Incorporating SPHM into Acute / Subacute Physical Therapy Treatments

April 9, 2025

Know Your Beds!

- Trendelenburg / Reverse Trendelenburg – What angle does the bed get to for each? is it measured by the bed? Measure with a goniometer if not.
- How does the head of the bed, feet of the bed rise up – independently of one another, same rate, or head faster than feet? How is it measured? You measure the angle if not measured by the bed.
- Does your bed allow pt to exit the bed from a full seated or standing position? How do the railings move on the bed?
- What kind of mattress is in the bed? Can the bed be put into max inflate for more support?
- Have you gotten in the bed and felt all of the functions that your patient will experience?
- Measure the lowest height that the bed frame / mattress gets to – measuring the point the patient is standing from.

Air Assisted Devices

- What is the width of the air mattress? Where are the handles on the mattress and where do they line up with the pt's body? What is the length of the mattress?
- Air canister – Is it variable speed or one speed? Variable speed allows you to manipulate how much assistance you offer your patient with movement. The more air in the matt, the more support the patient is getting with movement. The less air in the matt, the more the patient has to engage the movement.
- Functional movements: Rolling, Bridging, Boosting

Air assisted Rolling

- Measure how much air you are placing in the matt based on the type of air canister you are using (variable speed or one speed).
- Where does your patient need assistance – shoulder, pelvis, both?
- Utilize the strap on the matt to assist pt for rolling by pushing / pulling on the matt to provide assist to the patient using the air.
- Measure at what point the patient starts to participate – what angle do they begin engaging? Can be done in supine and with head of bed slightly elevated.

Air Assisted Bridging

- Have patient flex knees so that feet are flat on the bed.
- Tuck the air assist matt so that bottom of the matt is now bunched under the patient's knees with the bottom edge of the matt near the patient's heels. The patient's feet may need to be supported.
- Inflate the matt and the patient will now be assisted with bridging.
- Measure the starting angle of the patient's trunk / femur and measure when they start to engage with the bridge. Can they achieve a full bridge?

Air Assisted Boosting / Mini Squats

- The first piece of information that needed is what kind of foot board is one the bed. What is the weight capacity of the foot board for the patient to be able to push against it?
- Patient's that need an air assist matt, likely are quite weak. Can you utilize a physio ball or form wedge for them to push against if the foot board is not able to take force?
- Measure the angle of the bed. Trendelenburg / Reverse Trendelenburg / Neutral position. Measure beginning / end point of patient's ROM for movement.

Repositioning Sling

- Assisted patient rolling
  - What type of lift do you have access to? Ceiling / floor lift? Know the weight limits of the lift. Recognize if the ceiling lift is a single-track system or XY system.
  - Recognize the sling itself. How many sling straps are on each side? Which strap lines up best with the shoulder complex? With the pelvis / hip? How many loops are on each strap? Are they different colors? If the closest loop to the sling is attached to the lift, the sooner the patient receives assistance. The further loops lead to assistance being received slower.
  - Assist the patient with rolling by choosing where the patient needs assistance / facilitation – shoulder complex, pelvis / hip, both. Attach appropriate sling strap and loop to the lift. Measure which strap and loop are used.
  - Utilize the lift to begin to roll the patient to their side, having them reach, as able, for the rail. Measure the angle at which they engage the rolling, if they do, or measure the distance from the bed that they are lifted before they engage. Hold lift and sling in that position where they engaged and have them perform repetitions from that point. Ex: 45 degrees to full roll (90 degrees). Adjust angle as they gain strength to engage rolling.

Repositioning Sling Continued

- Repositioning Sling and Bridging
  - Find the strap on the sling that is closest to the pelvis / hip. Choose what loop you are going to use on each strap. Attach each side to the ceiling or floor lift. Raise patient to the angle / level that they can engage in the bridge. Measure starting point angle and angle at which they engage. If cannot measure the angle, measure the distance they are lifted off of the bed by the sling. Measure the angle that the bed is positioned as well (head / feet / trend/ rev trend).
  - Repetitions as indicated. Support patient's feet as needed, utilizing non slip matt if available.

Slide sheet

- What type of slide sheet do you have access to? Tubular / non tubular?
  - Friction reducing device to facilitate boosting / mini squats, bridging, rolling.
  - Manually feel how much patient is exerting and provide min assist or less to let patient to complete as much of task as possible.
  - Tubular version can be placed and removed without rolling patient. To place slide sheet, hold it in front of you with one of the closed ends up toward the ceiling. Fold approx. 3 inches away from yourself and then toward yourself until all folded. Pass slide sheet under the patient's lumbar spine, under the chuck pad, to your teammate. Unfold the slide sheet under patient by pulling together – up first by the seam that you folded and then down. To remove the slide sheet, tuck (don't fold or roll) under the patient as far as you can. Teammate on the other slide holds the bottom part of the slide sheet and start to pull hand over hand until it is removed from under the patient.
  - Slide sheet can also be utilized to place slings under patient and for mobility of limbs (AAROM)

Floor Lift / Ceiling Lift / Universal Sling

- What lifts do you have access to? Note weight limit of slings that are to be utilized as well as the weight limit of the lift. Note the hanger bar type. 2 point, 4 point, or 6 point bar? The number of points of attachment will affect positions that you can achieve with your patient. A 2 point bar will naturally sit the patient in a more upright sitting posture pending manipulation of the sling loop usage.
- If you only have access to a floor lift, measure the distance that is available to you with the legs of the lift are at their narrowest point as well as their widest point so that you will know how much room you have for your patient and any equipment that may be needed. Also make sure you know the height of the legs and whether it will fit under all of the beds and stretchers at your facility.

