

Staff Safety Guidelines For Interior Health / Northern Health Facility Design Projects

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1.0 DESIGN PHILOSOPHY

Interior and Northern Health facilities shall be planned and designed to produce an environment of care that is safe and secure for all occupants (patients, staff, and visitors). The planning and design of the facility shall include provisions for achieving the following objectives related to the safety and security of patients, staff, and visitors:

- All current provincial and national ergonomic, violence prevention and occupational safety regulatory standards are followed
- The built environment promotes wellness to all those within it including staff
- The built environment does not contribute to physical, psychological and emotional risks to patients, visitors or staff.
- The built environment provides security from criminal activity such as personal assault or theft of property

Healthcare facilities present unique issues when it comes to safety and security design. Often incompatible issues such as 24-hour operation in an environment that has to be more open than most other facilities combined with a large portion of patients being in a vulnerable state, and staff often under stress, present particularly difficult challenges for the design team.

By addressing safety and security issues appropriately during the design process, considerable costs can be avoided that can otherwise arise if patients, staff, or visitors are injured or if property is damaged or stolen.

Ergonomic, safety and violence prevention design considerations are an essential part of creating safe and effective services within Interior and Northern Health healthcare facilities and ensuring that equipment, work environments and work processes promote patient and staff safety and wellbeing. This can contribute to decreased medical errors, decreased sick time, decreased injury and stress related claims. They can also contribute to increased staff productivity and overall system efficiencies.

2.0 PROCESS TO DETERMINE LEVEL OF WH&S CONSULTATION IN CAPITAL PLANNING & PROJECTS

Refer to [Appendix 15.1](#) for flowchart.

Step 1. Review the high risk areas in section 3.1 - 3.3 to determine if your project incorporates building or renovating any areas that are considered high risk from a WH&S perspective. If high risk areas are identified proceed to step 3.

Step 2a. If project does NOT incorporate high risk areas, provide design team with this document to assist the team in meeting the mandatory WH&S requirements. Design team may contact workplaceinjury.prevention@interiorhealth.ca for additional clarification and support as needed.

Step 2b. If the project DOES incorporate high risk areas, an external consultant specific to the high risk issue/specialty area is required to work with the design team. The external consultant must use this document as well as their professional lens to assist the team in meeting the mandatory WH&S requirements. A pre-qualified list of external consultants in the fields of

ergonomics and occupational hygiene and safety is being compiled. The external consultant may contact WH&S via workplaceinjury.prevention@interiorhealth.ca at any time and must inform WH&S upon completion to ensure operation processes are in place.

3.0 HIGH RISK AREAS FOR STAFF SAFETY IMPACTING DESIGN

3.1 Ergonomic High Risk Areas

1. Patient care areas only when unable to implement specifications and/or equipment from these guidelines. I.e. redesign where rooms are sized differently than guidelines recommend.
2. Patient treatment areas such as DI, delivery rooms. (awkward postures during procedure: bending, twisting, reaching) – Design layout and space. Proper ergonomic equipment is significant in these areas and space must accommodate for such i.e. recommended adjustable beds, carts, ceiling lifts etc.
3. Reception areas (awkward postures, excessive reaching, excessive neck rotation) - Standing workstations with chair/stool, transaction counter widths/heights, security barriers including pass through and cut-out sizes, multiuser adaptability, egress, accommodation for wheelchair patients, appropriate storage. Also consider infection control design requirements.
4. Care Stations (awkward postures, excessive reaching, excessive neck rotation) - Standing workstations with stool, transaction counter widths/heights, security barriers including pass through and cut-out sizes, multiuser adaptability, egress, accommodation for wheelchair patients, appropriate storage.
5. Pharmacy and Laboratory Workstations (awkward postures, static postures, excessive reaching, repetitive tasks, limited task variance, limited working space) – Counter size and shape, shelf heights, multiuser adaptability, mounted equipment to increase counter space, design layout to reduce repetition and improve work flow.
6. Laundry and Food Services (awkward postures, static postures, repetition, contact stress, pushing/pulling, lifting) – Design layout to reduce repetition and improve work flow, counter widths and heights, multiuser adaptability

3.2 Occupational Safety and Hygiene High Risk Areas

1. Laboratories
 - Highest risk area in Healthcare for potential exposures:
 - Carcinogenic, caustic, and toxic process chemicals used
 - Specimen fixation with Formaldehyde
 - Biological Exposures
 - Specialized Ventilation requirements, fume hoods, Grossing Stations to contain potential aerosolization of biological and chemical contaminants.
 - Hygiene facilities for decontamination (eyewash, shower)
 - Hazardous material Storage.

2. Medical Device Reprocessing:

- Hazardous Process Chemicals used.
- Specific air pressure standards for clean/dirty rooms.
- Heat stress engineering requirements

3. Labour and Delivery

- Medical Gas Usage, possibly portable.
- Special ventilation requirements for medical gas (Entonox)
- Possible requirements for storage and transport of specimens in Formaldehyde.

4. Laundry

- Large volume of concentrated laundering chemicals
- Potential spill containment requirements, sewage and environmental considerations

5. Ambulatory Care Unit

- Reprocessing.

6. Operating Room

- Medical gas, leak handling, management, monitoring,
- Medical gas scavenging systems, internal monitoring, function alarming.
- Specimen fixation, formaldehyde dispensing system, tissue fixation, storage for specimen fixers, fume hood for handling. Local exhaust systems for capture of fugitive vapours.

7. Maintenance (refrigerants)

- Mechanical rooms- refrigerants
- Confined Space requirements, egress, and emergency escape considerations.
- Carpentry, electrical, plumbing

8. Diagnostic Imaging

- Process chemicals used.
- Ventilation locally for fugitive vapours.
- Areas where fall protection or confined space equipment may be required. (e.g. Window washing- anchor points, guardrails where personnel are likely to require access. Roof structure must be designed for safe access and egress.)
- Areas that require special temperature and/or humidity levels. These areas may include computer/network equipment areas.
- Areas with potential for excessive noise levels. These areas may include mechanical rooms, laundry service and food service areas.
- Areas with potential for inadequate lighting levels. These areas may include enclosed stairwells, interior hallways, storage areas, exterior walkways.
- Areas with potential for slips, trips and falls. These areas may include corridors, stairwells, outdoor walkways etc.

3.3 Violence High Risk Areas

1. High risk in acute care may include emergency departments, mental health departments, detox units, reception areas, and medical units that have patients with delirium/dementia and head injuries.
2. High risk in residential care may include units that are home to residents with mental health, dementia related conditions and/or head injuries.
3. All areas where staff members are required to work alone and/or in isolation.

4.0 POTENTIAL STAFF SAFETY DESIGN INPUT INTO EACH STAGE OF THE CAPITAL PLANNING PROCESS

4.1 General WH&S Input

1. Ensure an objective of the project is to develop a safe environment for both staff and patients.
2. Ensure design team is aware of high risk areas/tasks pertinent to healthcare from an ergonomic, safety/hygiene and violence prevention perspective.
3. Ensure design team has current health and safety standards pertinent to project (CSA, ASHRAE, WorkSafe BC etc.); consider space, bariatric, noise, lighting, air exchange, handling of chemicals, violence prevention etc.; highlight key sections that pertain to high risk areas in project; a specific meeting may be required to review all pertinent standards with the design team.
4. Ensure design team references this document for IH health and safety standards/recommendations/required equipment pertinent to the project (e.g. patient lift equipment, office ergonomic equipment).
5. Ensure design team aware of bariatric design standards and specifications
6. Review available LEAN flows of medicine (if done prior to planning process by site) to ensure no safety/occupational hygiene concerns (e.g. equipment placed too close together is increasing ambient noise, trip/fall risk) or ergonomic concerns.
7. Ensure separate public, material/equipment and patient/staff circulation if at all feasible.
8. Review initial schematic design floor plans to determine safety concerns due to circulation, adjacency, site lines etc.
9. Provide design team with WH&S end-user commissioning processes for major equipment and mechanical systems (e.g. smoke tests) pertinent to project.

4.2 Ergonomic Input

| Stage of Design | Ergonomic Role |
|---------------------------|--|
| Schematic Design | <ol style="list-style-type: none"> 1. Provide summary of high risk user activities and potential design implications if known. This may require working with front line staff via focus groups or informal on the job observation/problem solving outside the scheduled design mtgs. 2. Ensure ramps are avoided if at all possible. If not possible recommend ramp incline ratio that is safe for a healthcare environment (e.g. 1/20 ratio) and recommend inclusion of midway step 3. Ensure essential corridor distances and turning radii are maintained; if additional patient convoy equipment (e.g. Cardiac OR patient transport to CSICU) required then promote wider corridors (1200mm) and room entrances 4. Review equipment list to ensure patient and staff safety equipment is incorporated |
| Design Development | <ol style="list-style-type: none"> 1. Participate in the focus group/mock up sessions to determine the detailed design of each piece of millwork, the placement of equipment and supplies and the requirements of any modular furniture. This may require further informal interviews and job shadowing with front line staff 2. If more detailed understanding requested from design team, provide staff observation analysis for high risk tasks highlighting only those aspects that are architecturally significant. 3. Ensure recommended working distances are maintained as outlined in this document 4. If plans include ceiling lifts, ensure that the Interior Health Safe Patient Handling Policy and Ceiling Lift Allocations Guidelines (refer to section 7.4.2.5) are adhered to. Review ceiling layout plans to ensure lighting and other ceiling fixtures (e.g. HVAC, sprinklers) do not interfere with optimal ceiling lift gantry location and that the charger is ideally placed to prevent carry bar damage/interference with key equipment (e.g. physiological monitors) and circulation paths and that associated electrical plug has been included at ceiling height for the charger. Assist staff and vendor with curtain specifications required in these areas if needed. 5. Ensure workstation/mounted equipment heights/depths/widths, reaching distances, viewing distances adhere to anthropometric standards or rationale provided as to why these could not be adhered to. If not adhered to, ensure site is aware of associated ergonomic risk factors 6. Provide design team with WH&S recommended equipment pertinent to the area. 7. Determine if CSA space standards have been adhered to for high risk area. If not adhered to, ensure site is aware of associated ergonomic risk factors 8. Review door widths and door swings from both an ergonomic and workflow perspective 9. Ensure appropriate access to light switches for both staff and patients, capacity for flexible lighting levels where needed, 10. Ensure practical placements of cable, phone and computer data outlets and head wall requirements. In patient care areas, ensure that the electrical plugs that will be accessed by staff are placed at the appropriate height of 910mm (and not at the building code standard of 460mm height) wherever feasible. In office/team care station areas ensure some electrical and data are included above work surface counter (Wang, W. et.al.). |

