XXII CONGRESSO NACIONAL DE MEDICINA INTENSIVA

VIII CONGRESSO LUSO-BRASILEIRO DE MEDICINA INTENSIVA

# MOBILIZAÇÃO PRECOCE NO DOENTE CRÍTICO

SOCIEDADE PORTUGUESA DE CUIDADOS INTENSIVOS

João Vítor da Silva Vieira

# IMOBILIDADE E A DOENÇA CRÍTICA

**DOENTE CRÍTICO**

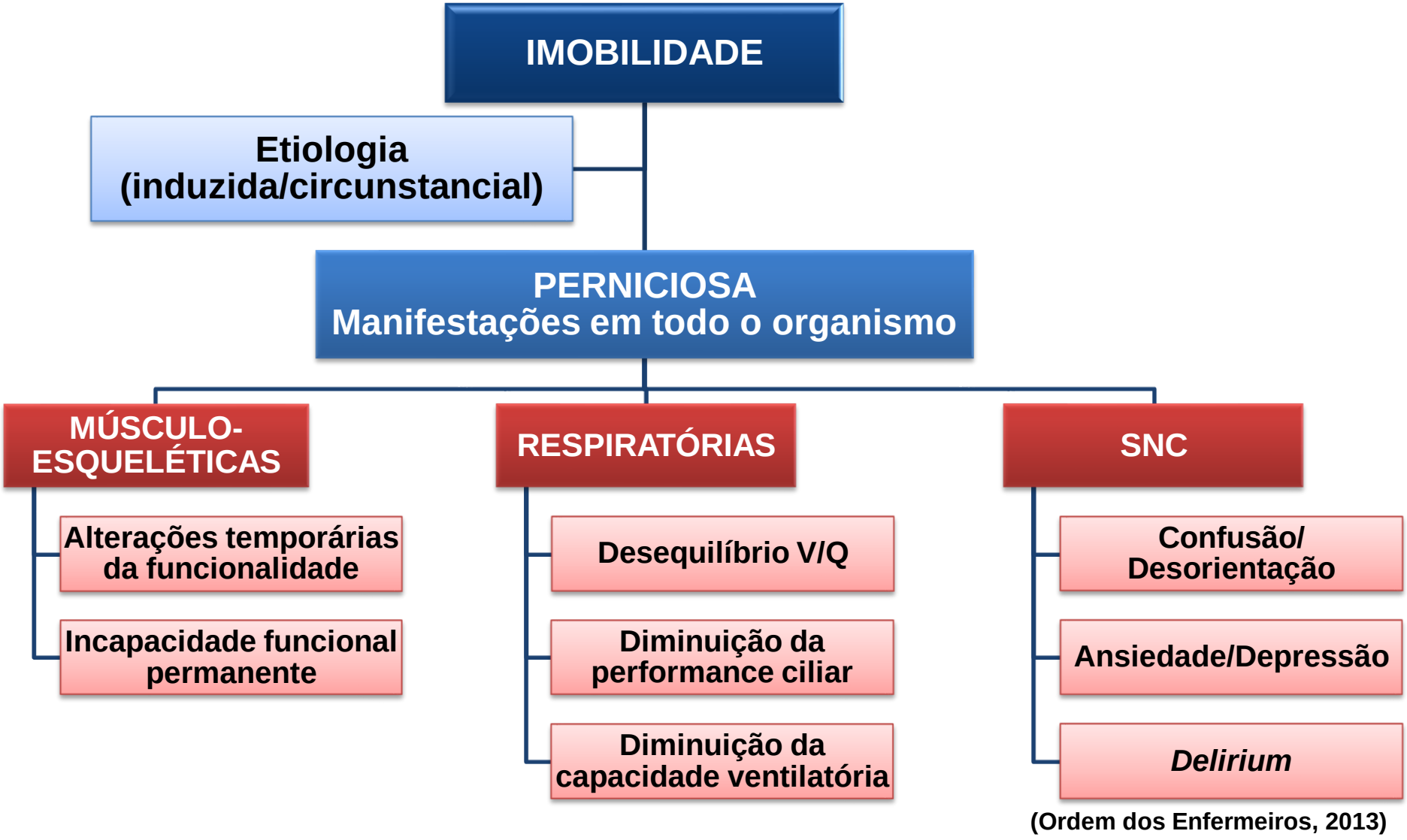
**Vulnerabilidade/ Instabilidade/ Complexidade**

**Cuidados/Vigilância Intensiva**

**Repouso no Leito/ Imobilidade**

(Bell, 2015)

# IMOBILIDADE E A DOENÇA CRÍTICA




(Ordem dos Enfermeiros, 2013)

## "Cultura" de Repouso no Leito

- **Minimizar as exigências metabólicas;**
- **Foco do tratamento: o descanso para promoção da recuperação.**

