

Ceiling and Mobile Client Lift Guidelines for AHS Facilities

Endorsed and Final

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1. Preface

These guidelines shall be used when planning and designing new health care facilities and are recommended for extensive renovation projects where appropriate for Alberta Health Services (AHS) facilities. Both installed ceiling lift styles and freestanding mobile lift styles of client (patient/resident) lift equipment are addressed. Users of the guidelines will include AHS Capital Management, AHS Operations, AHS Workplace Health and Safety, Alberta Infrastructure and Alberta Health.

It is understood that use of the guidelines in renovation/rejuvenation projects may require additional flexibility in implementing the guidelines due to potential limitations that may be imposed by existing building infrastructure and conditions. The application of this guideline must take into consideration the intended Health Care Facility Class (refer to Canadian Standards Association (CSA) Z8000-18 Annex B) [1]. Accordingly, the guidelines must be read in concert with all applicable building codes/requirements. The patient transfer plan and the functional program will also determine the specific requirements.

For additional background information that initiated and supported the creation of this guideline, refer to the “History and Context for the Guideline” at the end of this document.

2. Principles

These guidelines will be followed in the spirit of, and with a commitment to, the following principle:

1. *Patient-Centred Care*: Care providers and administrators should strive to keep the patient’s needs and perspectives at the heart of the healthcare encounter, contributing to systems, processes and designs that try to prioritize the needs of the patient;
2. *Patient and Staff Safety*: Health care providers aim to minimize risks to patients’ physical and psychological well-being. Patients, families, staff and the public should not be exposed to harm where it is reasonably avoidable;
3. *Quality Improvement*: AHS is committed to the continued development of better means to improve service standards over time. This includes adapting to and anticipating the changing needs of the population and being proactive in our response;
4. *Accessibility*: We strive to ensure that the design of AHS devices, services, and facilities are attentive and responsive to the wide-ranging needs of our patients;
5. *Equity*: We acknowledge that empowering two patients to meet the same desirable outcome may require two very different investments of health care resources; and
6. *Good Governance*: A health system’s decisions should be based on the best information available, and gathered through processes that are collaboratively determined, well-considered, well-communicated, consistently-applied, transparent and reasonable.

3. Guideline Management

This is version 1.0 of the Ceiling and Mobile Client Lift Guidelines for AHS Facilities, finalized and released effective September 14, 2018.

The authors of this guideline are:

- Lead:
 - Senior Ergonomist, Workplace Health & Safety, AHS
- Working Group:
 - Workplace Health and Safety, AHS
 - Lead, Provincial Ergonomics Team (Edmonton)
 - Lead for It's Your Move, Provincial Ergonomics Team (Calgary)
 - Capital Management, AHS
 - Director, Projects Centre of Expertise & Provincial Programs (Calgary)
 - Guidelines & Evaluation Specialist (Calgary)
 - Equipment Planner (Edmonton)
 - Infection Prevention & Control
 - Infection Control Practitioner, Covenant Health (Edmonton)
 - Infection Prevention and Control Director, Alberta Health Services (Calgary)
 - AHS Operations
 - Unit Manager, 93/94 Rockyview General Hospital (Calgary)
 - PT & Team Leader, Arthroplasty Team, Rehab Services, Royal Alexandra Hospital (Edmonton)
 - Coordinator – General Education/Staff Scheduling, High River General Hospital (High River)
 - Alberta Infrastructure
 - Healthcare Facility Specialist (Calgary)
 - Alberta Health
 - Senior Manager, Affordable Supportive Living (Calgary)
 - Director of Continuing Care, Capital Projects (Edmonton) – shared membership with Ralph Hubele

This document will be reviewed and updated every three years, or as required to reflect new or revised standards that impact the content of this guideline.

If there are any questions regarding the guideline, contact AHS Workplace Health and Safety - Ergonomics at info.ergonomics@ahs.ca.

4. Ceiling and Mobile Client Lift Guidelines for AHS Facilities

4.1 Scope of Facilities Included

In alignment with the Z8000-18 Canadian Health Care Facilities definitions, this document provides guidelines applicable to Class A and Class B Health Care Facilities (HCF). [CSA: 3.1] [1]

Class C HCFs [CSA: 3.1] [1] are not included in the scope of this guideline.

4.2 CSA Z8000-18 Canadian Health Care Facilities and Other References

The CSA Z8000-18 standard has a section [CSA: 7.6.6.2] [1] dedicated to client mechanical lift devices. The *Ceiling and Mobile Client Lift Guidelines for AHS Facilities* is complementary to this standard, with the guidelines aligning with, and adding additional detail and specification to that which is covered by the standard. [1] The additional details and specifications that are included are based on the evidence-informed information summarized in the separate document “Ceiling and Mobile Client Lift Guidelines for Alberta Health Services’ (AHS) Facilities: Literature Review” available on AHS’ Insite under the Ergonomics Resource Library.

4.3 Client Handling and Workflow

When designing a work area, the ergonomics, workflow and efficiency must be considered, to facilitate safe client lift, transfer and handling tasks. [2] [3] [4] [5] Consideration should be given to using the same lift manufacturer’s products throughout a facility. [6] [7]

Consistency of lift manufacturer’s products throughout a facility allows for the movement of clients and equipment through the site for more seamless client care (e.g. appropriate sling can be kept under client from OR to inpatient unit), simpler inventory management, and increased familiarity for workers in using the same equipment everywhere. [6] [7]

4.4 Ceiling Lifts

4.4.1 Capacity

Ceiling lifts shall have structures to support permanently and semi-permanently affixed rails designed to support point load of 453kg (1000lbs). [CSA: 7.6.6.2.6] [1] The weight capacity of the lift system shall be clearly displayed on the lift.

4.4.2 Clients with Bariatric Care Needs

Rooms that are designed for bariatric clients shall have a ceiling lift that can lift and transport at least 453kg (1000lbs). [CSA: 7.6.6.2.6] [1] The weight capacity of the lift system shall be clearly displayed on the lift.

The design needs for clients with bariatric care needs shall be considered [CSA: 7.8.8.1.1] [1] in new construction and renovations. Consider the prevalence of obesity at current and projected future rates for the client population, [8] [2] and design in a proportional number of inpatient bedrooms with ensuite bathrooms and associated ceiling client lifts, which should be reflected in the functional program [CSA: 7.8.8.1.7] [1].