4.3 Occupational Safety and Hygiene Input

| Stage of Design | Occupational Safety and Hygiene Role |
|-----------------------------------|---|
| Schematic Design | <ol style="list-style-type: none"> 1. Determine what areas will require maintenance of critical conditions (such as negative air rooms, dirty/clean laundry areas, reprocessing areas) and storage of toxic gases and other such products. 2. Determine any sources of outdoor contaminant to avoid infiltration into building and ensure intake/exhaust placed to avoid cross-contamination (e.g. loading docks, ambulance zone, parking zones even at a distance can create contaminant infiltration into building by wind/thermal inversions) 3. Ensure air quality thermal standards and codes are in place. 4. Ensure design incorporates effects of outdoor conditions on air rates/CO2 levels specifically in extreme temperature situations involving air conditioning/heating system venting. |
| Design Development | <ol style="list-style-type: none"> 1. Ensure design of HVAC system includes all components; condensate drains, water baffles, cooling towers. 2. Ensure adequate access points into HVAC system are in place for inspection, cleaning and servicing. 3. Ensure placement and specifications of insulation materials are adequate and appropriate. 4. Examine equipment manufacturer safety information for materials that may contribute to indoor environmental pollution/possible contamination issues (e.g. carpets, adhesives, and fire-proofing materials), VOC emissions, off-gassing options. 5. Review and ensure appropriate lighting options and levels are chosen based on user needs. Refer to Section 12.7. 6. Assist design team in choosing appropriate materials etc. to ensure recommended noise levels are met. |
| Construction Commissioning | <ol style="list-style-type: none"> 1. Determine end-user commissioning processes for all specified equipment and mechanical systems (e.g. smoke tests etc.). 2. Ensure any temporary ventilation has been removed and replaced with long-term ventilation system when construction is complete. 3. Inspect and verify HVAC system components are constructed as designed, critical service and cleaning areas are accessible and insulation is installed according to design. 4. Complete pre-occupancy Indoor Air Quality testing and again once the building is operating at full or close to full capacity. Provide project manager with comparison of results and recommendations. |

4.4 Violence Prevention Input

| Stage of Design | Violence Prevention Consultant Role |
|--------------------|--|
| Schematic Design | <ol style="list-style-type: none"> 1. Review schematic design floor plan/adjacencies from a sight line perspective ensuring key sight lines in high risk areas are maintained, 2. Review Section 10 of this document with design team and highlight specific needs outlined in CSA for violence prevention. |
| Design Development | <ol style="list-style-type: none"> 1. As per Section 10 for high risk areas, assist in determining ceiling types, ceiling fixture types, wall composition, door hardware, door types, door viewing needs, door access, glass composition, mirror composition, hardware and integral blind needs and other window viewing options, light fixtures etc. as per level of risk identified for the area and per the CSA requirements |
| Commissioning | <ol style="list-style-type: none"> 1. Guide site JOSH Committee with completion of Violence Risk Assessment (found on InsideNet) for new area. |

5.0 MANDATORY REGULATIONS FOR DESIGN

1. WorkSafe BC Regulations
 - [Occupational Health and Safety Regulation](#)
 - Refer to all applicable sections with specific attention to the following:
 - [Part 4 – General Conditions](#)
 - [Part 5 – Chemical Agents and Biological Agents](#)
 - [Part 6 – Substance Specific Requirements](#)
 - [Part 7 – Noise, Vibration, Radiation and Temperature](#)
 - [Part 11 – Falls Protection](#)
 - [Part 30 - Laboratories](#)
2. Canadian Standards Association (2011). Z8000-11 Canadian Health Care Facilities.
 - Ergonomic related sections-7.6, 7.8, 8.1-8.8, 9.1-9.8, 9.10, 10.1-10.2, 11.1
 - Violence prevention related sections- 8.2 Planning and design principles, 7.6, 7.6.1.2, 7.6.1.3, 7.7, 7.7.1, 7.7.1.3, 7.7.1.4, 7.7.2, 7.7.2.1-7, 9.4.3.8, 9.4.3.8.1, 9.4.2.2.7, 9.4.2.4.9, 9.4.3.8.3, 9.4.3.8.5, 9.5.3.19, 9.7.3.12, 9.11.3.9.1,
3. Canadian Standards Association (2006). Z305.12 “Safe storage, handling and use of portable oxygen systems in residential buildings and health care facilities”
4. ANSI/ASHRAE std 170 (2008) Ventilation for Health Care Facilities
5. ANSI/SHRAE std. 62.1 (2007) Ventilation for Acceptable IAQ (note that CSA Z8000-11 references the 62.1-2001 ANSI/ASHRAE std.)
6. ISO 11625 (2007). Standard for storage of gases.
7. Any and all applicable fire codes/regulations for compressed gases and storage.

8. [Provincial Safe Resident Handling Standards for Musculoskeletal Injury Prevention in British Columbia \(2012\)](#). Interior Health, Northern Health, Vancouver Island Health, Fraser Health, Vancouver Coastal Health, Providence Health, Provincial Health Services
9. Provincial Hand Hygiene Working Group (2013). [Best Practices for Hand Hygiene Facilities and Infrastructure in Healthcare Settings](#).
10. [BC MOH Secure Rooms and Seclusion Standards and Guidelines](#) (2012).
11. IH Standards for Medication Rooms for Acute Care Facilities Decision Brief (2014). Refer to [Appendix 15.2](#)
12. Emergency Eye Wash Station Guidelines (in development). Please contact [Brian Nordin](#) for details.

6.0 OFFICE / WORKSTATION REQUIREMENTS AND RECOMMENDATIONS

6.1 Space Allocation

All IN/NH office environments shall be sized according to the "[Interior Health Space Guidelines](#)" document.

6.2 Workstation Dimensions and Distances

The design of the millwork must meet the minimum requirements below. In the design of reception areas and working desks, modular furniture shall be used. This will allow for flexibility and adaptability in the future. If fully modular furniture is not practicable in an environment, then components, such as drawer units, keyboard trays and shelving units must be designed to allow for flexibility.

| 6.2.1 Seated Workstation Specifications | Dimension (mm) |
|---|--|
| Seated work station height – stationary | 720 |
| Seated work station height – adjustable | 660-810 |
| Seated keyboard height | Adjustable tray positioned at seated elbow level |
| Height between work surface and bottom shelf located above work surface (so monitor can easily fit) | 560 |
| Clear leg space underneath a work surface: | |
| 1. Width | 600 |
| 2. Depth (from desk surface front edge) | 550 |
| Minimum work surface depth (no monitor and used as writing surface) | 610 |
| Minimum work surface depth where monitor will be placed: | |
| 1. Unit clerk, switchboard and main reception areas | 760 |
| 2. All other workstations | 600 |
| Height of transaction shelf from floor | 1060-1100 |
| Height between work surface and top of transition shelf | 330 |
| Depth of transaction shelf | 330 |
| Maximum depth between worker and client at transaction interaction space | 610 |

| 6.2.1 Seated Workstation Specifications | Dimension (mm) |
|--|--|
| Under work surface drawer filing units | Should be mobile if feasible |
| Reception desk design | Ability to have an L-shaped work surface where practicable |
| Height of outlets (electrical and data) | In addition to standard outlet specifications, consider providing additional outlets above work surface for items other than computer. |

*Transition of items across transaction shelf must **not** occur above computer monitor. Computer monitor shall be positioned at a 45 degree angle to the transaction interaction space to avoid additional reaching. Work surface should be a maximum width of 610mm at transaction interaction space. Consider cut-out in transaction shelf where visitor stands to interact with employee and/or pass through at sitting work surface height. Pass through shall have dimensions that will accommodate individuals in wheelchairs and meet WorkSafe regulation.

| 6.2.2 Standing Workstation Specifications | Dimension (mm) |
|---|--|
| Standing work height (adjustable if work repetitive) Standing work height (fixed, use with adjustable stool/chair) | 945-1190 945 |
| Light work tasks requiring moderate degree of force and precision. (stationary height) • Include height of equipment being used/ worked on | 50-100mm <u>below</u> standing work height |
| Precision work tasks (stationary height - e.g. writing, inputting data, pharmacy or laboratory precision tasks) | 50-100mm <u>above</u> standing work height |
| Heavy work tasks often with downward force required. (stationary height) • Include height of equipment being used/worked on | 100-250mm <u>below</u> standing work height |
| Minimum work surface depth where monitor will be placed | 600 |
| Minimum knee clearance (depth under work surface) if stool used at workstation | 550 |
| Minimum toe clearance (depth) if purely a standing work station and stools will not be used | 290 |
| Height of transaction shelf (absolute) | 1060-1100 |
| Depth of transaction shelf | 330 |
| Maximum depth between worker and client at transaction interaction space | 610 |
| Under counter drawer filing units | Should be mobile if feasible |
| Reception desk design layout | Ability to have an L-shaped work surface where practicable |
| Height of outlets (electrical and data) | In addition to standard outlet specifications, consider providing additional outlets above work surface for items other than computer. |

- For toe clearance, a 95% North American Male anthropometric data is used
- For knee clearance, a 95% North American Male anthropometric data is used (Pheasant & Haslegrave, 2006).
- *Transition of items across transition shelf must not occur above computer monitor. Computer monitor shall be positioned at a 45 degree angle to the transition interaction space to avoid additional reaching. Work surface should be a maximum width of 610mm at transition interaction space. Consider cut-out in transition shelf where visitor stands to interact with employee and/or pass through at sitting work surface height. Pass through shall have dimensions that will accommodate individuals in wheelchairs.

| 6.2.3 Workstation Reaching Distances | Dimension (mm) |
|---|-----------------------|
| Minimum space behind chair with person in seated position | 1520 |
| Maximum horizontal reach distance | |
| • Normal working distance (frequently used items) | 400 |
| • Convenient reach distance (infrequently used items) | 555 |
| Maximum vertical reach distance (in seated position): | 1060 |
| Maximum vertical reach distance (in standing position): | 1790 |

- For reach distances, a 5% North American Female anthropometric data is used (Pheasant & Haslegrave, 2006).

6.3 Office / Workstation High Risk Area Considerations

6.3.1 Ergonomic Considerations

The below points have been adapted from “Essential Ergonomics in the Healthcare Facility Design Process” (Gamble, 2006):

1. High risk areas may include: team care stations, reception, triage, and admitting areas, pharmacy & laboratory workstations.
2. Refer to CSA Z-8000-11 Table 8.2 item #1 & Table 11.1 item #37 and Interior Health’s WH&S Ergonomic Recommendations for Care Team Stations and Reception Areas (see [Appendix 15.3](#)).
3. Avoid long straight counter desks; L or U shaped desk counters preferred at task intensive workstations (unit clerk, switchboard, admitting). Laboratory and pharmacy workstations should also avoid long straight counter desks. Where appropriate consider a U shaped workstations, specifically for tasks that require a lot of counter space. This will decrease excessive reaching and promote increased efficiencies.
4. Furniture/equipment to accommodate multi-user workstations is recommended.
5. Due to the tasks and equipment used in lab height adjustable counters are recommended.
6. Avoid placing pencil drawers in legroom space. Pencil drawers will be part of the 3 drawer mobile unit to be placed at the end of one side of desk.
7. Avoid built in horizontal/vertical slots for card/paper/letter holder. Consider commercial desk top holders and/or floor to 1600mm shelving slot system (can be placed outside of care station also) to help create flexibility for change if needed in the future.
8. Ensure that electrical and data plugs be placed above desk height near task intensive office users workstations and throughout team care stations

9. Computer workstation furniture shall accommodate a multi-user work space and consider modular system design for increased flexibility of space.
10. In workstation requiring transaction with the public or patients, transaction of items (handing things back a forth) across transition shelf must not occur above computer monitor. Particular care must be taken so reaching distance is within safe zone for those staff having to frequently reach to hand out items or apply arm bands. This may require a cut-out in transaction shelf or pass-through.
11. A transaction space shall be available to accommodate individuals in wheelchairs as per disability guidelines.

