

Soteria Strains

Safe Patient Handling and Mobility Program Guide

Section 3 - Controls

Section 3.2 – Equipment Selection

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STRAINS

A provincial strategy for healthcare workplace musculoskeletal injury prevention.

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Section 3.2 – Equipment Selection

Introduction

This section discusses how to select appropriate equipment for the high-risk tasks where equipment has been identified as an appropriate control. Unit assessments are critical to understanding equipment needs and will inform purchasing decisions for a specific unit while the patient risk profile and point-of-care assessment will be helpful in guiding patient handling and mobility equipment selection for specific patients. Refer to Section 3.1 - Selecting Controls and Section 2.2 - Unit Assessment for more information.

Responsibility for Equipment Selection

The unit manager, working in conjunction with unit-based peer champions, are responsible for ensuring that the process for selecting, trialing, and evaluating equipment to reduce the risk associated with high-risk patient handling and mobility tasks. While this work is best done by a team, such as the team involved in completing the unit hazard identification and risk assessment (see Section 2.2), it is ultimately the unit managers responsibility to ensure that all steps in the equipment selection process are completed.

Steps to Selecting Equipment

Step/Activity		Tools
1. Identify specific equipment requirements for unit		Appendix 2.2.1 – Unit Hazard ID and Assessment Report Template
2. Compare equipment specifications to requirements		
3. Review process, procedures, and work practices		
4. Trial equipment	4a. Define parameters for the Trial	
	4b. Inspect equipment	
	4c. Install Equipment	
	4d. Train Health Care Workers	
	4e. Evaluate equipment	
	4f. Decide to purchase, lease, rent, or return equipment	
5. Repeat Steps 1-5e as need		

Step 1 – Identify Specific Equipment Requirements for Unit

Once it has been decided that equipment is the most appropriate control for identified high-risk patient handling and mobility tasks, the requirements for the specific type of patient handling and mobility equipment should be identified and agreed upon by stakeholders. This would include any patient handling and mobility equipment including but not limited to:

- Ceiling / frame / floor lifts
- sit/stand lifts
- air assisted lateral transfer aids
- transfer boards
- friction-reducing sliding aids
- gait and transfer belts

At this point, a list of requirements and constraints should be created to inform later steps. The first requirement should always be that the equipment mitigates the risk posed by the hazard it is intended to control.

Other important considerations are:

- room size and/or difficulty/inability to use portable equipment
- fit with current equipment
- current purchasing agreements
- special considerations for specific patient populations
- ease of use/anticipated learning curve for end users
- ceiling structure
- cost/budget
- accessibility/storage (include accessories - slings, batteries, etc)

When selecting rooms for ceiling lifts, speak with frontline users in an attempt to reach a consensus about which rooms require ceiling lifts more urgently than others. At this point, a list of requirements should be created to inform later steps. The first requirement is always that the equipment mitigates the risk posed by the hazard it is intended to control. Other important considerations are:

- room size and/or difficulty/inability to use portable equipment
- fit with current equipment
- current purchasing agreements
- special considerations for specific patient populations
- ease of use/anticipated learning curve for end users
- ceiling structure

Review the considerations from Table 3.2.1 to determine which type of mechanical lift will best meet the needs of the unit / room. Note that ceiling lifts should be the mechanical lift of choice whenever possible.

Table 3.2.2 outlines considerations for sit/stand lifts.

Table 3.2.3 outlines considerations for other equipment used for safe patient handling and mobility.

Table 3.2.1 – Considerations When Deciding Between Types of Mechanical Lifts

NOTE: Current evidence and experience in jurisdictions with mature safe patient handling and mobility programs suggest that installation of ceiling lifts is considered best practice when a mechanical sling lift is required. Therefore ceiling lifts should be considered first when implementing controls. This table outlines some of the considerations that may necessitate choosing a floor or frame lift instead of a ceiling lift.

