

How an Early Activity and Mobility Protocol for Mechanical Vent Patients Can be Beneficial in Rural Hospital Settings

Dacy Thomasson, MOT, OTR/L, PPOTD Candidate
Department of Occupational Therapy
University of Missouri



Occupational Therapy
School of Health Professions
University of Missouri Health

Learning Objectives

- At the end of this course, clinicians/students will be able to:
 - Summarize crucial elements of an early activity and mobility protocol (EAMP).
 - Apply EAMP concepts to clinical reasoning among acute care patients.
 - Effectively scribe and document notes to be submitted to patients' charts.
 - Understand and be able to articulate common steps/ procedures that are necessary to develop and implement an early activity and mobility protocol among a multi-disciplinary team.



Introduction

- Dacy Thomasson
 - OT for almost 4 years acute care/inpatient rehab settings
 - Tennessee State graduate December 2019
 - Will graduate from University of Missouri December 2023



Introduction

- Goals for this course include:
 - Better understanding of acute care, especially ICU
 - Importance of working with mechanical vent patients
 - How to be effective clinicians in the hospital setting



Introduction

- Please feel free to ask questions at any time!



Intubation

- Typically performed by a respiratory therapist or physician
- On average, days spent on the ventilator range from 1-4 days (Perkins, 2018).
- However, can last longer for more complex cases (Tipping, 2017).



Common Causes for Intubation

- Respiratory failure
 - ARDS
 - Asthma
 - COPD
 - Cardiac arrest
 - Overdose
 - Pneumonia
 - Sepsis
 - Spinal cord injury (polio, ALS, myasthenia gravis)

(National, 2021)



[This Photo](#) by Unknown Author is licensed under [CC BY-SA](#)



ICU-Acquired Weakness (ICU-AW)

- When sedated and intubated on a ventilator, muscle wasting happens quickly.
- Fazzini et al (2023) completed systematic review on muscle wasting during critical illness.
 - 33 studies included



ICU-Acquired Weakness (ICU-AW)

- Fazzini et al (2023) Systematic Review
 - On average, patients lost daily:
 - 1.75% of rectus femoris thickness
 - 2.10% of rectus femoris cross-sectional area
 - 1.82% of quadriceps thickness
 - 1.64% biceps brachii thickness
 - 2.23% of biceps brachii cross sectional area



ICU-Acquired Weakness (ICU-AW)

- Fazzini et al (2023) Systematic Review
 - Four studies highlighted total skeletal muscle mass loss:
 - One study → 21.9 cm of muscle mass loss in the abdominal region, which translates to 15% muscle mass loss in one week according to lumbar CT scans.
 - Another study → 2.09 cm of total muscle mass loss equal to 4.29% loss of total body muscle mass over 7-14 days.



ICU-Acquired Weakness (ICU-AW)

- Schefold et al (2020) completed a systematic review on ICU-acquired weakness (ICU-AW).
- Side-effects of ICU-AW include, but are not limited to:
 - Muscular weakness, impaired mobilization, prolonged bed rest, and extended ICU and/or hospital length of stay.



ICU-Acquired Weakness (ICU-AW)

- Schefold et al (2020)
 - In 40% of articles reviewed (1080/2686), ICU-AW was present in patients during preliminary testing, with more patients being diagnosed later in their hospital stay.
 - Some articles used other terms that are considered ICU-AW including:
 - Critical illness polyneuropathy (CIP)
 - Critical illness myopathy (CIM)
 - Combination—critical illness polyneuromyopathy (CIPM).



How Therapy Can Help

- Having multiple therapies working with the patient can produce lasting benefits
 - OT
 - PT
 - RT
 - ST
 - Nursing



This Photo by Unknown Author is licensed under [CC BY-NC-ND](#)



How Early Activity and Mobility Can Get Started

- In major hospitals, therapy while on mechanical ventilation is common (Hsieh, 2019)
 - Not as common in rural hospitals
- In my workplace, we could only work with vent patients after extubation, regardless of time on the vent
 - Would result in making it difficult to make positive gains with patients in short amount of time.



