

The Bedside Mobility Assessment Tool 2.0

*Effectively Assessing and
Improving Patient Mobility*

Illinois Health and Hospital Association

Occupational Safety & Workers' Compensation Symposium

Protecting Your Workers

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Educational Objectives

1. Describe complications of immobility and negative effects of bedrest - understand why mobilizing patients is important.
2. Analyze the link between safe patient handling and mobility practices, patient safety and initiatives (e.g., falls and HAIs), caregiver safety and injury prevention.
3. Explain the link between safe patient mobilization and a safer work environment for caregivers.
4. Explain the rationale behind BMAT 2.0 and each Assessment Level.
5. Outline how to perform each BMAT Assessment Level, assign a Mobility Level to patients and choose appropriate SPHM technology based on results.

Key Points

- Complications of immobility lead to patient harm including cardiovascular, respiratory and musculoskeletal deterioration; COVID-19 significantly impacts the respiratory system, resulting in weakness, difficulty breathing, fatigue and in the worst cases, acute respiratory distress syndrome (ARDS) and intubation.
- The use of unsafe manual handling, proning and transfer practices lead to healthcare provider/caregiver injuries.
- BMAT 2.0 incorporates new knowledge developed over 5+ years of BMAT 1.0 use.
- BMAT 2.0 addresses immobility using a simple functional assessment and selection of appropriate equipment to safely mobilize the patient.
- The effective use of BMAT 2.0 as part of a sustainable SPHM program is safer for caregivers and their patients.

Complications of Immobility

Almost every major system is compromised when patients are immobile



Prolonged bedrest can:

- have negative effects on body, mind & function.
- lead to a decline in skeletal muscle strength at a rate of 12% - 40% per week.
- lead to 'learnt helplessness' and relying on staff to help with even simple tasks.
- Increase the risk of depression and delirium.

COVID-19 can significantly impact the respiratory system, resulting in weakness, difficulty breathing, fatigue and in the worst cases, acute respiratory distress syndrome (ARDS) and intubation.

The risk of orthostatic hypotension is higher in patients who have been confined to bed.

Weakness and other negative effects of bedrest significantly increase a patient's risk of falling.

Prolonged pressure on skin, especially when combined with friction and/or shearing, can lead to pressure injuries.

Mobility in Acute Care

How hospitalized adults (who were previously ambulatory) spend their time:

- 13% sitting
- 4% standing or walking
- 83% in bed
 - Less than 5% are on “bed rest”

More than a third of adults aged 70 years and older are discharged from the hospital with a major, new disability that was not present before admission.

Research clearly shows that, whenever possible, patients should remain as active and mobile as they can, both while in hospital (even when confined to bed) as well as during recovery.

FALLS

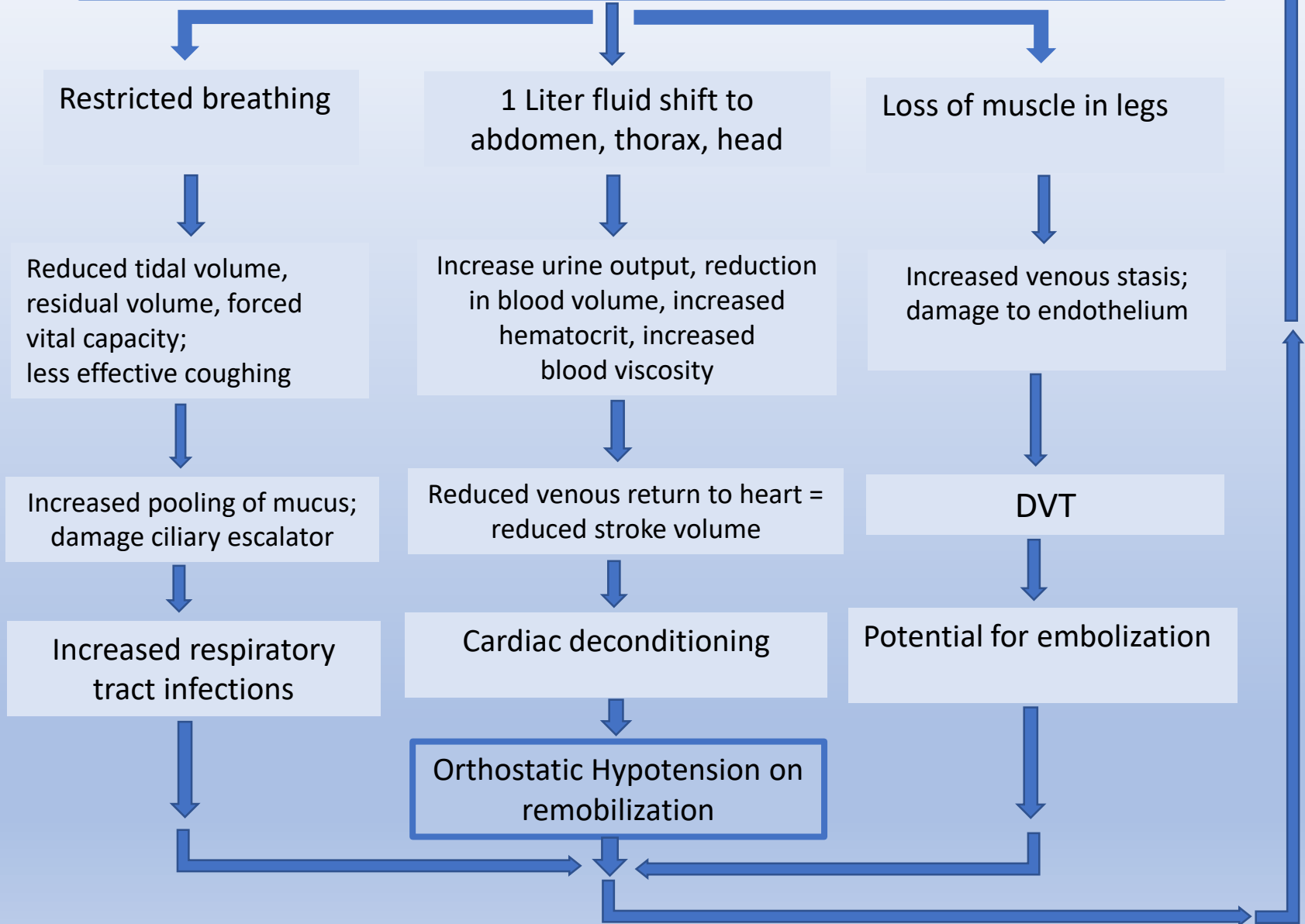
The Impact of Inpatient Falls is Staggering:

- 700,000 to 1 Million patient falls per year
- 30% - 50% of patient falls result in injury
 - Costing an average of \$14,000 per patient
- 4% - 6% result in serious injury
- 11,000 fatal falls in hospitals per year

Cardiac Causes of Falls – Three Main Categories

Neurally Mediated (reflex) – most frequent causes of syncope regardless of age	Vasovagal syncope: <ul style="list-style-type: none"> • Mediated by emotional distress: fear, pain, blood phobia • Mediated by orthostatic stress
	Situational syncope: <ul style="list-style-type: none"> • Coughing, sneezing, micturition (postmicturition) • Gastrointestinal stimulation (swallowing, defecation, visceral pain) • Post-exercise • Others (laughing, weightlifting)
	Carotid Sinus Syndrome (CSS)
	Atypical forms (without apparent triggers and/or atypical presentation)
Orthostatic Hypotension – OH or postural hypotension defined as a 20-mm Hg decline in systolic BP or a 10-mm Hg decline in diastolic BP w/in 3 minutes of assuming an upright posture; the majority of patients who exhibit OH do so within the first minute of standing	Primary orthostatic failure: <ul style="list-style-type: none"> • Pure autonomic failure, multi-system atrophy, Parkinson’s disease with autonomic failure, Lewy body dementia
	Secondary autonomic failure: <ul style="list-style-type: none"> • Diabetes, amyloidosis, uremia, spinal cord injuries
	Drug-induced autonomic failure: <ul style="list-style-type: none"> • Alcohol, vasodilators, diuretics, antidepressants, phenothiazines
	Volume depletion: <ul style="list-style-type: none"> • Hemorrhage, diarrhea, vomiting
Intrinsic Cardiac Disease	Arrhythmia as primary cause: <ul style="list-style-type: none"> • Bradycardia: sinus-node dysfunction, atrioventricular conduction disease, implanted device malfunction • Tachycardia: supraventricular or ventricular • Drug-induced bradycardia and tachyarrhythmias
	Structural: <ul style="list-style-type: none"> • Cardiac: cardiac valvular disease, acute myocardial infarction/ischemia, hypertrophic cardiomyopathy, cardiac masses (e.g., atrial myxoma, tumors), pericardial disease/tamponade • Others: pulmonary embolus, acute aortic dissection, pulmonary hypertension