6.3.2 Violence Prevention Considerations for Workstations

- 1 All reception /care stations identified in areas at high risk for violence (ED triage – initial stage, admitting /patient registration, mental health team care stations) must be provided with the following as per CSA standards:
 - 1.1 Physical barriers and signage to restrict public/patient access Locked doors with two points of exit/entry
 - 1.2 Adequate counter height / width to prevent a person from jumping over it. This may require incorporation of safety glass from counter to a 1100mm height (minimum) that can be opened or cut out for pass through to accommodate wheelchair access.
 - 1.3 A duress alarm system that is out of sight from the public and easily accessible to the employee.
 - 1.4 The computer, printer, and telephone should be located so they are not easily reached by the patient.
 - 1.5 Clear sight lines of incoming visitors/customers (e.g. emergency department reception/triage area shall be adjacent to walk-in and ambulance entrances) or visual monitoring of the entrance/exits from the central care station/reception.
- 2 In areas immediately adjacent to reception areas and are accessible to others, the furniture should be bolted to the floor and walls and contain lockable file drawers.
 - 2.1 An area designated as a safe zone must be provided in high risk of violence areas for staff to use should a possible threatening situation occur. This room should have a window or peep hole in door that locks on the inside, electrical outlet and phone jack. This room should be located in close proximity of team care station and reception areas
 - 2.2 Refer to Section 10 for detailed information on design details such as flooring, walls, ceilings, glass, hardware, light fixtures, fire sprinklers, window coverings hardware, furniture, picture and art works that assists to mitigate the risk of violence.

6.3.3 Safety and Occupational Hygiene Considerations for Workstations

1. Open concept office environments can be at high risk for noise levels above the recommended 45 dbA (Yantis 2006). Refer to section 11.6 for recommendations on acoustic control. Provision of shared meetings rooms and teleconference spaces is also recommended as are headsets.
2. Refer to section 11.7 for office environment lighting levels.
3. Where feasible, offices and other enclosed spaces (meeting rooms, file rooms, treatment rooms, etc.) shall be placed in the core of the work space with the open workspaces

organized along the windows to maximize the amount of natural light penetrating the interior of the work environment. All offices should have a “side-light” window adjacent to the door to allow natural light to flow into the space. Where this is not feasible, sun-tubes may be considered to increase the amount of natural daylight penetration in interior offices.

4. In office environments air quality levels should meet ASHRAE/CSA standards reflected through maintaining CO2 levels below 1000ppm with fresh air supplied to meet the dilution needs of the equipment found in the office, such as printers etc.

6.4 WH&S Office Resources and Standards

1. All furniture and office equipment should comply with the Interior and Northern Health Authority’s workstation standards as outlined in the most current version of these documents:
 - 1.1 IH/NH Workstation Standard Furniture (contact HSSBC)
 - 1.2 IH & NH – [WH&S Recommended Ergonomic Office Equipment](#)
 - 1.3 All office equipment should be set up according to the [IH/NH Office Ergonomic Independent Learning Package](#).

7.0 PATIENT CARE AREA REQUIREMENTS AND RECOMMENDATIONS

7.1 Space Allocation

- Refer to CSA Z-8000-11

7.2 Patient Area Dimensions and Working Distances

The design of workspaces shall meet the physical requirements to ensure the users can complete various tasks. The mandatory working distances listed below shall be accommodated.

| 7.2.1 Patient Room Room/Task (Acute and Residential) | Space |
|---|--------------|
| Inpatient Room | |
| 1. Minimum space for transfer onto bed | 1500* |
| 2. Minimum space on non-transfer side | 800* |
| 3. Minimum space between end of bed and next surface | 1200 |
| 4. Minimum door width opening | 1500** |
| 5. Minimum space on either side of toilet (wall to middle of toilet bowl) | 800 |
| 6. Minimum space in front of toilet (turning radius) | 1500 |
| Storage/ placement of patient care items | |
| 7. Maximum horizontal depth (forward reach) | 655 |
| 8. Max horizontal depth for frequent reaching | 350 |
| 9. Maximum vertical reach height (standing) | 1805 |
| 10. Maximum vertical reach height (sitting) | 1070 |

*The bed and bedside table can be relocated within the working area to obtain the space required on the preferred side of the bed as stated in Arjo Guidebook for Architects and Planners (Arjo 2005).

**A minimum single leaf dimension will be 1220mm as stated in Interior Heart and Surgical Centre Schedule 3 (Government of British Columbia, 2012).

| 7.2.2 Bariatric Patient Room (Acute and Residential) | Space (mm)* |
|---|--------------------|
| Bariatric beds (CSA Z-8000-11 7.8.8.2) | |
| 1. Minimum space for transfer onto bed | 1500* |
| 2. Minimum space on non-transfer side | 1500* |
| 3. Minimum space between end of bed and next surface | 1500 |
| 4. Minimum door opening width (split door preferred) | 1500** |
| 5. Minimum space on one side of toilet for transfer use | 1118 |
| 6. Minimum space in front of toilet (turning radius) | 1800 |
| Storage/ placement of patient care items | |
| 7. Maximum horizontal depth (forward reach) | 655 |
| 8. Maximum horizontal depth for frequent reaching | 350 |
| 9. Maximum vertical reach height (standing) | 1805 |
| 10. Maximum vertical reach height (sitting) | 1070 |

*The bed and bedside table can be relocated within the working area to obtain the space required on the preferred side of the bed as stated in Arjo Guidebook for Architects and Planners 2nd Edition 2005.

**A minimum single leaf dimension will be 1220mm as stated in Interior Heart and Surgical Centre Schedule 3.

| 7.2.3 Critical Care Patient Room Room/Task (Acute) | Space (mm) |
|---|-------------------|
| Critical Care Bed | |
| 1. Minimum space for transfer onto bed* | 1500 |
| 2. Minimum space on non-transfer side | 1200 |
| 3. Minimum space between end of bed and next surface | 1500 |
| Storage/ placement of patient care items | |
| 4. Maximum horizontal depth (forward reach) | 655 |
| 5. Maximum horizontal depth for frequent reaching | 350 |
| 6. Maximum vertical reach height (standing) | 1805 |
| 7. Maximum vertical reach height (sitting) | 1070 |

*The bed and bedside table can be relocated within the working area to obtain the space required on the preferred side of the bed as stated in Arjo Guidebook for Architects and Planners 2nd Edition 2005.

| 7.2.4 Examination / Procedure / Treatment Rooms | Space |
|---|--------------|
| Treatment Room | |
| 1. Minimum space for transfer onto bed | 1500mm* |
| 2. Minimum working space on either side of bed | 800mm |
| 3. Minimum space between end of stretcher and next surface | 800mm |
| 4. Minimum space between end of stretcher and next surface if procedure involves work at end of stretcher | 900mm |
| 5. Minimum space circumference around treatment chair | 800mm |
| 6. Minimum door width | 1500** |
| Storage/ placement of patient care items | |
| 7. Maximum horizontal depth (forward reach) | 655mm |
| 8. Maximum horizontal depth for frequent reaching | 350mm |
| 9. Maximum vertical reach height (standing) | 1805mm |
| 10. Maximum vertical reach height (sitting) | 1070mm |

*The bed and bedside table can be relocated within the working area to obtain the space required on the preferred side of the bed as stated in Arjo Guidebook for Architects and Planners 2nd Edition 2005.

**A minimum single leaf dimension will be 1220mm as stated in Interior Heart and Surgical Centre Schedule 3.

| 7.2.5 Bathing Rooms | Space |
|--|--------------|
| Tub Room | |
| 1. Minimum distance of transfer side of bathing tub | 1100mm |
| 2. Minimum distance on other side of bathing tub | 800mm |
| 3. Minimum clearance at end of bathing tub | 800mm |
| 4. Minimum ceiling clearance to accommodate ceiling lift and weigh scale | 9' |
| Stretcher Shower Room | |
| 5. Minimum space on one side | 1800mm |
| 6. Minimum space on other side | 1200mm |

7.3 Patient Care High Risk Area Considerations

7.3.1 Ergonomic Considerations for High Risk Patient Care Areas

1. Planning for bed clearances shall take into account the dimensions of the bed. Distances around beds are based on a bed width of 1000mm for a standard hospital bed and 1200mm for a bariatric bed. If different bed sizes are used, the distances shall be adjusted to accommodate the actual bed size.
2. For minimum clearance specifications (other than noted in this document) CSA Z-8000-11 and CSA B651 are used. Refer to CSA Z-8000-11 Section 12.2.2.1.
3. For reach distances, a 5% North American Female anthropometric data is used.
4. All patient washroom doors must be dual swing.
5. Door openings of adequate width shall be provided to suit the intended purpose of rooms on either side of the door and also allow movement of people and equipment associated with those rooms. Door hardware must also be considered – refer to door and door hardware table 9.3 in section 9.3.
6. At all doors, where patient wheelchair/stretchers/bed movement is required, including doors into/between major departments/activity areas automatic doors activated by disabled accessible push-button controls located on the inside and outside of both sets of doors shall be provided. (Also provide manual push/pull option on both sides of doors).
7. Apply door sizes and designs consistently to rooms of similar use, location and configuration.
8. The manufacturer's specifications for space requirements shall be consulted prior to the design and construction of the patient areas for bariatric patients.
9. Corridors in patient care areas will have alcoves for storage of equipment. The alcoves will be dispersed between patient rooms allowing corridors to be kept clear of equipment and supplies. Ensure all carts required by support services (Housekeeping and Laundry) are accommodated. Include storage space for portable floor lifts, slings, wheelchairs, etc. Provide the alcoves with power outlets for charging electronics and data ports, each at 910mm above finished floor.
10. Alcoves must not reduce required corridor widths but be in addition to standard corridor widths.

11. Corridors more than 30 M will have recessed rest areas for patients to promote mobility and activity.
12. Dedicated work space should be provided within the inpatient unit for support service staff such as clinical pharmacist and therapists. In teaching hospitals, space for students must also be incorporated.
13. Patient handling equipment turning and circulation considerations should at the minimum meet the radii guidelines as per the Arjo Guidebook for Architects and Planners (Arjo 2005).
14. Standardized rooms are preferred for patient / resident rooms and bays, medication rooms, multiple procedure rooms offering similar service (e.g. Labour and delivery rooms, OR's), other space supporting same processes (e.g. housekeeping rooms, lab workstations) (Rack, 2006).
15. Consult with pharmacy for narcotics stored at the bedside. A non-mobile locked narcotic cupboard may be required (e.g. PAR, ICU).

