

**SAFE PATIENT HANDLING AND MOBILITY (SPHM)  
TECHNOLOGY  
COVERAGE & SPACE RECOMMENDATIONS  
2016 Revision**

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# INTRODUCTION

This document is an edited version of VHA's 2006 Patient Handling (Lifting) Equipment Coverage and Space Recommendations.

Health care providers are at high risk for musculoskeletal injuries. In fact they are one of the highest risk groups of any industry, and manual patient handling is considered to be the reason. For the caregiver, these musculoskeletal injuries not only cause pain and discomfort but can also result in life long disability. For patients, their safety may be impacted when injured staff move and lift them. Quality of patient care is also impacted by manual handling methods that discourage mobility or cause skin shear or falls. Direct and indirect costs to the organization are huge, as is the impact on the already short supply of nurses.

Research has confirmed the caregiver risk associated with patient handling. Biomechanical studies tell us that manually moving and lifting patients cannot be performed safely, that such movements exceed the biomechanical limits of workers. When these limits are exceeded, not only do muscles develop microtears, but microfractures occur to the spine and result in the debilitating disc degeneration found in many nurses. In 2007, Waters determined that the maximum weight a caregiver should lift is 35 pounds, the weight of the leg of a man weighing 200 pounds.

Technology is now available to take the patient 'load' off of caregivers. And, in providing such technology assistance in handling and mobilizing patients, the risk of injury for caregivers is decreased significantly, resulting in fewer and less severe injuries to nurses and other patient care providers.

Because each clinical unit, treatment area, diagnostic area, etc. includes patient populations with varying characteristics, technology recommendations will also vary. For this reason, recommendations must be developed for each unit/area included in new construction and in renovations of existing construction. This ensures the correct type and quantity of safe patient handling and mobility (SPHM) technology are available on each unit and that sufficient storage is allocated for this equipment.

However, to ensure appropriate equipment decisions are made, direct patient care providers who are familiar with the characteristics of their unique patient/resident populations must be included in this process.

The following gives direction in determining design, installation, and storage requirements for SPHM technology that is used to handle and mobilize patients and residents in new and existing construction. Many other types of SPHM technology are available but will not be addressed as their design/space impacts are not as substantial. The SPHM technology that will be addressed includes overhead sling lifts (ceiling and wall mounted) (Figure 1), floor-based sling lifts (Figure 20), sit to stand lifts (Figure 18), and non-powered stand aids (Figure 19). Overhead and floor-based full body sling lifts are both used for dependent patients/residents who are unable to substantially assist in their transfers and movement, as well as assisting in mobility rehabilitation. Sit to stand lifts are used to assist in the transfers of patients/residents with some weight-bearing abilities, upper body strength, and the ability to follow simple instructions. Stand aids are

used to assist patients/residents who can pull themselves to standing and follow directions but need help transferring between seated positions or walking to bathrooms.

This document will first address coverage and installation issues surrounding overhead lifts, then coverage and storage issues for portable/floor-based lifts, such as sit to stand and floor-based full body sling lifts.

PLEASE NOTE: This document does NOT provide direction on conducting a full patient care ergonomic evaluation. Such a comprehensive evaluation is important to determine patient handling technology required to be able to implement a 'Minimal Lift' or 'Safe Patient Handling and Mobility' Policy. Organizations must understand that the information provided here focuses only on design and storage requirements, and only for overhead and portable lifting equipment. It is highly recommended to conduct a thorough Patient Care Ergonomic Evaluation that will provide recommendations for other SPHM technology and programmatic issues related to patient handling and mobility. Information on safe patient handling and mobility, conducting complete ergonomic assessments, and other SPHM technology not included here, can be found in the Facility Guidelines Institute's "[Patient Handling and Movement Assessments: A White Paper](#)", and its updates, as well as the [VHA SPHM Guidebook](#) and the [VHA Bariatric SPHM Guidebook](#).

# OVERHEAD FULL BODY SLING LIFTS



Figure 1: Overhead Full Body Sling Lifts  
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## 1. OVERHEAD LIFT COVERAGE REQUIREMENTS by UNIT/AREA

- Definitions:
  - Overhead Lift SYSTEM refers to the lift unit that performs the lifting function and includes the motor, strap, and hanger bar.
  - Overhead Lift TRACK refers to the pathway on which the lift system moves. “Track” and “rail” are used interchangeably.

### Step 1. Determine overhead lift system and track coverages needed in each UNIT/AREA

- Use the following summary to determine the following.
  - Overhead Lift SYSTEM Coverage:
    - Overhead Lift ‘System’ Coverages relay the percentage of PATIENTS who should be covered on the particular unit in question.
    - In order to allow for flexibility of room assignments and plan for future needs, it is important to cover a higher percentage of rooms than the percentage of patients needing the lift at any given time. 100% coverage allows maximum flexibility on inpatient units.
    - **Because the medical/physical characteristics of patients/residents within different clinical units/areas vary widely, it is critical to base overhead lift purchase decisions on these characteristics. Insufficient coverage will result in increases in risk of staff and patient injury.**
    - **For those clinical units/areas that specify variable coverage based on patient population and flow, determine coverage as instructed in Step 2, using patient/resident characteristics to direct coverage requirements.**

- Sometimes overhead lift coverage must be phased in. Consider prioritizing areas with patients requiring more assistance as well as bariatric/expanded capacity rooms, multiple-bed rooms, and/or smaller rooms that cannot accommodate floor-based equipment.
- Overhead Lift TRACK Coverage:
  - While there are overhead lift motors that are meant to be quickly moved between rooms with tracks, the time required to move the lift may decrease use. These are rarely used.
  - If the recommended coverage level of overhead lifts cannot be attained during the original planned construction or renovation, it is important to ensure the completion of the recommended lift coverage is supported within the original design. It is recommended to include, in the original design, future structural needs and installation of tracks. When funds are available to purchase the additional lift systems to fulfill the coverage requirements, the needed tracks and structural support will already be in place, with the potential for considerable savings in cost. However, because the lift systems may change after the track is installed, installation of the entire lift system is preferable to installation of track alone. If the lift systems are never installed, as has happened frequently, the track cost is wasted.
  - Track configurations mentioned below are explained further in section 3 below.