Consider the pathway of the client with bariatric care needs through a facility [1] [9] and ensure the client handling needs are met throughout the design (i.e. from admission, to inpatient care, to diagnostic imaging, etc.) by installing the appropriate equipment and ensuring wide enough clearances (i.e. doorways) for the movement of mobile equipment and furnishings.

4.4.3 Determining Ceiling Lift Coverage for a Project

The next three sections of the guidelines are structured to identify the areas in a facility requiring “100% of Inpatient Bedrooms and Ensuite Washrooms to have ceiling lifts”, determine areas where less than 100% coverage may be suitable (“Exceptions and Calculations for Inpatient Bedroom and Washroom Ceiling Lift Coverage”), and identify additional areas other than inpatient rooms that may require ceiling lifts (“Other Client Care Areas”). This is depicted below in Figure 1. Options for phasing in ceiling lifts over time should budget or planning require it are then discussed in a fourth section (“Phased Approach”)

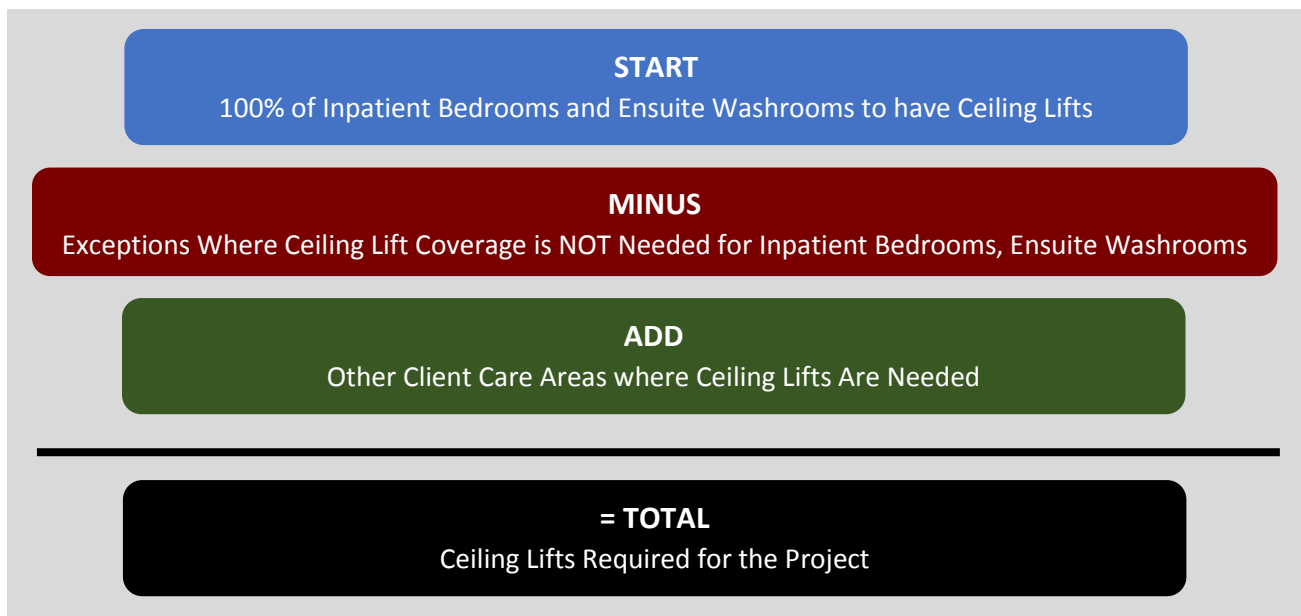


Figure 1: Determining Ceiling Lift Coverage for a Project

START

100% of Inpatient Bedrooms and Ensuite Washrooms to have Ceiling Lifts

4.4.4 Inpatient Bedroom and Ensuite Washroom

4.4.4.1 In Class A HCFs, 100% of inpatient bedrooms [6] [9] for the following client groups shall have a ceiling mounted client lift ('ceiling lift') [CSA: 7.6.6.2.5] [1] [10] [11] [12] that provides lift and transfer coverage of the entire client bedroom. [10] [11] The inpatient bedroom ceiling lift shall connect to a track extension going into the washroom and over the toilet [13] [2] [14] [15] [16], and the track should approach the toilet from the front. [14] [15]

- (a) Acute medical or surgical care units [CSA: 7.6.6.2.5] [1]
- (b) Critical care units [CSA: 7.6.6.2.5] [1]
- (c) Inpatient continuing care units [CSA: 7.6.6.2.5] [1]
- (d) Pediatrics units [CSA: 7.6.6.2.5] [1]
- (e) Rehabilitation units [CSA: 7.6.6.2.5] [1]
- (f) Palliative care units [15]

4.4.4.2 In Class B HCFs, 100% of inpatient bedrooms [6] [9] shall have a ceiling mounted client lift ('ceiling lift') [CSA: 7.6.6.2.8] [1] [10] [10] [11] [12] that provides lift and transfer coverage of the entire client room. [10] [11] The inpatient bedroom ceiling lift shall connect to a track extension going into the washroom and over the toilet [13] [14] [15] [2] [16], and the track should approach the toilet from the front. [14] [15] In residential care areas striving for a more home-like aesthetic, consideration should be given to having a recessed track with a dropped ceiling grid. [13]

The front approach to the toilet is recommended to address risks identified with a side approach. The risks of a side approach include the client bumping their back into a flipped-up grab rail when being guided along a single track, or being raised much higher to go over a grab rail or commode armrest. [15] A front approach to toilet is also more familiar and intuitive from a user experience perspective.

4.4.4.3 For Class A and B HCFs, ceiling lift coverage in the washroom [13] [17] [16] should also include access to the sink, shower and central floor where possible.

Greater ceiling lift coverage enables clients to use an ambulation sling for increased independence while having fall protection. Greater ceiling lift coverage also allows workers to assist fallen clients from more areas within the washroom, [15] [18] and to transfer to/from shower chairs within or in close proximity to the shower.

4.4.4.4 If less than 100% of the Class A or Class B HCF inpatient bedrooms and bathrooms are to have ceiling lifts, this must be evaluated and justified per the *Exceptions and Calculations* section of this guideline.

