# Safe Patient Handling - Equipment Purchasing Checklist

**Before You Start the Equipment Selection Process:**

This check list is designed to help you with the patient handling equipment assessment and purchase process. It is designed to be used as part of a comprehensive a safe program plan.
Purchase of equipment should occur *after you* have identified the hazards to be addressed that are related to patient handling (e.g. the type of lift, transfer, movement or patient care task) and the needs of the patient population (physical and cognitive abilities and clinical needs).

This check list is **not** all inclusive - vendors, purchasing, facilities engineering and maintenance staff and members of your multidisciplinary safe patient handling team will also provide valuable information. A collaborative approach helps to ensure that the equipment choice made is one that fits your patient, staff, facility's design and organization needs.

**For an overview of sample safe patient handling program components and implementation processes see Appendices I & II.**

When choosing any medical device including patient handling equipment keep in mind basic ergonomics design principles that is, to ensure the device accommodates a majority of the *user* population's physical, perceptual and cognitive (mental) capabilities.

In health care the equipment user population may include staff who perform direct patient care, support care staff (e.g., radiology), transportation, environmental services and maintenance; and patients or residents and their families.

It is also important that your SPH program and the equipment you purchase will 'fit' future needs of the organization, e.g. a changing patient population, changing surgical procedures or medical treatment protocols; facility design changes (new building, renovations or movement of units/depts.) etc., so that the maximum return on investment re equipment purchase is achieved.

Remember to 'Try Before You Buy'. Conduct structured trials of equipment with the users before purchase to determine the best fit for patients, staff and the physical work environment, etc. Consider the following when evaluating SPH equipment (or any other medical device)

- Effectiveness of device/system – does it fulfill the work-related needs and functions of the clinician using it (or needs of the user) and clinical goals?
- Efficiency of use.
- Acceptance by intended users of the system.
- Comfort associated with the operator's use of the system.
- Potential safety or ergonomics related hazards or risk of error during use and anticipation of misuse of the device. Ensure new hazards are not created.
- Needs related to support processes/systems., e.g. training, maintenance, infection control, etc.
- Integration with other devices and overall clinical systems (upstream & downstream).

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# Safe Patient Handling - Equipment Purchasing Checklist

**Note – some questions are applicable to powered equipment only**

| Action Item | Components | Yes | No | Notes |
|---|---|---|---|---|
| **Basic Ergonomics Design Principles for Equipment:** | | | | |
| **1. Designing for the User - Physical Capabilites**<br><br>Goal: Design within physical capabilities for at least a majority of users (90%) | a. Provide Adjustability. | | | |
| | b. Allow for neutral working postures (ability to use proper body mechanics) when operating or using equipment. | | | |
| | c. Ensure easy reach distance to access controls for hands and feet. | | | |
| | d. Avoid static postures especially when combined with force. | | | |
| | e. Ensure acceptable force to activate hand/finger/foot controls*. | | | |
| | f. Ensure minimal grip force to hold hand controls or lever mechanisms e.g., raising the head of a stretcher when loaded, lowering side rails on beds and gurneys.* | | | |
| | g. Ensure acceptable force to maneuver, push or pull equipment such as floor lifts, stretchers and beds. Consider floor covering; entryways; slopes uneven floors and wheel type.* | | | |
| | h. Ensure minimal repetitive motion is required to operate equipment especially is combine with forceful motions e.g., using a hand crank or foot pump mechanism when operating equipment. | | | |
| | i. Ensure that there are no contact stress on soft tissue when using equipment e.g. from sharp edges, and ensure pinch points protection on all moving parts (for employees or patients). | | | |
| | j. Prevent or minimize transmission of vibration from equipment to operator. | | | |
| **2. Designing for the User – Perceptual, Cognitive/Mental Capabilities**<br><br>Goal: Equipment is intuitive to use & user friendly thus reducing training time and risk of operator error. | a. When activating equipment controls feedback to indicate if action is correct or incorrect is immediate, visible, and meaningful (e.g., light comes on, or equipment does not operate). | | | |
| | b. Equipment operation errors can be easily reversed. | | | |
| | c. Procedures (menus and navigation) if present are logical and intuitive e.g. use of electronic scales on a lift device. | | | |
| | d. Equipment controls and displays are consistent – consider standardization between groups of equipment and between units or departments if appropriate. | | | |
| | e. Device Control and Display functions are clearly communicated:<br>i. Control type is appropriate for function/use**<br>ii. Labels are legible, consistent and adjacent to corresponding control<br>iii. Comprehensible icons or pictograms<br>iv. Activation of controls and information on displays meet population stereotypes<br>v. Redundant coding systems are used (e.g., shape, size, color)<br>vi. Consider impact of lighting, glare and viewing distance (bifocal use considered) if displays have to be read. | | | |
| | f. Controls are designed to prevent accidental activation – e.g. not too close together. | | | |