### **Overhead Lift (OL) Coverage and Track Configuration Recommendations by Clinical Unit/Area**

This section summarizes the best practice and preferred track configurations for overhead lift coverage in each common type of clinical unit/area.

- For medical/surgical units, overhead lifts on traverse room-covering tracks are recommended in all inpatient bedrooms. Scales are recommended.
- For post-surgical units, overhead lifts on traverse room-covering tracks are recommended in all inpatient bedrooms. Scales are recommended.
- For rehab units, overhead lifts on traverse room-covering tracks are recommended in all inpatient bedrooms. Consider installing a straight track down a hallway for fall protection while ambulating patients/residents. For new construction, rooms should be large enough to ambulate patients/residents within the room. (This does not include domiciliary and non-physical rehab such as substance abuse treatment.) Scales are recommended.
- For intensive care units, overhead lifts on traverse room-covering tracks are recommended in all inpatient bedrooms. Scales are recommended.
- For nursing home/long term care units, overhead lifts on traverse room-covering tracks that connect into bathrooms are recommended in all inpatient bedrooms. Less coverage may be provided for primarily dementia units or areas with many

independent residents, but if not all rooms are covered, a plan is necessary to move residents who need ceiling lifts. Scales are recommended.

- For hemodialysis areas, overhead lifts on room-covering traverse and/or straight tracks are recommended wherever lateral transfer is necessary. Consider covering 100% of beds and 50% of chairs with ceiling lifts. One straight track or traverse over several bays in a row may be appropriate, as long as privacy curtains are not impeded. Scales are recommended to allow weighing before and after dialysis.
- For radiology areas, overhead lifts on room-covering traverse and/or straight tracks are recommended in or near every modality. Overhead lift systems must be compatible with the ceiling-mounted radiological equipment. Design may vary by modality, and transfer and positioning requirements need to be addressed either with lifts, air-assisted lateral transfer, or a combination.
  - Where disabled patients are commonly transferred directly onto tables such as CT tables, overhead lifts are recommended over each table to the extent possible.
  - In ultrasound areas where disabled patients are seen, ceiling lifts are recommended over at least some tables for transfer and repositioning.
  - Where substantial obstacles prevent overhead lift use in rooms such as X-ray or Interventional Radiology, overhead lifts are recommended in nearby holding/transfer areas.
- For MRI areas, an overhead lift on traverse or straight track is recommended in an area adjacent to the MRI suite that is designated as a safe patient transfer area. This allows transfer onto MRI-safe stretchers that can be used in the room with lateral transfer aids such as friction reducing devices or air-assisted lateral transfer devices (with elongated tubes to keep the pump outside the room).
- In Nuclear Medicine and Radiation Oncology, overhead lifts on room-covering traverse and/or straight tracks are recommended in or near every modality. They must be designed to avoid interfering with sensors and cameras.
- In procedure areas such as GI lab and Cystoscopy, overhead lifts are recommended on traverse or straight tracks, positioned as needed for transfer and repositioning needs. Design should be planned to allow turning during colonoscopy.
- In cardiac catheterization and electrophysiology labs, overhead lifts on traverse or straight tracks are recommended if they can be made compatible with other equipment. Alternatively, a patient transfer area similar to MRI may allow preparation for use of air-assisted lateral transfer equipment in the room.
- In PACU/post-surgical areas, overhead lifts are recommended on traverse tracks covering all beds thoroughly enough to allow repositioning. The tracks may be designed to cross curtain tracks to allow use over multiple beds.

- In operating rooms, traverse or boom-mounted lifts can be designed in to work around other ceiling mounted equipment and to have enough coverage for lateral transfer, lifting appendages, and repositioning.
- In Same Day Procedure areas, overhead lifts are recommended on traverse tracks covering some of the beds, depending on patient population and flow.
- In Physical, Occupational or Kinesiotherapy Clinics, overhead lifts are recommended on all-encompassing traverse tracks, installed so that two or more motors can be used simultaneously on tracks that move independently. Alternatively, some clinics have preferred a straight track over parallel bars or walking paths and a separate traverse track system covering treatment tables and activity areas.
- In Activities of Daily Living (ADL)/ Apartment training areas, overhead lifts are recommended on a traverse track – preferably as similar as possible to the lifts that are typically issued for home use.
- In Spinal Cord Injury (SCI) inpatient areas, overhead lifts are recommended on traverse tracks covering the whole bed and transfer areas on both sides of the bed. All inpatient bathrooms are also recommended to have overhead lifts on separate traverse track systems.
- All Outpatient SCI clinic exam or treatment rooms are recommended to have overhead lifts on traverse track systems to allow transfer and repositioning.
- Outpatient Primary Care clinics have variable requirements depending on patient population and flow, and it is often appropriate to put one or more overhead lift in a procedure room or bariatric/extended capacity room and redirect patients who need it into the rooms with the lifts. Traverse tracks are recommended to allow flexible lifting location and limb lifting. The number of lifts should be determined by a patient care ergonomic evaluation.
- Specialty Clinics (including Podiatry, Women’s, and Cast Room) have variable requirements, concentrating on areas of need for transfer and limb lifting. Traverse tracks are recommended to allow flexible lifting location and limb lifting.
- In Emergency Department and Urgent Care Exam Rooms, overhead lifts are recommended over all beds. Coverage may depend on varying trauma and dependency levels in each area within the department. For emergency rooms in high demand, coverage over every bed is recommended. Track design can be traverse or straight, and may be designed to cover multiple bays, although traverse designs allow more flexibility that may save time during emergent situations.
- In ambulance bays, a lift under a canopy in one ambulance bay or similar vehicle transfer area is recommended. A traverse track design is recommended to accommodate vehicle locations. Designs need to protect the lift, controller and track from weather damage and from tall vehicles. Often this includes weatherproofing and a locked cabinet for the hanger bar and controller.