How Early Activity and Mobility Can Get Started

- With patients being harder to mobilize after intubation, this lead to increased time needed to get patients discharged or placed in rehab.
- Some negatives associated with this included:
 - Decreased muscle mass
 - Decreased endurance/activity tolerance
 - Decreased cognition
 - Decreased motivation
 - Increased stress for patients and families



Getting Ground Work Completed

- Completed research regarding early activity and mobility (EAMP), benefits of therapeutic intervention
- Discussed with director, who discussed with ICU managers, who created EAMP MD Team
 - RN
 - OT
 - PT
 - RT
 - Physician



Getting Ground Work Completed

- Reached out to other facilities for their protocols for EAMP.
- Drafted and created early activity and mobility protocol (EAMP) with multidisciplinary team, complete with inclusion and contraindication criterion.



Facility Support

- If implementing an EAMP at your facility, make sure you have:
 - Staff to create/develop/implement protocol
 - Buy-in from the staff
 - Equipment necessary
- Have clear inclusion/exclusion criteria, as well as contraindications.
- Have a clear protocol plan that can be used by any clinician.

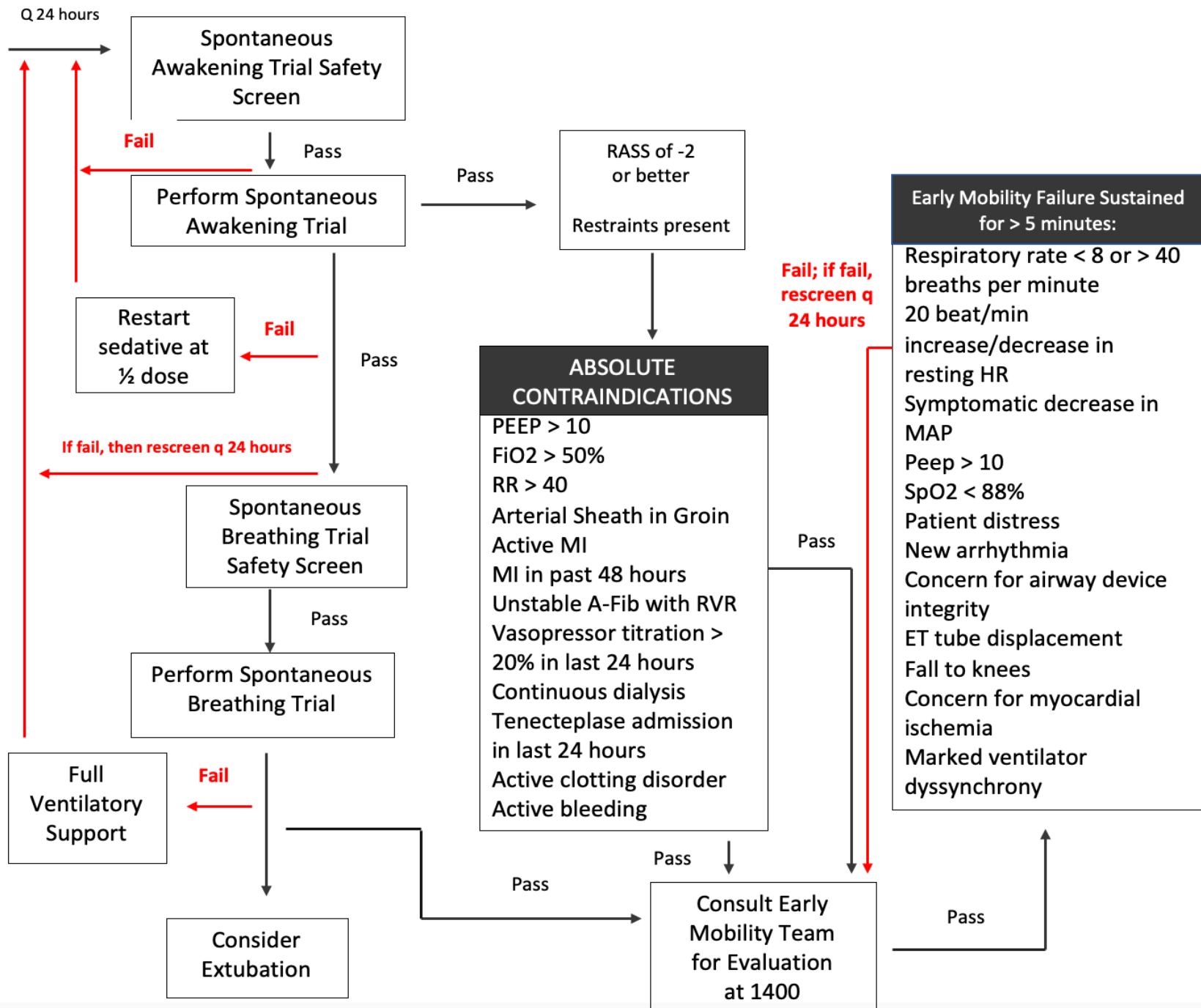


Implementation + Identifying Patients

- Attend ICU rounds daily and speak with multi-disciplinary team
- Identify mechanical vent patients that may be appropriate for therapy, determine if the medical team is okay with treating this patient
- Establish time with multi-disciplinary team to evaluate/treat patient(s)



ICU Early Mobilization Team Protocol



Contraindications

ABSOLUTE CONTRAINDICATIONS

PEEP > 10

FiO₂ > 50%

RR > 40

Arterial Sheath in Groin

Active MI

MI in past 48 hours

Unstable A-Fib with RVR

Vasopressor titration >

20% in last 24 hours

Continuous dialysis

Tenecteplase admission

in last 24 hours

Active clotting disorder

Active bleeding



Occupational Therapy

School of Health Professions

University of Missouri Health

Early Activity and Mobility Failure

Early Mobility Failure Sustained for > 5 minutes:

Respiratory rate < 8 or > 40
breaths per minute

20 beat/min

increase/decrease in
resting HR

Symptomatic decrease in
MAP

Peep > 10

SpO₂ < 88%

Patient distress

New arrhythmia

Concern for airway device
integrity

ET tube displacement

Fall to knees

Concern for myocardial
ischemia

Marked ventilator
dyssynchrony



Occupational Therapy

School of Health Professions