**(Parry & Puthucheary, 2015) •**

## Actualidade

- **Apesar dos efeitos negativos do REPOUSO NO LEITO/IMOBILIDADE estarem bem documentados, esta modalidade de tratamento continua a ser amplamente utilizada, nomeadamente no cuidado à pessoa em situação crítica.**

**(Dammeyer, Dickinson, Packard, & Ricklemann, 2013; •**
**Hashem, Nelliot, & Needham, 2016; •**
**Schimdt, U., Knecht, I. & MacIntyre, 2016; •**
**Schober & Thornton, 2013) •**

*Physiotherapy Theory and Practice*, 20: 175–185, 2004

ISSN: 0959-3985 print/1521-0510 online
DOI: 10.1080/09593980490487474

# The safety of mobilisation and its effect on haemodynamic and respiratory status of intensive care patients

Kathy Stiller, Anna C. Phillips, and Paul Lambert

**1.º ESTUDO**
**(Segurança)**

Although mobilisation resulted in significant increases in heart rate and blood pressure and a non-significant fall in percutaneous oxygen saturation, the ICU patients in this study deemed suitable for mobilisation were able to be safely mobilised.

# MOBILIZAÇÃO PRECOCE NO DOENTE CRÍTICO

**1.º ESTUDO**
**(Efectividade)**

## Early intensive care unit mobility therapy in t… acute respiratory failure*

Peter E. Morris, MD; Amanda Goad, RN; Clifton Thompson, RN; Karen Tay…
Leah Passmore, MS; Amelia Ross, RN, MSN; Laura Anderson; Shirley Baker; Mary Sanchez;
…d Small, MBA;

***Conclusions:*** **A Mobility Team using a mobility protocol initiated earlier physical therapy that was feasible, safe, did not increase costs, and was associated with decreased intensive care unit and hospital length of stay in survivors who received physical therapy during intensive care unit treatment compared with patients who received usual care.**

*Patients:* Medical intensive care unit patients with acute respiratory failure requiring mechanical ventilation on admission: Protocol, n = 165; Usual Care, n = 165.

*Interventions:* An intensive care unit Mobility Team (critical care nurse, nursing assistant, physical therapist) initiated the protocol within 48 hrs of mechanical ventilation.

*Measurements and Main Results:* The primary outcome was the proportion of patients receiving physical therapy in patients surviving to hospital discharge. Baseline characteristics were similar between groups. Outcome data are reflective of survivors. More Protocol patients received at least one physical therapy session than did Usual Care (80% vs. 47%, $p \leq .001$). Protocol …earlier (5 vs. 11 days, $p \leq .001$), had …equently in the intensive care unit (91% …d had similar low complication rates …re. For Protocol patients, intensive care …5 vs. 6.9 days for Usual Care ($p = .025$); … Protocol patients was 11.2 vs. 14.5 days …) (intensive care unit/hospital length of …ass index, Acute Physiology and Chronic Health Evaluation II, vasopressor). There were no untoward events during an intensive care unit Mobility session and no cost difference (survivors + nonsurvivors) between the two arms, including …bility Team costs.

*Conclusions:* A Mobility Team using a mobility protocol initiated earlier physical therapy that was feasible, safe, did not increase costs, and was associated with decreased intensive care unit and hospital length of stay in survivors who received physical therapy during intensive care unit treatment compared with patients who received usual care. (Crit Care Med 2008; 36:2238–2243)

KEY WORDS: respiratory failure; mechanical ventilation; mobility; intensive care units; physical therapy; passive range of motion

**(Morris, Goad, Thompson, Taylor, Harry, Passmore, …Haponik, 2008)**

# MOBILIZAÇÃO PRECOCE NO DOENTE CRÍTICO

CHEST Transparency in Health Care

## Reducing Iatrogenic Risks

### ICU-Acquired Delirium and Weakness—Crossing the Quality Chasm

*Eduard E. Vasilevskis, MD; E. Wesley Ely, MPH, MD, FCCP; Theodore Speroff, PhD; Brenda T. Pun, RN, MSN, ACNP; Leanne Boehm, RN, MSN, ACNS-BC; and Robert S. Dittus, MPH, MD*

**ICUs are experiencing an epidemic of patients with acute brain dysfunction (delirium) and weakness, both associated with increased mortality and long-term disability. These conditions are commonly acquired in the ICU and are often initiated or exacerbated by sedation and ventilation decisions and management. Despite > 10 years of evidence revealing the hazards of delirium, the quality chasm between current and ideal processes of care continues to exist. Monitoring of delirium and sedation levels remains inconsistent. In addition, sedation, ventilation, and physical therapy practices proven successful at reducing the frequency and severity of adverse outcomes are not routinely practiced. In this article, we advocate for the adoption and implementation of a standard**