7.3.2 Violence Prevention Considerations for High Risk Patient Care Areas

1. Refer to section 11.1 – Level 2, 3 & 4 for detailed patient room design specifications.
2. Care areas offering after hours or 24 hours per day services require the following; security cameras, emergency call system and the ability to lock down the unit after hours. Refer to section 11.3 for working alone design considerations.

7.3.3 Occupational Safety and Hygiene Considerations for High Risk Patient Care Areas

1. Refer to ASHRAE 170-2008 Ventilation for Healthcare Facilities and CSA standard special requirements for HVAC systems in HC 2003 need to be adhered to.
2. Refer to section 12.1 for care areas that contain gases (e.g. labour and delivery, OR, ambulatory care procedure rooms), 12.3 for negative air room requirements and 12.5 for HVAC system requirements.
3. All areas where patients with airborne infectious diseases shall have Neg units installed such as:
 - 3.1 Emergency area shall consider rooms adjacent to side waiting areas that can provide airborne containment until suspected airborne patients are admitted into negative pressure rooms within ER.
 - 3.2 Emergency area shall consider containment area with shower, separate plumbing, negative air for contaminated patients that require decontamination prior to entry into the facility. Preference is to have an anteroom prior to entry and storage area containing needed equipment in close proximity.
 - 3.3 Clinical Care areas: ICU, OR, PAR. ACU (Cardiopulmonary and wherever bronchoscopies or AGMPs are being performed by RT

4. Ensure HVAC grilles over patient beds/stretchers have the appropriate diffuser so air will not blow down directly onto the patient.
5. Ensure adequate ventilation and requirements met for areas involving specialized tooling and/or dust control (e.g. grinding in OR, PT/OT areas where applicable).

7.4 Safe Patient Handling Resources and Standards

7.4.1 Safe Patient Handling Policy

Refer to the organizational [Safe Patient Handling Policy](#).

7.4.2 Safe Patient Handling Equipment Recommendations

7.4.2.1 Floor Based Full Body Lifts and Slings

1. One Full body floor based lift for each care unit or floor.
2. One full body floor based lift for every 8-10 non weight-bearing patients if there is no or minimal ceiling track lift coverage (patient function based on patient assessment criteria).
3. Consider 2 slings per lift (in areas with recommended ceiling track lift coverage). Slings should be different sizes to accommodate a wide range of patients. Slings must be deemed compatible for lift.
4. For areas that solely use floor based full body lifts (no/minimal CTL coverage) please refer to [IH/NH Safe Patient Handling Equipment Recommendations and Lift Allocation Guidelines](#) for sling recommendations.

7.4.2.2 Sit-to-Stand (stand assist or standing) Lifts

1. One sit-to-stand lift for each care unit or floor
2. One sit-to-stand lift for every 8-10 partially weight-bearing patients (patient function based on patient assessment criteria).
3. Consider 2 slings per lift. Slings should be different sizes to accommodate a wide range of patients. Slings must be deemed compatible for lift.

7.4.2.3 Devices for Lateral Transfers/Repositioning

(Listed below in order of injury risk reduction impact)

1. Overhead lifts with positioning sling (can also be used to lift patient from floor).
2. Air-assisted lateral transfer devices. When additional components are purchased (i.e. compatible air jacks) can also be used to lift patient from floor.
3. Friction-reducing assistive devices (e.g., slider/roller boards, slider sheets).

7.4.2.4 Ceiling Track Lifts (CTL) and Slings

| Motor Weight Capacity (lbs.) | Ceiling Track Lift System | Coverage Percentage/ Unit or Site |
|------------------------------|-------------------------------|-----------------------------------|
| 450 lbs. | X-Y Gantry Manual traverse | Minimum of 80% |
| 800 lbs. | X-Y Gantry Manual traverse | Minimum of 20%* |

1. All CTL's must be weight tested according to [WorkSafe BC requirements: OHSR Section 14.54 – Loading](#).
2. Should a facility not have the capacity beyond ceiling structure (i.e. door widths too narrow etc.) to accommodate a bariatric patient this facility is not expected to retrofit/redesign to meet CTL guidelines.
3. The system is capable of lifting patients from the floor (e.g., when a patient falls).
4. 2 slings per patient in residential care and 4 slings per patient in acute care when slings are laundered in-house; 3 slings per patient in residential care and 6 slings per patient in acute care when slings are laundered off-site
5. Coverage based on assessment; see recommendations below in section 7.4.2.5 Ceiling Track Lift Allocation Guidelines.
6. One CTL system should cover a maximum of 2 beds.
7. ICU beds are most often identified as the highest priority area in acute care; a power gantry system is recommended in ICU in order to avoid any unwanted movement of the patient.
8. All active tub rooms to be covered and tracks extended to toilet and patient dressing table.
9. Consider a portable or built in scale in the CTL system for weighing patients, with a minimum of one scale per site in residential care. If there is only one scale the recommended location is in the tub room. (Ensure scale is compatible with lift motor).
10. Coverage for rehabilitation areas recommended and outlined in section 7.4.2.5 Ceiling Track Lift Allocation Guidelines.
11. In procedural areas where beds/stretchers are positioned in a row (side-by-side) such as haemodialysis, or cath lab a straight track can be considered. In such cases one motor to cover 2 beds should still be followed.

7.4.2.5 Ceiling Track Lift Allocation Guidelines

| Unit | CTL Coverage |
|---|--|
| Residential Care | 100% |
| Intensive / Critical Care | 100% |
| Medical Imaging | Coverage for procedure rooms (e.g., X-ray, CT) with coverage based on patient dependency Coverage in patient transfer bay (MRI) |
| Emergency | Consider for 100% monitored beds, 50-75% acute beds |
| Medical/Palliative Units | 75% minimum |
| Surgical Unit | 50% minimum (depending on type surgical unit) |
| Subacute | 50% minimum as per assessment |
| OR's | 0% - alternatives such as lateral air transfer devices recommended |
| PAR | 100% coverage; alternatives such as lateral air transfer devices may be considered |
| Rehabilitation Unit | 50% minimum: if unit is primarily neuro rehab, consider a minimum of 70% coverage. For new construction or rooms large enough for ambulation within rooms, consider 100% coverage. |
| Rehabilitation Treatment Clinic | Consider 100% coverage over treatment tables extending to parallel bars to allow 2 motors used simultaneously on one system. In such cases, ensure adequate weight capacity testing is done. Alternately consider straight track over parallel bars and X-Y gantry system over treatment tables & activity areas. |
| Morgue | Consider 100% coverage. Lift system should be able to assist with inserting/extracting trays into cooler as well as lifting/moving bodies into/within autopsy suite. |
| Nursing Training Room | 1 system per training room. |
| Haemodialysis, Cath Lab – procedural areas | 100% coverage. Consider straight track to accommodate beds/stretchers positioned side-by-side. 1 motor should cover 2 beds. If track extends beyond 2 beds purchase additional motors. |
| Other units | Consider coverage based on average number of patients requiring assistance for transfers or bed repositioning |
| <p>Coverage into Washroom - considered for new construction and in renovation projects where feasible. Criteria for consideration to include:</p> <ol style="list-style-type: none"> 1. X-Y gantry system covers toilet room. Tracks other than X-Y gantry (i.e. separate tracks that connect to a X-Y system) to reach toilet room are NOT recommended 2. Toilet room has pony walls to allow CTL boom to pass over (pony wall is a lower wall used to separate rooms while still maintaining privacy). | |
| Based on "Patient Handling (Lifting) Equipment Coverage and Space Recommendations" (US Veterans Health Administration, 2003) & Canadian Health Care Facilities standard CSA Z8000-11. | |

8.0 SUPPORT SERVICE AREA REQUIREMENTS AND RECOMMENDATIONS

8.1 Space Requirements and Recommendations

- Refer to CSA Z-8000-11

8.2 Housekeeping

8.2.1 Housekeeping Rooms

8.2.1.1 Ergonomic Considerations for Housekeeping Rooms

1. Standard housekeeping rooms require the following features (unless otherwise noted by site):
 - 1.1 Provide wall hook to hang ladder
 - 1.2 Provide a rack to clamp mops above floor sink
 - 1.3 Provide a minimum of 914mm (3') section of mounted storage wall bins (e.g. PAR wall) in each housekeeping room. For main rooms an 1829mm (6') section is recommended (Government of British Columbia, 2012).
 - 1.4 Provide a shelf positioned above floor scrubbers deep enough to hold battery packs for these machines and high enough to allow equipment to fit below.(min1500mm height) The battery packs are fairly heavy so additional wall support may be required. Power must be provided above shelf to charge battery pack. These batteries will stay positioned on shelf and will have a cord dropping down from the shelf to plug into the machines (ensure length of plug able to reach between shelf and machine).
 - 1.5 Provide a floor drain in room or incorporate the mop sink drain as a room drain.
 - 1.6 Provide wall protection to a height of 1600mm for entire room.
 - 1.7 Built in casework for these rooms is not recommended.
 - 1.8 Door hardware to include hold open function
 - 1.9 Detergent dispenser needs cold water outlet with backflow preventer. Back flow preventer to be concealed behind access panel
 - 1.10 Hand wash sink in room cannot be within a one meter of any fixed item unless protective barrier is placed on side of sink.
 - 1.11 Housekeeping staff to have card reader, not store room function hardware.
 - 1.12 Non-skid flooring is required.
 - 1.13 Floor mop sink in each housekeeping room must be of an adequate size, depth and access to support the floor buffers and other required housekeeping equipment.
 - 1.14 Provide 2 coat hooks per room (behind door)

8.2.2 Facility Wide Housekeeping Requirements

8.2.2.1 Ergonomic Recommendations for Housekeeping

1. Receptacles for housekeeping must be staggered on alternate sides of the hallways throughout the facility and spaced a maximum of 10 meters apart and as required for complete coverage of the building.
2. Duplex receptacle is required at each stairwell landing.

3. Each specialized treatment area (e.g. operating rooms) must have a dedicated duplex receptacle for housekeeping.
4. Each unit/area must work with housekeeping/laundry to identify and allocate storage space and corridor alcoves to house all necessary bins and carts required to support that area. Storage of these items in the corridor is not acceptable in newly renovated/built spaces and creates hazards for staff manoeuvring equipment and patients.
5. Wall protection to a minimum height of 1600mm where any bins or laundry carts will be stored and full height in equipment rooms and treatment areas with a great deal of equipment/booms (Government of British Columbia, 2012).