University of Missouri Health

Inclusion Criteria

Therapy Inclusion Criteria

(Able to Participate in Early Activity and Mobility Protocol)

- PEEP < 10
- FiO₂ ≤ 50%
- RR < 40 (respiratory rate)
- NO Arterial Sheath in Groin
- NO Active MI
- NO MI in most recent 48 hours
- Stable A-Fib
- NO Vasopressor titration > 20% in last 24 hours
- NO Continuous dialysis (CRRT or SLED)
- NO Tenecteplase admission in most recent 24 hours
- NO Active clotting disorder
- NO Active bleeding



Contraindications

Therapy Contraindications

- PEEP > 10
- FiO₂ > 50%
- RR > 40
- Arterial Sheath in Groin
- Active MI
- MI in most recent 48 hours
- Unstable A-Fib with RVR
- Vasopressor titration > 20% in last 24 hours
- Continuous dialysis (CRRT or SLED)
- Tenecteplase admission in most recent 24 hours
- Active clotting disorder
- Active bleeding



Protocol

Chart Review

- Chart review will include:
 - Assessments
 - RASS score
 - CAM-ICU score
 - Vent settings
 - Appropriate: at or below 50% FiO₂; 10 PEEP
 - NOT Appropriate: above 50% FiO₂; > 10 PEEP
 - Activity orders
 - Current sedation (including sedation level and sedative medication used)
 - Therapy contraindications



Protocol

Early Activity and Mobility Overview

- 1A: Passive Range of Motion/Initiation of Mobility
- 1B: Active Assisted ROM/Chair Mode of Bed
- 2: Active Mobilization and Edge of Bed Activity
- 3A: Sit to Stand
- 3B: Transfers (*Will ONLY occur if RT or second RN is present and has cleared therapists to complete transfers*)
- 4: Gait training (*Will ONLY occur if RT is present with portable vent*)



Evaluating/Treating MV Patients

- Staffing
 - Establish roles
- Monitor vitals at beginning, throughout, end of treatment
- Remove any unnecessary equipment
- Have extra hands present



[This Photo](#) by Unknown Author is licensed under [CC BY](#)



Protocol

Level 1A: Passive Range of Motion/Initiation of Mobilization

Staff Needed: PT, OT, RN, RT

Therapy Staff	Nursing Staff	Respiratory Staff
<ul style="list-style-type: none">RASS < -1	<ul style="list-style-type: none">Begin to implement protocol for progressive mobility	<ul style="list-style-type: none">Swap vent sides of the bed daily to limit developing neck contractures

Step 0	Continuous lateral rotation therapy for at least 18 hours per day with 80% rotation.
Step 1	HOB elevated to 45 degrees with PROM **Therapy services will join at this time to provide/initiate PROM program, initiate schedules for patient, assist with PROM and rotating patient as needed.