**“ABCDE bundle,”**

**the “back end” of critical care and toward improved cognitive and functional outcomes for ICU survivors.**

***CHEST 2010; 138(5):1224–1233***

**Abbreviations:** ABCDE = awakening and breathing coordination, delirium monitoring, and exercise/early mobility; CAM-ICU = confusion assessment method for the ICU; LOS = length of stay; SAT = spontaneous awakening trial; SBT = spontaneous breathing trial

# ABCDE Bundle in Critical Care (2010)

A – Assess, Prevent and Manage Pain

B – Both Spontaneous Awakening Trials and Spontaneous Breathing Trials

C – Choice of Analgesia and Sedation

D – Delirium – Assess, Prevent and Manage

## E – Exercise/Early Mobility

**"A mobilização precoce reduz a disfunção cognitiva e física. Múltiplos estudos demonstraram a exequibilidade da mobilização precoce em doentes com falência respiratória.**
**A mobilização precoce contribui, isoladamente, para uma diminuição do tempo de internamento em 3 dias, redução da incidência de *delirium*, melhora a recuperação da independência funcional".**

**(Vasilevsky, Ely, Speroff, Pun, Boehm & Dittus, 2010)**

# MOBILIZAÇÃO PRECOCE NO DOENTE CRÍTICO

Review Article

## Rehabilitation and early mobilization in the critical patient: systematic review

PATRICIA ARIAS-FERNÁNDEZ, RN[1], MACARENA ROMERO-MARTIN, RN, MHS[2], JUAN GÓMEZ-SALGADO, PhD[3, 4]*, DANIEL FERNÁNDEZ-GARCÍA, PhD[5]

[1] *Health Sciences School, Department of Nursing and Physiotherapy, Intensive Care Unit, University Hospital of León, Spain*
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**Abstract.** [Purpose] To review the literature that examines rehabilitation and early mobilization and that involves different practices (effects of interventions) for the critically ill patient. [Materials and Methods] A PRISMA-Systematic review has been conducted based on different data sources: Biblioteca Virtual en Salud, CINHAL, Pubmed, Scopus, and Web of Science were used to identify randomized controlled trials, crossover trials, and case-control studies. [Results] Eleven studies were included. Early rehabilitation had no significant effect on the length of stay and number of cases of Intensive Care Unit Acquired Weaknesses. However, early rehabilitation had a significant ity of walking more distance at discharge. Early rehabilitation is associated with an increase in functional capacity and muscle strength, an improvement in walking distance and better perception of the health-related quality of life. Cycloergometer and electrical stimulation can be used to maintain muscle strength. Further research is needed to establish stronger evidences.

**Key words:** Critical care, Early mobilization, Rehabilitation

*(This article was submitted Apr. 3, 2018, and was accepted Jun. 29, 2018)*

al intensive

is, Markus Heim, Timothy Houle,
hos, Karen Waak, J Matthias Walz,

care unit (SICU). Attempts to
ther early mobilisation leads to
f patients at hospital discharge.

ed controlled trial in SICUs of
tients (aged 18 years or older,
al ventilation for ≥24 h) were
platform to standard of care
sed-loop communication and
patients' mobilisation capacity
e had three main outcomes
ring their SICU stay (primary
ndependence measure score
icalTrials.gov (NCT01363102).

o receive standard treatment
intervention improved the
in control group, p<0·0001),
days [6–15] in control group,
4–8] in intervention group *vs*
tion group (25 cases [2·8%])
d. Before hospital discharge
onths after hospital discharge

Lancet 2016; 388: 1377–88
See Editorial page 1349
See Comment page 1351

*Members of the International Early SOMS-guided Mobilization Research Initiative listed at the end of the Article

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# The ABCDEF Bundle in Critical Care

Annachiara Marra, MD, PhD(c)[a], E. Wesley Ely, MD, MPH[b], Pratik P. Pandharipande, MD, MSCI, FCCM[c], Mayur B. Patel, MD, MPH[d,*]

**KEYWORDS**

• Pain • Spontaneous awakening trials • Spontaneous breathing trials • Sedation • Analgesia • Delirium • Early mobility • Intensive care unit

**KEY POINTS**

- The ABCDEF bundle is an evidence-based guide for clinicians to coordinate multidisciplinary patient care in the intensive care unit (ICU).
- Assessment of pain is the first step before administering pain relief. The Behavioral Pain Scale (BPS) and the Critical-Care Pain Observation Tool (CPOT) are the most valid and reliable behavioral pain scales for ICU patients unable to communicate.