- In mental health/psychiatric patient care areas, overhead lifts shall not be installed in mental health units with the potential for actively suicidal patients. These statements do not apply to dementia care units or geri-psychiatry units that do not treat actively suicidal patient and may need overhead lifts.
- In geri-psych areas without actively suicidal patients, overhead lifts are recommended on traverse tracks.
- In dental clinics, one lift is recommended in an exam room and one in a surgical room. Traverse tracks are recommended for flexibility of wheelchair location. Alternative equipment may include wheelchair tilters.
- In morgue areas, overhead lifts are recommended on traverse or straight tracks, although traverse tracks are recommended for autopsy areas. The lift system should be able to assist in inserting and extracting trays into the cooler as well as lifting and moving bodies into and within the autopsy suite. These lifts need to include a Supine Lift Frame or other appropriate attachment depending on morgue design. Designs vary widely and need to be evaluated for ease of use and compatibility with the storage system.
- In clinical training areas, an overhead lift is recommended on a traverse track system comparable to lifts in patient rooms.
- In labor and delivery and in C-Section ORs, overhead lifts are recommended with traverse track systems. Allow for lift use for limb positioning.

Step 2. Calculate MINIMUM # of Overhead Lift (OL) SYSTEMS required for each UNIT/AREA (for areas where coverage depends on patient flow and need).

- Unit OL System Coverage is based on 1) type of clinical unit/area, thus dependency levels of patient/resident population and 2) number of private, semi-private, 3-bed, 4-bed rooms, etc. on unit.
1. Determine Average % of Patients Requiring Overhead Lift (OL) System Coverage: Estimate highest % of patients needing transfer, repositioning, limb lifting, or rehab/mobility support = **Highest % of Patients Requiring OL Coverage.**
  2. Determine # & Configuration of Rooms requiring Overhead Lift Systems per unit:
    - Use **Highest % of Patients Requiring OL Coverage** to calculate number of rooms needing overhead lifts.

For units with only private patient rooms:

Highest % of Patients Requiring OLs x # patients = # private patient rooms w/ OLs

For units with only semi-private rooms:

Highest % of Patients Requiring OLs x # patients / 2 = # semi-private patient rooms w/ OLs

For units with a mixture of room configurations:

Prioritize the rooms that have the patients most often in need of lifts, expanded capacity rooms, and the rooms that are too small for effective floor-based lift use. Alternatively, for cost effectiveness and if appropriate for the unit, begin calculations

with overhead lifts placed in most or all larger wards (3-bed & 4-bed wards), then continue as appropriate in smaller rooms (private and semi-private). Make sure to include isolation and expanded-capacity rooms.

Example: Med/Surg Unit with 30 patients has four (4) private rooms, ten (10) semi-private rooms, and two (2) 3-bed rooms. On this unit, at most 70% of the patients will require use of overhead lifts; therefore this unit should have coverage for 21 patients (70% x 30 patients). For cost effectiveness, and if appropriate for unit needs, overhead lift coverage may be as follows: overhead lifts in two (2) 3-bed rooms (covering 6 patients), seven (7) semi-private rooms (covering 14 patients), and one (1) private room (covering one patient) in order to have overhead lift coverage for 70 % (21) patients.

## 2. Overhead Lift System Weight Capacities

Overhead lift weight capacities range from around 440 lbs to bariatric/expanded capacity lifts of 1,000 lbs. or more. Specification of 550 - 600 lb. capacity overhead lifts in patient rooms will accommodate the greatest range of all patients. If admissions of patients of size warrant, expanded capacity lifts should be included, in addition to the lower weight capacity lifts. Expanded capacity lifts may also be needed in emergency rooms, ambulance bays, wheelchair fitting rooms, radiology areas where equipment has high capacity, and any other location where patients of size will be assisted. Allow for the estimated percentage of patients served by the facility who need expanded capacity lifts. Assume that the population of patients of size may increase over time.

The Center for Disease Control (CDC) provides guidance on projected increases in obese populations by geographic area ([www.cdc.gov/obesity/data/prevalence-maps.html](http://www.cdc.gov/obesity/data/prevalence-maps.html) and [http://nccd.cdc.gov/NPAO\\_DTM/](http://nccd.cdc.gov/NPAO_DTM/)). This information will assist in estimating the number of expanded capacity patient 'rooms' and the number of required expanded capacity 'overhead lifts'. Not all expanded capacity rooms will require expanded capacity lifts. It is suggested to use 300 lbs. as the cut-off for patient 'rooms' and 600 lbs. (or facility threshold. i.e., the weight capacity of existing or future non-bariatric overhead lifts used within the facility) for the number of expanded capacity 'overhead lifts' needed in these rooms.

For instance, for renovations to existing buildings or designing replacement hospitals, determine the number of bariatric 'rooms' that are necessary by using existing facility data such as the average number of patients heavier than 300 lbs. admitted each week on a specific unit and the average length of stay on the specific unit for these patients in addition to information from the CDC bariatric prevalence projections by geographic area. Use 600 lbs. as the threshold for bariatric rooms requiring 'expanded capacity overhead lifts' plus CDC projections. For new construction, use CDC bariatric prevalence data of projections for a specific geographic area to drive 'room' number estimates to accommodate patients of size who weigh more than 300 lbs. Use 600 lbs. (if this is the weight capacity of future non-bariatric overhead lifts to be used within the facility) as the threshold for bariatric rooms requiring expanded capacity 'overhead lifts'.

### 3. Overhead Lift Tracks/Rails

#### Design to Accommodate Track Coverage

Research has demonstrated the positive effect of extensive overhead lift coverage on staff and patient injury prevention.

