

**eAppendix.**

Survey of Acute Care Physical Therapists/Physiotherapists Regarding Intensive Care Rehabilitation<sup>a</sup>

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**Physical Therapy Program**  
SCHOOL OF MEDICINE

UNIVERSITY OF COLORADO  
ANSCHUTZ MEDICAL CAMPUS

Mailstop C-244 School of Medicine - PT Program  
13121 E. 17th Ave  
Aurora, CO 80045

o 303 724 9123

f 303 724 9016

EMAIL: daniel.malone@ucdenver.edu

Dear Physical Therapy Colleague:

It has been well established that individuals who survive critical illness exhibit persistent physical impairments, functional limitation, and impaired quality of life. Early mobilization as part of the physical therapy plan of care has been shown to be feasible, safe, and may improve functional outcomes. As such, the incorporation of physical therapy and early mobilization programs within the ICU is gaining momentum within the critical care community.

In 2007, we mailed a survey to acute care physical therapists who practice in the United States. Many of you might have participated in this survey. Much has changed regarding ICU practice since our original survey, and we wish to investigate these changes by repeating a survey of acute care physical therapists. The goal of the current survey is to determine if physical therapist practice has evolved over the last 6 years. Specifically, we aim to identify current physical therapist practice and compare to information gathered previously. Additionally, we aim to investigate the educational background and knowledge base of the physical therapist providing ICU care and identify barriers to the provision of rehabilitation service to our clients in the ICU. Finally, we will compare US practice with that delivered by physiotherapists in the United Kingdom and Australia.

This survey will take approximately 10 minutes to complete. Throughout this survey, the terms “physical therapist” and “physical therapy” should be considered interchangeable with the terms “physiotherapists” and “physiotherapy.” *We hope you complete the survey and mail the results back to us in the enclosed prepaid envelope.* We appreciate your time and effort as you complete the survey.

Sincerely,

Handwritten signature of Daniel Malone.

Daniel Malone PT, PhD, CCS

Handwritten signature of Marc Moss.

Marc Moss, MD

Assistant Professor  
Physical Therapy Program  
Department of Physical Medicine  
and Rehabilitation  
University of Colorado Denver

Roger S. Mitchell Professor of Medicine  
Head of Critical Care  
Division of Pulmonary Sciences  
and Critical Care Medicine  
University of Colorado Denver

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## Physical Therapist Practice in the ICU

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#### Survey of Acute Care Physical Therapists/Physiotherapists Regarding Intensive Care Rehabilitation

#### **I. The following questions will provide a description of current physical therapist practice in the ICU:**

1. In which country, city, and state/country do you primarily work?

Country: \_\_\_\_\_

City: \_\_\_\_\_

State/Territory/Country: \_\_\_\_\_

2. How many years have you been working as a physical therapist? \_\_\_\_\_

3. How many years have you been working as physical therapist in the hospital/acute care setting?  
\_\_\_\_\_

4. What percentage of the time do you work in the ICU? \_\_\_\_\_ (0%-100%) (enter 0 if you do not work in the ICU)

5. How many years have you been working in the ICU? \_\_\_\_\_ (enter 0 if you do not work in the ICU)

6. How would you best describe your hospital?

*For USA:*

- a. University hospital
- b. University-affiliated hospital
- c. Community hospital

*For Australia/United Kingdom:*

- d. Public
- e. Private
- f. Tertiary/university
- g. Secondary/district/general
- h. Other

7. What is the total number of beds in your hospital? \_\_\_\_\_ (hospital beds)

8. What is the total number of ICU beds in the hospital? \_\_\_\_\_ (ICU beds)

9. Does your hospital have the following types of ICUs (circle all that apply)?

- a. Medical
- b. Surgical
- c. Medical-surgical
- d. Orthopedic/trauma
- e. Neurologic/neurosurgical
- f. Other. Please specify: \_\_\_\_\_

10. How can you best describe the ICU where you provide care (circle all that apply)?

- a. Medical
- b. Surgical
- c. Medical-surgical
- d. Orthopedic/trauma
- e. Neuro/neurosurgical
- f. Cardiac
- g. Other. Please specify: \_\_\_\_\_