*Continued*

# ABCDEF Bundle in Critical Care (2017)

A – Assess, Prevent and Manage Pain

B – Both Spontaneous Awakening Trials and Spontaneous Breathing Trials

C – Choice of Analgesia and Sedation

D – Delirium – Assess, Prevent and Manage

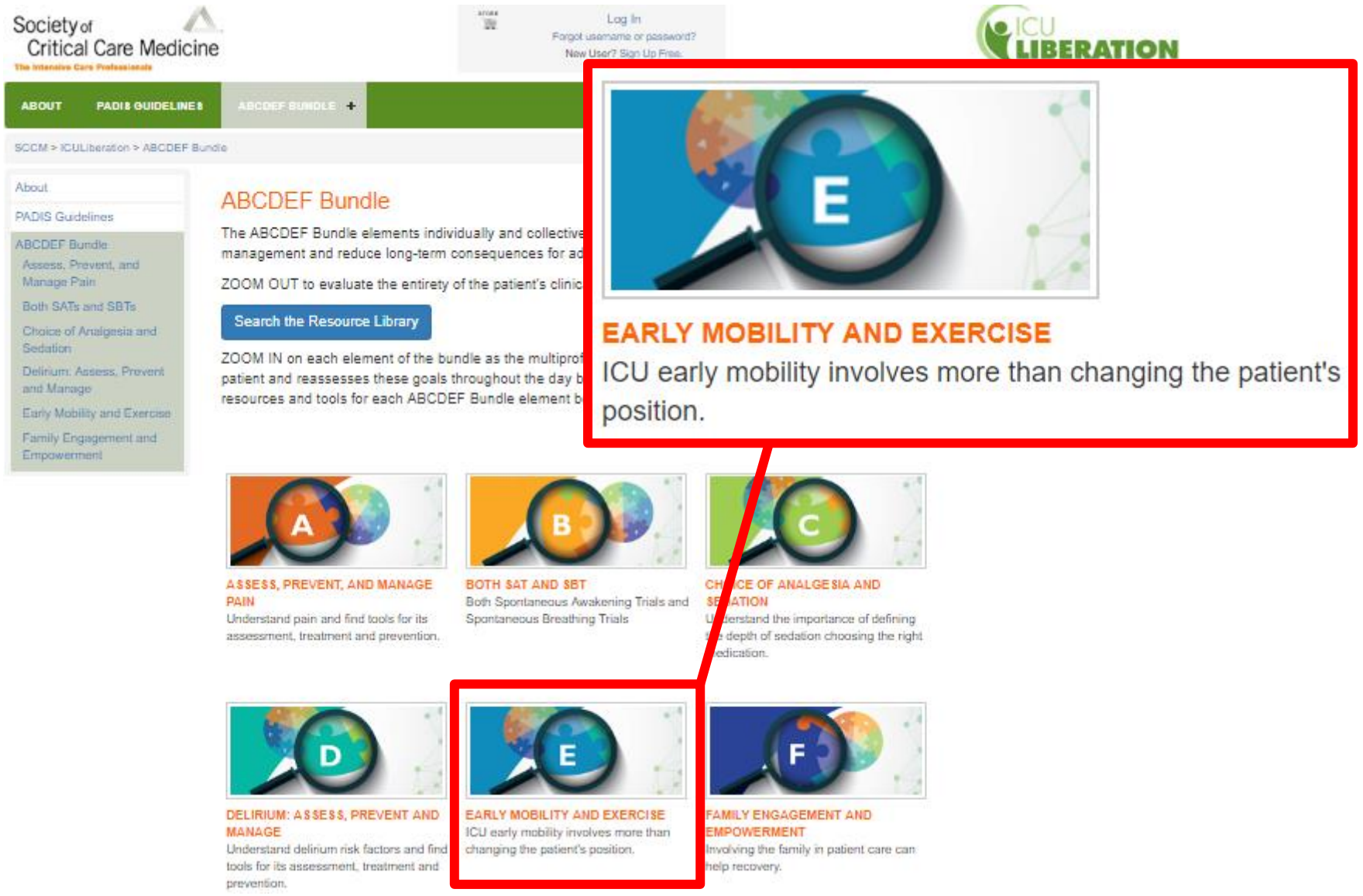
## E – Early Mobility

**Ainda que existam alguns intensivistas com alguns receios acerca da mobilização precoce, existem boas evidências da conjugação da estratégia de minimizar a sedação e promover a actividade física do doente crítico. A mobilização precoce tem-se revelado fazível e segura, incluindo em subgrupos de elevada complexidade (TSR, ECMO), com uma incidência de complicações muito reduzida (<1%). Alguns estudos advogam benefícios como: melhoria da independência funcional, diminuição da duração de *delirium*, maior taxa de sobrevivência, mais dias sem necessidade de ventilação assistida.**

F – Family Engagement

**(Marra, Ely, Pandharipande & Patel, 2017)**

# MOBILIZAÇÃO PRECOCE NO DOENTE CRÍTICO



## QUESTÕES:

- Início da mobilização precoce?
- Tipo de mobilizações/intervenções?
- Frequência das mobilizações/intervenções?
- Duração da implementação das mobilizações/intervenções?
- Benefícios em subgrupos de doentes críticos?