#### Track Motorization

- 1) Non-Motorized Track: Lift is moved manually by caregiver. Many caregivers prefer to move the lift manually horizontally rather than press a button and wait for the lift to move to the desired location. Movement is quite smooth and easy with this design, but caregivers must manually pull lift to recharging area unless the lift charges anywhere on the track (continuous charge). Continuous charge is recommended wherever possible, as noted below.
- 2) Motorized Track: Track has motorization component that enables caregiver to use hand-held operation device to move the lift horizontally along the track, as well as vertically. One positive aspect is that most have a function to move the lift automatically to the charging station. The traverse track movement can also be motorized; however this option increases cost, can decrease speed, and is most common in homecare applications.

#### Charging System

Overhead lifts require a source of power to recharge batteries between uses. Consult your local electrical requirements, and consider whether you need power outlets closer to the ceiling, above the ceiling, or hard-wired into standard or emergency power.

- 1) Preferred Design – Continuous Charge (Lift charges anywhere on the rail and does not have to be returned to a charging station. This is recommended because it decreases service problems caused by lack of charging.)
- 2) Alternate Design – Automatic Return to Charge (Lift returns automatically to charging station when caregiver pushes a button. Requires motorized track and may not be possible with a traverse rail.)
- 3) Alternate Design – Charging Station (Caregiver is required to return lift to charging station in order to charge. May result in uncharged lifts more often.)

#### Track Design

Tracks can be recessed in order to diminish the aesthetic impact in patient/resident rooms and increase lifting height. For recessed track, ensure dropped ceiling grid is butted up against track.

There are three track design options:

- Traverse (Room Covering) Track (Figure 2)
- Straight Track (Figure 3)
- Curved Track (Figure 4)

In most rooms, the traverse system (Figure 2) offers staff more options for transfers and performance of patient handling and mobilizing activities. This design also offers the patient more opportunity for rehabilitation and timelier patient handling assistance. Traverse system designs may impact the use of privacy curtains. (See Section 5 for more information on privacy curtains/screens.) Extensive coverage has been achieved

in some places using bathroom walls with a gap near the ceiling to allow one traverse system to cover the bedroom and bathroom. Although structural and fire code restrictions may impact ability to run ceiling track through bathroom doorways, during renovation adding tracking into the bathroom should be considered. The only time a straight track configuration (Figure 3) is suggested is when the room is small and a straight track can reach all areas where patient handling and placement will occur (when the sink is in line with the bed, the chairs have easy access to the bed, etc.). Straight tracks impede patient repositioning, limb support, mobilization/ambulation, and lifting from the floor. Curved Tracks (Figure 4) are used for turns/transitions from one room into another, when ceiling obstructions such as lights, sprinkler, or other objects hang too low to use a straight rail, and to enhance appearance of the lift system. Connections between rooms may also require special hardware such as gates or turntables.

The following are track design recommendations for specific clinical areas, as described in the list above:

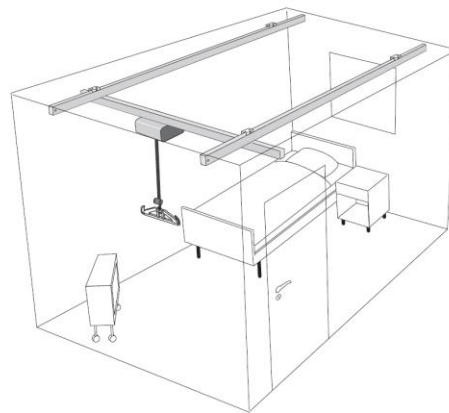


Figure 2: Traverse System Design

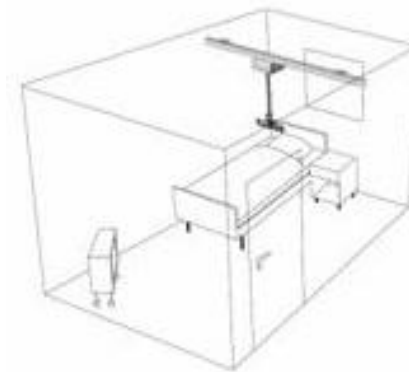


Figure 3: Straight Track System Design



Figure 4. Curved Track Design

Track Design options for Bariatric/Expanded Capacity, Long Term Care, and other patient/resident rooms that require overhead lift coverage connected into bathroom areas have a few alternative designs. Four are shown below.

- 1) Overhead lift tracks into bathroom, through doorway. (Figures 5 & 6)
- 2) Single traverse system covering bedroom and bathroom with a gap in the separating wall that allows the traveling rail to reach both rooms. (Figure 7)
- 3) Separate traverse systems for each bed and immediate surrounding area, with no connection to the bathroom, as recommended in Spinal Cord Injury inpatient areas. (Figure 8)



Figure 5. Overhead lift track connecting into bathroom with a turntable in the bathroom