MINUS

Exceptions Where Ceiling Lift Coverage is NOT Needed for Inpatient Bedrooms, Ensuite Washrooms

4.4.5 Exceptions and Calculations for Inpatient Bedroom and Ensuite Washroom Ceiling Lift Coverage

4.4.5.1 Inpatient bedroom and ensuite washroom ceiling lifts are not required:

- In pediatric areas where the clients consistently weigh less than 16kg (35lbs) e.g. NICU [19] [6]
- Where ceiling lifts are contraindicated for mental health or addiction programs, [CSA: 7.6.6.2.5] [1]
- Where clients will consistently be independently ambulatory.

4.4.5.2 If less than 100% ceiling lift coverage is being considered due to clients that are independently ambulatory, the actual percentage (%) of ceiling lift coverage should be determined by: [9] [6]

- Estimate the highest percentage of clients requiring transfer, repositioning, limb lifting, or rehabilitation/mobility support, and multiply it by the number of beds/care spaces in that area

4.4.5.3 Operational stakeholders should be included in the design of the functional areas. [6] The omission of the ceiling lifts from a functional program should be relative to the needs assessment for that functional program, as well as the justified cost/benefit need for the ceiling lift as opposed to another transfer device. [CSA: 7.6.6.2.5] [1] If not all rooms have ceiling lift coverage, a plan is necessary for moving clients who need lift equipment [6], which should be addressed in the patient transfer plan. The user group including frontline workers, design team, workplace health and safety, and other stakeholders should be involved in this decision making.

The stakeholder group may identify the anticipated client population as being highly ambulatory where alternative equipment options could be explored in the place of a ceiling track. Long-term flexibility for using the space with more dependent client populations should still be considered in ceiling infrastructure.

4.4.5.4 Consider all factors using a risk assessment approach, when making any decisions to reduce the number of ceiling lifts. Considerations include the implications to client flows and care experience. It can be disruptive to clients and operations if clients have a change in mobility status and need to be moved to a different room just to have access to different equipment. [15] Also consider future flexibility of the design.

Note: To allow for flexibility and future changes in the function of areas, consider installing the necessary ceiling infrastructure for client lifts in all inpatient bedrooms and ensuite washrooms. This is not recommended for mental health and addiction services. [CSA: 7.6.6.2.10] [1]

ADD**Other Client Care Areas where Ceiling Lifts Are Needed****4.4.6 Other Client Care Areas**

4.4.6.1 Non-inpatient room areas may also require some ceiling lift coverage [CSA 7.6.6.2.5].

[1] Based on the functional program and patient transfer plan, ceiling lifts shall be installed to meet the client lift, reposition and transfer needs in the following areas:

- (a) Examination rooms (e.g. above treatment tables and assessment tables) [CSA Table 9.6 #3] [1] [6] [9]
- (b) Along client pathways of rehabilitation ambulation (e.g. over parallel bars for client walking in rehabilitation clinic, along a hallway of a rehabilitation unit for fall protection while ambulating clients) [6] [9]
- (c) Diagnostic imaging (consider each type i.e. general radiography, fluoroscopy, CT scanner, MRI) [CSA 7.6.6.2.5] [1] [6] [9]
- (d) Treatment bays (e.g. recliner chairs and/or stretchers for chemotherapy, dialysis, separated by curtains or similar dividers) [6]
- (e) Urgent-emergent care (e.g. emergency department rooms) [CSA Table 9.6 #4, #11] [6]
- (f) Tub rooms [15]
- (g) Morgue (for lift/transfer within suite and to assist with inserting/extracting trays into cooler) [CSA Table 9.11 #68-69] [1] [6] [9]
- (h) Labour, delivery, recovery, postpartum (LDRP) [6]

4.4.6.2 To determine if and how many ceiling lifts must be provided in the above areas, [7] [9] [15] the user group, design team, workplace health and safety, and other stakeholders shall consider the questions and guidance in section 4.4.6.2.1 below. The exact number of rooms for each area that requires a ceiling lift will be determined during functional programming.

4.4.6.2.1 If any of the following statements are **True**, a ceiling lift should be incorporated into the rooms/areas where the statement applies:

- ✓ Clients are going to require assistance or total care to transfer in this area (consider current needs and future flexibility for the area)
- ✓ Client with bariatric care needs will be cared for in this area (consider the pathway of a client throughout a facility, from an emergency department admission, through diagnostic imaging, to being an admitted client, rehabilitation, etc.)
 - *If clients with bariatric care needs are anticipated in an area, the ceiling lift installed must meet the requirements noted in the guideline section “Ceiling Lifts – Clients with Bariatric Care Needs”*
- ✓ The base of a mobile lift may be incompatible with the furnishings and equipment that clients are to be transferred on/off (e.g. stretchers, recliner chairs, x-ray tables, tubs) thus not allowing for safe lifts and transfers
 - *It may be appropriate to install a ceiling lift in a common clinical area that can be used specifically for the lift and transfer of a client, if the furniture or equipment they are transferring onto is easily mobile and can then be moved to and from the treatment bay or other required location with the client on it (e.g. a client in a wheelchair could be transferred onto a stretcher with the ceiling lift in the common clinical area, and then be moved on the stretcher into the treatment or diagnostic area and be laterally transferred with an air assist device)*
- ✓ Multiple treatment bays are in close proximity to each other such that a single track ceiling lift could be positioned to support several of them (ensure that privacy curtains are not impeded, and that privacy and dignity of clients are maintained during lift use)
- ✓ Limb lifting and/or holding is an expected part of the care provided in this area (storage space for band / limb holding slings will also need to be provided)
- ✓ The floor space where lifts and transfers to be done is too small to accommodate a mobile lift

4.4.6.2.2 Options to consider related to integration of ceiling lifts in an area:

- If other client handling equipment (e.g. air-assisted lateral transfer devices) is going to be utilized in an area, the extent of coverage required by ceiling lifts may change
- Existing infrastructure elements may prevent the installation of ceiling lifts in an area, e.g. clinical equipment gantries may limit other installations on the ceiling. If this is the case, consider installation of ceiling lifts in nearby holding/transfer areas, wall-mounted options, or other available innovations.
- Consider if the lift needs to be secured when not in use to avoid accidental activation, e.g. in pediatric areas
- Consider how and where the lift (motor and sling bar) are going to be docked when not in use, to ensure they are secure and not going to swing or get in the way of workers, clients, visitors or families. In residential care style settings, a form of cabinetry may be provided for the lift to be guided into to provide a more aesthetic appearance.