SUMMARY of the Effects of Prolonged Bedrest on the Respiratory, Cardiovascular and Hematological Systems



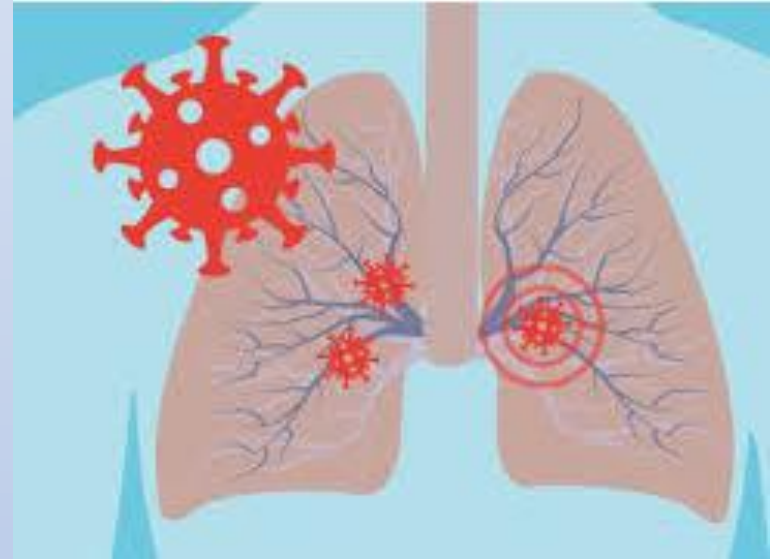
COVID-19 and Acute Respiratory Distress Syndrome

ARDS:

- First described as a distinct clinical entity in 1967
- Mortality rate continues to remain above 40-45%
 - Mortality increases with severity of ARDS
- ARDS accounts for 10% of all ICU Admissions and 23% of ventilated patients

Pathophysiology

- Multisystem syndrome triggered by traumatic and non traumatic events.
- Diffuse lung injury resulting in non-cardiogenic pulmonary edema characterized by an increase in capillary permeability and interstitial and alveolar edema.
- Profound hypoxemia
- Decreased lung compliance
- Increased intrapulmonary shunting



Ventilator-Induced Lung Injury (VILI)

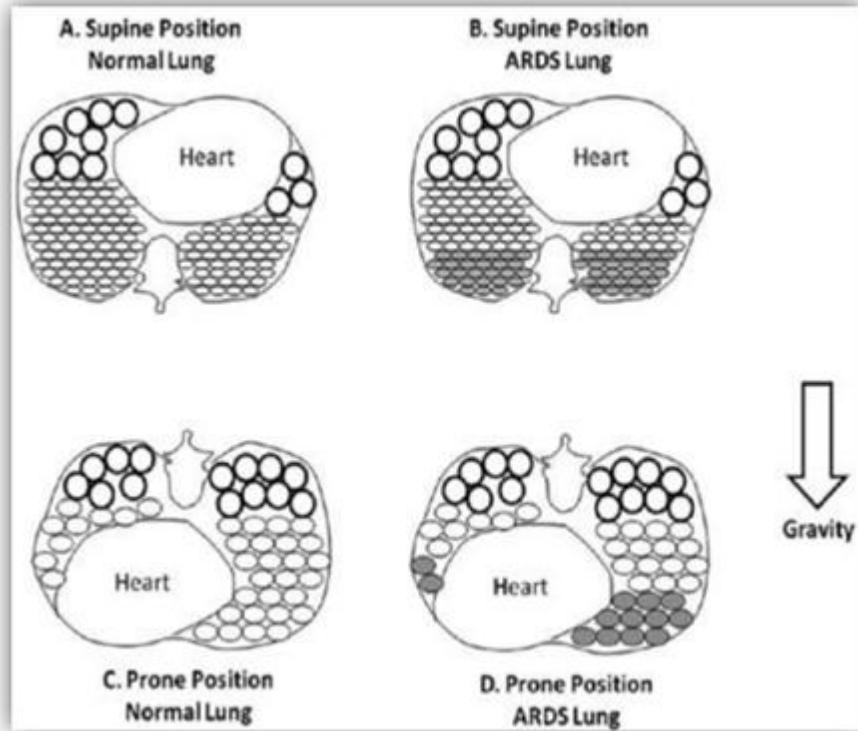
- Thought to occur as a result of over-inflation and/or from the injury produced by shear stresses. These shear stresses are caused by repetitive airspace opening and closing.
- VILI is a clinically important entity that adversely affects clinical outcomes

Current Ventilator Strategies

Protective Lung Strategies

- Low Volume/High Rate Ventilation
 - Tidal Volumes of 4-6ml/kg of predicted body weight
- Lower plateau pressures to 30 or below
- NO oscillatory ventilation
- **Prone Positioning**