Considerations	Ceiling Lifts	Floor Lifts	Frame lifts	Other Notes
Room size and/or difficulty/inability to use portable equipment	N/A	Small rooms, narrow doorways, or other obstacles may preclude the use of floor lifts	Some rooms may be too small or have too many obstacles to accommodate.	
Fit with current equipment / layout of room	Consider ceiling level obstacles, location of bathroom and door design, etc.	Clearance under beds/chairs, adequate space for moving, turning and positioning needed	Consider ceiling level obstacles, location of bathroom and door design, etc.	
Special considerations for specific patient populations	Is patient population likely to include bariatric patients, especially those at the high end of the spectrum	Is patient population likely to include bariatric patients, especially those at the high end of the spectrum	Is patient population likely to include bariatric patients, especially those at the high end of the spectrum	It may not be possible to use floor lifts with certain bariatric patients
Characteristics of patient population	Regular repositioning	Regular repositioning of	Regular repositioning of	If lifts required for regular

and care activities required	of patients required	patients required	patients required	repositioning of patients ceiling lifts may be more feasible than floor lifts
Ceiling structure	Is the ceiling structure designed to support the weight of the lift when at maximum capacity? Does the ceiling space contain asbestos-containing material?	N/A	N/A	
Cost/budget	Possible use with multiple patients, but limited to use in one room.	Use with multiple patients and across multiple rooms / units.	Possible use with multiple patients, but limited to use in one room.	
Infection Control	Improved infection control due to use in one room, can be used for isolation rooms	Reduced infection control due to use across multiple rooms, more work required when used for isolation rooms	Improved infection control due to use in one room, can be used for isolation rooms	
Availability, accessibility, storage (including accessories, slings, batteries, etc.)	Applicable only if lift motors will be used in more than one room.	Multiple lifts may be required to ensure adequate levels of availability. Accessible / safe storage / charging areas.	Applicable only if lift motors will be used in more than one room.	Appropriate storage required for slings for all lifts

Table 3.2.2 – Considerations for Sit/Stand Lifts

Considerations	Sit Stand Lift	Other Notes
Room size and/or difficulty/inability to use portable equipment	Small rooms, narrow doorways, or other obstacles may preclude the use of sit stand lifts	
Fit with current equipment / layout of room	Clearance under beds/ chairs, adequate space for moving, turning and positioning needed	
Special considerations for specific patient populations	Is patient population likely to include bariatric patients, especially those at the high end of the spectrum	Special sit stand lifts may be required
Availability, accessibility, storage (including accessories, slings, batteries, etc.)	Multiple lifts may be required to ensure adequate levels of availability. Accessible / safe storage / charging areas.	Appropriate storage required for slings for all lifts

Table 3.2.3 – Considerations for Other Types of Equipment

Considerations	Air Assisted Lateral Transfer Aids	Transfer Boards Friction Reducing Sliding Aids Gait and Transfer Belts	Other Notes
Fit with current equipment	Fits beds and stretchers	N/A	
Special considerations for specific patient populations	Is patient population likely to include bariatric patients, especially those at the high end of the spectrum	Is patient population likely to include bariatric patients, especially those at the high end of the spectrum	Appropriately sized / capacity required for bariatric populations
Availability, accessibility, storage and power outlets	Accessible / safe storage / charging areas. Power outlets available and accessible.	Multiple aids may be required to ensure adequate levels of availability. Accessible / safe storage.	Appropriate storage required

Step 2 – Compare Equipment Specifications to Requirements

Select Vendors

At this stage, it is important to involve Procurement to identify and select possible vendors for the specific types of equipment selected. Procurement staff can provide information about vendors from whom the organization has previously purchased patient handling and mobility equipment, the organization's request for proposals (RFP) process, and/or if any agreements exist regarding preferred vendors for this equipment.

Compare Equipment Specifications to Requirements

A variety of vendors supply patient handling and mobility equipment. Much of this equipment is similar but has slightly different features. It is important to review the various features in light of the list of requirements, similar equipment within the organization and how it is used and regarded.