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11. How many full-time physical therapists work in your **hospital** on an average weekday (ie, Monday-Friday)? \_\_\_\_\_
12. How many full-time physical therapists work in the **ICUs** of your hospital on an average weekday (Monday-Friday)? \_\_\_\_\_
13. On average, how many minutes are spent in direct rehabilitation interventions (eg, mobilization; NOT specific respiratory treatments) during a typical session with an ICU patient? \_\_\_\_\_ (in minutes)

**II. The following questions will provide information on education and postgraduate training related to the provision of physical therapy services in the ICU:**

14. How were you primarily prepared/trained to work in the ICU of your hospital (choose the single best answer)?
- a. Physical therapy school (qualification program)
  - b. Senior staff member-based mentoring/training
  - c. Facility-based training (ie, departmental competency)
  - d. Postgraduate training: internship/residency
  - e. Continuing education courses
  - f. No formal training
  - g. Other. Please specify: \_\_\_\_\_
15. Does your hospital have a specific ICU competency or education process for physical therapists?
- a. Yes
  - b. No
16. Do you feel this competency process adequately educates and prepares physical therapists in the treatment of patients in the ICU?
- a. Strongly disagree
  - b. Disagree
  - c. Neither agree nor disagree
  - d. Agree
  - e. Strongly agree
  - f. Not applicable; no specific competency or education process

	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neither Agree nor Disagree</b>	<b>Agree</b>	<b>Strongly Agree</b>	<b>Not Applicable</b>
17. I am adequately trained to provide rehabilitation in the ICU						
18. I understand mechanical ventilation						
19. I understand how to work with the physiologic monitoring and patient support equipment found in the ICU						
20. I am confident in my decision making when determining which patients should/should not receive physical therapy						
21. I am confident in discussing the appropriateness of physical therapy treatment and mobility with nurses and physicians						

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**III. The following questions and case studies will help us identify changes in practice and identify barriers to implementing physical therapy rehabilitation services in the ICU:**

22. Does your facility have specific guidelines/protocols to determine patient eligibility for physical therapy in the ICU?
- Yes
  - No
23. Do you have specific guidelines/protocols to terminate a physical therapy session in the ICU?
- Yes
  - No
24. In your facility, do physical therapists participate in interdisciplinary rounds on the **floor/ward**?
- Yes
  - No
25. In your facility, do physical therapists participate in interdisciplinary rounds in the **ICU**?
- Yes
  - No
26. If you answered “No” to question #25, physical therapists do not attend interdisciplinary rounds because:
- Not enough time in a standard work day to participate
  - Not invited to participate
  - It is not expected that physical therapists participate
  - Other: \_\_\_\_\_
  - Not applicable; physical therapists participate in interdisciplinary rounds in the **ICU**
27. A patient has been referred to physical therapy in the ICU. Who decides at the bedside if the patient is ready to start a physical therapy rehabilitation program (eg, mobilization; NOT a respiratory treatment)?
- Physical therapist
  - Nurse
  - Physician
  - Nurse and physical therapist
  - Physician and physical therapist
  - Other
28. During a bedside physical therapy treatment in the ICU, a patient with a tracheostomy is unable to cough and has retained secretions. What do you most likely do?
- Ask the nurse to suction the patient’s trachea
  - Ask the respiratory therapist to suction the patient’s trachea
  - Ask the physician to suction the patient’s trachea
  - Perform tracheal suctioning yourself
  - None of the above

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Common barriers to providing physical therapy rehabilitation (NOT respiratory treatments) in the ICU have been identified. Please answer the following questions about **your facility**:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
29. There is a lack of adequate physical therapy resources (eg, not enough physical therapy staff members to provide physical therapy in the ICU)					
30. There is a lack of adequate physical therapy training to provide physical therapy in the ICU					
31. Patients in the ICU are considered lower "priority," and physical therapy is allocated to other areas/service lines within the hospital					
32. There is a lack of specific consult criteria to facilitate early physical therapy for patients in the ICU					
33. Most patients are too sedated to participate in physical therapy in the ICU					
34. Other team members (eg, physicians, nurses, respiratory therapists) undervalue the importance of early physical therapy in the ICU					