| Action Item | Components | Yes | No | Notes |
|---|---|---|---|---|
| **General Design Considerations for Safe Patient Handling (SPH) Equipment** | | | | |
| **3. Powered Equipment** | a. Is the speed of operation satisfactory for staff and patients? | | | |
| | b. Is the soft start/stop (smooth acceleration/deceleration)? | | | |
| | c. Is the range of adjustment e.g., lift height range sufficient? *A floor or ceiling lift needs to lower far enough to reach a patient who has a low bed or has fallen to the floor.* | | | |
| | d. What is the weight capacity of the equipment? | | | |
| | e. Is weight capacity and the operation instructions listed on equipment? | | | |
| | f. Is a scale incorporated or can one be attached to the equipment? | | | |
| | g. Does the device have an emergency shut off switch or control? | | | |
| | h. Is it easily accessible? | | | |
| | i. Is there a Manual Override Control –if the battery loses power? | | | |
| | j. Is there protection against free falling? | | | |
| | k. Is there a Boom Pressure Sensitive Switch (boom lifts automatically if inadvertently lowered onto the patient, etc)? | | | |
| | l. What is the noise level when in operation? | | | |
| | m. Are there any application limitations? | | | |
| | n. Does the device have features that are not available on other products? If so, what are they? | | | |
| | o. Is the lifting device compatible with different slings produced by other suppliers? Warranty to include this. | | | |
| | p. What is the life expectancy of equipment and parts? *APPLICABLE TO ALL EQUIPMENT AND DEVICES* | | | |
| **4. Spreader Bar** (i.e., on floor and ceiling lift devices) | a. What type of spreader or sling bar does the device have e.g. 2 or 4 point? | | | |
| | b. Does it meet your patient handling task needs? | | | |
| | c. Does the spread bar or support boom allow sufficient clearance for taller patients when being moved in sling? | | | |
| | d. Does the design of the mechanism for attaching a sling to the spreader bar prevent accidental unhooking or release? | | | |
| **5. Hand Control** | a. Are function keys are easily understood on control device; it is easy to tell if the control is upside down or right side up? | | | |
| | b. Is there an easy access area on equipment to place hand control when assisting or maneuvering the patient? | | | |
| | c. Is it resistance to water damage and droppage? | | | |
| | d. If the control is a wireless device – will it interfere with other equipment? | | | |
| **6. Battery** | a. What is the type of battery that is used e.g. lead acid or gel cell batteries? | | | |
| | b. Is there a low battery indicator? | | | |
| | c. How long will the battery operate before needing to be recharged? | | | |

| Action Item | Components | Yes | No | Notes |
|---|---|---|---|---|
| | d. What is the battery recharge time? | | | |
| | e. What is the expected life of a battery? | | | |
| | f. Can a 'dead' battery be replaced with a fully charged battery or does the equipment need to be plugged in to charge? | | | |
| | g. Is there an automatic shut down of power on the equipment when not in use to save energy and battery life? | | | |
| | h. Can batteries be shared between different devices e.g. between a floor lift and a sit to stand device? | | | |
| | i. What is the battery replacement cost? | | | |
| | j. What is the weight of the battery? | | | |
| **7. Storage for Equipment and Supplies** | a. What are the storage "footprint" requirements? | | | |
| | b. Is storage available with easy access to electrical outlets to charge equipment batteries? | | | |
| **Equipment Design Considerations - Specific** | | | | |
| **8. Portable Lift, Floor Based Systems and Transport Devices** | a. Is lifting mechanism powered adjustable? | | | |
| | b. Can the device be easily maneuvered in area of use?<br>Consider:<br>▪ Required diameter of turning circle<br>▪ Clearance through doorways/in the bathroom/elevators/in other depts.<br>▪ Clearance of leg support under beds (especially motors) and chairs<br>▪ height of leg supports/size of casters<br>▪ Adjustability of base to allow the legs to fit around chairs, bed motors, commodes, etc. | | | |
| | c. Are base legs power adjust or require manual adjust? | | | |
| | d. Is high force required to start pushing the device | | | |
| | e. Is high force required to sustain movement of the device<br>Consider:<br>▪ Distance to be pushed<br>▪ Force to control equipment when turning corners<br>▪ Force required to push equipment over thresholds, on uneven or sloping floors and gratings.<br>▪ Steering mechanism peak and sustained push force turning etc | | | |
| | f. Does the diameter of the caster assist to minimize force required to push the equipment (in general, larger casters require less force to push/pull and maneuver)? | | | |
| | g. Is caster material suitable for floor type? | | | |
| | h. Are brakes easily accessible? | | | |
| | i. Is there powered steering or steering assist for equipment that is used for transporting a patient e.g. stretchers, beds or gurneys | | | |
| | j. Handle design – can operator maneuver equipment using vertical handles and neutral body postures? | | | |
| | k. Can the device be used to lift a patient from car? | | | |