8.2.2.2 Violence Prevention Considerations for Housekeeping High Risk Areas

1. Refer to Section 11 Level of Care 5; 6.b. v & vii

8.2.2.3 Safety & Occupational Hygiene Recommendations for All Areas

1. Refer to section 12.1 for requirements on areas that use chemical liquids.

8.3 Pharmacy / Medication Storage

8.3.1 IH Pharmacy Requirements for Medication Room Design

1. Refer to [Appendix 15.2](#).

8.3.2 Ergonomic Recommendations for Pharmacies

1. Refer to [OHSAH Ergonomic Guide for Hospital Pharmacies](#) and to Section 6, specifically 6.3.1 for Workstation considerations.
2. Medication areas should also incorporate:
 - 2.1 be enclosed to limit distraction
 - 2.2 have site lines to key patient areas – this may require use of large windows or full glass panel doors in spaces not obstructed by the pyxis machines
 - 2.3 Avoid excessive millwork due to changing needs of pharmacy

8.3.3 Violence Prevention Recommendations for All Pharmacy Departments and Medication rooms in High Risk Areas:

1. Pharmacy Departments
 - 1.1 Refer to CSA Standard Z8000-11 and ensure 2013 Canadian Pharmacy standards are incorporated.
 - 1.2 Dual access that allows employees to have quick egress to a more secure area
 - 1.3 Access control system on both doors via a swipe card
 - 1.4 Intruder alarm system to monitor the pharmacy periphery (doors and windows) and internal secure areas (e.g. narcotics vault)
 - 1.5 Staff duress alarm button easily accessible at room entrances and in other key spaces (if larger pharmacy department); ideal for staff to carry a personal staff duress alarm / Vocera badge
 - 1.6 Drug storage room and narcotics vault should be a locked room and not be located on an outside wall

- 1.7 Width/height of the pharmacy reception counter/desk should provide appropriate barrier between staff and the public such that the public cannot jump over the counter. Refer to section 6.3.2 for violence considerations in office environments such as counter/desk specifications.

2. Medication Rooms requirements

- 2.1 Enclosed room
- 2.2 Dual access that allows the employee to have quick egress to a more secure area
- 2.3 Site lines to care station and each door must have non-breakable large viewing window (or sliding non-breakable glass)
- 2.4 Access control system on both doors via a swipe card. Staff duress alarm button easily accessible at room entrances if staff do not carry a personal staff duress alarm/Vocera badge
- 2.5 Built in narcotics cupboard with dual lock
- 2.6 Newly built medication rooms should be in close proximity of main care areas

8.3.4 Occupational Safety and Hygiene Recommendations for Pharmacy Departments

1. Specific consideration must be given to storage and handling of hazardous/cytotoxic drugs as outlined in the BC Health Authorities' Exposure Control Plan for Hazardous Drugs. To ensure the safety of staff who prepare hazardous drugs, refer to WSBC Occupational Health and Safety Regulation:
 - [Section 6.53 Drug Preparation and Administration](#)
 - BC Occupational Health and Safety Guidelines, [Section G6.53\(1\) Biological Safety Cabinets \(BSC\)](#)
 - BC Occupational Health and Safety Guidelines, [Section G30.12 – Biological Safety Cabinets](#)

8.4 Laundry services

8.4.1 Ergonomic Recommendations

1. Refer to [OHSAH Ergonomic Guide for Hospital Laundries](#)

8.4.2 Safety & Occupational Hygiene Considerations

1. Refer to section 12.3 of this document for dirty/clean room requirements.

8.5 Lab

8.5.1 Ergonomic Recommendations

1. Refer to [Ergonomic Guidelines in the Laboratory](#)

8.5.2 Safety & Occupational Hygiene Considerations

1. Refer to section 12.1 for requirements on areas that process chemical liquids and gases are used.

2. Morgue requires special consideration for tasks performed and extent of the storage of Specimen fixation. Specialized ventilated cabinets for the quantities of stored specimens as well as specific ventilation and disposal controls when specimens are disposed of.

9.0 CIRCULATION SPACES / COMMON AREAS

9.1 Space Requirements and Recommendations

- Refer to CSA Z-8000-11

9.2 Corridors/Circulation Dimensions

1. Material circulation routes shall be kept separate where possible from patients/staff/public circulation routes.
2. Door widths shall be dependent on the people/equipment loads anticipated.
3. Stairways shall be used to augment personnel movement between floors.
4. Passenger elevators shall be clearly identifiable from the building main entrance. Location of elevators shall be clearly marked, as appropriate, from the building entrances for the intended user (public/staff/service). Service elevators shall not be obvious or accessible to the public.
 - 4.1 All corridor widths must be a minimum of 2440mm (8') of clear (e.g. additional) width is required if storage or sitting alcoves are required in corridor.
 - 4.2 If large convoys of equipment accompany patient transport (e.g. post Cardiac Surgery) then minimum 3050mm (10') may be required.
 - 4.3 Design corridors to be level. No ramps are permitted unless approved by authority.

Table 9.2 Minimum corridor widths

| | mm |
|--|------|
| 1. Public Circulation Areas (clear space – additional width required for storage spaces and sitting alcoves) | 2440 |
| 2. Patient Care Circulation Areas (clear space – additional width required for storage spaces and sitting alcoves) | 2440 |
| 3. Logistics/Material Handling service areas | 2000 |
| 4. Loading Zone Areas | 3600 |
| 5. Administrative / Office spaces | 1500 |

9.3 Door dimensions, access control and hardware

1. Door openings of adequate width shall be provided to suit the intended purpose of rooms on either side of the door and also allow movement of people and equipment associated with those rooms.
2. At all doors, where patient wheelchair/stretchers/bed movement is required, including doors into/between major departments/activity areas automatic doors activated by disabled accessible push-button controls located on the inside and outside of both sets of doors shall be provided. (Also provide manual push/pull option on both sides of doors)

3. Apply door sizes and designs consistently to rooms of similar use, location and configuration.
4. Provide patient rooms with hardware that allows the doors to stay in an open position and facilitates casual observance of patients by the nursing staff.
5. Avoid doors swinging into corridors in a manner that may obstruct
 - 4.1 Traffic flow or reduce the corridor width, except doors to spaces that are used infrequently and are not subject to occupancy such as small closets.
6. Provide all doors with appropriate hinges, edge protection, and face protection to minimize damage and resultant disruptive maintenance.
7. Be consistent with the extent of glazing in a door, or the size and quantity of sidelights, and balance these between the extent of observation required and the privacy requirements of the occupants of the room. Where appropriate, provide glazing in an adjacent sidelight rather than within the door itself. The amount of glazing in doors or side lights in clinical areas will require input and review by the Authority in the context of the specific design of rooms and departments.
8. Provide glazing in doors and sidelights in such a way that they allow patient observation and operational safety of the spaces they serve.
9. Provide sealed double glazing in aluminum frame sliding doors, sliding doors to be without floor tracks, and be provided with emergency swing breakout.
10. Provide doors and door frames with the capability to withstand the varying and high levels of humidity and impact that occur typically within a hospital and in specific rooms within a hospital, and maintain their inherent aesthetic and functional capacities.
11. In areas where security is considered paramount, achieve security with the appropriate location, configuration, materials, construction, and detailing of doors and hardware. Refer to Section 11.1.
12. Wood doors are appropriate for public, patient and staff care areas, including department entrances. Metal doors are appropriate for service areas where high impact to doors is frequent.

| Table 9.3 Minimum door widths | Door Hardware | Access Control | Min Width (mm) |
|--|----------------------|-----------------------|---------------------------|
| 1. Main Entrance | | | 2440 |
| 2. Non Clinical | | | 914 |
| 3. Lounges and waiting areas | | | 1220 |
| 4. Clinical where NO pallet/stretcher/bed pass through | | | 1065 |
| 5. Clinical where beds pass through | | | 1500 |
| 6. Movement of large equipment (All mechanical and electrical rooms) | | | 914 x 2 (double doors) |

9.4 Elevators

9.4.1 Patient/Staff Elevator Dimensions

1. Width must accommodate a bariatric bed/stretchers (1200mm width), accompanying equipment and care team.
2. In specialized care areas, width must also accommodate convoy of patient, staff and associated equipment (e.g. transport to Intensive Care Units)
3. Depth must allow for minimal 700mm space plus length of a bed/stretchers. This enables staff the necessary room to maneuver the equipment/patient.
4. Minimal threshold gap at door to prevent wheeled equipment from getting stuck in threshold space

9.4.2 Safety Features

1. Provide and integrate with existing campus elevator communication systems a hands-free, two-way voice communication system in each elevator, with a central CACF lobby rescue station and remote hand-set located in Facilities management Office. Provide system that will permit two-way communication between any station location in each car enclosure, remote CACF Facilities Management Office and control / machine room(s).
2. For all elevators provide a personnel card reader inside each elevator cab. For Service elevators, the personnel card must be swiped to activate the elevator to go to that floor. For Public elevators, no personnel card swipe will be required during normal hours of operation. After hour access to any of the floors will require personnel card swipe to activate the elevator.
3. IMDR/OR access elevators - for newly built facilities it is optimal to have separate, dedicated clean and soiled MDR service elevators each located in its own shaft to access the OR directly.

10.0 IMPACT OF PATIENT POPULATION ON DESIGN

10.1 Disability and Elder Friendly Design Elements

1. Refer to “Code Plus – Physical Design Components for an Elder Friendly Hospital” (Parke & Friesen, 2007).
2. In addition incorporate:
 - 2.1 A minimum of 800mm clear space is required on either side of patient washroom toilets and either side of bed/exam table in treatment areas. This does not pertain to public accessible washrooms.
 - 2.2 Provide curb cuts at exterior sidewalks to assist persons with disabilities in accordance with the BC Building Code, and to the design requirements of the local authorities having jurisdiction.
 - 2.3 Counters, desks and work areas shall include wheelchair access for both patients and the public.

- 2.4 All light switches accessible to patients shall be wheelchair accessible.
- 2.5 All wall electrical outlets that need to be accessible to patient shall be located at 710mm
- 2.6 Public orientation to and from all parts of the facility shall be achieved by emphasis on “first time” entrances where personal guidance and building graphics/signage can introduce the interior circulation system to the user.
- 2.7 Service vehicle loading/unloading area(s) shall be distinct from other entrances.
- 2.8 The must be accessible by those of different functional capacities including, children
- 2.9 Ramps will be avoided if at all possible. If a ramp must be included it will not be permitted with greater than a 1/20 incline ratio and will have a midway step rest, if appropriate, and the appropriate handrails provided.

10.2 Bariatric Population

1. Provisions for Bariatric Population shall include the following:
 - 1.1 One public washroom per department and public areas must accommodate a bariatric wheelchair.
 - 1.2 General areas shall accommodate the bariatric patient such as elevators, corridors, washrooms, furniture.
 - 1.3 Consider a universal approach to designing spaces and furnishings, creating spaces and products that can equally serve both average and size-challenged individuals to provide all patients and families with the dignity, respect, and compassion such as loveseats with appropriate bariatric weight capacity are a preferred option as they are not obviously intended for bariatric patients (Delgandio, 2008)

10.3 Emotionally Distressed / Mental Health Population

1. The design shall address the following aspects of security:
 - 1.1 personal security of patients, family members, and staff;
 - 1.2 security of property of patients, visitors, and staff;
 - 1.3 security of equipment and stores items;
 - 1.4 drug security;
 - 1.5 access and egress/unauthorized intrusion;
 - 1.6 night staffing conditions;
 - 1.7 security lighting;
 - 1.8 the potential need for site lockdown and the control of access or egress during pandemics and other disasters; and code responses, e.g., for missing patients and provision of secure storage for personal items belonging to patients or staff.
2. Consider incorporating passive design measures to enhance security (e.g. by providing clear sight lines to entry points);
3. Ensure the floor layout in both clinical and public areas shall provide clear sight lines from control points (e.g., a nurses’ station or reception desk) to entrances, waiting areas, and circulation routes.
4. Ensure clinical staff can easily monitor movements and activity of patients and visitors in their departments through direct visual contact (e.g. from reception, care stations, etc.).
5. Consider incorporating active security elements such as security services or security systems including location and installation of staff emergency assistance alarms; location and installation of intercom systems; and location of security office.