35. Other barriers to rehabilitation in the ICU that I have identified include:

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## Clinical Scenarios

Case #1: A patient is admitted to the ICU of your hospital with pneumonia and COPD, resulting in respiratory failure. The patient had a **tracheostomy** performed and requires mechanical ventilation with an **FiO<sub>2</sub> of 0.40 (40%) and PEEP of 5 cm H<sub>2</sub>O**. The patient is alert and able to follow commands and is diffusely weak (3 out of 5 muscle strength) in bilateral upper and lower extremities.

1. What is the likelihood that you would be asked to provide rehabilitation interventions (NOT respiratory treatments) for this patient? \_\_\_\_\_ (0%–100% of the time)
2. If you were asked to see this patient for physical rehabilitation (NOT respiratory treatments), how many days per week would you "ideally" work with this patient in your hospital (what is the "ideal" frequency of physical therapy)? \_\_\_\_\_ (days/week)
3. Based on this case scenario, which of the following interventions would you perform (circle all that apply):
  - a. Patient would not be seen
  - b. Bed-level exercises (ROM; progressive resistive exercises)
  - c. Sitting edge of bed
  - d. Standing at the side of the bed
  - e. Transfer to a bedside chair
  - f. Ambulation training
4. In your opinion, what type of physical therapy intervention would have the **most** positive impact on the outcome of the patient?
  - a. Active-assisted ROM exercises
  - b. Positioning
  - c. Therapeutic exercise (aerobic or resistive training)
  - d. Functional mobility retraining/mobilization
  - e. Breathing exercises and retraining

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5. Based on this case scenario, I would feel confident in mobilizing this patient out of bed during a physical therapy treatment?
- Strongly disagree
  - Disagree
  - Neither agree nor disagree
  - Agree
  - Strongly agree

Case #2: A patient is admitted to the ICU of your hospital with pneumonia and COPD, resulting in respiratory failure. The patient is **orally intubated** and requires mechanical ventilation with an **FiO<sub>2</sub> of 0.40 (40%) and PEEP of 5 cm H<sub>2</sub>O**. The patient is alert and able to follow commands and is diffusely weak (3 out of 5 muscle strength) in bilateral upper and lower extremities.

1. What is the likelihood that you would be asked to provide rehabilitation interventions (NOT respiratory treatments) for this patient? \_\_\_\_\_ (0%–100% of the time)
2. If you were asked to see this patient for physical rehabilitation (NOT respiratory treatments), how many days per week would you “ideally” work with this patient in your hospital (what is the “ideal” frequency of physical therapy)? \_\_\_\_\_ (days/week)
3. Based on this case scenario, which of the following interventions would you perform (circle all that apply):
  - Patient would not be seen
  - Bed-level exercises (ROM; progressive resistive exercises)
  - Sitting edge of bed
  - Standing at the side of the bed
  - Transfer to a bedside chair
  - Ambulation training
4. In your opinion, what type of physical therapy intervention would have the **most** positive impact on the outcome of the patient?
  - Active-assisted ROM exercises
  - Positioning
  - Therapeutic exercise (aerobic or resistive training)
  - Functional mobility retraining/mobilization
  - Breathing exercises and retraining
5. Based on this case scenario, I would feel confident in mobilizing this patient out of bed during a physical therapy treatment?
  - Strongly disagree
  - Disagree
  - Neither agree nor disagree
  - Agree
  - Strongly agree

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Case #3: A patient is admitted to the ICU of your hospital with severe pneumonia and COPD, resulting in respiratory failure. The patient is intubated and had a **tracheostomy** performed and still requires mechanical ventilation with an **FiO<sub>2</sub> of 0.70 (70%) and PEEP of 10 cm H<sub>2</sub>O**. The patient is alert and able to follow commands and is diffusely weak (3 out of 5 muscle strength) in bilateral upper and lower extremities.