Following the identification of required equipment, contact must be made with vendors to obtain equipment specifications, quotes, and availability of trial equipment. It is important for the equipment selection team, with assistance of procurement support staff, ensure that equipment requirements are well communicated to vendors.

Consideration should also be given to:

- warranties
- repair services
- response rates for service
- proximity to vendor
- availability of substitute or loaner equipment
- willingness/ability to provide training

These factors can be significant in ensuring there is minimal downtime of equipment.

Before any equipment is brought into a facility for trial, the equipment specifications should be reviewed by the following departments/stakeholders. These functions may be performed by different groups in different organizations. Also, some organizations may wish to consult with additional stakeholders when making decisions on equipment selection:

- Equipment users - review to determine if equipment meets identified needs
- Occupational health – review to determine if equipment falls within safe patient-handling guidelines
- Infection control – review to determine if equipment is suitable to meet infection prevention and control standards; also review slings to determine if they can be suitably laundered
- Engineering services – review to determine if equipment meets electrical and other requirements
- Clinical engineering/biomed – review to determine if equipment meets current standards for medical equipment and load testing specifications
- Environmental services – review to determine if current cleaning products and processes can disinfect properly

These responsibilities should be explicitly reflected in appropriate policies/procedures and a method for tracking approval should be in place to minimize unnecessary delays and ensure all appropriate stakeholders have had an opportunity to provide their input. Organizations are encouraged to maintain a list or database of approved equipment labeled by type, model, and common hazards the equipment controls for. Ideally this will lead to a provincially shared list and will be used to facilitate equipment selection performed in other units.

Safe Patient Handling and Mobility Equipment Database

Organizations are encouraged to maintain a list or database of approved equipment labeled by type, model, and common hazards the equipment controls for. Ideally this will lead to a provincially shared list and will be used to facilitate equipment selection performed in other units.

Step 3 – Review Process, Procedures, and Work Practices

By this step, enough should be known about the intended equipment purchase to plan for changes to workflow and/or procedural changes. This could include changes to or the creation of:

- safe work practices
- processes and procedures
- staffing complement
- workflow
- work distribution

This is work that needs to be done, but not necessarily by the team selecting equipment. Refer to existing organizational processes, procedures, and practices to complete this step.

Step 4 – Trial Equipment

It is recommended that a trial be conducted before purchasing any costly safe patient handling and mobility equipment (e.g. mechanical lifts, sit stand lifts, air assisted devices). However, if the equipment to be purchased is standard and has been used previously in the facility, then the trial period can be shortened, and conducted to confirm that the specific piece of equipment is appropriate for the patient handling and mobility task(s) and that it fits with existing equipment and room layout.

When a new type of patient handling and mobility equipment has been selected, or when trying to decide between different models of the same type of equipment, a more complete trial should be conducted and feedback should be collected and compared to decide whether the equipment is appropriate or which model is the best fit for the task(s), existing equipment, and room layout.

When comparing different types or models of equipment, if none of the options work as intended no selection should be made, and the search for appropriate equipment should begin again with an expanded vendors list. If equipment cannot be found that works well, it may be beneficial to collaborate with centres of innovation such as universities, community colleges and/or internal departments to assist with designing and engineering a potential solution.

Steps 4a-f describes the process of trialing equipment.

Step 4a - Define Parameters for the Trial

Before the trial begins, it is important to define and agree upon the parameters of the trial with the vendor. Items that should be considered and agreed upon might include, but are not necessarily limited to:

- Time frames for the trial, including specific start and end dates, and any restrictions on how long the equipment can be trialed before it can be returned
- Service during the trial
- Accessories provided for the equipment
- Liability for damage to the equipment

Step 4b – Pre-installation Inspection of Equipment

Once a specific piece of equipment is selected and provided for trial, the equipment should be checked by Clinical Engineering (or equivalent for the implementing organization) to ensure it meets their standards before being used with patients and employees. Other departments (such as Materials Management, Procurement, Clinical/Biomedical Engineering, Engineering Services, Environmental Services Manager and Infection Control) that may have questions should also review the equipment at this time.