- Ensure there is enough coverage provided by an installed lift for a client to be transferred between two locations, allowing sufficient room for the furnishings and equipment (e.g. wheelchair, chair, bed, stretcher) typical for the area, and space for the workers to move with safe body mechanics during the lift, transfer and repositioning tasks
- Tub rooms should have a power traverse ceiling lift over the tub, so the motor can be stopped in the required position to minimize sway and movement when a client lying in a hammock-style sling is in the tub. A ceiling lift may not be required for tub rooms where the client population can consistently sit and be transferred using the tub chair lift.

4.4.6.2.3 If any of the following statements are **True**, **do not utilize a ceiling lift**:

- Mental health/psychiatric care is going to be provided in this area for potentially actively suicidal clients (this does not apply to dementia care units or geri-psychiatry units that do not treat actively suicidal clients who may need overhead lifts). If client handling demands requiring lifts are anticipated in this area, consider special lift design considerations noted in sections 4.4.8.6 and 4.5.4.2.
- Where concerns are identified about maintaining a sterile field, e.g. over an operating table.
 - *For operating rooms, consider provision of a ceiling lift in an adjacent area where a client transfer can be done safely, and then a lateral slide transfer is done from the stretcher onto the surgical table.*

= TOTAL

Ceiling Lifts Required for the Project

4.4.7 Phased Approach

4.4.7.1 It is preferable that client lifts be considered early in the design process, as it is simpler and more cost effective to incorporate, compared to redesigning and retrofitting later in the design and construction process. [5] [9]

4.4.7.2 In the case of renovations and retrofits, and sometimes in new construction due to budget constraints, it may be necessary to incorporate ceiling lifts in a phased approach. Due to the cost and disruption associated with retrofitting ceiling lift tracks, it is recommended that at a minimum, the future capability to install track systems be built into the infrastructure at the time of construction. Installing the tracks can be the next stage of a phased installation, with the provision of ceiling lift motors possible at a later stage when the need arises. [6]

Portable motors that can be transferred from a ceiling track in one room to a ceiling track in a different room are sometimes used, however these are not recommended. The portable motors introduce other issues including slower lifting/lowering speed, trailing electrical wire (tripping hazard), and operational demands for Facilities Maintenance & Engineering to transfer the motors. [15]

4.4.7.3 When a phased approach is taken, priority for the ceiling lifts should be given in areas with clients requiring more assistance as well as bariatric/expanded capacity rooms, multi-bed/bay areas, and/or smaller rooms that cannot accommodate floor-based equipment. [6] This should be determined by the functional program and consultation involving the user group, design team, workplace health and safety, and other stakeholders.

4.4.8 Installation and Ceiling Track Features

4.4.8.1 When ceiling lifts are to be included in the design, they shall be installed with the necessary structural, mechanical, and electrical systems, and then be tested and inspected in accordance with CSA Z10535.2 prior to being placed in service. These shall be designed so that there is no interference between the lift system and other inpatient support services located in the ceiling (e.g. lighting, HVAC, life safety, equipment booms, curtain tracks). [CSA: 7.6.6.2.4] [1] [20]

4.4.8.2 Traverse (i.e. X-Y gantry) ceiling tracks are preferred over straight and curved tracks in most situations (see illustrations below), as they provide greater coverage of the area and therefore more flexibility in function including transfers, client handling, and client mobilization activities. [6] [9] [21] Table 1a-1c illustrates three typical ceiling lift configurations and the advantages and disadvantages associated with each, and serves as a guide for the user group, design team, workplace health and safety, and other stakeholders in selecting the options most suited to their project needs.

4.4.8.3 Straight (single rail) tracks may be considered if a traverse system will not fit within the existing space/design, and as long as the straight (single rail) track will provide access to all areas where client handling and placement will, or be more likely, to occur (for planned lifts and for unplanned lifts i.e. in the case of a client fall). [9]

4.4.8.4 Curved tracks may be considered for turns/transitions from one room into another, where obstructions need to be avoided, and to enhance appearance of the lift system [6] especially in residential care types of settings.

4.4.8.5 The end portions of the tracks (approximately 18") should be electrically charged [15] so precise end of rail docking is not required for battery charging, to ensure that the lift battery is always charged and ready. "Continuous charge" along the length of the rail could also be done at additional cost. [9] The battery docking location should be situated so it is out of the way during other activities, yet be easily accessible when the lift is needed.

4.4.8.6 If client handling demands are anticipated in mental health areas, ceiling lifts should be flush-mounted, and have stationary charging systems at the end of the rails that can be secured within locked cabinets that do not offer any ligature connection points. [9] Refer to section 4.4.6.2.3.

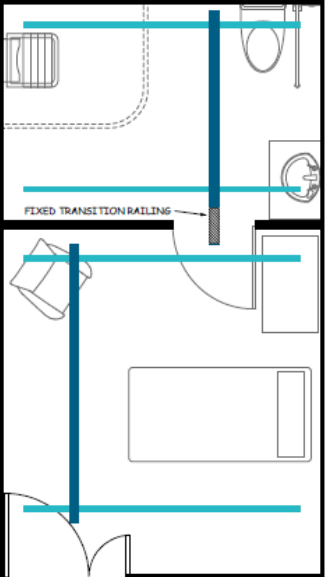
4.4.8.7 Consider incorporation of a weigh scale to the ceiling lift system, [6] [11] if this function is not going to be addressed through other equipment options such as beds with a built-in weigh scale. This allows weight information for a client to be easily obtained in all areas of care, e.g. measuring before and after weights in dialysis. [6]

Table 1a – Ceiling Lift Configuration Options*, Advantages and Disadvantages

Option 1: X-Y gantry in inpatient bedroom with single track to washroom	
Illustration**	<p>Advantages</p> <ul style="list-style-type: none"> • Flexibility to transfer to either side and foot end of bed • Provides good bedroom coverage • Safe, direct transfer between bed and toilet facilitated • Rail approaches toilet from front • Single rail portion into washroom can be curved for greater coverage and/or to navigate around obstacles • Smoother transfer for client between surfaces, with little to no interruption. As a result, the client feels an enhanced sense of safety and increased control compared to the portable lift
	<p>Disadvantages</p> <ul style="list-style-type: none"> • Gateway transition between X-Y and single rail is noisy (loud “click”) and tends to require more maintenance • More limited floor space coverage within washroom from single rail compared to X-Y coverage (Option 3)