6. Consider physical layout and systems that support the facilities emergency management plan.
7. Consider including lighting that avoids shadows and is bright enough to see all areas of a room.
8. Consider the need for mirrors in corridors which have a 90° corner.
9. Provide stairwells that do not allow for individuals to hide in the landing areas.

11.0 DETAILED VIOLENCE PREVENTION DESIGN SPECIFICATIONS

High risk areas for violence may include the following; (refer to section 3.3)
 acute care: mental health units, detox units, medical units (that tend to have patients with delirium/dementia and head injuries), admitting/triage/reception areas; emergency department including interview rooms/exam rooms/seclusion rooms; areas which are open after hours or staff are required to work alone (Refer to section 11.3 for Working Alone Recommendations)

High risk areas in residential care include units that are home to residents with mental health, dementia related conditions and/or head injuries.

11.1 High Risk Areas for Violence in Healthcare: Dimensions, Working Distances and Materials per level of concern

This table has been adapted from Design Guidelines for the Built Environment of Behavioural Health Facilities (Hunt & Sine, 2013) and Facility Design Considerations to Increase Patient and Staff Safety in Mental Health Facilities (Gamble & Fowler, 2006).

(1 = least concern, 5 = highest concern)

| Level of Concern | High Risk Areas for Violence | Requirements for Spaces Determined to be high risk for Violence |
|------------------|--|--|
| 1 | Staff and service areas where patients are not allowed | No special requirements required |
| 2 | Corridors, counseling rooms and interview rooms | <ol style="list-style-type: none"> a. At access doors provide intercom, camera and secured access at the entrance door and secured access at all exit and stairwell doors to limit access to unit and elopement from unit b. Security camera monitors must be located so that they are visible to staff but not visible to patients. Optimal to have camera view as wide angle as possible; ensure main monitor can display the adequate number of views required to effectively monitor an area. c. 'Staff access only' areas should be well signed and accessible only with a card swipe. d. Dual access door entry should be provided. (e.g. back-up exit). Main door must swing out, have 24" x 24" view window and must |

| Level of Concern | High Risk Areas for Violence | Requirements for Spaces Determined to be high risk for Violence |
|------------------|------------------------------|---|
| | | <p>only be lockable from the outside to prevent barricading inside the room. Layout of the room and furniture must permit staff to exit if threatened. These rooms are often the first area in which a potentially aggressive patient is assessed.</p> <ul style="list-style-type: none"> e. Staff duress system is essential. Provide staff with a personal staff duress pendant (panic button) that can be worn by each staff member and activated wherever they are in the facility. All counseling and interview rooms should have a wall mounted duress pull cord (with a maximum 10" pull-cord) or hidden panic button. f. Noise level should be reduced by avoiding use of overhead paging or alarms in all areas; optimal to provide a silent staff duress system. g. Confidentiality shall be provided to an optimal acoustic confidential privacy rating (STD = 45-55dB). h. Walls shall consist of lightweight concrete block, optimal to have painted abrasion resistant gypsum on metal studs or drywall reinforced with plywood in corridors, counseling and interview rooms or at minimal smaller stud spacing with thicker drywall to prevent patients punching/kicking through drywall. i. Ceiling may be lay-in acoustic tile if needed for accessibility to equipment. However a solid ceiling is preferred in interview rooms used for patient in-take and assessment purposes. Avoid locating service panels in these areas or ensure lockable panels to prevent unauthorized access, tampering, or attack. j. Flooring should be vinyl tiles with matte finish; subtly distinguish entrances to aid in way-finding; limit high contrasting floor colours when more than one color used; area rugs ideal for lounges and family rooms to provide home-like feel. Shiny reflective and high contrasting surfaces have been found to aggravate some individuals in an acute phase of some mental illnesses. Carpet is considered an infection control issue – area rugs can be removed and effectively cleaned when needed. k. Where light fixtures are within easy reach of patients, they must be tamper-resistant type or have lenses and covers firmly secured with tamper-resistant screws, no glass components should be used in any fixture. Use of table or desk lamps is strongly discouraged. Incandescent light bulbs accessible to patients must always be "shatter resistant". Fluorescent tubes should never be accessible to patients. Calm natural lighting is preferred. l. It has been suggested that corridor light fixtures (other than minimal night lighting) be controlled at night by motion detectors. This would allow staff to know immediately when a patient leaves his or her room. m. It is essential to have door handles that are open at the bottom to limit potential for sit down hanging. Refer to "Design Guide for the Built Environments of Behavioral health Facilities" for more detail on hardware recommendations (Hunt & Sine, 2013). n. Windows / glass must be shatterproof tempered glass (e.g. Lexon); If wire glass is required by code, install ¼" polycarbonate type |

| Level of Concern | High Risk Areas for Violence | Requirements for Spaces Determined to be high risk for Violence |
|------------------|--|---|
| | | <p>glazing on side(s) to which patient has access. If replacing existing glass is cost prohibitive, application of a security laminate to existing glass may be an alternative. All mirrors and fire extinguisher cabinet windows should be made of ¼" polycarbonate and must be secured to the wall.</p> <ul style="list-style-type: none"> o. Avoid creating hiding places; Convex mirrors [Norix, DuraVision, model QD18] may be used to assist with seeing into blind spots where patients could hide. p. Window coverings must be tamper-proof and located between 2 shatterproof windows, all curtain tracks should be tight to the ceiling or soffit and must have no cords or chains. If retrofitting, puncture proof blinds with no strings can be considered as an alternative. Mini-blinds should never be used. q. Sprinklers should be tamperproof institutional sprinkler heads installed with tamper-resistant screws and made to break –away under a 50lb load. r. Smoke Detector shall be tamper resistant but not caged as caging creates a hanging risk. s. Water Sources should be ground fault protected receptacles and must be provided near all sources of water including sinks to prevent ability for patients to electrocute themselves. t. Reflective surfaces should be avoided such as use of mirrors and other highly reflective surfaces (e.g. highly polished floors, polished acrylic surfaces, reflective glass) to prevent aggravation of patients. u. Furniture such as covering, bedding and window dressings must be highly fire resistant; lockable storage cabinets and drawers; lockable patient phone and computer storage. Provide furniture that cannot be easily thrown, or has removable parts that can be used as weapons v. Pictures and art work must be mounted on walls with polycarbonate type glazing and screwed to the wall with tamper resistant screws; metal frames must never be used. w. Garbage bins should have breathable paper liners; no plastic trash can liners permitted. x. Telephones located in corridors or common spaces should be wall mounted, have a shielded cord of minimal length, and be equipped with an on/off switch that can be controlled by staff. |
| 3 | Lounges, waiting rooms and activity rooms; where patients/families may spend time with minimal supervision | <ul style="list-style-type: none"> a. Refer to Level 2 requirements and apply all items in addition to the following unless conflicting then implement Level 3 requirement. b. Use tile flooring where wet or potentially messy activities will be conducted. c. A nine foot high ceiling is highly desirable in that the added height makes it more difficult to reach and therefore decreases patient tampering with ceiling mounted devices. Prefer non-accessible solid gypsum board ceiling. If more sound attenuation is desired, apply 1'x1' acoustic tile to the gypsum board with adhesive. d. Provide only HVAC grilles with small perforations in new builds. If other types exist cover with heavy gauge stainless steel screen fabric and tamper-free screws. |

| Level of Concern | High Risk Areas for Violence | Requirements for Spaces Determined to be high risk for Violence |
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| | | <ul style="list-style-type: none"> e. All kitchen appliances shall have key operated lock out switches to disable. f. GFI-protected receptacles must be provided near all sources of water including sinks. g. All electrical device (switches, outlets, etc.) cover plates must be attached with tamper-resistant screws¹². Electrical cover plates for switches and receptacles should be made of polycarbonate materials and secured with tamper-resistant screws. h. TV sets should not be mounted on walls using brackets because of the risk presented to patients. All cords and cables should be as short as possible. Consideration should be given to providing built-in TV or media centers and installing an isolation switch that staff can control that will secure the power to the TV set. |
| 4 | <p>Patient rooms (semi-private, private and private toilets); where patients spend a great deal of time alone with minimal or no supervision, medication areas, reception areas where money is exchanged or staff are required to work alone</p> | <ul style="list-style-type: none"> a. Refer to Level 2 and 3 requirements and apply all items in addition to the following unless items are conflicting then use Level 4 requirement. b. Walls should be impact resistant gypsum board on metal studs and paint finish is preferred. Consider magnetic paint to allow pictures and wall art without potentially harmful frames used as weapons or for self-harming. It is optimal to have reinforced plywood walls with wall protection similar to Panelam, extending from floor to a 6' H with pick proof coating. c. Use tile where wet or potentially messy activities will be conducted. If some of patient population have problem with urinating on the floor, provide some rooms with seamless epoxy flooring. Flooring should have matte finish in main areas and patient rooms; subtly distinguish entrances to aid in way-finding; limit high contrasting floor colours when more than one color used; area rugs ideal for lounges and family rooms to provide home-like feel. d. It is optimal for patient rooms to have an entrance door with a 1220mm (4') door width; essential to have dual door swing and stainless steel door kicks. This allows bed to be moved out of room if needed; allows easier access by a wheelchair user; dual swing facilitates entry by staff in the event of a patient fall or other incapacity in the room that might block the door; ensures that the patient cannot successfully bar the door from inside preventing staff access or from preventing safe staff egress. e. It is essential to have door handles that are open at the bottom to limit potential for sit down hanging f. Ceilings should be non-accessible solid gypsum board ceiling – paint. Provide key lockable access panels at all locations where access is required. In new buildings it is ideal to design mechanical systems so access panels are not required in patient rooms g. Ceilings must not allow patient access; preferred height is a minimal 9'. 9' makes it more difficult for patients to tamper with ceiling fixtures and makes the room feel more spacious. As well it allows space to be more easily converted to another hospital function. For increased privacy rating in rooms, acoustic tiling can be adhered to the gypsum board. |

