，年齢の増加に伴って入浴動作自立が困難となる原因として，加齢に伴う身体機能の低下が影響したと考えられる．しかし，身体活動量および大腿筋厚に有意な関連性は認められず，バランス機能などの身体機能特性が関与している可能性が考えられた．今後は，高齢 HF 患者に対して，入浴における介助および支援の方法を多職種で検討したい．