Floor lift / Ceiling Lift / Universal sling

- Floor / Ceiling lift utilization for dangling at bed side. Utilize the sling to your advantage to provide more / less support based on the patient's need. The closer the loop to the sling, the more support the patient will receive. The further loop utilized, the less support that patient will receive.
- As patient progresses with function, utilize the sling for safety and support and have the patient reach outside of the sling and begin to scoot / mobilize themselves in and out of bed – from sitting up in bed to sitting on the edge of the bed. Utilize a slide sheet as needed to assist their LE's and/or under their buttock (IN THE SLING) to assist the motion. Utilize the slide sheet as well at the edge of the bed to promote weight shifting as needed (IN THE SLING).
- Manually measure how the patient engages with the activity physically vs. how much sling the support is giving, documenting what loops are being used on which straps and showing improvement by manipulating the loops and support provided. Also measure patients' ability to mobilize from supine to sit and sit to supine from different angles of the bed.

Floor Lift / Ceiling Lift / Universal Sling

- Ambulation with the universal sling
  - Check with sling manufacturer to make sure that the universal sling you are utilizing can be used in this fashion.
  - Utilize one size larger that you would normally use with the patient. If you were using a medium for a patient, move up to a large to allow for enough room to stand.
  - The upper straps of the sling should be in front of the patients' arms (under the arms) and the legs of the sling should be crossed.
  - This is a high level technique and should be practiced and trained with your staff before using with a patient. Minimum of two staff and likely more pending lines attached to patient. One staff member should have hand on remote of lift so that patient can be lifted / supported more securely if a fall occurs.
  - The patient obviously needs to fit the criteria medically and mentally to be able to participate with this technique.

Floor Lift / Ceiling Lift / Walking Sling, Pants

- As a patient progresses functionally and still struggles with getting oob to sitting at edge of bed, utilize the walking sling to assist patient to be functionally support by the sling and the lift to reach the bedside and remain supported, without you having to manually assist the patient.
- Manipulate the loops on the sling first attaching the far side strap on a tighter setting (closer to the sling) and keeping the closer strap looser to help promote the patient's ability to reach across to the bed rail. Manipulate the loops as needed to promote the mobility from the patient. Once seated at edge of bed, adjust the loops one at a time to the appropriate loops for patient to then stand and be supported equally by the sling straps.
- Measure by documenting the loops utilized and how much the patient is exerting vs how much the lift is exerting. At what point in the motion does the patient starting initiating vs the sling? How much of the motion does the patient complete? What angle of the bed are the moving from?
- This could also be done with walking pants as well. As always, most effective way to manipulate this is to practice on yourself with the sling, lift, and space available to you and your patient.

Power Stand Lift

- What type of powered stand lift do you have? What is the line of pull as it assists the patient to standing? When does the patient initiate standing with the help of the machine? Does the foot plate of the stand lift come off or flip up?
- Stand lift slings: The standard sling that is associated with the lift, a hygiene sling to provide more support through the thigh / buttock of the patient as they stand, a walking sling / pant to attach to the stand lift which will pull more forward and still provide support to the patient under the buttock to prevent falling.
- Measure what loops you are utilizing on the sling, what angle is the patient starting at in sitting, what angle are they initiating the standing with the lift, what angle do they achieve when standing?
- You can also measure the distance that the bed is starting at (height) and at what height does the patient initiate standing.
- Should the foot plate be removed, perform pre-gait activities with stand lift and patient supported. I would caution ambulating with a sling and patient in the stand lift as the recovery of the patient if they were to fall or lose their balance could be quite difficult. I do not ambulate patients when attached to the stand lift. I will utilize the ceiling lift / floor lift if they are able to ambulate with the sling.

SUMMARY

- There are many styles of powered and non powered lifts that are available to you and at your fingertips already. What do you have and what can you utilize to mobilize your patient more often, more safely for you and them.
- There are ways to measure the use of the sling, the angles the patient participates at, the distances they move within functional movements with / without the sling. Can we be more creative with what we have at our disposal to improve patient outcomes, safety and the safety of our own bodies!
- YES!!!!!

Thank you!

- Thank you for your time. Please reach out with questions, comments, thoughts, ideas that I didn't cover, success stories that you have had with your equipment, anything at all to promote the safe and effective mobility of our patients!
- Mark Van Leuven PT, CSPHC
  - Cell phone - 518 505 2374
  - Email – markvanleu@gmail.com