Figure 6. Overhead lift track connecting into bathroom through door frame to traverse system  
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Figure 7. Overhead lift on traverse track system covering both bedroom and bathroom, with traveling rail moving through a gap in the separating wall.  
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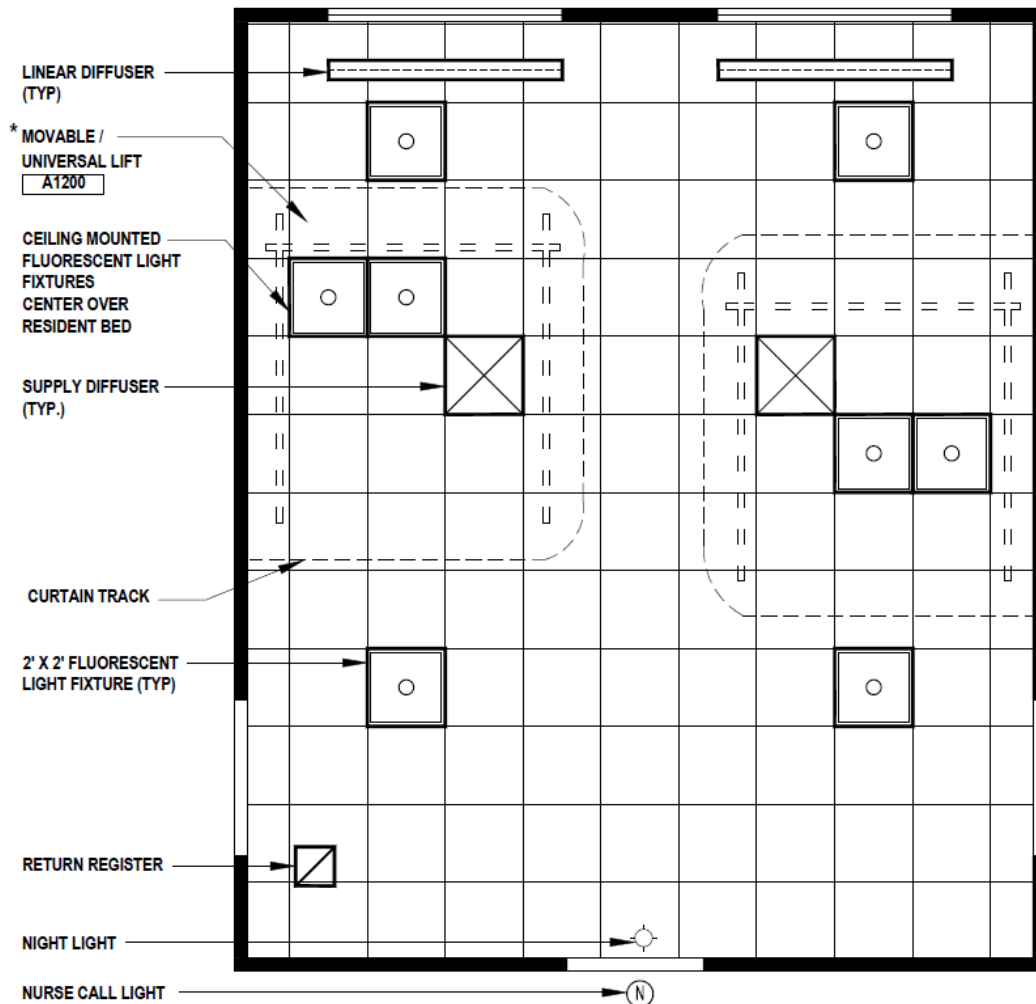


Figure 8. Separate traverse systems for each bed and immediate surrounding area, with no connection to the bathroom, as recommended in Spinal Cord Injury inpatient areas.

### Track Support/Fastening Options

The following are three types of attachment options. Two are specific for ceiling-mounted lifts. The other is for wall-mounted lifts. Others may be available that are not included below, so consult with overhead lift manufacturers and Facility Engineering to obtain an approved design for configuration-specific mounting instructions for their tracks. For ceiling-mounted lifts, the interstitial space dictates the amount of lateral bracing required and type of attachment method (rod or pendant) to achieve a stable system. Installation methods are manufacturer-specific and must be installed or reinstalled by manufacturer-approved installers. Uncertified construction contractors do not have this expertise.

- Wall mount - attached to wall with toggle bolts or attached with wall bracket. Economical, appropriate for renovations and new construction. (Figures 9 & 10.) In some cases, the load may be borne by the floor and not just the wall.

- Pendant - steel plate is bolted to Unistrut which is anchored to the concrete structure with anchors. Lateral support to stabilize the rail may be required. Consult with engineering to obtain an approved design. Tracks can be fully or partially recessed into ceiling. (Figures 11 & 12.)
- Threaded rod - Threaded rod size to be determined through structural engineering calculations. Threaded rod can be mounted to hard ceiling with Unistrut support spanning beams or trusses. Tracks can be fully or partially recessed into ceiling. (Figure 13.)



Figure 9. Wall mount with bracket.



Figure 10. Wall mount with upright support.



Figure 11. Pendant.





Figure 12. Pendant



Figure 13. Threaded Rod

#### 4. Other Overhead Lift Design Considerations

- Structural capacity
- Seismic considerations
- Positioning of light fixtures, A/C diffusers, fire sprinkler heads, televisions, X-ray equipment, boom-mounted lights, privacy curtains and other fixtures
- Items above ceiling such as other ceiling mounted equipment (radiology equipment, boom-mounted lights), HVAC, electrical conduits, plumbing, etc.
- Wall mounted barriers: televisions, light fixtures, cabinets and door swing radius must be considered in determining track dimensions
- Materials in frame structure
- Unique architecture considerations: multi-level ceiling heights, vaulted ceilings, soffits, non-structural or radius walls
- Header and door walls (structural and non-structural walls). Use of structural walls creates more challenges in room to room tracking.
- Fire codes
- Ceiling height compared to maximum lifting range required by patients (including height loss for scales, rails, obstacles, and hanger bars. Areas with patients of size or procedure tables may need more height.) Ceiling height of at least 9 feet

provides adequate clearance, but lower ceilings may lead to “drag” depending on installation method and surface height. Specialty beds and radiology or procedure tables may require more lifting height than standard beds and wheelchairs.

- Motor maintenance: allow enough space between rail-end and wall for removal of motor, depending on removal method
- Space for motor and hanger bar storage when not in use, which also allows immediate accessibility
- Head wall design in ICU areas must allow use of overhead lifts
- Ceiling lifts should be integrated into the design of procedure/surgical areas if possible
- Maintaining consistency in overhead lift manufacturer throughout a facility is suggested primarily because of the need to ensure staff competency in use, and thus compliance in use. With a variety of manufacturers throughout a facility, competency and use can decrease. Additionally, use of different manufacturers will impact sling needs, if slings are not interchangeable from manufacturer to manufacturer.
- Suspended track allows clearance for sprinkler heads, lights, curtain tracks, other obstacles but is not as aesthetically appealing as recessed. (Figures 14 & 15.)