Step 4c – Install Equipment

Equipment should be installed, configured, and set up according to the manufacturer's directions and the requirements of the unit / organization. Installation steps included in *Section 3.3: Equipment Installation and Maintenance* need to be considered.

At this point, the equipment should be looked at as a trial. Some vendors, in the case of specialized equipment and/or equipment with significant installation costs, may not provide trial periods for equipment. This should be taken into consideration at this step and should generally be the exception not the rule. If a trial period is not available, it is important to obtain references from the vendor of other facilities who have purchased this equipment. Contact can then be made with these facilities to obtain their feedback, discuss any concerns, and observe the equipment at their site.

When a Trial Period is Not Possible

If a trial period is not available, it is important to obtain references from the vendor of other facilities who have purchased this equipment. Contact can then be made with these facilities to obtain their feedback, discuss any concerns, and observe the equipment at their site.

Step 4d – Train Health Care Workers

Health care workers should be trained in the selection and use of the equipment being put in place. Refer to section "3.6 – Training" for details on implementing this step.

Training should include general, unit specific, and equipment specific elements. Vendors can usually provide equipment specific training elements and may also assist with general and unit specific elements in collaboration with internal resources (peer champions, trainers, managers, etc.). Refer to Section 1.2 – Policy and Roles and Procedures and Section 3.6 – Training for more details on

delivering the general and unit specific training elements. Prior to the trial, health care workers should be assessed as competent to use the equipment, as per the competency evaluation built into the training program, before the trial begins.

Please note that an equipment trial is generally not long enough for all users to become adept at using a particular piece of equipment. As with learning anything new, individuals need time to become comfortable using the equipment. This should be addressed early in the process and in light of individual differences in experience / rate of learning.

Step 4e – Evaluate Equipment

Feedback on the equipment should be obtained. The feedback should be collected both during and at the end of the trial period.

Equipment should meet with all requirements identified in step 1.

The evaluation process should be communicated to all users/stakeholders including:

- Equipment users - review to see if equipment meets identified needs
- Occupational Health – provides consultation and support as needed to ensure the equipment falls within safe patient handling and mobility guidelines and mitigates risk as intended
- Infection Prevention and Control – provides consultation and support as needed to ensure organization cleaning products and procedures are disinfecting equipment properly
- Engineering Services – provides consultation and support as appropriate regarding electrical, facility, maintenance, etc.
- Clinical Engineering/Biomed – provides consultation and support as needed with issues such as interface/interference with existing medical equipment
- Environmental Services – review to identify new and outstanding infection-control issues
- Materials Management - review to identify new and outstanding materials management issues

Step 4f – Decide to Purchase or Return Equipment

A decision on whether to purchase or return the equipment needs to be made prior to the date that the equipment must be returned to the vendor. As such, it is important to ensure that all stake holders are made aware of this date and the evaluation is completed in enough time to allow a decision to be made prior to this date.

All information collected during the evaluation should be compiled, reviewed and summarized by the unit manager, with assistance of the unit-based peer champions and/or the members of the equipment selection team. Based on this review, a recommendation to purchase or return the equipment should be made to the person financially accountable for the purchase (managers and/or directors).

Step 5 – Repeat Steps 1-f as Required

Organizations and units should continually be evaluating and mitigating risks. Refer to “Section 1.4 – Continuous Improvement” for the rationale and details on the continuous-improvement cycle.