Protocol

Level 1B: Active Assisted Range of Motion/Chair Mode

Staff Needed: PT, OT, RN, RT

Therapy Staff	Nursing Staff	Respiratory Staff
<ul style="list-style-type: none">• OT: initiate functional cognitive goals• PT: initiate functional strengthening/mobility goals	<ul style="list-style-type: none">• Continue to implement protocol for progressive mobility.	<ul style="list-style-type: none">• Swap vent sides of the bed daily to limit developing neck contractures

Step 2	HOB elevated to 45 degrees and legs put in dependent position (partial chair mode) with a goal of 20 minutes 3x/day
Step 3	HOB elevated to 60 degrees and legs put in full dependent position (full chair mode) with a goal of 20 minutes 3x/day



Protocol

Level 2: Active Mobilization and Edge of Bed Activity

Staff Needed: PT, OT, RN, RT

Therapy Staff	Nursing Staff	Respiratory Staff
<ul style="list-style-type: none">• Begin to assess sitting balance and strength in extremities	<ul style="list-style-type: none">• Continue to implement protocol for progressive mobility.	<ul style="list-style-type: none">• Lowest SpO2 level is 88% and allotted 5-minute recovery time until patient needs to return to supine.

Step 4	HOB elevated to 65 degrees plus legs in full dependent position and feet on the floor (*Therapy present for initiating transfers to neuro chair*)
Step 5	Sit on the side of the bed with feet on the floor (*Therapy present for transfers*)



Protocol

Level 3A: Sit to Stand Staff Needed: PT, OT, RN, RT

Therapy Staff	Nursing Staff	Respiratory Staff
<ul style="list-style-type: none">• Begin to assist patient with sit to stand transfers• Continue to implement protocol for progressive mobility	<ul style="list-style-type: none">• Continue to place patient in chair mode 3x/day during typical meal times• Be present for line management during mobility sessions	<ul style="list-style-type: none">• Lowest SpO2 level is 88% and allotted 5-minute recovery time until patient needs to return to supine.

Step 6	Therapy will begin to initiate stand/pivot while at EOB
---------------	---



Protocol

Level 3B: Transfers

Staff Needed: PT, OT, RN, RT

Therapy Staff	Nursing Staff	Respiratory Staff
<ul style="list-style-type: none">• Patient will begin to progress to chair transfers• Continue to implement protocol for progressive mobility	<ul style="list-style-type: none">• Continue to implement protocol for progressive mobility.	<ul style="list-style-type: none">• Lowest SpO2 level is 88% and allotted 5-minute recovery time until patient needs to return to supine.

Step 7	Therapy will begin to initiate stand/pivot with side-stepping towards chair
---------------	---



Protocol

Level 4: Gait

Staff Needed: PT, OT, RN, RT

Therapy Staff	Nursing Staff	Respiratory Staff
<ul style="list-style-type: none">• Begin gait training• Continue to implement protocol for progressive mobility	<ul style="list-style-type: none">• Place patient in bedside chair for at least 1 meal with the goal of sitting up for at least 20 minutes	<ul style="list-style-type: none">• Lowest SpO2 level is 88% and allotted 5-minute recovery time until patient needs to return to supine.• Be present for portable vent management

Step 8	Patient will take side-steps with appropriate AE and gait belt to initiate ambulation
Step 9	Patient will ambulate with appropriate AE and gait belt in room/hallway as tolerated



Documenting Therapy Session

- Identify if any other discipline was present
- Include vitals throughout treatment
- List vent settings
- What was accomplished
- Therapeutic benefit to patient



Documenting Therapy Session

- Standardized assessments can be used (and documented)!!
 - CAM-ICU <https://www.aphand.org/docs/Best%20Practices/WB0016/Delirium-CAM-ICU-gwgqyd12.pdf>
 - HADS (Hospital Anxiety and Depression Scale) (Stern, 2014)
 - BIMS <http://www.foundationsgroup.net/files/126558935.pdf>
 - AMPAC-6 Clicks <http://www.summit-education.com/wp-content/uploads/AM-PAC-6-patient-basic-mobility-short-form-information.pdf>

- All can be found for free online



Confusion Assessment Method for the ICU (CAM-ICU)

Worksheet

Instructions: To evaluate for the presence of delirium in your patient, complete this clinical assessment every shift (8-12 hours).