| Action Item | Components | Yes | No | Notes |
|---|---|---|---|---|
| **Equipment Design Considerations - Specific** | | | | |
| **Ceiling Lift Systems**<br><br>**9. Facility Structure Considerations & Track Configuration** | a. Are ceiling lifts to be installed in new construction or existing facility (retrofit)? *(This may impact the mounting systems and track configuration that can be used)* | | | |
| | b. Can they be installed in the ceiling or installed as wall mount systems? | | | |
| | c. Is there sufficient vertical clearance to lift a patient from a bed or chair? | | | |
| | d. Is there sufficient clearance to operate the motor in relation to privacy curtains, medical gases delivery systems, exam lighting, and sprinkler heads, etc? | | | |
| | e. Can ceiling lift tracks be moved or reconfigured after they are installed to accommodate changing needs? | | | |
| | f. What configuration is available and best for tasks required<br>▪ Full room coverage vs. straight track?<br>▪ Curved, turntable, access into bathroom, other<br>*If a design is submitted other than room covering, the track layout should have the ability to lift patients from a position which is off center from the lift. Moving beds and other furniture when using the ceiling lift system to position a patient may increase time to complete the task and decrease use of the lift system by staff.* | | | |
| | g. The ceiling and track configuration enables the following patient handling to be performed e.g.:<br>▪ Bed to chair seated transfers<br>▪ Horizontal/supine lifting<br>▪ Turning in bed<br>▪ Re-positioning up and down in bed<br>▪ Sit-stand<br>▪ Bathing<br>▪ Toileting<br>▪ Assisted walking/ambulation<br>▪ Lifting from the floor from any point in the room. | | | |
| **10. Weight capacity** | a. What is the maximum safe working load of the tracking system? | | | |
| | b. What is the weight capacity of a motor? | | | |
| | c. Are 2 motors required to lift patients who weigh over 500-600lb? | | | |
| | d. Are portable scale units are available for the lift system? | | | |
| **11. Safety features** | a. Does the system have low friction wheels (minimal effort required to move lift along track)? | | | |
| | b. How is motor recharged? On track charging or return to charge (automatic or manual)? | | | |
| | c. Does the system have overload protection? | | | |
| | d. Is the emergency stop button easily accessible? | | | |
| | e. Is there automatic shut-off if hoist strap is twisted? | | | |
| | f. Are emergency lowering system with instructions clearly outlined on the motor or easily visible during operation? | | | |
| | g. Can the lift be operated safely by one caregiver? | | | |
| | h. Can overhead track systems are able to be used in wet and humid environments | | | |

| Action Item | Components | Yes | No | Notes |
|---|---|---|---|---|
| | (bathrooms, showers, and bathing areas)? | | | |
| **12. Portable motors** | a. **Refer to *Batteries* for questions about charging** | | | |
| | b. What is the weight and size of the motor unit? | | | |
| | c. Can the motor be easily attached to the rail system (no lift system)? | | | |
| **13. Installation piece** | a. Who will conduct a structural engineering inspection and provide stamped structural drawings? | | | |
| | b. What type of anchoring system will be used? | | | |
| | c. What building, electrical, fire and seismic codes have to be met? *Also refer to Vendor Service - Regulations* | | | |
| | d. Who will install the tracking system – employees of the vendor or other contractors? | | | |
| | e. How are the installers trained and certified by the lift system manufacturer? Have vendor provide applicable documentation. | | | |
| | f. Are the installers licensed and bonded to work in your state? Have vendor provide prove of insurance etc. | | | |
| | g. Ask the vendor is ceiling lift installation meets any international safety design standards e.g. at a minimum the ISO 10535 standard 'Hoists for the transfer of disabled persons- requirements and test methods'?<br><br>Although not necessary required in the US a vendor who demonstrates that they meet such safety standards maybe be your preferred choice vs. one who is not. Manufacturers from other countries should be knowledgeable re such standards<br><br>The ISO 10535 standard does have recommendations re the maximum deflection of the rail during maximum load and load testing of the ceiling lift system including track systems joints and attachments.<br>ISO standards can be found at http://www.iso.org/iso/iso_catalogue.htm<br><br>British Columbia also has guidelines for ceiling lift installation go to http://www2.worksafebc.com/i/posters/2002/WS%2002_02.htm | | | |
| **14. Room Preparation – Pre & Post Installation** | Consider:<br>*Pre Install -*<br>▪ Relocation of patient to appropriate site<br>▪ Removal of beds, equipment, privacy curtains<br>▪ Secure area from staff and patients<br>▪ Consider areas where all staff/ patients cannot be removed (e.g., ICU, emergency)<br>▪ Design work procedures/work plan to accommodate<br>*Post Install -*<br>▪ Cleaning of room<br>▪ Undo lockout<br>▪ Replace beds and equipment<br>▪ Replace privacy curtains etc<br>▪ Site safety inspection prior to use of room | | | |

