



BENEFITS OF EARLY VERTICALISATION

Total Lift Bed tilting best practices

Compilation of best practices gathered from Total Lift™ Bed users

Total Lift Bed: Mobility at the push of a button.

Using only one or two caregivers, the Total Lift Bed™ can progressively move patients to full standing and weight bearing to aid rehabilitation early in the acute phase of critical illness.

Without leaving the bed patients who need a graded transition from bed rest to supporting their full body weight, can be progressively moved to the standing position. As the bed tilts the change in weight bearing achieved by the patient is displayed on the Foot Lifter footboard.

This visual feedback helps caregivers to monitor progress, and set milestones against rehabilitation and mobility objectives.



Importance of early mobilisation

- Early Mobilisation is vital and feasible^{1,2}
- Early intervention is important (within the first 48-72 hours of admission) and as soon as the life-threatening event has been stabilised^{3,4}
- Shorter more frequent mobilisation is associated with favourable outcomes⁵
- Maintaining optimal physiological health indicates that intermittent, vertical alternating movement throughout the day is more beneficial, rather than the total hours sat⁶
- Tilting can improve consciousness⁷
- Achieving functional mobility may reduce length of stay⁸
- Patient Handling and mobility technology reduces staff injuries⁹



**Early
verticalisation:
early and
often**



Ambition of mobility

The ultimate goal is to restore the highest level of function along with independent transfers, so as many patients as possible can return to their best quality of life. In addition to bed-level mobility and frequent sitting position, orientation to an upright position and weight bearing should be introduced as soon as the patient is able to medically tolerate it.

Respiratory

Choosing your patients: Pneumonia and respiratory conditions

We know that immobility increases the risk of developing or worsening pneumonia.

Tidal volume

This is the volume of air exchanged during normal breathing and is typically around 500 ml. In a supine person, the weight of the body restricts the free movement of the rib cage, reducing tidal volume and increasing the work of breathing.

Residual volume

This is the air remaining in the lungs after a full forced breath out and is typically around 1.5 L. The residual

volume of the lungs drops in bedridden patients due to shifting of internal abdominal organs toward the thorax, increased pressure of the heart on lung tissue and increased central fluid shift, potentially increasing the risk of portions of the lung collapsing.

FVC and FEV1

Forced vital capacity (FVC) is the amount of air that can be forced out of the lungs after a maximum intake of breath. Forced expiratory volume in 1 second (FEV1) is the volume of gas expired in the first second during forced a vital capacity maneuver and is the most sensitive index of lung function.

A repeated measure ANOVA-multiple comparison study^{10,11} showed that FVC and FEV1 values in standing were significantly higher than supine, sitting and right and left lateral positions.

Aim to begin little and often. At least 4-5 times per day, for 5-15 minutes minimum each tilt. The number of times per day is more important than the time spent in the tilting position.





Day 1

Step 1

Check with the medical team that the patient meets the criteria to begin tilting (tilting assessment).

Step 2

Secure the patient using the straps across the patient's knees, thighs and chest.

Step 3

Make sure the lines and drains are secure and free to move as the bed tilts.

Step 4

Begin tilting gradually to 20°. Watch the monitors and vital signs and monitor the patient to ensure they are tolerating the change in position. If any vital signs fall outside the numbers shown to be adequate in the tilting assessment, lower patient back to the angle where the numbers are within the range the patient is tolerating the position. If there are any concerns, check with the patient's doctor.

Step 5

If the patient tolerates 20° of tilt for 5 minutes, progress gradually to 25°, assess again to make sure the patient is tolerating the position and if all vital signs are good, tilt to 30°. Remain there for up to 15 minutes, checking the vital signs and the patient tolerance.

Step 6

After 15 minutes, return the patient to horizontal position, with the head of bed elevated or to chair position.

Step 7

Repeat 4-5 times as long as the patient is tolerating the position and vitals are remaining in a suitable range.

Suitable vital signs are as follows:^{1,2}

Patient should be able to respond to verbal stimulus 3-4 times by squeezing your hand or other form of communication to let you know they have awareness and can feel what is happening.

- SPO2 ≥90%
- Systolic blood pressure >90 and <200 mmHg while receiving no support or low level support MAP greater than lower limit of target range while receiving no support or low level support
- Heart rate <120 bpm at rest
- Respiratory rate ≤30 pm at rest
- Pain level is acceptable
- No excessive fatigue or anxiety

Day 2 & beyond

Repeat steps 1-4 from day 1

Step 5

Tilt gradually to 30°. If the patient tolerates 30° without any problems, increase tilt angle to 35°, then 40°. Watch the patient and monitors to ensure the patient is tolerating it and vital signs are still in an appropriate range. Assess at 40° for 2-3 minutes.

Step 6

Continue increasing 5° at a time, or slower if the patient needs to go more slowly, progressing each time until the patient achieves full standing at 82°. Continually checking to make sure vital signs are in appropriate limits and watch the patient to make sure they are not in too much pain or discomfort and are still positioned comfortably.