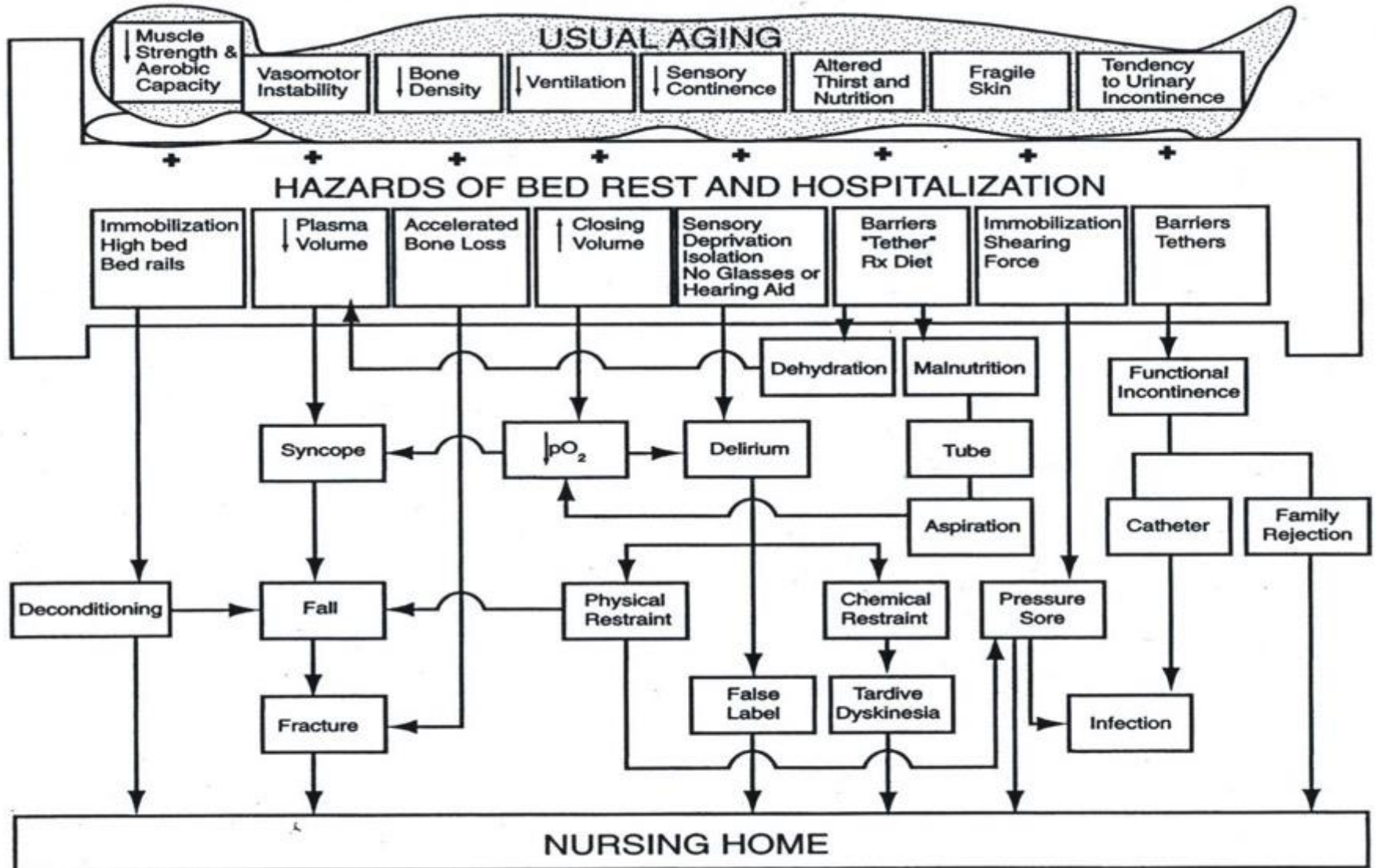
Why Proning Works



- Assists with improved ventilation-perfusion matching and keeps alveolar units open and evenly distributed
- Assists with drainage of secretions
- Improved respiratory mechanics
- Improved oxygenation

Hazards of Bed Rest

Creditor M.C. (1993). Hazards of hospitalization of the elderly. *Annals of Internal Medicine*, 118(3): 219-223.



Definition of Mobility

In the **Hospital Setting**, “MOBILITY” is more than walking and basic ambulation.

Mobility includes movement:

- in-bed
- to the edge-of-bed/side-of-bed
- up-from-bed
- out-of-bed

It can be PASSIVE or ACTIVE.

Safe Mobility includes the use of SPHM technology -

Safer for the Patient *and* Safer for the Caregiver

The **Early Recovery After Surgery (ERAS) programs** are systematic processes for pre- and post-operative care that includes early mobilization.

These programs have been shown to improve patient and facility outcomes in the ICU as well as in less critical hospital environments.

Given these positive outcomes, many hospitals have adopted house-wide mobilization efforts.

Why EARLY Mobility?

- Prevent complications associated with immobility and the negative effects of bedrest
- Research on Early Mobility:
 - Fewer cases of ventilator associated pneumonia
 - Fewer pressure ulcers
 - Fewer cases of delirium and shorter durations of delirium for those with an early mobility intervention
 - Shorter length of stay in the ICU and in the hospital
 - Fewer unplanned readmissions
 - Decreased risk of mortality

Why SPHM?

Because healthcare workers continue to be needlessly injured on the job.

According to ANA's **2011** health and safety survey:

- 62% of RNs indicated that suffering a disabling MSD was one of their top 3 safety concerns.
- 80% reported working despite frequent musculoskeletal pain.
- Nurses and nursing assistants continue to have the highest number of injuries with days away from work for any occupation.
- Many injuries are career-ending and life altering.
- The high rate of injuries among healthcare workers is a growing concern.



2013 and **2015** data:

- Healthcare workers incur 7 times the national rate of musculoskeletal disorders (MSDs; OSHA 2013)
- The majority of MSDs for healthcare workers are due to lifting or moving patients (BLS 2015)

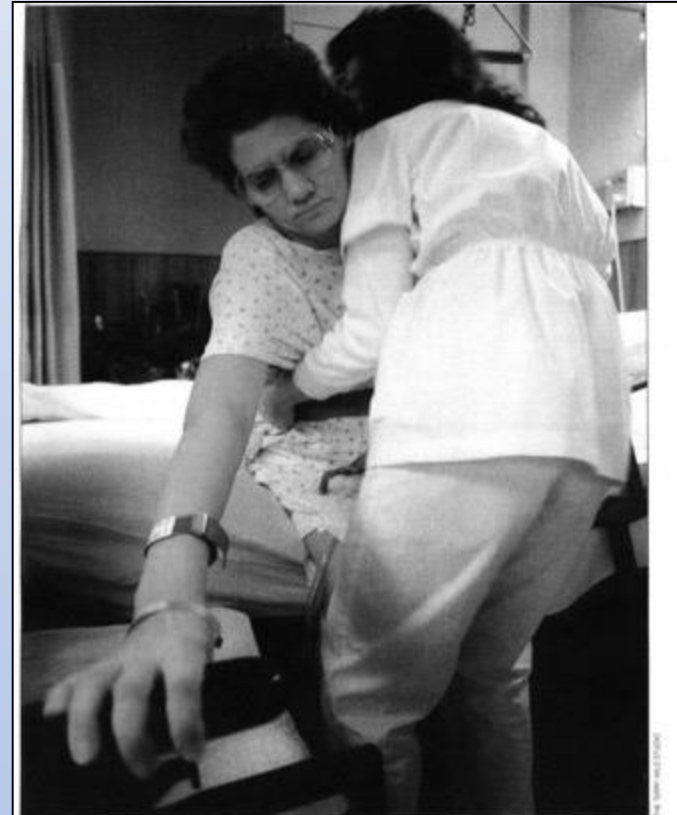
SPHM programs: Safer for Patients and for Caregivers

What Does SPHM Mean to the Caregiver?

A major area in need of improved safety is that of patient handling and mobility.

- **NIOSH recommends 35lbs as the safe lifting limit for healthcare workers “when conditions are right”** (less than 35lbs when conditions warrant)

*Every day, staff make the unconscious trade-off to take on **more personal risk** for the **immediate benefit of the patient**, to avoid interrupting others, or to avoid using specialty lifting equipment not immediately available at the bedside.*



In a study for NIOSH, nursing assistants ranked transferring wheelchair patients to and from the bed, the toilet, and the chair scale as most stressful to the lower back. In fact, the compression on the disc between the fifth lumbar and first sacral vertebrae often exceeds safety limits during those transfers.