| Action Item | Components | Yes | No | Notes |
|---|---|---|---|---|
| **15. Other Safety Considerations** | a. If concrete drilling is required, ensure location of electrical, gas, and water lines are known? | | | |
| | b. Is there is the risk of asbestos disturbance | | | |
| | c. Are there confined space requirements (per OSHA standards)? | | | |
| | d. What lockout considerations are required to work on room consider electrical, gas, etc | | | |
| | e. Staging area for ceiling tracking materials and equipment | | | |
| **16. Load testing** | a. What is the vendor load testing policy or recommendations post installation prior to use? | | | |
| | b. Will all room covering overhead track systems, joints and attachments used for lifting be tested? | | | |
| | c. What is the test load e.g. maximum weight plus x%? | | | |
| | d. Will load test be administered by installers in the presence of administration and facilities personnel and other authorities as necessary? | | | |
| | e. What is the recommended routine load testing schedule? = | | | |
| | f. Can in-house maintenance staff perform this testing | | | |
| | g. Will the vendor provide training re this procedure? | | | |
| **17. Other post Installation Checks** | a. Are rail end stops present and secured well? | | | |
| | b. Who will certify the installation e.g. a structural engineer? | | | |
| **Equipment Design Considerations: Slings** | | | | |
| **18. General** | a. What type of sling is available and required?<br>e.g. Seated; toileting; supine/flat; limb; ambulation; amputee sling<br>Single patient use or reusable slings? | | | |
| | b. What size of slings should be available (consider head neck support, removal of seated slings)? | | | |
| | c. How many of each type of sling is needed? | | | |
| | d. Can slings be used with both floor and ceiling systems – e.g. attachment point (fabric loop vs. key lock system) is compatible with spreader bar receptacle? | | | |
| | e. The sling sizing is clearly and easily identified e.g. color-coding is used to indicate sizing | | | |
| | f. The safe working load is clearly marked on a sling? | | | |
| | g. What material are slings made of? | | | |
| | h. Do slings have positioning handles for correct sling and patient positioning? | | | |
| | i. Are custom made specialty slings are available? | | | |
| | j. What is the warranty on the slings? | | | |
| | k. How long will slings last? | | | |
| | l. What is the replacement/repair policy including turnaround time and costs? | | | |
| | m. What is the sling trade-in policy? | | | |

| Action Item | Components | Yes | No | Notes |
|---|---|---|---|---|
| **19. Safety** | a. Are there instructions for proper use of slings? | | | |
| | b. Is it possible for the patient/resident to slip out of the sling or become injured on any parts of machine? | | | |
| | c. Indicate the sling weight rating? | | | |
| | d. Are slings load tested for safety at a minimum of 1.5 times their maximum lifting capacity? | | | |
| | e. Are slings inspected before use for wear and tear; fraying etc? | | | |
| | f. Can repositioning slings be left under the resident without creating bedsores? | | | |
| **20. Laundry** | a. What are the laundering requirements for reusable slings? | | | |
| | b. Are laundering instructions available? | | | |
| | c. Can slings be laundered with other linens? | | | |
| **Infection Control Considerations** | | | | |
| **21. Also refer to *Slings*** | a. How easily can equipment such as floor and sit to stand devices be cleaned?<br>b. Consider effectiveness of cleaning stitched seams, rope attachments, etc. | | | |
| | c. What chemicals can be used to clean equipment? | | | |
| | d. Is the wipe down (with approved disinfectant) of slings, belts and transfer devices that do not touch patient's skin an acceptable practice? | | | |
| | e. Has the infection control officer approved decontamination procedure for all equipment and accessories etc? | | | |
| **Maintenance Considerations** | | | | |
| **22. Maintenance** | a. What preventative maintenance and inspection is required and how often?<br>Consider:<br>▪ The recommended standard interval for cleaning tracks on ceiling lift systems<br>▪ The recommended standard interval for cleaning motors, moving parts; wheels and casters. | | | |
| | b. Can this be performed by in–house maintenance staff? | | | |
| | c. Can in–house maintenance staff perform emergency maintenance? | | | |
| | d. Will the vendor or representative provide training and orientation for in-house maintenance with equipment training? | | | |
| | e. How difficult is the device to maintain/service?<br>Consider:<br>▪ Access and clearance for facility maintenance techs/Biomed & IT personnel<br>▪ Time and effort to diagnose/troubleshoot problem<br>▪ Are special tools required | | | |
| | f. What is the availability of replacement and spare components, cost and time to delivery? | | | |
| | g. What is the procedure for replacing defective parts, or getting replacement and spare components?<br>Do you have to buy from the vendor or can you buy part at a local supplier or store? Some sales representatives stock their own parts, whereas others rely on the manufacturer to supply parts. | | | |
| | h. Is loaner equipment available if repairs are extensive or replacement is required? | | | |