1. What is the likelihood that you would be asked to provide rehabilitation interventions (NOT respiratory treatments) for this patient? \_\_\_\_\_ (0%-100% of the time)
2. If you were asked to see this patient for physical rehabilitation (NOT respiratory treatments), how many days per week would you “ideally” work with this patient in your hospital (what is the “ideal” frequency of physical therapy)? \_\_\_\_\_ days/week (eg, 3 days/week)
3. Based on this case scenario, which of the following interventions would you perform (circle all that apply):
  - a. Patient would not be seen
  - b. Bed-level exercises (ROM; progressive resistive exercises)
  - c. Sitting edge of bed
  - d. Standing at the side of the bed
  - e. Transfer to a bedside chair
  - f. Ambulation training
4. In your opinion, what type of physical therapy intervention would have the **most** positive impact on the outcome of the patient?
  - a. Active-assisted ROM exercises
  - b. Positioning
  - c. Therapeutic exercise (aerobic or resistive training)
  - d. Functional mobility retraining/mobilization
  - e. Breathing exercises and retraining
5. Based on this case scenario, I would feel confident in mobilizing this patient out of bed during a physical therapy treatment?
  - a. Strongly disagree
  - b. Disagree
  - c. Neither agree nor disagree
  - d. Agree
  - e. Strongly agree

Case #4: A patient is admitted to the ICU of your hospital with COPD, pneumonia, and renal failure. The patient is intubated and had a **tracheostomy** performed and still requires mechanical ventilation with an **FiO<sub>2</sub> of 0.40 (40%) and PEEP of 5 cm H<sub>2</sub>O** and receiving **continuous renal replacement therapy (CRRT/CVVHD) via subclavian venous access**. The patient is alert and able to follow commands and is diffusely weak (3 out of 5 muscle strength) in bilateral upper and lower extremities.

1. What is the likelihood that you would be asked to provide rehabilitation interventions (NOT respiratory treatments) for this patient? \_\_\_\_\_ (0%-100% of the time)

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## Physical Therapist Practice in the ICU

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2. If you were asked to see this patient for physical rehabilitation (NOT respiratory treatments), how many days per week would you “ideally” work with this patient in your hospital (what is the “ideal” frequency of physical therapy)? \_\_\_\_\_ days/week (eg, 3 days/week)
3. Based on this case scenario, which of the following interventions would you perform (circle all that apply):
  - a. Patient would not be seen
  - b. Bed-level exercises (ROM; progressive resistive exercises)
  - c. Sitting edge of bed
  - d. Standing at the side of the bed
  - e. Transfer to a bedside chair
  - f. Ambulation training
4. In your opinion, what type of physical therapy intervention would have the **most** positive impact on the outcome of the patient?
  - a. Active-assisted ROM exercises
  - b. Positioning
  - c. Therapeutic exercise (aerobic or resistive training)
  - d. Functional mobility retraining/mobilization
  - e. Breathing exercises and retraining
5. Based on this case scenario, I would feel confident in mobilizing this patient out of bed during a physical therapy treatment?
  - a. Strongly disagree
  - b. Disagree
  - c. Neither agree nor disagree
  - d. Agree
  - e. Strongly agree

Case #5: A patient is admitted to the ICU of your hospital with COPD and pneumonia. The patient is in the ICU, has had a **tracheostomy** performed, and requires mechanical ventilation with an **FiO<sub>2</sub> of 0.40 (40%) PEEP of 5 cm H<sub>2</sub>O** and is receiving a **low, constant dose of a vasopressor medication (eg, dobutamine, vasopressin, dopamine, epinephrine)** but is considered medically stable. The patient is alert and able to follow commands and is diffusely weak (3 out of 5 muscle strength) in bilateral upper and lower extremities.