# REVISÃO

**MOTOR DE BUSCA**: EBSCOHost

**BASES DE DADOS**: CINAHL *Complete* e MEDLINE *Complete*

**PERÍODO DE PESQUISA**: 2016-2019

**PALAVRAS-CHAVE**: "*Critical Illness*" *OR* "*Intensive Care Units*" *OR* "*Critical Care*" *AND* "*Early Ambulation*" *OR* "*Early Mobilization*"

Medical Subject Headings (MeSH) e Descritores em Ciências da Saúde (DeCS)

**CRITÉRIOS DE INCLUSÃO**: (1) doentes críticos, admitidos em unidades de cuidados intensivos; (2) doentes com idade igual ou superior a 18 anos; (3) intervenções implementadas baseadas em mobilização/reabilitação precoce.

**CRITÉRIOS DE EXCLUSÃO**: artigos com metodologia ambígua, repetidos em ambas as bases de dados, sem correlação com o objecto de estudo, ou que apresentaram conflitos de interesse.

# MOBILIZAÇÃO PRECOCE NO DOENTE CRÍTICO

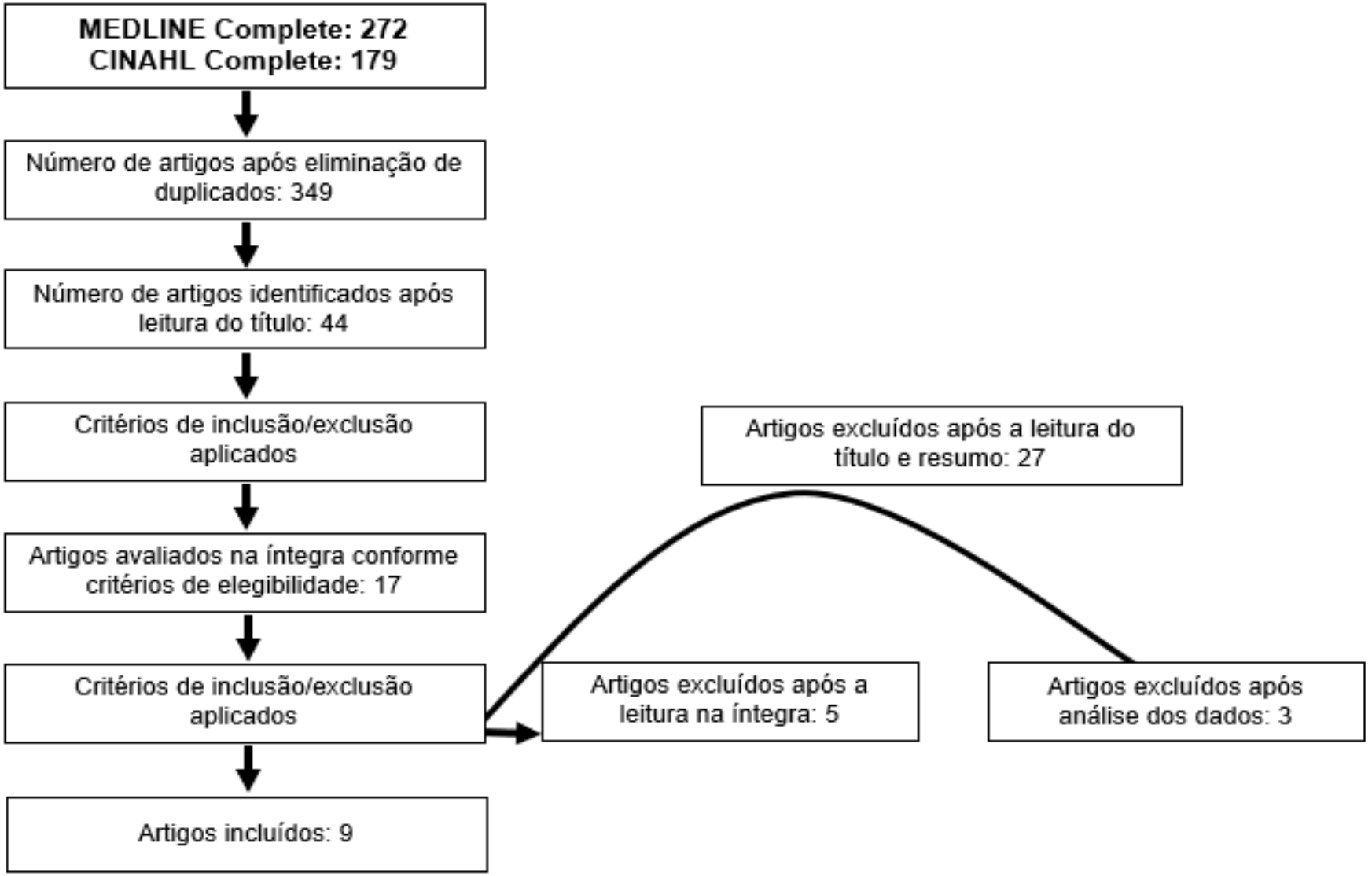



Diagrama PRISMA para a apresentação da metodologia de pesquisa.