| Action Item | Components | Yes | No | Notes |
|---|---|---|---|---|
| | i. Consider environmental impact & disposal of equipment and accessories such as batteries | | | |
| **Vendor Service** | | | | |
| **Also Refer to Ceiling Lift Installation** | Obtain references from vendor and contact other facilities (possible include the Better Business Bureau) re their experience with purchase, training and after service.<br><br>Check with your organizations Purchasing Dept. re group purchasing plan discounts or criteria that may apply to the equipment purchase. | | | |
| **23. Local Consultant/Representative Information** | a. How many years of experience with lift and transfer equipment- -does the local consultant/rep have? Be specific to the type of systems you wish to purchases e.g. ceiling lift systems. | | | |
| | b. How long has the current representative worked with them? | | | |
| | c. How many customer representatives are in this state? | | | |
| | d. How many clients do you service in this state? | | | |
| | e. Can the company provide data on the success of using their equipment? | | | |
| | f. What other hospitals in the state have this equipment? Will they talk to you about their experience and attest to the quality, timeliness and satisfaction with their work for the installation lift and transfer equipment? | | | |
| **24. Manufacturer Information** | a. How many years of experience does the manufacturer have in lift/transfer equipment? | | | |
| | b. How long has the manufacturer done business in the state? | | | |
| | c. Does the manufacturer/vendor provide service technicians? If yes, please provide the names of those who would respond to service calls at XXX | | | |
| **25. Specific to equipment purchase** | a. Has the device or equipment been evaluated in a published study? | | | |
| | b. Has the device been listed on the FDA product recall or safety alert list at http://www.fda.gov/opacom/7alerts.HTML? | | | |
| | c. What is the equipment evaluation period? | | | |
| | d. What is the new equipment delivery time? | | | |
| | e. What is the life expectancy of equipment and parts? | | | |
| | f. Is there an option to rent or lease equipment? Is so what are the lease terms? | | | |
| | g. Does the vendor offer bariatric or larger versions of the standard equipment? | | | |
| **26. After service** | a. What is the average on site response time for service? | | | |
| | b. What is the equipment warranty or guarantee for length of service?<br>c. Consider limitations of the warranty | | | |
| | d. What is the warrantee for batteries and motors, Slings and other 'soft' goods, etc? | | | |
| | e. Will the manufacturer or vendor notify customers when an upgrade for equipment and accessories is needed or available? | | | |
| | f. What are the terms or policy for upgrading equipment etc? | | | |
| | g. Will the manufacturer or vendor notify customers about recalls? | | | |

| Action Item | Components | Yes | No | Notes |
|---|---|---|---|---|
| **27. Training** | a. Will the vendor or factory representative do training for all users on all shifts? | | | |
| | b. Does training include the use of all types of slings available for the equipment? (i.e. walking slings, disposable slings, supine slings, octopus, and custom made for amputees etc.) | | | |
| | c. What training materials are provided for the facility to use when training new employees etc?<br>d. Consider training videos or on-line training support. | | | |
| | e. Will the vendor return and train new staff periodically?<br>f. Is there a fee for this? | | | |
| | g. Will vendor provide any special orientation and training for doctors or other specialty groups, e.g. therapists; maintenance, etc. | | | |
| **28. Regulatory Requirements**<br>**Federal**<br><br>**State** | a. Does the device or equipment meet design FDA regulations if applicable e.g. many patient handling devices are considered Class 1 Medical Devices by the FDA? | | | |
| | b. Are there any Joint Commission, CMS or other Federal agency regulations to consider regarding the use and storage of the equipment? | | | |
| | c. Are there any state agency regulations to consider e.g., OSHA, state/county/city building, electrical and fire codes | | | |
| | d. *Electrical*: Many patient handling devices re manufactured 'offshore' in Canada or Europe.<br><br>Determine per your state, county and city fire codes etc, what safety certification is acceptable for medical electrical devices. For example the typical acceptable designation is the UL rating in the US from the Underwriters Laboratories-Standard for Safety for Medical Electrical Equipment - UL- 2601-1.<br>*Your facilities engineering department should be able to assist you to determine this.* | | | |