CAM-ICU is a valid and reliable delirium assessment tool recommended by the Society of Critical Care Medicine (SCCM) in its 2013 Pain, Agitation, and Delirium (PAD) guidelines.

CAM-ICU	Criteria	✓ Present
FEATURE 1: Alteration/Fluctuation in Mental Status		
<ul style="list-style-type: none"> Is the patient's mental status different than his/her baseline? OR Has the patient had any fluctuation in mental status in the past 24 hours as evidenced by fluctuation on a sedation scale (eg, RASS, Glasgow Coma Scale [GCS]), or previous delirium assessment? 	If Yes for either question ►	<input type="checkbox"/>
FEATURE 2: Inattention 1: Alteration/Fluctuation in Mental Status		
<p>Letters Attention Test:</p> <p>Tell the patient <i>"I am going to read to you a series of 10 letters. Whenever you hear the letter 'A,' squeeze my hand."</i></p> <p>SAVEAHART</p> <p>Count errors (each time patient fails to squeeze on the letter "A" and squeezes on a letter other than "A").</p>	If number of errors >2 ►	<input type="checkbox"/>
FEATURE 3: Altered Level of Consciousness (LOC)		
<ul style="list-style-type: none"> Present if the RASS score is anything <u>other than</u> Alert and Calm (zero) OR If SAS is anything <u>other than</u> Calm (4) 	If RASS ≠0 OR SAS ≠4 ►	<input type="checkbox"/>
FEATURE 4: Disorganized Thinking		
<p>Yes/No Questions: Ask the patient to respond:</p> <ol style="list-style-type: none"> Will a stone float on water? Are there fish in the sea? Does 1 pound weigh more than 2 pounds? Can you use a hammer to pound a nail? <p>Count errors (each time patient answers incorrectly).</p> <p>Commands: Ask the patient to follow your instructions:</p> <ol style="list-style-type: none"> "Hold up this many fingers." (Hold 2 fingers in front of the patient.) "Now do the same thing with the other hand." (Do not demonstrate the number of fingers this time.) <ul style="list-style-type: none"> If unable to move both arms, for part "b" of command ask patient to "Hold up one more finger." <p>Count errors if patient is unable to complete the entire command.</p>	If combined number of errors >1 ►	<input type="checkbox"/>
<p>If Features 1 and 2 are both present <u>and</u> either Features 3 <u>or</u> 4 are present:</p> <p>CAM-ICU is positive, delirium is present</p>		<p>Delirium present <input type="checkbox"/></p> <p>Delirium absent <input type="checkbox"/></p>

Hospital Anxiety and Depression Scale (HADS)

Tick the box beside the reply that is closest to how you have been feeling in the past week.
Don't take too long over you replies: your immediate is best.