# MOBILIZAÇÃO PRECOCE NO DOENTE CRÍTICO

| Título | Nível de Evidência (JBI) | Qualidade Metodológica (CASP) |
|---|---|---|
| Systematic review of early exercise in intensive care: A qualitative approach. | 1.b – Revisão sistemática de ensaios clínicos randomizados e outros desenhos de estudo. | Nível A |
| Rehabilitation and early mobilization in the critical patient: systematic review. | 1.b – Revisão sistemática de ensaios clínicos randomizados e outros desenhos de estudo. | Nível A |
| Early mobilisation in mechanically ventilated patients: a systematic integrative review of definitions and activities. | 1.b – Revisão sistemática de ensaios clínicos randomizados e outros desenhos de estudo. | Nível A |
| Safety criteria to start early mobilization in intensive care units. Systematic review. | 1.b – Revisão sistemática de ensaios clínicos randomizados e outros desenhos de estudo. | Nível B |
| Early intervention (mobilization or active exercise) for critically ill adults in the intensive care unit. | 1.b – Revisão sistemática de ensaios clínicos randomizados e outros desenhos de estudo. | Nível A |

# MOBILIZAÇÃO PRECOCE NO DOENTE CRÍTICO

| Título | Nível de Evidência (JBI) | Qualidade Metodológica (CASP) |
|---|---|---|
| A Binational Multicenter Pilot Feasibility Randomized Controlled Trial of Early Goal-Directed Mobilization in the ICU. | 1.c – Ensaio controlado randomizado. | Nível A |
| Earlier and enhanced rehabilitation of mechanically ventilated patients in critical care: A feasibility randomised controlled trial. | 1.c – Ensaio controlado randomizado. | Nível A |
| Early, goal-directed mobilisation in the surgical intensive care unit: a randomised controlled trial. | 1.c – Ensaio controlado randomizado. | Nível A |
| Understanding early goal-directed mobilization in the surgical intensive care unit. | 1.c – Ensaio controlado randomizado. | Nível A |

# MOBILIZAÇÃO PRECOCE NO DOENTE CRÍTICO

## CONCLUSÕES

**Diversidade de intervenções**: exercícios de mobilização articular, exercícios de fortalecimento muscular, actividades (sentar, transferir, levantar, permanecer em pé, andar, …)

**Diferenças na definição de mobilização precoce**: 24 horas, 48 a 72 horas, durante a ventilação mecânica invasiva.

**A MOBILIZAÇÃO PRECOCE DO DOENTE CRÍTICO É SEGURA E BENÉFICA.**

# MOBILIZAÇÃO PRECOCE NO DOENTE CRÍTICO

**- Início da mobilização:**

- Mais precocemente possível (estabilidade, segurança).

**- Tipo de mobilizações/intervenções:**

- Dependem da capacidade do doente para participar na implementação das mobilizações/intervenções (Consciência; Agitação-Sedação; Força Muscular; *Status* Funcional).
- Exercícios Terapêuticos de Mobilização Articular:
  - RASS -5/-4 – Exercícios de Mobilização Passiva;
  - RASS -3/-2 – Exercícios de Mobilização Passiva/Activa-Assistida;
  - RASS -1/1 – Exercícios de Mobilização Activa.
- Exercícios Resistidos;
- Actividades/intervenções (sentar, levantar, andar)

**- Frequência das mobilizações/intervenções:**

- Diária, com um aumento gradual das mobilizações/intervenções:
  - 1 Série de 8 Repetições até 3 Séries de 12 Repetições.

**- Duração da implementação das mobilizações/intervenções:**

- Durante toda a admissão em Cuidados Intensivos.