Table 1b – Ceiling Lift Configuration Options*, Advantages and Disadvantages

Option 2: Single track from inpatient bed to washroom	
Illustration**	<p>Advantages</p> <ul style="list-style-type: none"> • Less cumbersome design which may be preferred in more residential care facilities • Safe, direct transfer from bed to toilet facilitated • Less costly than X-Y gantry systems • Accommodates privacy curtains better than other options • Can be curved to navigate around obstacles • Can be flush-mounted or recessed for client safety and/or aesthetic purposes
	<p>Disadvantages</p> <ul style="list-style-type: none"> • Limited space coverage of both bedroom and washroom (compared to Option 1 or 3) • Less flexibility for positioning furniture and equipment in the room • Introduces risk of more manual client handling tasks and associated injuries for workers • Limited ability to provide in-bed repositioning and care activities that are possible with an X-Y system

Table 1c – Ceiling Lift Configuration Options*, Advantages and Disadvantages	
Option 3: X-Y gantry in inpatient bedroom, connected to X-Y gantry in washroom	
<p>Illustration**</p> 	<p>Advantages</p> <ul style="list-style-type: none"> • Full coverage of bedroom and washroom for client handling, fall recovery, and use of ambulatory slings anywhere in the space • Benefits of the full coverage in the washroom may be most realized when caring for a client with bariatric care needs • Ability to provide a smooth transition within the room, using the equipment safely and to full potential for optimal patient and family centered care <p>Disadvantages</p> <ul style="list-style-type: none"> • Gateway transition between two X-Y systems is noisy (loud “click”) and tends to require more maintenance • Challenging to design with privacy curtains • Most expensive of the three options for ceiling track equipment

* Configurations listed are the most common however do not preclude other options to adjust for old/existing infrastructure, or to incorporate new innovations and technology to suit project and operational needs.

** Illustrations are to demonstrate ceiling lift configurations only and are not to scale

4.5 Mobile Lifts

4.5.1 Coverage

4.5.1.1 Ceiling lifts are typically preferred over mobile lifts in areas where client handling activities are regularly anticipated. In accordance with the lift/transfer plan, mobile lifts shall be available for use in all areas of the health care facility to lift and transfer clients where ceiling lifts are not available, [20] for scheduled or anticipated client lifts (where ceiling lifts could not be installed), and also to help with assistance and recovery if a client falls. The number of mobile lifts required for a facility will depend on the nature of client care requirements and the extent that ceiling lifts provide coverage (i.e. fewer ceiling lifts will result in the need for more mobile lifts and associated storage space). [6] Ceiling lifts are preferable in most client lift and transfer situations, however it is recognized that a facility will not have 100% coverage by ceiling lifts alone.

4.5.1.2 A unit with extensive (at or near 100%) room coverage by ceiling lifts shall have a minimum of one total mobile lift and one sit-to-stand mobile lift per unit (department). [6] If the demand for use is expected to be low, or the unit size is relatively small, the mobile lifts can be centrally located to allow shared use across two units. [6] The number of lifts shall be determined by the functional program, patient transfer plan, in consultation with client care providers familiar with the unique client requirements of a particular area or unit, the design team, workplace health and safety, and other stakeholders.

4.5.2 Types

4.5.2.1 The exact types (e.g. sit-to-stand lift, total lift) and capacities of mobile lifts shall be determined in consultation with client care providers familiar with the unique client requirements of a particular area or unit, the design team, workplace health and safety, and other stakeholders. If only one mobile lift is going to be available on a unit, it shall have a bariatric weight capacity (should be 453 kg) [CSA Table 11.1 #24b] [1] as a lift with a higher weight capacity can function for clients of all weights below the maximum, however a lower capacity lift cannot function for weights above its capacity. A variety of sling sizes will be required (small to extended capacity) and can all be used with a higher capacity lift. The selected lifts types, quantities and sizes will impact the associated storage space and locations that need to be allocated in the facility design.

4.5.3 Interaction with Furnishings and Environment

4.5.3.1 If a mobile lift is expected to achieve a client lift and transfer between furnishings and equipment (e.g. recliner chair, stretcher, x-ray table, bed, tub), ensure the base of the lift is compatible with the furnishings/equipment (i.e. fits underneath the base or slides around the furniture/equipment legs) for appropriate and safe positioning of the client. If the base of the lift is incompatible with the furnishings/equipment, either alternate furnishings/equipment need to be found, or a ceiling lift should be installed in this area.

Example: Mobile lifts are often incompatible with stretcher bases, with the workaround strategy involving workers positioning the lift at the foot of the stretcher and then manually boosting the client up the stretcher, causing more effort/musculoskeletal injury risk for workers and more disruption to the client.

4.5.3.2 For facility areas expected to be covered by the mobile lifts, ensure the lift can be brought to and from that area easily (i.e. consider straighter pathways with less turning, door widths for clearance, flush flooring thresholds, and hard flooring for ease of movement). [22] [9] [11] [4]

4.5.4 Storage for Mobile Lifts

4.5.4.1 Dedicated storage areas, i.e. clean equipment holding area, alcove, or room, [23] [6] with electrical outlets for charging batteries, shall be provided for mobile lifts. The storage location shall be in close proximity to the most commonly expected points of use based on the functional programming, [CSA 7.6.6.1.12] [1] [22] e.g. corridors within inpatient units, client dining areas. If a mobile lift is to be shared between two units (departments) the storage area should be centrally located for equal access by each unit. [6]

4.5.4.2 If client handling demands are anticipated in mental health areas, secure, locked storage shall be provided for mobile lifts in psychiatric/mental health units with clients who may be actively suicidal. [6] Refer to section 4.4.6.2.3.