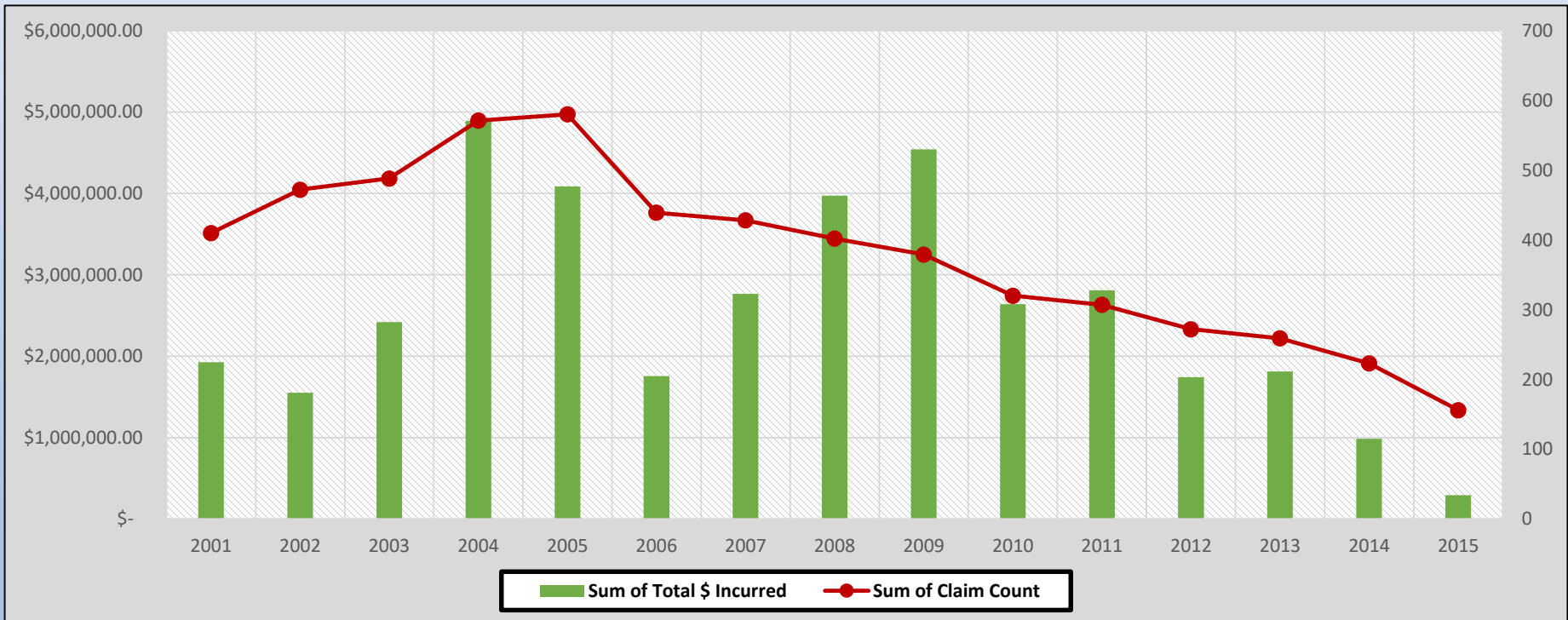
AJN / February 2003

48

Caregivers know they need to provide early mobility for their patients BUT they can't if they don't have the right equipment, processes and procedures.

ALL Claims

Table 4
 All Regional Facilities (*combined*) – 11 Hospitals
 Bar & Line (Combo) chart that Summarizes the
 Total \$ Incurred & # of **All Claim Types** by Year (2001 to 2015)



Patient Handling-related Injuries Claims Only

Table 3

All Regional Facilities (*combined*) – 11 Hospitals

Bar & Line (Combo) chart that Summarizes the

Total \$ Incurred & # of **PHI Claims** by Year (2001 to 2015)

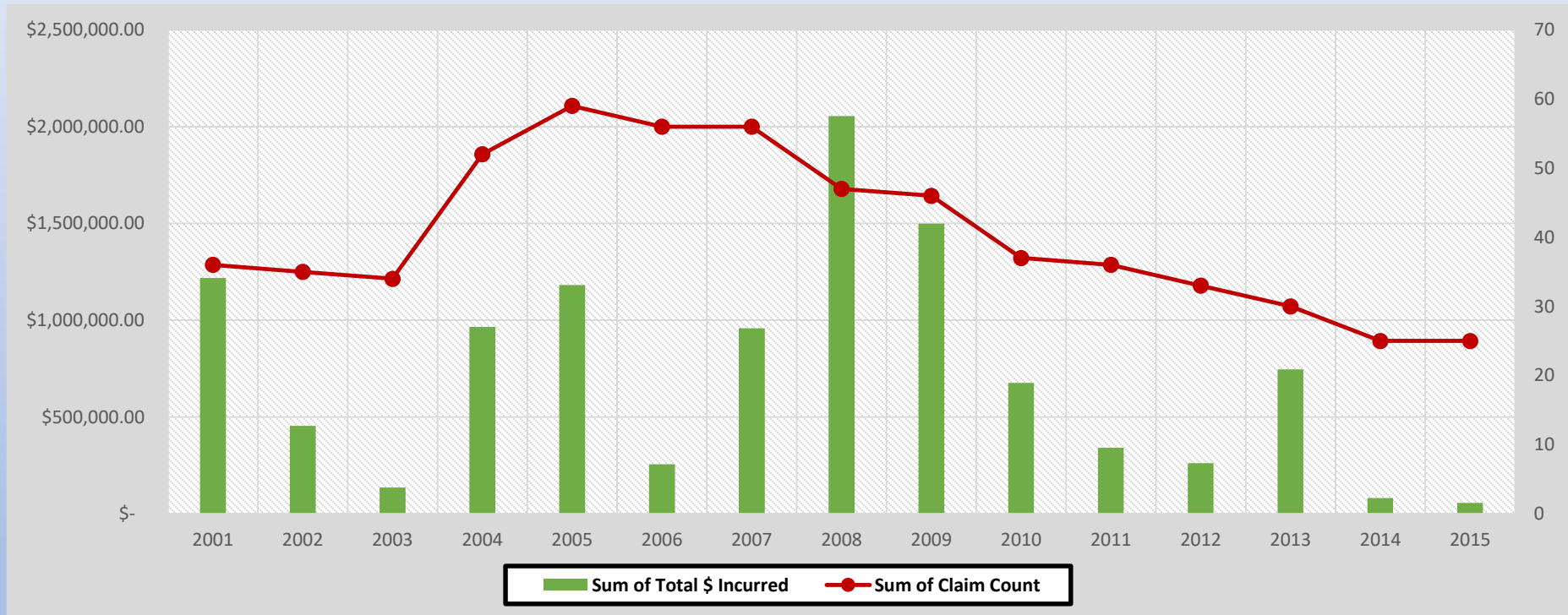


Table 3 – 11 hospitals, 2001-2015
Top 11 most frequent Patient Handling-related Injuries (PHI)

	Code and Sub-codes with Description of Cause of Injury (COI)	Number of incidents*
1.	56h: Repositioning or boosting a patient up in bed	82
2.	56p: Assisting a patient during a controlled descent or assisted fall	74
3.	56a: Assisting a patient during a bed to chair transfer	67
4.	56b: Transferring a patient to or from a toilet	28
5.	56i: Transferring or assisting a patient to the side or edge of bed	26
6.	56r: Repetitive patient handling tasks** - no further description provided. Repetitive transferring/repositioning/turning patients	20
7.	56v: Transferring a patient from vehicle or assisting with a vehicle extraction	19
8.	56c: Assisting a patient during a bed to stretcher or lateral transfer – laterally transferring a patient to and from: bed to stretcher, gurney, cart	15
9.	56d: Transferring a patient from stretcher or from a wheelchair to exam table – laterally transferring patient to and from: stretcher, gurney, cart to exam table	15
10.	56k: Performing a floor retrieval or patient rescue from the floor	13
11.	56s: Assisting a patient during showering or bathing	7

With SPHM

Nurses report:

- They are more efficient.
- Feel they are providing optimal care for all of their patients and going home without their backs hurting.
- They need fewer caregivers (typically only 3 versus 5-8) and less PPE to prone patients.

Their hospital's SPHM program has improved their ability to provide the type of care they want to provide and allows them to take better care of themselves and their co-workers.

The Next Vital Sign



Patient Mobility

Early Mobility and SPHM

- The *RIGHT SPHM EQUIPMENT* at
- the *RIGHT TIME* in
- the *RIGHT PLACE* supported by
- the *RIGHT ASSESSMENT, PROCESSES and PROCEDURES*
- with *EXPECTATIONS* clearly communicated by
NURSING LEADERSHIP and PHYSICIANS
- Leads to **Standardized Care and Safer Practice**

Safer for Patients
Safer for Caregivers –
our most valuable resource

Executive Summary – validating BMAT at Banner Health

- Challenges addressed
 - Need for a quick bedside mobility tool in EMR
 - Linking mobility, safe patient handling and falls prevention
 - Having adequate SPHM equipment at all facilities
- Steps/process created
 - Define, Design and Implement process used
- Key players involved
 - System Falls/SPHM Team Leads and Administrators
 - Clinical Informatics
 - Research RN and team
 - Frontline SPH Specialist, PT and RN manager
- Outcomes achieved
 - BMAT validated and built in Cerner
 - BMAT rolled-out system-wide 8/20/13
- Success factors/pre-requisites
 - Adequate support to take on this change in practice and address all components needed to sustain a SPHM and fall prevention program

Why BMAT?