**(Ntoumenopoulos, 2015)**

# BARREIRAS À MOBILIZAÇÃO PRECOCE DO DOENTE CRÍTICO

| Instabilidade/ Vulnerabilidade | Tratamentos | Recursos Humanos |
|---|---|---|
| - Hemodinâmica;<br>- Respiratória;<br>- *Delirium.* | - Ventilação Mecânica;<br>- TSR;<br>- ECMO;<br>- Drenagens;<br>- … | - Insuficientes;<br>- Falta de formação/ competência.<br><br>CULTURA DE REPOUSO NO LEITO |

(Fontela, Forgiarini & Friedman, 2018)

## COMPLICAÇÕES

*"What about the lines?"*

**Safety and patients' response to ambulation with a pulmonary artery cateter in the cardiac Intensive care unit (American Journal of Critical Care, 2019).**

**População**: 19 doentes.

**Deambulações**: 303 (média 7 metros/máximo 68 metros).

**Eventos Adversos**: 7 (2,4%) – 7 caminhadas com migração de cateter (1,5cm) sem evidência de arritmias.

SEGURANÇA

**Mobilização**: média 8,3 dias ± 5,5 dias) (149 sessões incluíram sentar ou andar).

**Eventos Adversos**: 4 (2,2%) – durante a deambulação: 1 aumento da ICP e 1 deslocação do cateter; após deambulação: 1 aumento da ICP e um episódio de emese.

**Shah, Kraft, Ankam, Bu, Stout, Melnyk, Rincon & Athar (2016)**

## COMPLICAÇÕES

***"What about the lines?"***

**Safety and feasibility of femoral catheters during physical rehabilitation in the intensive care unit (Journal of Critical Care, 2013).**

**População**: 239 doentes com cateter femoral (6% diálise).

**Intervenções**: Sentar, levantar, andar, exercícios no leito.

**Eventos Adversos**: 0.

# SEGURANÇA

**Intervenções**: 630 actividades de mobilização (sentar na cama, transferência para cadeira, levantar, andar).

**Eventos Adversos**: 0.

**Perme, Nalty, Winkelman, Nawa & Masud (2013)**

# MOBILIZAÇÃO PRECOCE NO DOENTE CRÍTICO

## CONTRA-INDICAÇÕES ABSOLUTAS

- Bloqueio Neuromuscular;

- Instabilidade Hemodinâmica (acompanhada de sistemático aumento de suporte vasopressor);

- Fracturas Instáveis;

- Edema Cerebral com pressão intracraniana incontrolável;

- Hemorragia Activa;

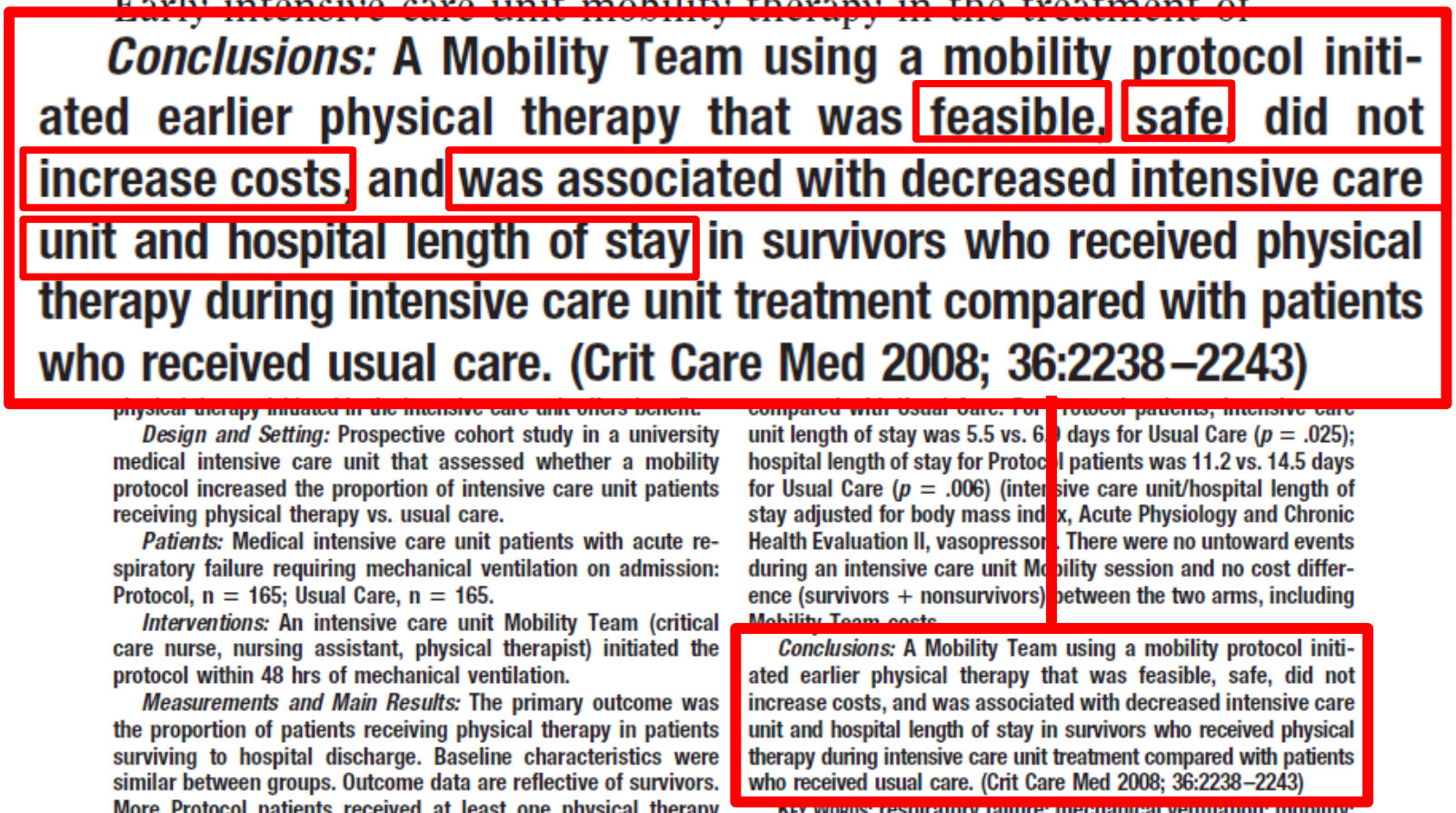
- ECMO (com canulação femoral);