D	A		D	A	
		I feel tense or 'wound up':			I feel as if I am slowed down:
	3	Most of the time	3		Nearly all the time
	2	A lot of the time	2		Very often
	1	From time to time, occasionally	1		Sometimes
	0	Not at all	0		Not at all
		I still enjoy the things I used to enjoy:			I get a sort of frightened feeling like 'butterflies' in the stomach:
0		Definitely as much		0	Not at all
1		Not quite so much		1	Occasionally
2		Only a little		2	Quite Often
3		Hardly at all		3	Very Often
		I get a sort of frightened feeling as if something awful is about to happen:			I have lost interest in my appearance:
	3	Very definitely and quite badly	3		Definitely
	2	Yes, but not too badly	2		I don't take as much care as I should
	1	A little, but it doesn't worry me	1		I may not take quite as much care
	0	Not at all	0		I take just as much care as ever
		I can laugh and see the funny side of things:			I feel restless as I have to be on the move:
0		As much as I always could		3	Very much indeed
1		Not quite so much now		2	Quite a lot
2		Definitely not so much now		1	Not very much
3		Not at all		0	Not at all
		Worrying thoughts go through my mind:			I look forward with enjoyment to things:
	3	A great deal of the time	0		As much as I ever did
	2	A lot of the time	1		Rather less than I used to
	1	From time to time, but not too often	2		Definitely less than I used to
	0	Only occasionally	3		Hardly at all
		I feel cheerful:			I get sudden feelings of panic:
3		Not at all		3	Very often indeed
2		Not often		2	Quite often
1		Sometimes		1	Not very often
0		Most of the time		0	Not at all
		I can sit at ease and feel relaxed:			I can enjoy a good book or radio or TV program:
	0	Definitely	0		Often
	1	Usually	1		Sometimes
	2	Not Often	2		Not often
	3	Not at all	3		Very seldom

Please check you have answered all the questions

Scoring:

Total score: Depression (D) _____ Anxiety (A) _____

0-7 = Normal

8-10 = Borderline abnormal (borderline case)

11-21 = Abnormal (case)

Brief Interview for Mental Status (BIMS)

Repetition of Three Words

Ask resident: "I am going to say three words for you to remember. Please repeat the words after I have said all three. The words are: **sock**, **blue** and **bed**. Now tell me the three words."

Number of words repeated after first attempt:

0. None

1. One

2. Two

3. Three

After the resident's first attempt, repeat the words using cues ("sock, something to wear; blue, a color; bed, a piece of furniture"). You may repeat the words up to two more times.

Temporal Orientation (orientation to month, year and day)

Ask resident: "Please tell me what year it is right now."

Able to report correct year

0. Missed by > 5 years, or no answer

1. Missed by 2-5 years

2. Missed by 1 year

3. Correct

Ask resident: "What month are we in right now?"

Able to report correct month

0. Missed by > 1 month, or no answer

1. Missed by 6 days to one month

2. Accurate within 5 days

Ask resident: "What day of the week is today?"

Able to report correct day of the week

0. Incorrect, or no answer

1. Correct

Recall

Ask resident: "Let's go back to the earlier question. What were the three words that I asked you to repeat?"
If unable to remember a word, give cue ("something to wear," "a color," "a piece of furniture") for that word.

Able to recall "sock"

0. No - could not recall

1. Yes, after cueing ("something to wear")

2. Yes, no cue required

Able to recall "blue"

0. No - could not recall

1. Yes, after cueing ("a color")

2. Yes, no cue required

Able to recall "bed"

0. No - could not recall

1. Yes, after cueing ("a piece of furniture")

2. Yes, no cue required

Summary Score

Add scores for each question and fill in total score (00-15).

Enter 99 if the resident was unable to complete the interview.

Boston University AM-PAC™ “6 Clicks” Basic Mobility Inpatient Short Form

Please check the box that reflects your (the patient’s) best answer to each question.

How much difficulty does the patient currently have...	Unable	A Lot	A Little	None
1. Turning over in bed (including adjusting bedclothes, sheets and blankets)?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
2. Sitting down on and standing up from a chair with arms (e.g., wheelchair, bedside commode, etc.)	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
3. Moving from lying on back to sitting on the side of the bed?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4

How much help from another person does the patient currently need...	Total	A Lot	A Little	None
4. Moving to and from a bed to a chair (including a wheelchair)?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
5. Need to walk in hospital room?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
6. Climbing 3-5 steps with a railing?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4

Raw Score: _____

CMS 0-100% Score: _____

Standardized Score: _____

CMS Modifier: _____

Note: Use the AM-PAC [Basic Mobility Inpatient Short Form Conversion Table](#) to convert raw scores.