Results from an early BMAT pilot, the BMAT validation project, and findings reported by BMAT users during the past 5+ years include:

- **Standardizing processes and procedures** leads to more consistent use of SPHM equipment
- **Identifying gaps**, such as:
 - The need for more unit-specific SPHM equipment
 - Purchasing appropriate amounts and types of equipment based on BMAT levels in that department
- A **decrease in caregiver injuries** associated with increased use of SPHM equipment; **decrease in use of unsafe, outdated manual handling** and transfer techniques.
- Nurses reporting **increased awareness** of their patients' mobility challenges and changing needs throughout a shift; **earlier identification of decline**
- **Decrease in patient falls**
- Earlier and **appropriate referrals to PT**
- A focus on the need for **EARLY MOBILITY** programs and appropriate interventions leads to **improved discharge**

BMAT

- Validated
- Quick: typically takes less than 2 minutes to complete
- Nurse-driven: typically completed and documented in the EMR by RN on admission, once per shift and with any significant change in patient's status
 - In addition, some hospitals also use as a screening tool or recheck completed by CNAs and other clinical staff.
- Linked to SPHM interventions and technology based on patient's real-time status and safety needs
- Addresses ANA's SPHM Interprofessional National Standard 6: Integrate Patient-Centered SPHM Assessment, Plan of Care, and Use of SPHM Technology

Publications

- ANA's American Nurse Journal, July 2020
**The Bedside Mobility Assessment Tool 2.0:
Advancing patient mobility**

Boynton T, Kumpar D, VanGilder, C

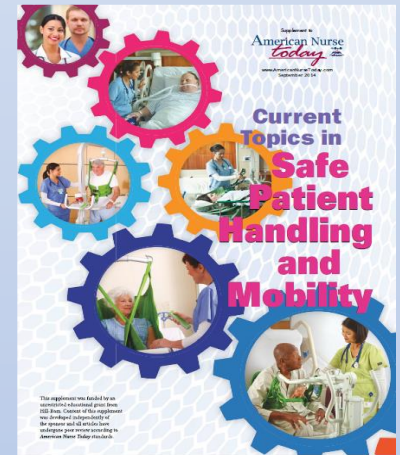
The authors describe BMAT 2.0 (revised from BMAT 1.0), which addresses immobility using a simple functional assessment and selection of appropriate equipment to safely mobilize and progress the patient.



- American Nurse Today, September 2014
Current Topics in Safe Patient Handling and Mobility
Implementing a Mobility Assessment Tool for Nurses

Boynton T, Kelly L, Perez, A

The authors describe a nurse-driven tool that can be used at the bedside to evaluate a patient's mobility level and guide decisions about patient lifts, slings, and other technology.



- American Journal SPHM, September 2014
**Banner Mobility Assessment Tool for Nurses:
Instrument Validation**

Boynton T, Kelly L, Perez A, Miller M, An Y, Trudgen C

The purpose of this study was to validate a tool created to assess mobility in the hospitalized patient.

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BANNER MOBILITY ASSESSMENT TOOL FOR NURSES: INSTRUMENT VALIDATION

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Why BMAT?

Skeptic

- Example: Based on evaluation day before, PT indicates patient is Min Assist x1; family said patient was independently walking using cane; CNA arrives to transfer patient from bed to chair and notes that patient's status has changed and the patient states he's "feeling weak."
- Doubt until demonstrated:
 - How is the patient doing **right now**?
 - What is the patient's **current** mobility status and **SPHM needs right now**?

Avoid "Errors of omission"

Links to **caregiver injuries, complications associated with immobility and falls**

- CNAs most injured
- Caregiver injuries during controlled descents/assisted falls
- Inconsistent use of SPHM equipment; no standardized practice, protocols and procedures
- Patients-of-size not mobilized; caregivers injured when they attempted to assist patients-of-size.
- **Identified need for a tool that can be easily used at the bedside/chairside to determine real-time/current status and SPHM needs.**

Pilot on Med/Surg unit with high rate of patient falls and RN and CNA injuries associated with patient handling and mobility tasks.

Outcomes of this pilot study using the BMAT:

- Decrease in patient falls associated with consistent use of SPHM equipment
- Decrease in staff injuries associated with consistent use of SPHM equipment
- Getting patients up and OOB early and often
- Mobility program led by nursing; not just relying on PT/OT to move, transfer and mobilize patients

Why BMAT?

Understanding, acknowledging and addressing the fact that the mobility status and needs of patients can change during a shift is important.

- Relying on what the patient or family reports or on a PT eval done the day before or in the morning, isn't effective.
- **Verify! Be cautious!**

BMAT helps with early identification of decline/deterioration.

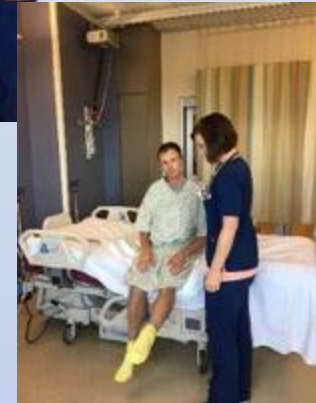
RN statements:

- "I was surprised by how much I can tell about my patient based on their ability to cross their body and shake my hand or how well they straighten their leg and bend their ankle."
- "I'm more cautious when I ask a patient to stand and walk. I'm more aware of how taking the patient through the BMAT levels impacts the risk of orthostatic hypotension and falls."
- "BMAT is a good exercise that increases both my awareness and my patient's awareness of how they're doing right now."
- "We're doing the BMAT and using our lifts consistently, and the falls on our unit have gone way down. We've really standardized our progressive mobility program."
- "When I go home now, my back doesn't hurt."

4 Assessment Levels

Is the patient able to:

1. Sit and Shake
2. Stretch (and Point)
3. Stand
4. Step
(March-in-place, Advance step and return)



1.

2.



3.

4.

Assessment Level 1 - Sit and Shake

Sit and Shake:

Assessment of: sitting balance; upper extremity and core strength; ability to sit upright without getting tachycardic, diaphoretic and/or light-headed; i.e. sitting tolerance; cognitive ability to follow directions.

Description of Test:

From a semi-reclined position or at EOB ask patient to sit upright then reach across midline and shake hands with the caregiver. Repeat with other hand. (Patients feet may either be flat on floor or dangling.)

Safe Mode: Use sling and lift to assist to side of bed (e.g., sternal precautions, abdominal incision) or bed in chair position, then complete “Sit and Shake.”

Pass/Able to Perform = Progress to Assessment Level 2, “Stretch”

Fail/Unable to Perform = Mobility Level 1 Patient

As appropriate, follow Critical Care early, progressive mobility program to advance.

NOTE: *If the patient is on strict bedrest/has bedrest orders, is hemodynamically unstable or fails ICU/CCU physiologic stability and readiness parameters, **you do not need to complete Assessment Level 1; i.e. it's apparent that the patient cannot pass “Sit and Shake.”** Until their status changes, **this patient is automatically a BMAT Mobility Level 1 Patient; i.e., they are unable to perform “Sit and Shake” at this time – they are unable to participate.***

Goals for Mobility Level 1 Patients:

Avoid complications of immobility, engage and strengthen postural muscles, pass “Sit and Shake” and progress to Level 2.

Automatically

Mobility Level 1 Patient

If unable to perform or pass “Sit and Shake”

For example:

- Has strict bedrest or bedrest orders
- Hemodynamically unstable
- Fails ICU/CCU physiologic stability and readiness parameters
- RASS -5 to -3 (cannot participate)
- PMP Level 1 and Level 2 patients

Goals for BMAT **Mobility Level 1 Patients:**

Avoid complications of immobility and prolonged bedrest, engage and strengthen postural muscles, when appropriate perform and pass “Sit and Shake” and progress to Assessment Level 2.

These are NOT Mobility Level 0/“Zero” Patients!!

Dependent BMAT Mobility Level 1 patients require frequent, safe mobilization in order to prevent or limit complications associated with prolonged bedrest and immobility.

For example: use SPHM practices for boosting, turning, proning and follow early, progressive mobility program protocols and procedures.

Zero gives the impression that these patients require no mobilization.

Don't use ZERO!

Assessment Level 2 – Stretch

Stretch and Point:

Assessment of: leg strength in prep for weight bearing; control and strength of leg muscles, including quads and lower leg muscles; foot drop; cognitive ability to follow directions.