| Level of Concern | High Risk Areas for Violence | Requirements for Spaces Determined to be high risk for Violence |
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| | | <ul style="list-style-type: none"> h. Sturdy wood furniture and should be bolted to the floor or wall. The furniture should withstand abuse, will not provide opportunities for hiding contraband, and will resist being disassembled to provide the patients with weapons. Cube-style storage may be appropriate for some patient populations. Doors and drawers should be lockable, as appropriate, with a key lock. All upholstery and foam used in furniture and mattresses should have flame resistant and meet code i. The “clothes pole” to hang clothing in the closet must not allow something to be tied around it. This is accomplished by using a “J” shaped configuration. Molded units can be considered with and without clothes hanging space. These eliminate many of the hazards associated with wardrobe units. Wire coat hangers are prohibited. j. Non-adjustable beds without wire springs or storage drawers are preferred. k. Electric beds are only preferred for psycho geriatric population. These must have lockable controls and regular hand control on cord must be removed; one piece bed frame with a top mattress height of 30” (slightly higher than most standard beds) for psychiatric intensive care units and other ambulatory patient population areas. l. Mattresses must have no metal parts to prevent using metal parts from a mattress to break off sprinkler heads and assault staff m. Cupboard and desk units shall include break away rods and hooks; drawers must be difficult to remove; no door handles; entire unit(s) are fastened to the wall; sloped top preferred to prevent hanging and use of units as weapons. n. Calm natural lighting is preferred. It is optimal to have variable lighting levels in patient care areas and have dual controls in patient rooms at both entrance and by the bed. Warm white light (3000 K) facilitates relaxation and improves people’s wellbeing, while daylight-white light (5600 K) stimulates and activates the human body. o. Same as in Level 2 above except that all light fixture lenses should be secured with tamper-resistant screws to prevent lens from being removed and fixture being opened to prevent the patient from having access to the bulb. No glass components should be used in any fixture, and lamps are discouraged. p. In new construction or major remodeling, locate individual room HVAC equipment (such as fan/coil units) adjacent to corridor or in other location (such as an interstitial space) where they can be serviced without entering the patient’s room. q. Pull cords on nurse call and/or emergency call switches (where required or provided) shall be no longer than 12” and as lightweight as possible. r. Medical gas outlets are not normally required for behavioral health units. If there is medical necessity or the outlets are a pre-existing condition in remodeling projects, they should be covered with panels attached with tamper-resistant screws. |

| Level of Concern | High Risk Areas for Violence | Requirements for Spaces Determined to be high risk for Violence |
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| | | <ul style="list-style-type: none"> s. Television sets and telephones should not be provided in patient rooms to encourage patients to use activity areas with other patients and provide easier supervision and prevent use as a weapon. Consider a cordless phone if necessary. t. Plastic liners in trash bins should be prohibited because of their potential risk. A substitute liner made of paper may be used. u. Baseboards of any kind that are applied to the surface of the wall (vinyl, rubber, wood, etc.) intended to cover the joint between the wall and floor is strongly discouraged. v. Patient access to smoking areas should be easy access to smoking area for mentally ill patients. See section 6.2.5 for more detail on smoking area design. w. Patient Toilets: Refer to Appendix 11 Section Construction and Materials Consideration Level 4b - Patient Toilets for design details. x. Medication Storage; Refer to CSA Standard Z8000-11 9.11.3.9.1. The following requirements should be incorporated into design; y. Minimization of entry and exit points; area should be enclosed to limit distraction, designed in a way that allows the employee to have quick egress to a more secure area should a possible threatening situation occur (e.g. another way out for an emergency exit). Optimal to have an enclosed room with dual access. Main door must swing out and have a view window. Secondary door must have a view window. Locks on both doors. z. Maximization of control by staff through direct observation of all persons entering the area; visible sight lines to entry and exit points and have a locked narcotic cupboard. aa. Access Control System; newly renovated/built medication rooms should be staff accessed by security card swipe. All medication areas must be staff access only via Pyxis code or double locked narcotic cupboard. bb. Intruder alarm system to monitor the pharmacy periphery (doors and windows) and internal secure areas, such as the narcotics vault cc. Staff emergency assistance alarms and security shuttle at the outpatient dispensing counter; Area should be equipped with a duress alarm system easily accessible to the employee(s) and out of sight from the public with the addition of a pull cord or panic button in the room dd. Drug storage room and narcotics vault should be a locked room and not be located on an outside wall ee. Newly renovated/build medication rooms should be in close proximity to main care areas ff. Width/height of the counter/desk should provide appropriate barrier between staff and the public such that the public cannot jump over the counter. gg. Ensure 2013 Canadian Pharmacy standards are incorporated. |
| | Admission areas, examination | <ul style="list-style-type: none"> a. Refer to Level 2-4 requirements and apply all items in addition to the following, if conflicting details use Level 5 requirements. b. Patient Observation should maintain clear sight lines whenever |

| Level of Concern | High Risk Areas for Violence | Requirements for Spaces Determined to be high risk for Violence |
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| | rooms and seclusion rooms; (where staff interact with newly admitted patients that may present potential unknown risk and/or where patients/families may be in a highly agitated condition) and seclusion rooms/PICU patient rooms | <p>feasible so staff can easily observe patients in any room. Avoid / minimize places, such as recessed doorways, unlocked storage areas, and stairwells</p> <p>c. Admission areas;</p> <ul style="list-style-type: none"> • Refer to Section 6, specifically section 6.3.2 • A separate room that has direct access from both outside and inside the unit should be considered for this purpose. This allows for the patient to be brought directly into the admissions area without entering the unit directly. If possible, the admitting staff member should not be in the room alone with the patient. After the admitting process is complete the patient can be taken through the second door and directly on to the unit. • The furniture should be bolted to the floor and walls and contains lockable file drawers. The computer, printer, and telephone should be located so they are not easily reached by the patient. • An emergency call button should be provided so the staff may summon additional staff if necessary <p>d. Seclusion Rooms</p> <ul style="list-style-type: none"> • Refer to BC MOH Secure Rooms and Seclusion Standards and Guidelines. <p>e. Emergency Department;</p> <ul style="list-style-type: none"> • Refer to Facility Design Consideration To Reduce Violent Encounters in Emergency and Psychiatric Departments ICE 2006 (Gamble & Bryant Maclean 2006) Sections 3.3.1-3.3.3,3.3.6-3.3.8 • Video security system should be in place. • Emergency call system shall be located in each examination and treatment area, including toilets and bathrooms, at triage and reception counters and on mobile units for staff who do not work in a fixed location e.g. clinicians. • A safe room shall be provided and it shall be adjacent to a staff area and able to be accessed without passing other patient zones. <p>f. Behavioral Health Unit (all areas);</p> <ul style="list-style-type: none"> • Chart rooms and other staff areas should be located so that staff members may have conversations regarding patients and other clinical matters without being overheard by patients or visitors. • When possible, locate service areas such as trash rooms and clean and soiled utility rooms so that they are accessible both from the unit and from a service corridor. This eliminates the need for environmental staff servicing these rooms to enter the treatment areas of the unit and possibly disturb patient activities. All doors to these rooms must be kept locked at all times. • Nurse call systems are not required in behavioral health units. • All electrical circuits having receptacles near sources of water (such as sinks, lavatories, and toilets) must be protected by Ground Fault Interrupters (GFI). All other outlets in areas |

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| | | <p>accessible to patients should be tamper resistant.</p> <ul style="list-style-type: none"> • Housekeeping rooms should be large enough to lock away the carts when not in use. All cleaning materials must be locked inside at all times when the carts are in patient areas or corridors and not attended by staff. • Outdoor areas (e.g. enclosed courtyards, fenced areas adjacent to the treatment unit, or open campus) - careful consideration should be given to exterior landscaping and furniture. Avoid climbable fences, shrubs planted together, landscape or decorative rocks. Ensure all furniture is anchored down and heavy to lift. Provide decking composed of fire resistant, easy to clean and tamper-proof material, tamper and weather proof exterior lighting, |
| n/a | All areas that have high risk for violence | <p>a. Access doors – optimal to provide intercom, camera and secured access at the entrance door and secured access at all exit and stairwell doors. The design should provide the staff with an easy method to obtain help and support each other in maintaining safety. Main entrances as well as ambulance and after- hour’s patient entrances should have the same level of video security protection. As well staff entrances should have well-lit, secured vehicle access to entrance door area.</p> <p>b. The design should provide staff with a means for egress from potentially harmful circumstances.</p> <p>c. The design should provide staff with a way to observe a space before entry into potentially harmful circumstances as follows; (a) Bedrooms doors shall have observation panels in doors, sized and positioned so that staff can view the room (i.e., through a high panel), as well as being able to see a small child on the other side of the door (low panel). (b) Convex mirrors shall be used on all blind corners. (c) Door swings shall be planned and arranged so that there is no danger of hitting a patient on the other side and so that a patient cannot block access into a room.</p> <p>d. The design should maximize security by incorporating features for staff to have direct observation of all persons entering an area when security is required. The design features may include the following: (a) minimizing the number of entry and exit points; (b) incorporating an access control system (e.g., electric strike and card readers to all perimeter doors) and consider an intercom system between visitor area and staff work area so that staff can interview visitors to ensure appropriate entry into the area; and(c) locating the main access door so that it does not impede access to rooms outside</p> |

11.2 Parking Lot, Building Perimeter

1. Ensure project has received input from IH Protection Services

11.3 Working Alone Requirements and Recommendations

1. Refer to section 7.3.2 (additional information will be added as determined)

12.0 OCCUPATIONAL SAFETY AND OCCUPATIONAL HYGIENE HIGH RISK AREAS AND SYSTEMS – FURTHER DESIGN SPECIFICATIONS

| High Risk Areas/Systems | Requirement and Recommendation |
|---|--|
| 12.1 Areas where process chemical liquids or gases are used. | |
| <ul style="list-style-type: none"> • Laboratories • Medical Device Reprocessing • Labour and Delivery • Laundry • Ambulatory Care Unit • Operating Room • Maintenance (refrigerants) • Housekeeping • Emergency Departments • Dietary | <ol style="list-style-type: none"> 1. Storage Requirements for hazardous materials: <ol style="list-style-type: none"> 1.1 A list of the hazardous materials should be provided to hygienist to review and recommend proper storage containment including proper storage ventilation (exhausting, negative pressure, cabinetry design) 1.2 Minimize distance between storage of materials and point of use reducing transport risks. 2. Ensure that incompatible equipment, environmental conditions and chemicals are identified, assessed and controlled 3. Refer to CSA Z305.12 (2006) and ISO 11625 (2007) for storage requirements. 4. Enclosed Process Instrumentation- <ol style="list-style-type: none"> 4.1 Process Equipment reviewed by hygienist to ensure design maximizes exposure control of process chemicals. 4.2 Equipment should be selected as to minimize quantities and volumes of products used. 5. Locally Exhausted Ventilation, <ol style="list-style-type: none"> 5.1 Dedicated local exhaust systems must be considered in all instances where hazardous process chemicals are used. 5.2 Dedicated Local exhaust should be designed to meet the current and relevant recommendations for source capture, direct exhaust and elimination and/or scrubbing and function alarming 6. Environmental considerations for disposal, spills, sewage 7. Clean/Dirty Room Pressure Balance - ensure that the design of the ventilation system provides air movement that is from clean to less clean 8. Any area where process chemical gases or liquids are used require continual commissioning process which must include occupational hygiene monitoring survey of the effectiveness of the engineering controls upon commissioning as well as an evaluation of the worker exposure once department is in full operation. |