Overall Benefits

- Improved quality of life (Bach, 2022; Tipping, 2019; Zhang, 2019).
- Decreased time spent in the ICU and hospital (Hashem, 2016)
- Decreased time spent on the ventilator (Hsieh,
- Greater chance for survival after spending time on life support (Hodgson, 2015)
- D/C home sooner when compared to patients who did not receive early therapy (Young, 2019)



SOURCES

- Fazzini, B., Markl, T., Costas, C., Blobner, M., Schaller, S. J., Prowle, J., Puthuchery, Z., & Wackerhage, H. (2023). The rate and assessment of muscle wasting during critical illness: a systematic review and meta-analysis. *Critical Care*, 27(2), 1-26. <https://doi.org/10.1186/s13054-022-04253-0>
- Schefold, J. C., Wollersheim, T., Grunow, J. J., Lueidi, M. M., Z'Graggen, W. J., & Weber-Carstens, S. (2020). Muscular weakness and muscle wasting in the critically ill. *Journal of Cachexia, Sarcopenia and Muscle*, 11(6), 1399-1412. <https://doi.org/10.1002/jcsm.12620>
- National Heart, Lung, and Blood Institute (2021). Ventilator/ventilator support. <https://www.nhlbi.nih.gov/health-topics/ventilatorventilator-support>)



SOURCES

- Perkins, G. D., Mistry, D., Gates, S., Gao, F., Snelson, C., Hart, N., Camporota, L., Varley, J., Carle, C., Paramasivam, E., Hoddell, B., McAuley, D. F., Walsh, T. S., Blackwood, B., Rose, L., Lamb, S. E., Petrou, S., Young, D., Lall, R., & Breathe Collaborators (2018). Effect of protocolized weaning with early extubation to noninvasive ventilation vs invasive weaning on time to liberation from mechanical ventilation among patients with respiratory failure: the breathe randomized clinical trial. *JAMA*, 320(18), 1881–1888. <https://doi.org/10.1001/jama.2018.12282>
- Bach, C., & Hetland, B. (2022). A Step Forward for Intensive Care Unit Patients: Early Mobility Interventions and Associated Outcome Measures. *Critical care nurse*, 42(6), 13–24. <https://doi.org/10.4037/ccn2022459>
- Zhang, L., Hu, W., Cai, Z., Liu, J., Wu, J., Deng, Y., Yu, K., Chen, X., Zhu, L., Ma, J., & Qin, Y. (2019). Early mobilization of critically ill patients in the intensive care unit: A systematic review and meta-analysis. *PloS one*, 14(10), e0223185. <https://doi.org/10.1371/journal.pone.0223185>



SOURCES

- Hashem, M. D., Nelliott, A., & Needham, D. M. (2016). Early Mobilization and Rehabilitation in the ICU: Moving Back to the Future. *Respiratory care*. 61(7). <https://doi.org/10.1137/respcare.04741>
- Hodgson, C., Bellomo, R., Berney, S., Bailey, M., Buhr, H., Denehy, L., Harrold, M., Higgins, A., Presneill, J., Saxena, M., Skinner, E., Young, P., & Webb, S. (2015). Early mobilization and recovery in mechanically ventilated patients in the ICU: a bi-national, multi-centre, prospective cohort study. *Critical care (London, England)*, 19(1). <https://doi.org/10.1186/s13054-015-0924-2>
- Hsieh, S. J., Otusanya, O., Gershengorn, H. B., Hope, A A., Dayton, C., Levi, D., Garcia, M., Prince, D., Mills, M., Fein, D., Colman, S., Gong, M. (2019). Staged implementation of awakening and breathing, coordination, delirium monitoring and management, and early mobilization bundle improves patient outcomes and reduces hospital costs. *Critical Care Medicine*. 47(7). <https://doi.org/10.1097/CCM.0000000000003765>



SOURCES

- Tipping, C. J., Harrold, M., Holland, A., Romero, L., Nisbet, T., & Hodgson, C. L. (2017). The effects of active mobilization and rehabilitation in ICU on mortality and function: a systematic review. *Intensive care medicine*. 43(2). 171–183. <https://doi.org/10.1007/s00134-016-4612-4>
- Stern, A.F. (2014). The hospital anxiety and depression scale. *Occupational Medicine*. 64(5), 393–394. <https://doi.org/10.1093/occmed/kqu024>
- Young B., Moyer M., Pino W., Kung, D., Zager, E., Kumar, M.A. (2019). Safety and feasibility of early mobilization in patients with subarachnoid hemorrhage and external ventricular drain. *Neurocritical Care*. 31(1). <https://doi.org/10.1007/s12028-018-00670-2>