* For information about grip force requirements refer to **Kodak's Ergonomic Design for People at Work.** 2nd edition (2003). John Wiley & Sons, Inc. http://www.wiley.com or the **MIL-STD 1472F Human Engineering Design Criteria for Military Systems, Equipment and Facilities.** (1999 & 2003 updates). http://combatindex.com/mil_docs/mil_std_1400.html

For information about the maximum push force (initial and sustained) that a majority of the user population may safely exert refer to
**The Liberty Mutual Manual Materials Guidelines 2005** *http://libertymmhtables.libertymutual.com/CM_LMTablesWeb/taskSelection.do?action=initTaskSelection*

** For information about design of controls and displays refer to **Kodak's Ergonomic Design for People at Work.** 2nd edition (2003). or **MIL-STD 1472F Human**

# Resources and References

*Also refer to Websites and Resources provided in your conference proceedings*

### *Information related to Ceiling lifts*

**Occupational Health & Safety Agency for Healthcare in BC (OHSAH).** http://www.ohsah.bc.ca/EN/ergonomics/
**WorkSafe BC** http://www2.worksafebc.com/Portals/HealthCare/ceilingliftresources.asp
**WorkSafe Bulletin: Properly Install, Inspect, and Load Test Overhead Patient/Resident Track Lifts WS 02-**02
**Ceiling Lift Reference Guide: Installation Considerations Checklist.** Workers Compensation Board of B.C.
http://healthcare.healthandsafetycentre.org

### *Patient Handling Equipment and Slings*

**Dept of Veterans Affairs Patient Safety Center**

- **Patient Care Sling Selection and Usage Toolkit**
- **Technology Resource Guide**

Both can be downloaded at http://www.visn8.med.va.gov/patientsafetycenter/safePtHandling/default.asp

### *Medical Equipment Design*

**U.S. Department of Health and Human Services Food and Drug Administration's (FDA) Human Factors Program: Promoting Safety in Medical Device Use.** Information for Health Care Professional, Manufacturers and Consumers. http://www.fda.gov/cdrh/humanfactors/index.html
Documents include:

- **Getting To Market With A Medical Device US Food and Drug Administration ( 2003)**
- **Medical Device Use-Safety: Incorporating Human Factors Engineering into Risk Management, (2000)**
- **Do It By Design. An Introduction to Human Factors in Medical Devices. (1996) D. Sawyer et al.**

**ANSI/AAMI HE74-2001 Human Factors design process for medical devices.** Wiklund M. Eleven Keys to Designing Error-Resistant Medical Devices. *MD&DI*. May 2002 pp. 86-90. [Online]
http://www.devicelink.com/mddi/archive/02/05/004.html

### *Other*

**Handbook of Human Factors and Ergonomics in Health Care and Patient Safety (2007).** Edited by Pascale Carayon. Lawrence Erlbaum Associates

**Safe Patient Handling and Movement: A Practical Guide For Health Care Professionals (2006).** Audrey Nelson Editor. Springer Publishing http://www.springerpub.com/

**The Design of Every Day Things. (1988).** Donald Norman. Currency Doubleday. www.randomhouse.com/doubleday

**Using Human Factors Engineering to Improve Patient Safety (2005).** Edited by John Gosbee. Joint Commission Resources. www.jcrinc.com