Step 7

Repeat 4-5 times per day for up to 15 minutes each time at the maximum angle tolerated by the patient.

Keep in mind that although the aim is to stand and walk, and angles over 60° have increasing benefits for neurological status, respiratory function, and bowel and bladder function, frequent standing throughout the day is more important than a higher angle once per day. Aim to increase patient tolerance to increasingly upright angles by increasing times but keep the frequency throughout the day to at least 4-5 times.

- Nurses can incorporate multiple vertical tilts during their daily patient care
- Physical therapy can do one tilt per day during therapy activities
- Occupational therapy can do one tilt per day during OT treatment

The example below can be used to document how well the patient can tolerate tilting to standing.^{1,2}

Goal is to achieve standing (82°) or tilt to patient tolerance as long as the patient vital signs are in safe limits.

Tilt 20°: Assess 2-3 minutes then progress in 5° increments.

- Achieved 82° with stable vital signs and good tolerance
- Treatment angle (If different from maximum angle): _____ for _____ minutes
- Stopped at _____ degrees due to: (Check all that apply below)
 - SPO₂ dropped below 90%
 - Systolic blood pressure <90 or >200 mmHg
 - Mean arterial pressure <65 or >110 mmHg MAP less than lower limit of target range
 - Heart rate >120 bpm
 - Respiratory rate >30 pm
 - Unacceptable pain level
 - Excessive fatigue or anxiety
 - Other:

Precautions:



Using the chair position

In between tilts and rest periods, the patient should use the chair position to sit up and bear weight on their feet using the footboard.

When to take the patient off the *Total Lift Bed*:

1. When the patient is able to sit on the edge of the bed and stand with minimum assistance, they should progress to a regular bed and continue mobility progression with staff.
2. When the patient is able to march in place and shift their weight from side to side in 60° of tilt, reassess standing at edge of bed with caregivers, unless there are still reasons identified by the medical team that it is still hazardous for the patient to stand unsupported.
3. Discharge from the *Total Lift Bed* should be when the patient can mobilize frequently throughout the day without the bed. Consider if they will get up and stand at least 3 times per day and sit at least 3 times per day if they are in a regular bed.

Sample tilting tracker

PATIENT NAME: _____ ROOM: _____ DATE: _____

WEIGHT BEARING % PRECAUTION IF ANY: _____ PRECAUTIONS: _____

TILT #	ANGLE ACHIEVED	WEIGHT BEARING	TIME TILTED	NOTES FOR PT	NOTES FOR DR
1					
2					
3					
4					

Ideas to incorporate tilting into nursing care

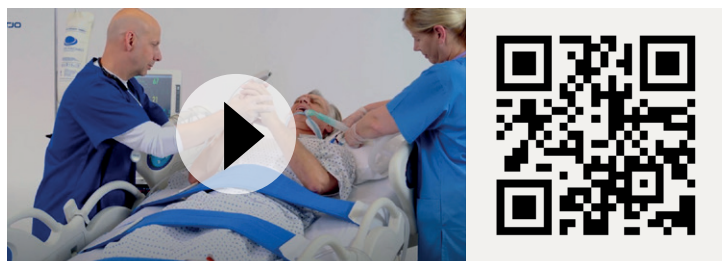
Incorporating tilting into nursing care is critical so that you can make it feasible to achieve as many tilts as possible daily. When giving medications, the nursing staff can tilt the patient.

- When family members visit, tilt the patient up to greet the family and be up right while interacting with them.
- When the doctor on medical rounds comes to assess how the patient is doing, tilt up so the patient can be more alert and interact at eye level.
- When you're doing wound dressings, which often make it easier because of height and angle.
- When doing activities of daily living with the patient.

Other patient populations who may benefit from upright tilting

1. Patients who are sedated. Traditionally, these patients would not be mobilised, but tilting is feasible (Qutab and Morris 2015), and may improve consciousness (Toccolini, 2015).
2. If patient has a femoral catheter, and is not mobilised due to concerns about bending at the hip and moving the catheter, tilting can achieve progressive tolerance to upright orientation without bending at the hip.
3. If the patient has insufficient abdominal strength/multiple surgeries and is prohibited from using abdominal muscles, *Total Lift Bed* supports the patient from behind, rather than the patient pulling up (or being pulled up) from their arms.
4. Patients with spinal precautions for whom bending and twisting to get up in the traditional manner is deemed hazardous by the medical team. The *Total Lift Bed* assists by helping them to stand without bending at the waist or flexing/potentially twisting the spine.
5. If the patient cannot tolerate fast changes in position, they can be gradually tilted a few degrees at a time.

To see the Total Lift Bed in use please visit Arjo Youtube channel.



www.youtube.com/playlist?list=PLHsfhjMWAXwoa0xANdt1I4YHvvIOkf66Y

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