Figure 14. Suspended Track



Figure 15. Suspended Track

- Location/design of privacy curtains. The use of privacy curtains are impacted with the installation of traverse track systems. Use of privacy screens may be an alternative or in some situations, privacy curtains can be split then fastened

together with Velcro. Some traverse designs can allow rails to be split to allow curtain to pass.

Example of Privacy Curtain Options for Traverse Systems for Private Room, (Figure 16)  
Semi-Private Room, (Figure 17) and Multi-Bay Coverage (Figure 18)



Figure 16. Privacy Curtain for Private Room or Exam/Procedure Room



Figure 17. Privacy Curtain for Semi-Private Room



Figure 18. Split Ceiling Lift Rail with Privacy Curtain for Multi-Bay Coverage

# FLOOR-BASED LIFTS



Figure 18. Powered Sit to Stand Lifts (STS)



Figure 19. Non-Powered Stand Aids (SA)



Figure 20. Floor-based Full Body Sling Lifts (FBSL)

## 1. FLOOR-BASED LIFT COVERAGE REQUIREMENTS by UNIT/AREA

- Definitions:
  - Powered Sit to Stand (STS) lifts are for patients who can provide some assistance in transferring and ambulating. They are used for transfers from seated positions to seated positions (e.g., bed to wheelchair, chair, commode, or vehicles) and for assistance in dressing, peri-care, and toileting. Some designs can also be used for assistance in mobility/ambulation. (Figure 18)
  - Non-Powered Stand Aid (SA) lifts are for who can stand on their own but may need fall protection and may not be able to walk. They are used for transfers

from seated positions to seated positions (e.g., bed to bathroom, car to wheelchair or motorized wheelchair to exam table) and for assistance in dressing, peri-care, and toileting. Some designs can also be used for assistance in ambulation therapy. (Figure 19)

- Floor-based Full Body Sling Lifts (FBSL) provide total support and assistance for dependent and extensive assistance patients. Some can also be used for assistance in ambulation therapy and for extracting patients/residents from vehicles. (Figure 20)
- Weight Capacities may range from around 350 lbs. to 1,000 lbs. for patients of size. However, it is not recommended to use such floor-based, rolling equipment for patients of size. Overhead lifts are safer and much preferred for these patients.
- Space requirements vary with weight capacities and size of equipment.

## **Floor-based Lift Coverage Recommendations by Clinical Unit/Area**

### **Step 1. Determine Number of SIT TO STAND, STAND AID, and FLOOR-BASED FULL BODY SLING LIFTS required for each UNIT/AREA**

- Use the list below to determine the number of each lift needed for each clinical area/unit.
  - Floor-based Full Body Sling Lift (FBSL) Recommendations:
    - Floor-based Full Body Sling Lift recommendations are based on **Overhead Lift Coverage** as specified and calculated above.
      - If Overhead lift coverage is less than required, there will be an increased need for Floor-based Sling Lifts, thus more storage space will be required.
      - With full Overhead Lift coverage, Floor-based Sling Lifts may be shared by adjacent patient care areas/units, thus decreasing the number required, thus space requirements. \*\* Note: In patient care areas, FBSL recommendations that follow are based on **full** Overhead Lift Coverage.
    - Sit to Stand Lift and Stand Aid Recommendations:
      - For the sit to stand lift and stand aid calculations below, include all patients who can use these lifts as defined above. The population overlaps, and the use of stand aids and sit to stand lifts in the same area may decrease the recommended number of each.
      - Many outpatient or procedure areas may choose to have either a sit to stand lift or a stand aid, depending on the physical environment and their populations' needs.
  - Consult with staff from existing units undergoing renovation and/or staff who are aware of projected patient population characteristics for units included in new construction. They will be able to provide information on the number and types of existing equipment and/or assist in calculating such for new equipment.

### **Recommended floor-based lift and stand coverage by clinical unit/area:**

- General Medical Unit, Med/Surg Unit, Post-Surgical Unit, ICUs:



- 1 sit to stand lift (STS) per 8-10 partially weight bearing patients.
- 1 non-powered stand aid (SA) per 8-10 patients who can stand but need fall protection.
- 1 floor-based full body sling lift (FBSL) per floor or unit. \*\*
- Rehab unit:
  - 1 sit to stand lift (STS) per 8-10 partially weight bearing patients.
  - Possibly 1 non-powered stand aid (SA) for newer patients who can stand but need fall protection.
  - 1 floor-based full body sling lift (FBSL) per floor or unit. \*\*
- Long Term Care:
  - 1 sit to stand lift (STS) per 8-10 partially weight bearing patients.
  - 1 non-powered stand aid (SA) per 8-10 patients who can stand but not walk and need fall protection.
  - 1 floor-based full body sling lift (FBSL) per floor or unit. \*\*
- Psychiatry/Mental Health and Geri-Psych:
  - (If portable lifts are used in this setting, accommodations must be made for their immediate locked storage after use. This does not apply to dementia care units or geri-psychiatry units that do not treat actively suicidal patients.)
  - 1 sit to stand lift (STS) per 8-10 partially weight bearing patients.
  - 1 non-powered stand aid (SA) per 8-10 patients who can stand but need fall protection.
  - 1 floor-based full body sling lift (FBSL) per floor or unit. \*\*
- Emergency Department/ Urgent Care:
  - 1 sit to stand lift (STS) per 8-10 partially weight bearing patients.
  - 1 non-powered stand aid (SA) per 8-10 patients who can stand but need fall protection.
  - 1 floor-based full body sling lift (FBSL). \*\*
  - Also, consider providing one dedicated floor-based lift for use with a supine sling and hanger bar system.
- Radiology (X-ray, CT, Nuclear Medicine, MRI):
  - (Specify X-ray tables without pedestals or with pedestal design that will accommodate placement of floor-based lifts under table and around pedestal.)
  - 1 sit to stand lift (STS) per entire radiology area. Note: Tables must accommodate lift bases.
  - 1 non-powered stand aid (SA) per modality.
  - 1 floor-based full body sling lift (FBSL) per floor. Note: Tables must accommodate lift bases.
- Physical, Occupational and Kinesiotherapy Clinics:
  - 1 sit to stand lift (STS) per clinic, with ambulation capacity, depending on population.