**ECRI's Medical Device Safety Reports** http://www.mdsr.ecri.org/index.asp

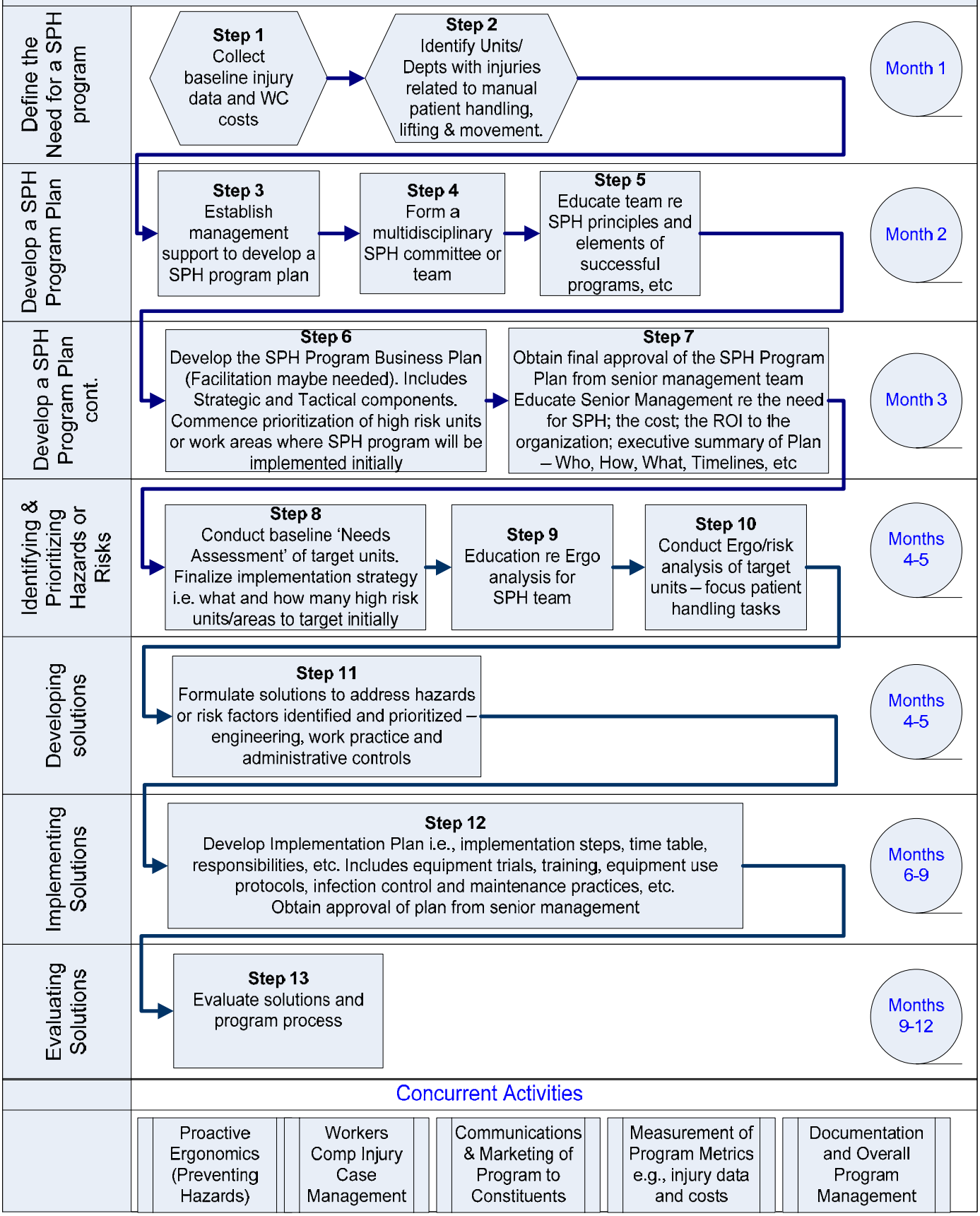
**Joint Commission on Accreditation of Healthcare Organizations (JCAHO's) Sentinel Events**
http://www.jcaho.org/

# Appendix I

## Safe Patient Handling Program Components and Process Flow

Oregon Nurses Association
Voice of Oregon Nurses Since 1904

Typical Timeline

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# Appendix II

## *Sample Safe Patient Handling Program Tactical Plan (Implementation Plan)*

A continuous quality improvement model is used when implementing the elements of the Tactical Plan.