Description of Test:

While sitting upright unsupported, extend one leg and straighten knee (knee remains below hip level) and point toes/pump ankle between dorsiflexion/plantar flexion x 3 repetitions. (Patients feet may either be flat on floor or dangling.)

Safe Mode: Use sling and lift (mobile or overhead/ceiling), bed in Fowler's or chair position to complete "Stretch."

Pass/Able to Perform = Progress to Assessment Level 3, "Stand"

Fail/Unable to Perform = Mobility Level 2 Patient

Goals for Mobility Level 2 Patients:

Avoid complications of immobility, engage and strengthen postural and lower extremity muscles, assist with fluid shifts, pass "Stretch" and progress to Level 3.

Assessment Level 3 - Stand

Stand:

Assessment of: ability to shift forward, raise buttocks and rise smoothly; balance and strength to rise; standing tolerance for up to 1 minute, which allows for fluid shifts and other compensatory changes to occur; static standing balance; cognitive ability to follow directions

Description of Test:

With feet flat on floor about shoulder width apart, shift forward, raise buttocks/rise and stand upright for up to 1 minute (if there is any concern regarding orthostatic hypotension, postural intolerance or syncope).

Safe Mode: Use sit-to-stand lift and vest/sling or ambulation vest/pants and lift.

Always default to using Safe Mode if concerned regarding orthostatic hypotension/syncopal event or other compensatory changes.

Pass/Able to Perform = Progress to Assessment Level 4, “Step”

Fail/Unable to Perform = Mobility Level 3 Patient

Goals for Mobility Level 3 Patients:

Strengthen muscles in upright position, assist fluid shifts, avoid falls, pass “Step” and progress to Level 4. If using a walker, cane, crutches or prosthetic leg(s) progress safe use and independence with aid; assure that aid is always easily accessible and used for transfers in-room and during hallway ambulation.

Assessment Level 4 - Step

Step:

Assessment of: pre-ambulation weight shift abilities; further assessment of leg strength; dynamic standing balance, which further allows for fluid shifts and other compensatory changes to occur; cognitive ability to follow directions

Description of Test:

1. March- or step-in-place taking small steps (not high-marching steps) x 3 repetitions; if able to pass then
2. Step forward with one foot, weight-bear/shift weight onto foot and return foot to starting position; repeat with other foot.

Safe Mode: Use ambulation vest/pants and lift; consider use of bed in chair position and egress from end-of-bed.

Always default to using Safe Mode if concerned regarding orthostatic hypotension/syncopal event or other compensatory changes.

Pass/Able to Perform = Continue to address medical issues and stability; Review Discharge Goals; Post-acute Discharge Planning

Fail/Unable to Perform = **Mobility Level 4 Patient**

Goals for Mobility Level 4 Patients: Pass “Step,” maintain or improve mobility (e.g., increase distance/endurance with hallway ambulation) and avoid falls; progress through Discharge Planning. If using a walker, cane, crutches or prosthetic leg(s) consistent with best practice and safe use guidelines, progress independence with use of aid.

BMAT 2.0 – Safe Mode

- Test in Safe Mode
- Patient Care Tasks in Safe Mode
- Progress and Strengthen in Safe Mode

BMAT 2.0, which takes about 2 minutes to complete, typically is performed by nurses on patient admission, once per shift, and with any significant change in a patient's status.

It empowers caregivers to ACT:

- **Assess** for mobility level in “safe mode.”
- **Coordinate** strategies for strengthening.
- **Target** the right piece of equipment to advance mobility.

4 Assessment Levels – Testing in SAFE MODE

Is the patient able to:

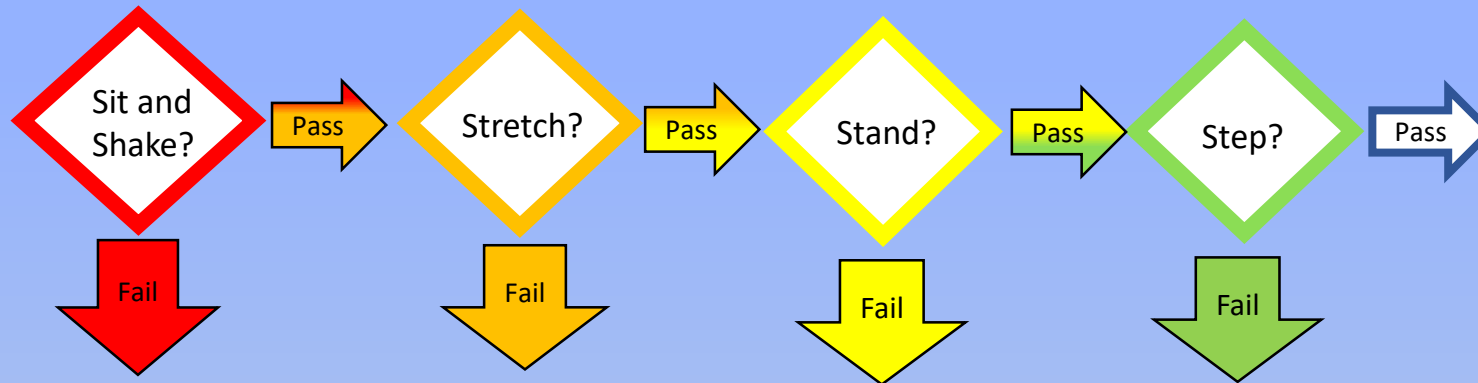
1. Sit and Shake
2. Stretch
3. Stand
4. Step (march in place, advance step and return)



Bedside Mobility Assessment Tool 2.0 (BMAT 2.0)

BMAT 2.0 helps the caregiver to *assess for mobility in safe mode, coordinate strategies for strengthening, target the right piece of SPHM equipment to advance mobility.*

Consider: What is the patient's pre-admit mobility and functional status, and what is used to determine this?



Mobility 1 Patient

- Unable to perform "Sit and Shake."
- Complete tasks (e.g., repositioning/turning) using SPHM practices.
- **Set goals for passing Sit and Shake, for strengthening and progressing.**

Mobility 2 Patient

- Able to perform "Sit and Shake," but unable to perform "Stretch."
- Complete tasks (e.g., bed to chair transfer) using SPHM practices.
- **Set goals for passing Stretch, for strengthening and progressing.**

Mobility 3 Patient

- Able to perform "Sit and Shake," and "Stretch," but unable to perform "Stand" with or without aid (e.g., walker).
- Complete tasks (e.g., bed to commode transfer) using SPHM practices.
- **Set goals for passing Stand, for strengthening and progressing.**

Mobility 4 Patient

- Able to perform "Sit and Shake," "Stretch," and "Stand," but unable to perform "Step" with or without aid (e.g., walker).
- Complete tasks (e.g., chair to toilet transfer) using SPHM practices.
- **Set goals for passing Step, for strengthening and progressing.**

For All Four Assessment Levels: consider how to test or complete the assessment in **safe mode**.

For Mobility Levels 1-4: consider how to complete tasks (e.g., repositioning/turning or bed to chair/bed to toilet transfer) using SPHM techniques/practices, as well as, how to strengthen and progress the patient using SPHM techniques/practices, and avoid complications of immobility.

Progress through Discharge Planning – Mobility Level 5

Continue to complete BMAT per protocol; with any change in status adjust Mobility Level and goals.

Continue to address medical issues and stability as needed while improving or maintaining mobility status; i.e., evaluate other medical conditions and treatment plans prior to physician release.

GOALS:

Prior to discharge return to previous level of function. Mobility goals may include improve balance, standing tolerance, endurance and confidence with walking; independence and confidence with aid(s); e.g., walker, cane, crutches, prosthetic(s).

Compare pre-admit status to discharge status; i.e., previous functional status to post-acute functional status.

Using a multi-disciplinary approach, review rehab goals - have they been met?

Review discharge goals and guide discharge recommendations; appropriate post-acute discharge destination and equipment needs.

Review risk of falling and risk of readmit; include in discharge planning.