1. What is the likelihood that you would be asked to provide rehabilitation interventions (NOT respiratory treatments) for this patient? \_\_\_\_\_ (0%–100% of the time)
2. If you were asked to see this patient for physical rehabilitation (NOT respiratory treatments), how many days per week would you “ideally” work with this patient in your hospital (what is the “ideal” frequency of physical therapy)? \_\_\_\_\_ days/week (eg, 3 days/week)
3. Based on this case scenario, which of the following interventions would you perform (circle all that apply):
  - a. Patient would not be seen
  - b. Bed-level exercises (ROM; progressive resistive exercises)
  - c. Sitting edge of bed
  - d. Standing at the side of the bed
  - e. Transfer to a bedside chair
  - f. Ambulation training

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## eAppendix.

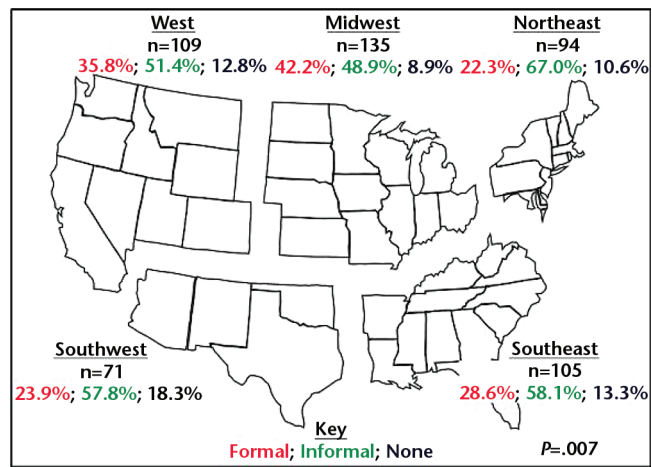
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4. In your opinion, what type of physical therapy intervention would have the **most** positive impact on the outcome of the patient?
  - a. Active-assisted ROM exercises
  - b. Positioning
  - c. Therapeutic exercise (aerobic or resistive training)
  - d. Functional mobility retraining/mobilization
  - e. Breathing exercises and retraining
5. Based on this case scenario, I would feel confident in mobilizing this patient out of bed during a physical therapy treatment?
  - a. Strongly disagree
  - b. Disagree
  - c. Neither agree nor disagree
  - d. Agree
  - e. Strongly agree

Case #6: A patient is admitted to the ICU of your hospital following a **major stroke**. The patient has aspiration pneumonia, which has progressed to respiratory failure. The patient had a **tracheostomy** performed and requires mechanical ventilation with an **FiO<sub>2</sub> of 0.40 (40%)** and **PEEP of 5 cm H<sub>2</sub>O**. The patient is alert and able to follow commands.

1. What is the likelihood that you would be asked to provide rehabilitation interventions (NOT respiratory treatments) for this patient? \_\_\_\_\_ (0%-100% of the time)
2. If you were asked to see this patient for physical rehabilitation (NOT respiratory treatments), how many days per week would you “ideally” work with this patient in your hospital (what is the “ideal” frequency of physical therapy)? \_\_\_\_\_ days/week (eg, 3 days/week)
3. Based on this case scenario, which of the following interventions would you perform (circle all that apply):
  - a. Patient would not be seen
  - b. Bed-level exercises (ROM; progressive resistive exercises)
  - c. Sitting edge of bed
  - d. Standing at the side of the bed
  - e. Transfer to a bedside chair
  - f. Ambulation training
4. In your opinion, what type of physical therapy intervention would have the **most** positive impact on the outcome of the patient?
  - a. Active-assisted ROM exercises
  - b. Positioning
  - c. Therapeutic exercise (aerobic or resistive training)
  - d. Functional mobility retraining/mobilization
  - e. Breathing exercises and retraining
5. Based on this case scenario, I would feel confident in mobilizing this patient out of bed during a physical therapy treatment?
  - a. Strongly disagree
  - b. Disagree
  - c. Neither agree nor disagree
  - d. Agree
  - e. Strongly agree

<sup>a</sup> ICU=intensive care unit, COPD=chronic obstructive pulmonary disease, FiO<sub>2</sub>=fraction of inspired oxygen, PEEP=positive end-expiratory pressure, ROM=range of motion. This survey may not be used or reproduced without written permission from the authors.



**eFigure.**  
Regional breakdown of training of physical therapists.