| Action Item | Components | Deadline 2008/2009 | Responsibility | Complete/ Date |
|---|---|---|---|---|
| **Strategic** | | | | |
| **1. Development of Program Plan And immediate needs** | a. Finalize SPH Program Plan | | | |
| | b. Develop Executive Summary of Program Plan | | | |
| | c. Review plan with CEO, Admin Council and Clinical Care Committee and revise as needed | | | |
| | | | | |
| **2. Communications/ Marketing** | a. Define and implement program marketing activities | | | |
| | b. Initial SPH program 'kick off' with unit staff<br>- Develop program plan summary for staff | | | |
| | c. Development and dissemination of communications materials to program constituents identified in the plan | | | |
| | d. Development of an ergo newsletter as a 'stand alone' tool | | | |
| | e. Development of an SPH/ergonomics resource intranet page | | | |
| | f. External marketing – program kick off and after equipment implemented | | | |
| | g. Other | | | |
| | | | | |
| **3. Program Goals/Evaluation** | a. Determine baseline injury data and rates for Unit(s) | | | |
| | b. Determine baseline cost data | | | |
| | c. Conduct program audit | | | |
| | d. Define and develop other metrics (Also developed from onsite ergonomics analysis) | | | |
| **Tactical** | | | | |
| **4. Problem Solving – Hazard Identification and Gap Analysis** | a. Conduct SPH Needs Assessment for each Unit | | | |
| | b. Conduct SPH ergonomics observation training for SPH team and other staff who will perform observations | | | |
| | c. Conduct unit SPH Ergo evaluation | | | |
| | d. Define equipment and procedure needs | | | |
| | | | | |
| **5. Problem Solving - Implementing Solutions** Develop action plan and time table for trial and purchase of equipment identified and changes to work procedures**:** | a. Develop implementation plan for purchase and trial of equipment. | | | |
| | Staff training for equipment **on trial** –develop equipment trial survey | | | |
| | b. Define work process changes | | | |
| | c. Identification and development of SPH experts or super users | | | |

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| Action Item | Components | Deadline 2008/2009 | Responsibility | Complete/ Date |
|---|---|---|---|---|
| | | | | |
| **6. Implementing Solutions Policy and Procedure** Components to include: | | | | |
| i. Purchase/delivery and install of equipment | a. Ceiling lift installation (room out of service; who to install etc) | | | |
| | b. All other powered equipment | | | |
| | c. Non powered (tube sliders etc and slings) | | | |
| ii. Patient assessment protocols | a. Determine patient dependency levels for SPH | | | |
| | b. Admission assessment process | | | |
| | c. During the shift communications | | | |
| | d. Before patient handling and movement task | | | |
| iii. Sling management process: | a. Type of slings and number required | | | |
| | b. Cost (including % for loss) | | | |
| | c. Coding | | | |
| | d. Laundering | | | |
| | e. Storage & distribution | | | |
| | f. JCAHO requirements for sling inspection possibly for 2008/09 | | | |
| iv. Process re storage and access to equipment | | | | |
| v. Infection controls policy re cleaning and use of equipment for: | a. Nursing | | | |
| | b. Housekeeping | | | |
| | c. Others | | | |
| vi. Education - Initial | **SEE # 8 –EDUCATION** | | | |
| vii. Maintenance & Inspection | a. Load testing newly installed ceiling lifts | | | |
| | b. Preventative and routine maintenance and inspection for SPH equipment ( including annual load testing) | | | |
| | c. Preventative for wheels on all unit equipment | | | |
| | d. Availability of replacement and spare components | | | |
| | e. Equipment, battery and sling inspection schedule by staff | | | |
| viii. Development of written SPH policy and procedure | | | | |
| ix. Development of SPH policy & procedure for specific patient populations: | a. Bariatric patients | | | |
| | b. Combative patients | | | |
| | c. Fall prevention related to SPH | | | |
| | d. Long stay patients | | | |
| | e. Other, e.g., orthopedic | | | |
| | | | | |

| Action Item | Components | Deadline 2008/2009 | Responsibility | Complete/ Date |
|---|---|---|---|---|
| **7. Evaluating Solutions** | a. Injury and cost data – see strategic plan | | | |
| | b. Patient satisfaction | | | |
| | c. Staff satisfaction | | | |
| | d. Procedural compliance & use of equipment post implementation | | | |
| | e. Develop & implement Audit tool - for eval SPH unit based work practices and other items – tie to (d) | | | |
| | f. Development of other metrics related to patient safety and other e.g. Pressure ulcer, medical outcomes, etc | | | |
| | | | | |
| **8. Education** | a. SPH Superusers | | | Initial and annual |
| | b. Employees re equipment competency based | | annual or biannual | |
| | c. New employees and student nurses | | | |
| | d. Patients and their families | | PRN | |
| | e. Job aids to be developed for use of equipment -<br>– Staff<br>– Housekeeping –cleaning policy and room set-up | | | |
| | f. Other staff groups – Therapy, Transfer Team, Housekeeping, Maintenance, etc | | | |
| | g. Refresher training for the SPH team and new team members | | Annual/PRN | |
| | | | | |
| **9. Proactive component** | a. Audit of vendors and development of equipment purchase criteria | | | |
| | b. Proactive component: Linkage facilities design and medical equipment review | | | |
| | | | | |
| **10. Workers Compensation Case Management** | a. Meet with HR to discuss how current system can be enhanced. Identify gaps | | | |
| | b. Get assistance to access and utilize EAIP funds (in Oregon- funds for workers on transitional duty) | | | |