- Non-powered stand aid (SA) as determined by therapists depending on population and tasks.
- 1 floor-based full body sling lift (FBSL) per clinic, or as needed depending on overhead lift coverage and nearby floor-based lifts.
- Operating Room (OR):
  - 1 floor-based full body sling lift (FBSL) if overhead lift coverage is not provided for use elevating body parts.
- PACU:
  - 0 or 1 sit to stand lift (STS) (depending on patient population).
  - 0 or 1 non-powered stand aid (SA) (depending on patient population).
  - 0 or 1 floor-based full body sling lift (FBSL) depending on proximity to OR and presence of FBSL in OR area. \*\*
- Procedure areas (GI, Cystoscopy, Cath Lab, etc.):
  - 1 sit to stand lift (STS) per floor/unit.
  - 1 non-powered stand aid (SA) wherever toileting is required of unsteady patients.
  - 1 floor-based full body sling lift (FBSL) floor or unit.
- Spinal Cord Injury Unit:
  - 0 or 1 sit to stand lift (STS) (depending on patient population).
  - 1 floor-based full body sling lift (FBSL) per floor or unit. \*\*
- Outpatient SCI Clinic Exam/ Treatment Rooms:
  - 0 or 1 sit to stand lift (STS) (depending on patient population).
  - 1 floor-based full body sling lift (FBSL).
- Outpatient/ Primary Care Clinics:
  - Exam tables must accommodate lift base.
  - 1 sit to stand lift (STS) per floor. (May need additional lifts if clinics are not in close proximity to one another.)
  - 0 or 1 non-powered stand aid (SA) as determined by staff for transfer between seated surfaces.
  - 1 floor-based full body sling lift (FBSL) per area. (May need additional lifts if clinics are not in close proximity to one another.)
- Hemodialysis:
  - Chair design must accommodate lift base.
  - Consider including scales in lifts.
  - 1 sit to stand lift (STS) (Depending on typical patient population & whether using chairs and/or beds).
  - 1 non-powered stand aid (SA) (Depending on typical patient population & whether using chairs and/or beds).
  - 1 floor-based full body sling lift (FBSL) nearby for emergencies.
- Dental:
  - Dental chairs must accommodate lift base
  - 1 sit to stand lift (STS) (Depending on typical patient population).



- 1 non-powered stand aid (SA) (Depending on typical patient population).
- 1 floor-based full body sling lift (FBSL) nearby for emergencies.
- Clinical Training Area:
  - 1 sit to stand lift (STS).
  - 1 non-powered stand aid (SA).
  - 1 floor-based full body sling lift (FBSL).
- Morgue:
  - Morgue lift if overhead lift is not available. Must be compatible with equipment.

(\*\* Note: In patient care areas, FBSL recommendations are based on FULL Overhead Lift Coverage.)

Step 2. Calculate STORAGE SPACE REQUIREMENTS for Portable Lifting Equipment

- These recommendations are **based on overhead lift coverage** as specified previously.
- Space requirements are based on 1) type of clinical unit, 2) # of patients/residents on unit, and 3) footprint/dimensions of floor-based lifts.
- Expanded capacity lifts for patients of size will take up more space and may need to be estimated based on actual manufacturer dimensions.
- Determine **minimal** space requirements for storing portable/floor-based lifts on each unit:

1. Multiply the number of Sit to Stand (STS) Lifts, Stand Aids, and Floor-based Full Body Sling Lifts (FBSL) required for the unit/area (as derived from Table 2) by the space requirements\* for each in use or to be purchased

$$\# \text{ STS Lifts/Unit} \times 8 \text{ sf} = \text{Sit to Stand Lifts Space Requirement (sf)}$$

$$\# \text{ Stand Aids} \times 8 \text{ sf} = \text{Stand Aids Space Requirements (sf)}$$

$$\# \text{ FBSL/Unit} \times 10 \text{ sf} = \text{FBSL Space Requirement (sf)}$$

2. Sum the space requirements for the Sit to Stand and Floor-based Sling Lifts to obtain the minimal space requirements for the portable/floor-based lifts.

$$\text{STS Lifts} + \text{Stand Aids} + \text{FBSL Space Requirements} = \text{TOTAL Space Requirements for Portable Lifts}$$

\* Lift Space Requirements:

- Use average (non-expanded base) dimensions (below or from lift manufacturer) to determine the minimum space necessary for the required number of all three types of lifts.
- Space requirements will vary with lift weight capacities. The footprint of expanded capacity floor-based lifts will be greater than those of the standard lifts given below.
- Space requirements will depend on storage arrangement (side by side, end to end, or combination).

- Storage design should avoid requiring removal of equipment, gurneys, wheelchairs, etc. to gain access to lifting equipment.
- Locations for lifts may be affected by whether lifts plug in or whether spare batteries charge on the wall.

Lift Footprint/dimensions (Consult w/ staff &/or lift manufacturer for true dimensions.)

- Average Sit to Stand Lift = 27" wide x 43" long (~8 sf)  
(Expanded base width = ~ 50")
- Average Stand Aid Lift = 27" wide x 35" long (~6.6 sf)  
(Expanded base width = ~ 37 ")
- Average Floor-based Sling Lift = 27" wide x 54" long (~10 sf)  
(Expanded base width = ~ 60")

Example: Nursing Home or Long Term Care – One Sit to Stand (STS) lift is recommended for every 8 - 10 partially weight-bearing patients/residents, and one Floor-based Sling Lift (FBSL) and one non-powered Stand Aid (SA) is recommended for each unit or floor. On a long term care unit with 60 beds and an average of 25 residents who are partially weight-bearing, there will need to be storage accommodations for 3 STS lifts, one SA, and one FBSL. Using the above average non-expanded base dimensions to determine space necessary for these 4 lifts, there will need to be 34 sf allotted for these 4 lifts.