4.5.4.3 Mobile lifts in pediatric health care areas should be concealed/secured to minimize unqualified persons using the lifts [CSA 7.6.6.2.5]. [1]

5. Storage of Minor Equipment on Unit

Dedicated storage space of sufficient size, suitable type, and in close proximity to point of use, shall be provided for sufficient client handling minor equipment required in the functional program and patient transfer plan for the area. [CSA: 7.6.6.2.2&5] [1] [24] Client handling minor equipment includes but is not limited to slings of various types/materials/sizes, slide sheets, and transfer belts. Storage options include but are not limited to dedicated areas (e.g. hooks, shelves) by the mobile lift storage alcove or in the equipment room. A dedicated hook should be installed within each inpatient room, so an assigned sling for each client is readily available. [6] [21]

6. Storage of Infrequently Used Equipment for the Site

Some client handling equipment is used less frequently, such as air-assisted lifting devices and bariatric/extended capacity beds/chairs/commodos/etc. A storage area for the site should be included in a facility, to store items that can be shared across multiple units and accessed as needed. Storage space should be centrally located for equal shared access, include electrical outlets for charging batteries, and shelves and/or hooks to store a variety of small items such as slings. Some equipment can be rented as needed, however this can involve a time delay before getting it, making on-site storage of some items critical for safe and healthy lifts and transfers. [19] [6]

7. Maintenance

The inclusion of Facilities, Maintenance and Engineering (FME) during design and planning for the incorporation of ceiling and mobile lifts is essential. This ensures maintenance considerations are included in preparation for the operation of the facility that may impact staffing levels, training, preventative maintenance planning, operating budgets, service contracts, and equipment/tools that are needed.

All client lifts (ceiling lifts and mobile lifts) shall be incorporated into the regular preventative maintenance program. Information to be included in the Operation & Maintenance manuals shall include the make, model, manufacturer, exact location (e.g. room number), signed off commissioning checklists, preventative maintenance requirements and documentation per the manufacturers' guidelines. Installation, commissioning and maintenance requirements shall also be done in alignment with CSA Standard Z10535.2-17 Lifts for the transfer of persons – Installation, use and maintenance.

8. Cleaning

The inclusion of Environmental Services (ES) during design and planning for the incorporation of ceiling and mobile lifts is essential. This ensures cleaning and disinfection considerations are included in preparation for the operation of the facility, and may impact staffing levels, training, work routines, operating budgets, and equipment/tools that are needed.

Information on the manufacturer's instructions for cleaning and disinfection should be made available prior to purchase (during the evaluation process). This is to ensure that devices can be appropriately cleaned and disinfected using AHS products, following AHS cleaning protocols. This would also apply to handling aides and accessories that may accompany lifts (ceiling and/or mobile); to ensure reusable items can be laundered or cleaned appropriately following AHS processes.

9. Infection Prevention and Control

The Alberta Health Services' Infection Prevention & Control (IPC) Best Practices Guideline "Cleaning, Storage and Selection of Mechanical Patient Lifts & Handling Aids" must be adhered to. IPC should be contacted for any additional information or clarifications.

10. Definitions

Administrative Controls: Controls that alter the way the work is done, including timing of work, policies and other rules, and work practices such as standards and operating procedures (including training, housekeeping, and equipment maintenance, and personal hygiene practices). [25]

Ceiling Lift: A ceiling lift is a motorized device that lifts and transfers a person from point to point along an overhead track. [26] The ones installed into the ceiling infrastructure are the focus of this document, however portable installed options are also available.

Class A HCF: Provide care for clients who are accommodated on the basis of medical need, are provided with continuing medical care, and are provided supporting diagnostic and therapeutic services that can extend beyond 12 hours. These are generally referred to as “active treatment” or “acute care” institutions. [CSA: 3.1] [1]

Class B HCF: Health care facility whose clients cannot function independently because of a physical or mental disability and are accommodated because they require daily care by health care professionals, but generally do not require invasive medical interventions. These include extended care, intermediate care, multi-level care, hospice, mental health and rehabilitation facilities. [CSA: 3.1] [1]

Class C HCF: There are classes within this section under Z8000-18, however in general Class C is a facility where ambulatory clients are provided with supportive, diagnostic, and treatment services on an outpatient or occasional basis, e.g. outpatient clinics, dentists’ offices, doctors’ clinics, group homes and privately run residences. [CSA: 3.1] [1]

Client: The term client in this document is inclusive to mean client, patient and resident.

Engineering Controls: Includes designs or modifications to buildings, equipment, ventilation systems, and processes that reduce the source of exposure to a hazard. [25]

Functional Program: A planning document that defines the desired outcome for a building project, informing both operating and capital cost estimates and providing the functional and spatial specifications that provide the primary guide for the subsequent architectural design of a building. [CSA: 3.1] [1]

Health Care Facility (HCF): A set of physical infrastructure elements supporting the delivery of health-related services. [CSA: 3.1] [1]

Hierarchy of Controls: A prioritization approach to control hazards from the most effective and protective method to gradually decreasingly effective methods. Top of hierarchy is the Substitution/Elimination of the hazard, followed by Engineering Controls, Administrative Controls, and then Personal Protective Equipment (PPE). [27]

Independently Ambulatory: Clients who are able to walk about and move with or without assistive devices (e.g. canes, walkers) without the physical assistance of others.

Mobile (Freestanding Portable) Lift: Portable (wheeled) lifts for transferring people between beds, wheelchairs, toilets, commodes, etc. [28] Can include sit-stand lifts (intended to help clients with partial weight bearing capability to transfer from one surface to another) and total lifts (which provide total support and assistance for client lifts and transfers).

Patient Transfer Plan: All facilities shall have a patient transfer plan. The plan shall include a risk analysis of all patient or client transfer points and identify the lift and transfer equipment to be used at each transfer point. The health care facility shall provide convenient storage locations for any portable lift or transfer equipment that is included in the plan. In addition, the structure shall be designed to accommodate fixed lift or transfer devices. [CSA 7.6.6.2.2] [1]

11. History and Context for the Guideline

As stated by an Alberta Health Services' Patient Family Advisor, "The effective use of these ceiling/portable lift systems not only ensure full safety for the client and staff but maintains the patient's dignity through the transferring process." [29]

The client population includes an increasing prevalence of obesity, chronic conditions, and the elderly. This changing client population presents challenges for nursing and rehabilitation staff in terms of safe client handling that needs to be supported with additional assistance and equipment. [2] There are known medical outcome benefits to early mobilization of clients [30] which is supported by the provision of client lifts.

In 2016 the AHS Our People Strategy was released. It made a commitment for "reduced health and safety risks through infrastructure planning" [31]. The associated Deliverables and Actions in the HR Operations Plan & Framework then included the objective to "link Capital Management, Alberta Infrastructure and Workplace Health & Safety" and to "identify and prioritize implementation of ceiling lift coverage" [32].