Appendix 3.2.1 – Ergonomic Design Considerations for Equipment

Adapted from Oregon Coalition for Health Care Ergonomics

ERGONOMIC DESIGN CONSIDERATIONS FOR EQUIPMENT				
Area	Item for Consideration	Yes	No	Notes
User Design	Does unit allow for adjustability?			
	Does it allow for neutral working postures?			
	Are the controls easily accessible?			
	Are the controls easy to use and understand?			
	Is the force to operate acceptable?			
	Is the force to maneuver acceptable?			
	Is there minimal repetitive motion to operate?			
	Is there pinch point protection on all moving parts (for both staff and patients)?			
Powered Equipment	Is the range of adjustment suitable for tasks? (e.g. retrieve patients from floor)			
	What is weight capacity of equipment?			
	Is weight capacity clearly displayed?			
	Is scale incorporated or easily accessible?			
	Is there an Emergency shut off switch or control?			
	Is there a Manual override?			
	Is there a Boom Pressure Sensitive Switch? (boom lifts automatically if inadvertently lowered onto patient)			
	What is the noise level when in operation?			
	Are there any limitations on its uses?			
	Are there features available that are not available on similar products?			
	Are slings from other companies compatible?			
	What is the life expectancy?			
	What type of spreader bar? 2 pt. or 4 pt.			
	Does it meet identified patient handling needs?			
	How is it charged?			
	If the battery pack is removable, what is the replacement cost?			
What is the weight of the battery pack?				
Storage	Is storage available?			
	Are there available electrical outlets to charge unit in storage area?			

Specific Design Considerations		Yes	No	Notes
Portable Lift, Floor Based Systems and Transport Devices	Is the unit easily maneuverable?			
	Does it fit through doorways/bathrooms/elevators?			
	Item for Consideration			
	Do the legs fit under the beds (particularly new beds and LTC beds)?			
	Is the base adjustable? Powered or manual adjustment?			
	Is caster material suitable for flooring?			
	Are brakes easily accessible?			
	Is there powered steering or steering assist?			
	Are handles easily accessible to promote neutral body postures?			
	Can the device lift a patient from a car?**(WHERE DO WE STAND ON CAR EVACUATION)			
	Are any slings provided with purchase of lift?			
Ceiling Lift systems	Is this new construction or an existing facility?			
	Can they be installed in the ceiling or is a wall mount or post system required?			
	Is this a single track system or x-y system (full room coverage)?			
	Is there sufficient vertical clearance to clear the patient when lifting from a bed or chair?			
	Is there sufficient distance for the rails from sprinkler heads and ventilation?			
	What is the maximum working load of the lift?			
	Where is the motor recharged?			
	Is the emergency stop button easily accessible?			
	Is there a manual emergency lowering available?			
Ceiling Lift Installation	At the time of installation what is the load test multiplier for the rails? (i.e. 1.2x, 1.5x)			
	Who will provide engineered drawings?			
	What type of anchoring will be provided?			
	What building, fire, electrical, seismic and CSA codes need to be met?			
	Who will do the installation?			
	How are the installers trained and certified by the manufacturer?			

Specific Design Considerations (continued)		Yes	No	Notes
Slings	How will slings be labeled to be returned to unit that purchased them after they are laundered?			
Infection Control Considerations	Can it be cleaned easily?			
	What chemicals can be used to clean equipment?			
	If lift is in a semi-private or ward, can it be used at all beds even when one patient may be under isolation?			
Clinical Engineering / Maintenance Considerations	What preventative maintenance and inspection is required?			
	Can this be performed by in-house staff?			
	What type and length of training by manufacturer for in-house staff?			
	What type of warranty is provided?			
	What does the warranty cover?			
	How difficult is it to service/change batteries?			
	What is the turnaround time on replacement parts?			
	Is loaner equipment available?			
Accessibility	Is the equipment where it needs to be when it needs to be there?			
	Is the equipment ready to use when needed?			
	Are accessories where they need to be when they need to be there?			
	Are accessories ready to use when needed?			
Use	Adequate training?			
	Is the equipment being used? (end user self report)			
	Why or why not?			
	Is the equipment being used? (Observations)			
	Why or why not?			
Effect	Does the equipment adequately control the risk associated with the patient handling and mobility task(s)? (end user self report)			
	Does the equipment adequately control the risk associated with the patient handling and mobility task(s)? (expert observation/measurement/opinion)			
Other	Any unexpected consequences? (+/-)			
	Patient/Family feedback			

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