STS space requirements:	27"x 43" = 8 sf	x 3 STS =	24 sf
FBSL space requirements:	27"x 54" = 10 sf	x 1 FBSL =	<u>10 sf</u>
TOTAL space requirements			34 sf

## 2. Floor-Based Lift 'Use' Design Considerations

- DOOR WIDTHS:
  - Standard patient room and bathroom doors must accommodate the expanded width of floor-based lifts along with at least two staff members. Standard Sit to Stand Lift expanded base width = 40 – 50" and Standard Floor-based Sling Lift expanded base width = 50 - 60".
  - Throughout the facility, all doors through which patients must pass should accommodate the expanded width of portable/floor-based lifts and other equipment such as standard and motorized beds/gurneys/stretchers and one or more staff members.
  - Bariatric/Expanded Capacity patient room and bathroom doors must accommodate the expanded width of expanded capacity portable/floor-based lifts along with at least three staff members. The width of bariatric/expanded capacity room doors should be a minimum of 5', and use of a double door design is recommended.
  - When the bariatric/expanded capacity population dictates, doors of procedure rooms and other areas must accommodate the expanded width of bariatric/expanded capacity beds/stretchers/etc.

- **THRESHOLDS:** Must be flush with floor surface to facilitate safe movement of rolling equipment.
- **FLOORING MATERIAL:** Vinyl and other non-carpeting flooring materials should be used in patient care settings and hallways where rolling equipment is used by patients and staff. Carpet increases the force required to use floor-based lifts and other rolling equipment.

# STORAGE CONSIDERATIONS

## LOCATION OF STORAGE AREAS for SPHM TECHNOLOGY

Accessibility of SPHM technology is critical to ensure appropriate use, therefore storage alternatives are found below.

- For small clinical areas/units, have storage area located centrally
- For large or small clinical areas/units, provide storage in alcoves interspersed throughout
- For large clinical areas/units, provide storage locations in multiple areas throughout
- For mental health/ psychiatric units: If portable lifts are used in these settings, accommodations must be made for their immediate locked storage after use. This does not apply to dementia care units or geri-psychiatry units that do not treat actively suicidal patients.
- Storage near the point of need decreases the time required to use the equipment. In some cases, storage in nooks on hallways may be faster than central storage rooms.

## STORAGE for LIFT SLINGS, HANGER BARS and OTHER SPHM TECHNOLOGY

- **SLING and SUPPLY STORAGE:**
  - Store slings in an easily accessible location: in the same location as floor-based lifts, or in clean linen room (or supply room for disposable slings). Install large hooks for hanging slings or provide shelving for storage of folded slings. In locations such as ICU, ED, Day Surgery or Medical/Surgical units where repositioning slings may be part of the linen process, these slings may be kept on a cart in the linen closet with the rest of the bedding linens.
  - Install large hooks for hanging slings in patient rooms. Slings assigned to a specific patient should be stored in patient rooms, for instance, on a hook on the outside of a patient's closet, bedside, or somewhere near the entry door to provide instant accessibility and ensure compliance.
  - Store air-assisted lateral transfer mats and friction reducing devices where they are easily accessible: near lifts or in clean linen or supply rooms.
- **BATTERY CHARGING:** Include battery charging areas near storage for floor-based lifts and other assistive devices requiring charging.
- **SHELVING:** Standard shelving is acceptable for storing:
  - assortment of slings for lifts
  - extra lift hanger bars (Figure 20.)
  - other foldable patient handling equipment including friction-reducing devices (Figure 21.)
- Carts may be used to store air assisted lateral transfer or air-assisted lifting aids with their motors (Figures 22-23.)
- Specialized carts may be used to store items needed for patients of size. This is discussed in the Bariatric SPHM Guidebook.

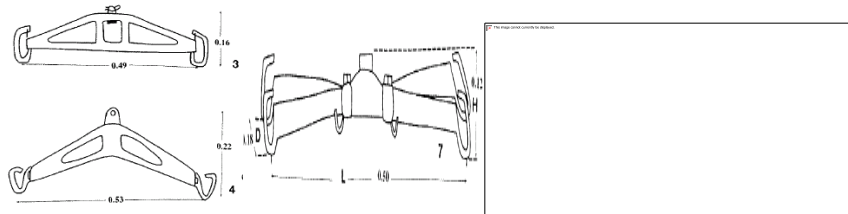


Figure 20. Lift Hanger Bar Styles



Figure 21. Friction-reducing devices



Figure 22. Air assisted lateral transfer device with motor  
(Air mattress folds into smaller size)



Figure 23. Air-assisted lifting devices

### STORAGE FOR INFREQUENTLY USED EQUIPMENT

An Equipment Bank located in the basement or other such area of the hospital is helpful for storing infrequently used equipment such as bariatric/expanded capacity beds, portable bariatric/expanded capacity lifts, supine set-up portable lifts, or extra lifts and transport equipment. Such an area would need electric supply for charging batteries. Facilities that do not own bariatric/expanded capacity beds and equipment may rent appropriate beds, commode chairs, or even bariatric/expanded capacity lifts as a package when patients who need them are admitted, although the lag time for rental is often important.

## OTHER DESIGN CONSIDERATIONS

ELEVATORS: There should be at least one facility elevator that will accommodate attending staff and motorized patient beds 9 feet in length and expanded capacity (bariatric) beds 60 inches wide. When designing for bed lengths, consider the effect of bed movers and pumps on the total bed length.

EMERGENCY EVACUATION of BARIATRIC PATIENTS: If a bariatric unit is planned, if possible, locate bariatric patients on street-access level. Plan for evacuation of patients of size from all other areas, including methods that work for specialty beds.

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**Acknowledgement and Appreciation:**

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