In Alberta's Occupational Health & Safety Code it states "209.1(1) An employer must ensure that appropriate patient/client/resident handling equipment is adequately incorporated into the design and construction of (a) a new health care facility, and (b) a health care facility undergoing significant physical alterations, renovations or repairs." [33] This supports the hierarchy of controls (refer to Figure 2) used to address workplace health and safety hazards [33] with engineering controls identified as the most effective and priority ones to consider, followed by complementary supportive administrative controls such as policies and training. Research has also found equipment was deemed to be the most effective component of a safe client handling program by staff. [11] [34]

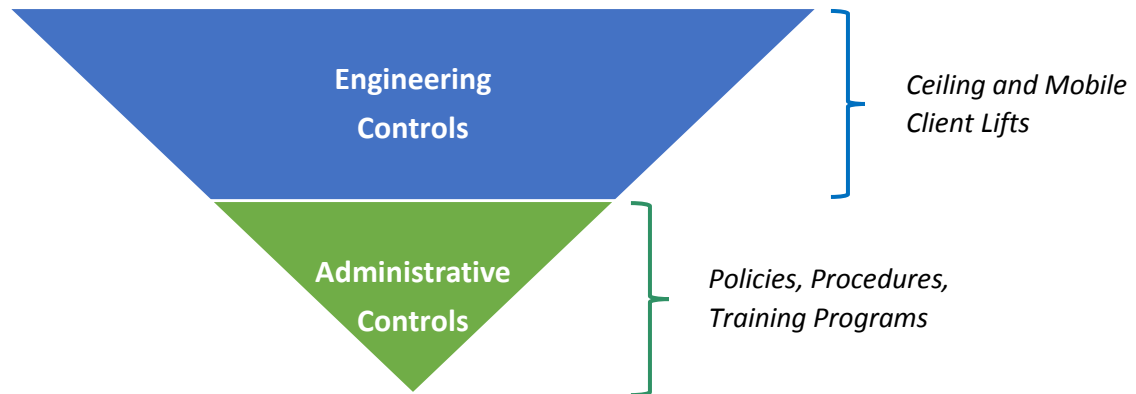


Figure 2: Hierarchy of Controls for Addressing Workplace Hazards

Within Alberta Health Services (AHS) client handling is identified as the most common task at the time of worker injury, resulting in high Workers’ Compensation Board (WCB) claims and costs. In AHS’ Q3 2016/17, 138 injuries were attributed to the source “Health care patient/resident”, [35] accounting for almost a quarter of all injuries sustained during this timeframe within AHS. The majority of injuries that occur during client handling tasks are musculoskeletal injuries (MSIs). MSIs are the number one injury within AHS. More than 60% of AHS injuries are MSIs, directly costing AHS more than \$10 million and 25,000 days lost from work, per year. [36]

Increased provision of ceiling lifts has been an effective engineering control in reducing worker injury, reducing Workers’ Compensation Board claim costs, increasing working comfort, and increasing client comfort and security. These findings are documented in the literature review.

It is recognized that mechanical client lift devices are only one part of a multi-part program required to accomplish safe client handling for the benefit of both workers and clients. “Regardless of a patient’s BMI [body mass index], nurses should be using safe patient handling techniques.”, “The Occupational Safety and Health Administration recommends the establishment of safe patient handling programs in all nursing units. The organization emphasizes that successful safe patient handling programs should involve a comprehensive assessment of the nature of patients’ and workers’ needs, full support from members of the hospital administration, involvement of employees, policies that encourage the safest patient handling techniques, the right equipment for the right job, adequate maintenance of equipment, education and training, and ongoing evaluation and improvement.” [Berrios, 2016, pg. 20] [19] The *Ceiling and Mobile Client Lift Guidelines for AHS Facilities* document is intended to help achieve the provision of the ‘right equipment for the right job’, with the other elements addressed through complementary operational programs including the *It’s Your Move Safe Client Handling Program* in AHS which provides education, resources, and support to the organization. These other programs also help meet the legislated requirements of education, awareness, and worker and leader involvement in addressing hazards in the workplace. [33]

12. Bibliography

- [1] Standards Council of Canada, CSA Z8000-18 Canadian Health Care Facilities, CSA Group, July 2018.
- [2] E. R. Vieira and L. Miller, "Facing the Challenge of Patient Transfers: Using Ceiling Lifts in Healthcare Facilities," *HERD Journal*, vol. 2, no. 1, pp. 6-16, 2008.
- [3] S. Hampton, "The appropriate use of equipment for moving and handling patients," *International Journal of Therapy and Rehabilitation*, vol. 12, no. 9, pp. 416-420, September 2005.
- [4] S. Mattei, R. Hasman, C. Hoeffling and P. Eckhaus, "The Case for Caring Technology: Why New York Patients & Nursing Home Residents Should be Entitled to the Use of Safer, Technology-Based Methods for Lifting and Moving," *New Yorkers for Patient & Family Empowerment*, New York, June 2013.
- [5] A. Miller, R. Engst, B. Tate and A. Yassi, "Evaluation of the effectiveness of portable ceiling lifts in a new long-term care facility," *Applied Ergonomics*, vol. 37, pp. 377-385, 2006.
- [6] M. Matz, K. McCoskey and M. Martin, *Safe Patient Handling and Mobility (SPHM) Technology - Coverage & Space Recommendations*, United States: Veterans Health Administration (VHA), 2016 Revision.
- [7] L. Thomas-Olson, M. Gee, D. Harrison and N. Helal, "Evaluating the Use of Ceiling Lifts in the Operating Room," *ORNAC Journal*, vol. 33, no. 1, pp. 14-28, March 2015.
- [8] Statistics Canada, "Body mass index, changes between 1994/1995 and 2006/2007, 2008/2009 and 2010/2011, by sex," 9 December 2012. [Online]. Available: <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/hlth68-eng.htm>. [Accessed 2 March 2017].
- [9] M. Cohen, G. Nelson, D. Green, R. Leib, M. Matz and P. Thomas, "Patient Handling and Movement Assessments: A White Paper," *The Facility Guidelines Institute (Carla M. Borden, Editor)*, Dallas, TX, April 2010.
- [10] H. Griffiths, "Adverse risk: a 'dynamic interaction model of patient moving and handling'," *Journal of Nursing Management*, vol. 20, pp. 713-736, 2012.
- [11] H. Alamgir, O. W. Li, S. Yu, E. Gorman, C. Fast and C. Kidd, "Evaluation of ceiling lifts: Transfer time, patient comfort and staff perceptions," *Injury International Journal*, vol. 40, pp. 987-992, 2009.
- [12] H. Alamgir, O. Wei Li, C. Gorman, C. Fast, S. Yu and C. Kidd, "Evaluation of Ceiling Lifts in Health Care Settings - Patient Outcome and Perceptions," *AAOHN Journal*, vol. 57, no. 9, pp. 374-380, September 2009.
- [13] R. Peck, "Across-the-board savings with resident lifts," *Long-Term Living*, pp. 24-29, April 2009.