- Contrapulsão Intra-Aórtica (acesso femoral);

- Tórax/Abdómen Aberto.

(Society of Critical Care Medicine)

# CONCLUSÕES



Early intensive care unit mobility therapy in the treatment of

***Conclusions:*** A Mobility Team using a mobility protocol initiated earlier physical therapy that was feasible, safe did not increase costs, and was associated with decreased intensive care unit and hospital length of stay in survivors who received physical therapy during intensive care unit treatment compared with patients who received usual care. (Crit Care Med 2008; 36:2238–2243)

physical therapy initiated in the intensive care unit offers benefit.

*Design and Setting:* Prospective cohort study in a university medical intensive care unit that assessed whether a mobility protocol increased the proportion of intensive care unit patients receiving physical therapy vs. usual care.

*Patients:* Medical intensive care unit patients with acute respiratory failure requiring mechanical ventilation on admission: Protocol, n = 165; Usual Care, n = 165.

*Interventions:* An intensive care unit Mobility Team (critical care nurse, nursing assistant, physical therapist) initiated the protocol within 48 hrs of mechanical ventilation.

*Measurements and Main Results:* The primary outcome was the proportion of patients receiving physical therapy in patients surviving to hospital discharge. Baseline characteristics were similar between groups. Outcome data are reflective of survivors. More Protocol patients received at least one physical therapy session than did Usual Care (80% vs. 47%, $p \leq .001$). Protocol

compared with Usual Care. For Protocol patients, intensive care unit length of stay was 5.5 vs. 6.[illegible] days for Usual Care ($p = .025$); hospital length of stay for Protocol patients was 11.2 vs. 14.5 days for Usual Care ($p = .006$) (intensive care unit/hospital length of stay adjusted for body mass index, Acute Physiology and Chronic Health Evaluation II, vasopressor). There were no untoward events during an intensive care unit Mobility session and no cost difference (survivors + nonsurvivors) between the two arms, including Mobility Team costs.

*Conclusions:* A Mobility Team using a mobility protocol initiated earlier physical therapy that was feasible, safe, did not increase costs, and was associated with decreased intensive care unit and hospital length of stay in survivors who received physical therapy during intensive care unit treatment compared with patients who received usual care. (Crit Care Med 2008; 36:2238–2243)

KEY WORDS: respiratory failure; mechanical ventilation; mobility; intensive care units; physical therapy; passive range of motion

**(Morris, P., Goad, A., Thompson, C., Taylor, K., Harry, B., Passmore, L., …Haponik, E. 2008)**

# CONCLUSÕES

| | |
|---|---|
| **BENEFÍCIOS** | **Diminuição dos efeitos do repouso prolongado no leito:**<br>**- Manutenção da amplitude articular e da força muscular.** |
| | **Diminuição de administração de sedativos.** |
| | **Redução dos dias de *delirium*.** |
| | **Redução dos dias de ventilação mecânica invasiva.** |
| | **Redução dos dias de internamento (UCI e Hospitalar).** |
| **MOTIVOS** | **Exequível e Segura (reduzida taxa de complicações associadas à mobilização precoce do doente crítico), independentemente da severidade/complexidade e dos tratamentos instituídos:**<br>**- Ventilação Mecânica Invasiva;**<br>**- Terapia de Substituição Renal;**<br>**- ECMO;**<br>**- …** |

**(Marra, Ely, Pandharipande & Patel, 2017; Denehy, Lanphere & Needham, 2016)**

# MOBILIZAÇÃO PRECOCE NO DOENTE CRÍTICO

- Evidência Científica
- Melhoria dos Resultados
- Maximização da Funcionalidade
  Promoção da Independência/Reinserção
- Estudos

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