Case Study¹

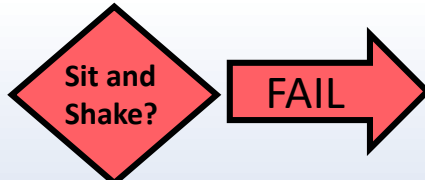
Mr. TM

- 75 y/o male
- Medical hx: diabetes mellitus, coronary artery disease, atrial fibrillation, COPD, iron deficiency anemia, chronic LB pain
- Admitted to university hospital for syncope
- Prior to admission: lived alone, independent with self-care; ambulated with a rolling walker
- Upon admission, found to have heart failure exacerbation
- Had a 3-week hospital course complicated by pneumonia with bacteremia, pulmonary embolism, cellulitis, and UTI; was generally confined to bed and attached to multiple tethers
- Received sporadic PT
- On day 18, he was being readied for discharge, when noted he could not sit up without assistance; discharge was delayed
- Subsequent evaluation resulted in transfer to a SNF on day 21
- At time of DC to the SNF, he required a two person assist to transfer OOB, and was unable to ambulate for more than two steps

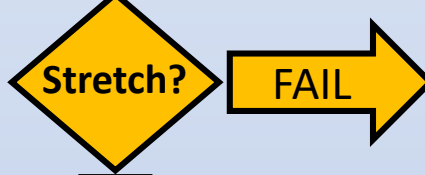
1. Wald, H. L., Ramaswamy, R., Perskin, M. H., Roberts, L., Bogaisky, M., & Suen, W. (2018). The Case for Mobility Assessment in Hospitalized Older Adults: American Geriatrics Society White Paper Executive Summary. *Journal of the American Geriatrics Society*, 67(1)

What equipment will you use?

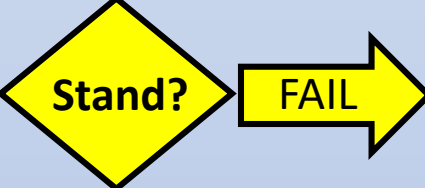
- How will you help every patient avoid complications of immobility?
- How will you help patients to progress; e.g., pass “Sit and Shake” and progress to “Stretch,” to “Stand,” to “Step?”
- How will you incorporate BMAT and SPHM into your early/progressive mobility program, including use for proning?
- How will you ensure your mobility program covers patients on every unit across the continuum of care?



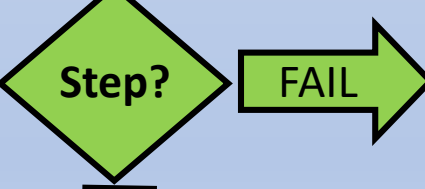
Mobility Level 1
 Unable to pass "Sit and Shake"
 Goals: Avoid complications of immobility, engage and strengthen postural muscles, pass "Sit and Shake" and progress to Level 2.



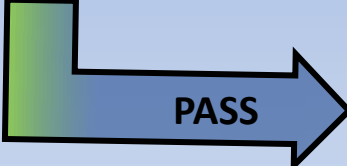
Mobility Level 2
 Able to "Sit and Shake" but unable to pass "Stretch"
 Goals: Avoid complications of immobility, engage and strengthen postural and lower extremity muscles, assist with fluid shifts, pass "Stretch" and progress to Level 3.



Mobility Level 3
 Able to "Sit and Shake" and "Stretch" but unable to pass "Stand"
 Goals: Strengthen muscles in upright position, assist with fluid shifts, pass "Stand" and progress to Level 4.
 Consistent with best practice, use walker, cane, crutches, prosthetic leg(s) to evaluate standing tolerance and to progress to "Step."



Mobility Level 4
 Able to "Sit and Shake," "Stretch" and "Stand" but unable to pass "Step"
 Goals: Improve standing tolerance and endurance with stepping and weight-shifts, balance and ambulation, pass "Step;" avoid falls; consider mobility, functional status, and discharge goals. Use walker, cane, crutches or prosthetic leg(s) consistent with best practice/safe use.



Mobility Level 5/4AP/PROGRESS though Discharge Planning:
 Able to "Sit and Shake," "Stretch," "Stand" and "Step." Goals: While improving/maintaining mobility, continue to address medical issues and stability; avoid falls; compare pre-admit status to discharge status; review discharge goals and guide discharge recommendations; appropriate post-acute discharge destination and equipment needs.

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BMAT 2.0 - Examples of Equipment Options to Consider for Patient Care and/or to Strengthen and Progress

Mobility Level 1 Patient



Mobility Level 2 Patient



Mobility Level 3 Patient








Mobility Level 4 Patient



Progress through Discharge Planning; avoid falls; maintain or increase endurance



BMAT 2.0 and Critical Care Progressive Mobility® Program (PMP)

PMP Initial Patient Assessment* Assess patient's mobility levels within 8 hours of admission to the ICU and reassess at least every shift.		PMP Level 1: BREATHE Patient Assessment: RASS -5 to -3 (e.g., cannot participate)	PMP Level 2: TILT Patient Assessment: RASS > -3 (e.g., opens eyes; may have profound weakness)	PMP Level 3: SIT Patient Assessment: RASS > -1 (e.g., weak but may move arms/legs independently)	PMP Level 4: STAND Patient Assessment: RASS > 0 (e.g., weak but may tolerate increased activity)	PMP Level 5: MOVE Patient Assessment: RASS > 0 (e.g., weak but may tolerate increased activity)						
Start at Level 1 if the patient meets any of these criteria or skip to level 2.												
PaO ₂ /FiO ₂	< 250	Activities <ul style="list-style-type: none"> Maintain HOB ≥ 30° q2hr turning Consider CLRT PROM 2x/day Up to 20° reverse T-berg/tilt table w LE exercises – min 15 mins/max 60 mins, 1x/day 		Activities <ul style="list-style-type: none"> Maintain HOB ≥ 30° q2hr turning PROM/AROM 3x/day Up to 20° reverse T-berg/tilt table w LE exercises – min 15 mins/max 60 mins 3x/day Legs dependent 15-20 mins, 3x/day PT consult, 1x/day 		Activities <ul style="list-style-type: none"> Maintain HOB ≥ 30° q2hr turning (assisted) AROM 3x/day Encourage ADLs as tolerated Bed in full chair position (footboard on) 60 mins, 3x/day Dangling as tolerated PT/OT actively involved, 1x day 		Activities <ul style="list-style-type: none"> Maintain HOB ≥ 30° q2hr turning (self/assisted) AROM 3x/day Encourage ADLs as tolerated Bed in full chair position (footboard on) 60 mins, 3x/day Stand attempts, if patient can move leg against gravity (use sit-to-stand lift), 3x/day Pivot to chair, it tolerates partial weight bearing, 2x/day PT/OT actively involved, 1x day 		Activities <ul style="list-style-type: none"> Maintain HOB ≥ 30° q2hr turning (self/assisted) AROM 3x/day Encourage ADLs as tolerated Patient stands/bears weight > 1 min, 3x/day Patient marches in place, 3x/day Ambulate to bedside chair to achieve OOB (use a patient lift), 3x/day PT/OT actively involved, 1x day 		
Positive End-Expiratory Pressure (PEEP)	≥ 10 cmH ₂ O	Move to Level 2 When Patient <ul style="list-style-type: none"> Has acceptable oxygenation/hemodynamics Tolerates q2hr turning Tolerates HOB >30° or up to 20° rev T-berg 		Move to Level 3 When Patient <ul style="list-style-type: none"> Tolerates AA exercises 2x/day Tolerates LE ex against footboard/up to 20° reverse T-berg Tolerates legs dependent/HOB 45° 		Move to Level 4 When Patient <ul style="list-style-type: none"> Tolerates increasing AA exercise in bed Actively assists w q2hr turning or turns independently Tolerates full chair position 3x/day 		Move to Level 5 When Patient <ul style="list-style-type: none"> Can successfully comply w all activities Tolerates trial periods of full chair position (footboard off/feet on the floor) Tolerates partial weight bearing stand and pivots to chair 		Continue to ambulate progressively longer distances as tolerated until patient consistently participates and moves independently		
O ₂ Saturation	< 90%											
Respiratory Rate (RR)	Not within 10-30 per minute											
Cardiac Arrhythmias or Ischemia	New onset											
Heart Rate (HR)	<60 or > 120 beats/min.											
Mean Arterial Pressure (MAP)	< 55 or >140 mm Hg											
Systolic Blood Pressure (SBP)	< 90 or > 180 mm Hg											
Vasopressor Infusion	New or increasing											
Richmond Agitation Sedation Scale (RASS)	< -3											
												