- [14] D. Goodwin, "AHS Client, Family and Worker Feedback on Client Handling Equipment Experiences," Workplace Health & Safety Department - Ergonomics, Alberta Health Services, Alberta, July 2017.
- [15] D. Goodwin, "Ergonomics Walk-Through of Edson Healthcare Centre - Lessons Learned in Design," Workplace Health and Safety - Ergonomics, Alberta Health Services, Alberta, Summer 2017.
- [16] Alberta Labour, "No Unsafe Lift Workbook," 2006. [Online]. Available: https://work.alberta.ca/documents/WHS-PUB_nounsafelift_workbook.pdf. [Accessed 27 October 2017].
- [17] J. Causier, Interviewee, *Email regarding proportion of patient falls in washrooms in AHS*. [Interview]. 8 July 2016.
- [18] AHS Workplace Health & Safety (Ergonomics) and AHS Provincial Bariatric Resource Team, "Safe Client Handling for Clients with Obesity: Lift Supported Ambulation Using a Walking Sling," Alberta Health Services, 6 April 2016. [Online]. Available: https://www.youtube.com/watch?v=_ulj6Y0kXA8&index=22&list=PLi1tOF1I5ZoU2aaTvpli6WS0bNeEUzhdb. [Accessed 27 October 2017].
- [19] L. A. Berrios, "The ABCDs of Managing Morbidly Obese Patients in Intensive Care Units," *Critical Care Nurse*, vol. 36, no. 5, pp. 17-26, October 2016.
- [20] S. Speser, *Mechanical Lift Systems*, April 2011, pp. 57-59.
- [21] S. Silverwood, "Reduction of musculoskeletal injuries in intensive care nurses using ceiling-mounted patient lifts," *CACCN*, vol. 17, no. 3, pp. 19-21, Fall 2006.
- [22] W. Marras, G. Knapik and S. Ferguson, "Lumbar spine forces during manoeuvring of ceiling-based and floor-based patient transfer devices," *Ergonomics*, vol. 52, no. 3, pp. 384-397, March 2009.
- [23] Infection Prevention & Control, "Infection Prevention & Control (IPC) Guidelines for Selection, Cleaning & Storage of Mechanical Patient Lifts and Patient Handling Aids Including Slings, Sliders and Transfer Belts," 20 February 2013. [Online]. Available: <http://www.albertahealthservices.ca/assets/infofor/hp/if-hp-ipc-guidelines-patient-lifts-handling-aids.pdf>. [Accessed 10 March 2017].
- [24] B. Hunter, M. Branson and D. Davenport, "Saving Costs, Saving Health Care Providers' Backs, and Creating a Safe Patient Environment," *Nursing Economics*, vol. 28, no. 2, pp. 130-134, April 2010.
- [25] CCOHS, "Hazard Control," Canadian Centre for Occupational Health and Safety, 2 December 2014. [Online]. Available: http://www.ccohs.ca/oshanswers/hsprograms/hazard_control.html. [Accessed 26 October 2017].
- [26] S. Cross, "Ceiling Lifts," Silver Cross, 2016. [Online]. Available: <https://www.silvercross.com/ceiling-lifts/>. [Accessed 26 October 2017].

- [27] C. f. D. C. a. Prevention, "Hierarchy of Controls," Centers for Disease Control and Prevention, 2016 July 18. [Online]. Available: <https://www.cdc.gov/niosh/topics/hierarchy/default.html>. [Accessed 26 October 2017].
- [28] M. Basics, "Patient Lift Information," Mobility Basics, 2017. [Online]. Available: <https://mobilitybasics.ca/patient-lifts/>. [Accessed 26 October 2017].
- [29] D. Goodwin, "Ceiling and Mobile Client Lift Guidelines Patient Family Advisors Feb 20 2018," Alberta Health Services - Workplace Health & Safety, 2018.
- [30] M. Zomorodi, D. Topley and M. McAnaw, "Developing a Mobility Protocol for Early Mobilization of Patients in a Surgical/Trauma ICU," *Critical Care Research and Practice*, 2012.
- [31] Alberta Health Services, "Our People Strategy: Because We Are Stronger Together," Alberta Health Services, Alberta, June 2016.
- [32] T. Gilchrist, "HR Operational Plan & Framework 2016-2019," Alberta Health Services, Alberta, 2016.
- [33] Carswell, *Handi-Guide to Alberta's OH&S Act, Regulation and Code - 2014 Edition*, Toronto: Thomson Reuters Canada Limited, 2013.
- [34] S. Hignett, M. Fray, M. Rossi, L. Tamminen-Peter, S. Hermann, C. Lomi, S. Dockrell, T. Cotrim, J. Cantineau and C. Johnsson, "Implementation of the Manual Handling Directive in the healthcare industry in the European Union for patient handling tasks," *International Journal of Industrial Ergonomics*, vol. 37, pp. 415-423, 2007.
- [35] Workplace Health & Safety, "Safe & Inclusive Workplace - Q3 Report 2016/17 (Internal Report)," Alberta Health Services, Alberta, February 2017.
- [36] Workplace Health and Safety, "WHS - Leading Health and Safety in the Workplace - Fundamentals Module 3 (MyLearningLink e-learning course for AHS Leaders)," Alberta Health Services, Alberta, 2017.
- [37] J. Stichler, "Research, Research-Informed Design, Evidence-Based Design: What is the Difference and Does it Matter?," *Health Environments Research & Design Journal*, vol. 10, no. 1, pp. 7-12, 2016.
- [38] Canadian Standards Association, *CSA Z8000-11 Canadian Health Care Facilities*, Mississauga: Canadian Standards Association, September 2011.
- [39] R. Chhokar, C. Engst, A. Miller, D. Robinson, R. Tate and A. Yassi, "The three-year economic benefits of a ceiling lift intervention aimed to reduce healthcare worker injuries," *Applied Ergonomics*, vol. 36, pp. 223-229, 2005.