PMP Assessed to Level 1 or 2		PMP Progress to Level 2		PMP Progress to Level 3		PMP Progress to Level 4		PMP Progress to Level 5		PMP End Protocol		
*BMAT Mobility Level 1 = PMP Levels 1 and 2; i.e., unable to perform or pass "Sit and Shake" at this time. Use appropriate SPHM equipment and practices to avoid or limit complications of immobility. Note: Automatically BMAT Mobility Level 1 if strict bedrest/bedrest order, hemodynamically unstable, fails CCU/ICU physiologic stability and readiness parameters, RASS -5 to -3; i.e., you do not need to try to complete "Sit and Shake" at this time. Goals include: Progress and strengthen to Pass "Sit and Shake"		*BMAT Mobility Level 2 Use SPHM as needed; Strengthen to pass "Stretch" and avoid complications of immobility		*BMAT Mobility Level 3 Use SPHM as needed; Strengthen to pass "Stand" and avoid complications of immobility		*BMAT Mobility Level 4 Use SPHM as needed; Strengthen to pass "Step" and avoid complications of immobility; e.g., falls		Mobility Level 5: Pass ALL 4 = USE SPHM as needed; Step-down unit or DC				

*Complete BMAT Assessment on admission, at least once per shift and with any significant change in patient's status.

FIGURE 1: EXAMPLE OF SUPPORT TOOL

Bedside Mobility Assessment Tool 2.0 (BMAT 2.0) FLOWCHART © 2020

ASSESSMENT LEVELS 1 through 4
Based on observation, **can the patient:**

Patient Care Tasks and Strengthening in SAFE MODE
SPHM Equipment to Consider¹ for patient care and/or strengthening
NOTE: Consult with PT/OT per facility protocol

Perform/Pass
1. SIT and SHAKE?* NO
Sit and Shake: From semi-reclined position or at EOB, ask patient to sit upright for up to 1 minute (if there is any concern regarding orthostatic hypotension or postural intolerance); then reach across midline and shake hands with caregiver – repeat with other hand. (Patient’s feet may either be flat on floor or dangling.)
*****Test in Safe Mode:** Use sling and lift to assist to side of bed (e.g., sternal precautions, abdominal incision) or bed in chair position, then complete “Sit and Shake.”

YES

MOBILITY LEVEL 1 Patient
Goals: Avoid complications of immobility, engage and strengthen postural muscles and progress to Level 2.
1) Edge of Bed (EOB) dangling with sling and lift: work on sitting balance and reaching across midline; perform calf pump exercises
2) Bed in Fowler’s or chair position: sitting supported or unsupported to cross midline and shake hands; also perform calf pump exercises
3) Lift and repositioning sheet: for boosting and turning
4) Lift and multistraps: for turning, limb holding, and proning
5) Lift and sling: for bed to chair/commode transfer
6) Friction Reducing Device (FRD): for PROM/AROM exercise, proning
***Unable to Perform (e.g. RASS -4) = Mobility Level 1 Patient**
For ICU/CCU patients: follow Critical Care Early/Progressive Mobility Program protocol to advance through BMAT Assessment Levels. See “BMAT 2.0 and Critical Care Progressive Mobility Program (PMP)” chart for additional information and use of bed features.

Perform/Pass
2. STRETCH and POINT? NO
Stretch: While sitting upright unsupported, extend one leg and straighten knee (knee remains below hip level) and **point toes/pump ankle** between dorsiflexion/plantar flexion x 3 repetitions (Patient’s feet may either be flat on floor or dangling.)
*****Test in Safe Mode:** Continue to use sling and lift (mobile or overhead/ceiling), bed in Fowler’s or chair position to complete “Stretch.”

YES

MOBILITY LEVEL 2 Patient
Goals: Avoid complications of immobility, engage and strengthen postural and lower extremity muscles, assist with fluid shifts and progress to Level 3.
1) FRD: partial squats and leg AROM exercises – bed flat or tilt position
2) Lift and repositioning sheet: boosting and turning
3) Lift and multistraps: limb holding or turning
4) Lift and sling: bed to chair/toilet transfer
5) In bed: perform additional calf pump exercises
6) Consider capacity to weight-bear through LEs and use powered or non-powered sit-to-stand lift/aid for transfers.¹
7) Consider bed features

Perform/Pass
3. STAND? NO
Stand: With feet flat on floor about shoulder width apart, shift forward, raise buttocks/rise and stand upright for up to 1 minute (if there is any concern regarding orthostatic hypotension, postural intolerance or syncope).
*****Test in Safe Mode:** Use sit-to-stand lift and vest/sling, or ambulation vest/pants and lift. As needed, use walker, cane, crutches or prosthetic leg(s) consistent with best practice and safe use guidelines.

YES

MOBILITY LEVEL 3 Patient
Goals: Strengthen muscles in upright position, assist fluid shifts, avoid falls and progress to Level 4.
1) Sit-to-stand lift with vest/sling: stand for 1-2 minutes; shift weight from one foot/leg to the other, 2 – 3 deep breaths
2) Squats using FRD with bed in tilt position
3) Lift and multistraps: limb holding
4) Powered or non-powered sit-to-stand lift/aid for bed to chair/toilet transfers (e.g., quick night-time transfer to and from toilet)
5) If using aid (walker, cane, crutches, prosthetic), after standing with sit-to-stand lift, work on standing with aid.

Perform/Pass
4. STEP? NO
Step: 1) March- or step-in-place taking small steps (not high-marching steps) x 3 repetitions; if able to pass then 2) Step forward with one foot, weight-bear/shift weight onto foot and return foot to starting position; repeat with other foot.
*****Test in Safe Mode:** Use ambulation vest/pants and lift; consider use of bed in chair position and egress from end-of-bed. As needed, use walker, cane, crutches or prosthetic leg(s) consistent with best practice and safe use guidelines.

YES

MOBILITY LEVEL 4 Patient
Goals: Improve standing tolerance and endurance with stepping and weight-shifts, balance and ambulation; progress to Level 4AP/Level 5; avoid falls; consider mobility, functional status, and discharge goals.
1) Lift and ambulation vest/pants for standing, stepping-in-place, weight-shifting/balance activities, and walking
2) Set distance goals to improve endurance and confidence with lift and without lift after passing “Step.”
3) If using aid (walker, cane, crutches, prosthetic) to pass “Step,” assure that aid is always easily accessible and used for transfers in-room and during hallway ambulation.

Performed/Passed ALL 4 = 4AP**
MOBILITY LEVEL 5 Patient

If you observe the patient walking, you may choose to document that they are a **4AP/Mobility Level 5 Patient after considering Fall Risk and other factors as

Goals:

- Continue to complete BMAT per protocol; with any change in status adjust Mobility Level and goals as needed.
- While improving/maintaining mobility, continue to address medical issues and stability as needed; evaluate other medical conditions/treatment plan prior to physician release.
- Mobility goals may include: independence with bed mobility and transfers; improve balance, standing tolerance, endurance with walking; independence with aid(s) - walker, cane, crutches, prosthetic(s).

Multidisciplinary approach:

- Compare pre-admit status, including ability to perform ADLs, to discharge status; i.e., previous level of function (PLOF) compared to post-acute functional status; review rehabilitation goals – have they been met?

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Summary

1. Failing to adequately address complications of immobility leads to patient harm.
2. Lack of or limited SPHM practices and use of outdated manual handling practices leads to caregiver harm and/or errors of omission (i.e. failure to mobilize patients early and often).
3. The use of the BMAT 2.0 in conjunction with comprehensive and standardized SPHM practices improves safety for both patients and caregivers.
4. Use of consistent standardized SPHM practices protects your healthcare workers by ensuring a safe work environment.

Questions or Additional Info

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