| 12.2 Areas where fall protection or confined space equipment may be required. | |
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| | <ol style="list-style-type: none"> 1. Roof top access points which may require frequent inspection, cleaning, maintenance, for windows HVAC systems and for where fall protection may be required incorporates appropriate anchoring points. 2. Where confined spaces may be located due consideration for egress, communication and emergency equipment should be considered based on nature of entry to the space and hazards located within the space. E.g. calling for help, breathing air supply |
| 12.3 Areas where critical conditions must be maintained. | |
| These areas may include negative air rooms, dirty & clean laundry areas and medical device reprocessing. | <ol style="list-style-type: none"> 1. Refer to CSA Z8000-11 Section 10.2 Environmental Services and Section 10.7 Medical Device Reprocessing 2. Ensure that the monitoring is set correctly with ease of use and ventilation and thermal requirements meet the use within the room. 3. If any design changes occur such as added equipment, process flow etc. after the design has been finalized it is mandatory that the design be re-reviewed to determine the practicality of implementation and ensure required modifications are added and agreed to by all parties. |
| 12.4 Areas that require special temperature and/or humidity levels. | |
| These areas may include computer/network equipment areas. | <ol style="list-style-type: none"> 1. Refer to individual equipment standards |
| 12.5 HVAC systems | |
| | <ol style="list-style-type: none"> 1. Ensure energy conservation does not override the pressure balancing relationships or the minimum number of air changes required as found in table 7-1 ASHRAE standard 170-2008. 2. Ensure that all HVAC exhaust points are isolated from doorways, service entries and any possibility of entrainment or public exposures. 3. Ensure design of HVAC system includes all components; condensate drains, water baffles, cooling towers. 4. Ensure adequate access points into HVAC system are in place for inspection, cleaning and servicing with sufficient space to work and maintain equipment within the system. 5. Ensure placement and specifications of insulation materials are adequate and appropriate. 6. Ensure air quality thermal standards and codes are in place and thermal air quality sensors and set points are located based on location of occupants and equipment to ensure the thermal level reflects the true requirement of the work area (e.g. occupancy, wall placements, furniture location, local ventilation, window location). 7. Ensure that inlets and outlets are placed within the rooms in such a way that it will aid in removing the possible contaminants produced in the room and supply enough fresh air dilution to minimize exposure. |

| 12.5 HVAC systems (continued) | |
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| | <ol style="list-style-type: none"> 8. Ensure that the design incorporates the effects of outdoor conditions on fresh air rates/CO2 levels specifically in extreme temperature situations involving air conditioning/heating system venting. 9. Ensure that the duct system is free of all construction debris and filters are in place prior to starting up system. 10. If HEPA filters are used within the HVAC system they should have monitoring system in place to indicate pressure drops supporting replacement. |
| 12.6 Areas with potential for excessive noise levels. | |
| <p>These areas may include mechanical rooms, laundry service and food service areas.</p> | <ol style="list-style-type: none"> 1. IH/NH WH&S recommends a max noise level of 45dba (Yantis, 2006) or less (not WSBC max noise level requirement of 82dba). 2. Ensure the best sound absorbing materials are utilized in the ceilings and walls (e.g. acoustic ceiling tiles, varying heights of sound absorbing fabric panel, cork flooring, insulating pipes and machinery, installing white noise machines above ceiling). 3. Ensure flooring material is suitable to reduce noise while still being able to be cleaned easily and provide non-slip surface. 4. Ensure corners and ceilings are rounded when possible. 5. Ensure small noisy pieces of equipment are placed on rubber noise absorbing pads 6. Ensure noisy equipment is not concentrated into one area. Work with LEAN to ensure process/increased efficiency does not increase and exceed required noise levels. |
| 12.7 Areas with potential for inadequate lighting levels. | |
| <p>These areas may include enclosed stairwells, interior hallways, storage areas, exterior walkways.</p> | <ol style="list-style-type: none"> 1. Ensure that all locations are assessed with regard to the processes occurring within the work area and the lighting is meeting the requirements of the WSBC OSH Regulation: Part 4.65 Illumination Table 4-1. 2. Ensure lighting in key areas (patient rooms, laboratories) is adjustable to allow for levels to be set depending upon needs. 3. Ensure that whenever possible natural light is used to its fullest extent to reduce the need for artificial lighting. Where this is not feasible consider sunlight tubes. 4. Ensure stairways are lit sufficiently to reduce tripping hazards. Table 4-1 in WSBC OSH regulations. 5. Ensure the utilization of full spectrum or near full spectrum lighting is incorporated whenever possible to ensure eye stress is lessened, and colour observations are accurate. |

12.8 Areas with potential for slips, trips and falls.

These areas may include corridors, stairwells, outdoor walkways etc.

1. Refer to CSA Z8000-11 Sections 7.6.6.1.3 and 7.7.4.1
2. Ensure all walking surfaces, inside and outside, are free from surface irregularities
3. Ensure that when designing entryways, outdoor stairs, etc. consideration is given to the possible changes in weather and how it would affect the walking surface.
4. Ensure that outdoor stairways meet building code requirements and outdoor areas are designed to reduce ice and snow accumulation.
5. Ensure that lighting is sufficient to allow for eyes to notice changes in depth or height of obstacles encountered.
6. Ensure that handrails meet the required codes and that they are placed in such a way that they can be recognized immediately as a safety precaution. (i.e. wider stairs may require a railing in the middle of the stairs as well as on the sides.)
7. Ensure that floor material has sufficient friction to prevent slipping by using of non- glare and slip-resistant surfaces (coefficient of friction should be above 0.5)
8. Ensure areas around safety showers or eyewash stations are not prone to spillage.
9. Ensure that any floor mounted electrical receptacles will not create a tripping hazard when in use.
10. Ensure that there is enough storage capacity to prevent storage of materials in hallways that may create a tripping hazard.
11. Ensure all drains are aligned correctly to prevent spillage onto general floor areas.
12. Properly designed steps, ramps, and railings; Recommended stair dimensions, adequate handrails and lighting to decrease the risk of slip/trip/falls are to follow the National Building Code of Canada Section 9.8.2.1-9.8.4.6 Stairs, Ramps, Handrails and Guard. Also refer to WSBC OHS Requirements Part 4.62 and publications Slip, Trip, and Fall Prevention for Healthcare Workers Department of Health and Human Services, CDC/NIOSH (Bell, et. al. 2010).

13.0 RECOMMENDED RESOURCES

13.1 Ergonomics

13.1.1 General Ergonomics

Kroemer, Karl H. E. (1999) *The Occupational Ergonomics Handbook: Chapter 9 Engineering Anthropometry*. CRC Press.

Kroemer, K.H.E., (1999). *Engineering Anthropometry*. In Karwowski, W. & Marras W. (Eds.), *Occupational Ergonomics Handbook (pp: 139-165)*. CRC Press.

13.1.2 Ergonomics in Healthcare Facility Design

Gamble, L. (2006). *Essential Ergonomics in Healthcare Facility Design Process*. Interior Health Authority, Kelowna, BC.

Gamble, L. (2006). *Ergonomic Input into Residential Care Facility Design Process*. Interior Health Authority, Kelowna, BC.

Ergonomic Challenges in Hospital Ancillary Departments, 9-23 Ergonomic Design in the Workplace in Healthcare Facilities.

American Institute of Architecture/Facilities Guideline Institution (2010). *Guidelines for Design and Construction of Healthcare Facilities*

American Institute of Architects. Academy for Architecture Health
<http://network.aia.org/academyofarchitectureforhealth/home>

13.1.3 Specific Areas within Healthcare

Follow this [link](#) to locate resources under 'Ergonomics Department Specific Resources'.

13.2 Violence Prevention in Healthcare Design

Psychogeriatric inpatient unit design: a literature review, 2011, J. dobrohotoff and r. Llewellyn-jones

Gamble L. A Macro-Ergonomic Approach into Staff Duress, Nurse Call, and Staff to Staff Communication Systems Acquisition and Utilization in Healthcare. Proceedings of the Association of Canadian Ergonomics Conference Oct. 2006.

Standards, Hospital-based Psychiatric Emergency Services: Observation Units (2000). Ministry of Health and Ministry Responsible for Seniors.

Follow this [link](#) to locate resources under 'Violence Prevention Risk Assessment, Working Alone'

Canadian Center for Occupational Health and Safety (CCOHS) OSH Answers, Working Alone – General <http://www.ccohs.ca/oshanswers/hsprograms/workingalone.html>

WorkSafeBC (2012 Edition) Working Alone - A Handbook for Small Business
http://www.worksafebc.com/publications/health_and_safety/by_topic/assets/pdf/BK131.pdf

WorkSafeBC (2005 Edition) Preventing Violence in Health Care – Five steps to an effective program:
http://www.worksafebc.com/publications/health_and_safety/by_topic/assets/pdf/violhealthcare.pdf?_ga=1.145056752.556019510.1355782019

Government of Alberta (2000) Working Alone Safely, a Guide for Employers and Employees
http://humanservices.alberta.ca/documents/WHS-PUB_workingalone.pdf

13.3 Safety and Occupational Hygiene in Healthcare Design

(2006). *Lighting for hospitals and healthcare facilities*. Illuminating Engineering Society.

(2013). HVAC design manual for hospitals and clinics. (2 ed.). Atlanta, GA: ASHRAE.

Hongisto, V., & Keränen, J. (Larm, P.). *Prediction of speech transmission index in open-plan offices*. Joint baltic-nordic acoustics meeting 2004, Mariehamn, Åland. Retrieved from <http://www.akustinenseura.fi/wp-content/uploads/2013/08/o14.pdf>

Lewitz, J. (2003). Privacy in the office environment: Understanding the sound and the silence. Sound & Communications, Testa Communications, Retrieved from http://www.soundandcommunications.com/archive_site/audio/2003_12_audio.htm

Ozanne-Smith, J., Guy, J., Kelly, M., & Clapperton, A. (2008). The relationship between slips, trips and falls and the design and construction of buildings. *Monash University Accident Research Centre, Report No. 281*, Retrieved from <http://www.monash.edu.au/miri/research/reports/muarc281.pdf>

The lighting handbook. (10th ed.). Illuminating Engineering Society.

Tijunelis, M. A., Fitzsullivan, E., & Henderson, S. O. (2005). Noise in the ed. *The American Journal of Emergency Medicine*, 23(3), doi: <http://dx.doi.org/10.1016/j.ajem.2005.02.037>

U.S. Environmental Protection Agency, Office of Noise Abatement and Control and Office of the Scientific Assistant. (1979). Noise effects handbook: A desk reference to health and welfare effects of noise (EPA 500-9-82-106). Retrieved from National Association of Noise Control Officials website: <http://www.nonoise.org/library/handbook/handbook.htm>

World Health Organization. (1995). Guidelines for community noise. Stockholm, Sweden: Stockholm University and Karolinska Institute. Retrieved from <http://whqlibdoc.who.int/hq/1999/a68672.pdf>

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- Gamble, L. (2006). Essential ergonomics in the healthcare facility design process. Proceedings of the IEA Conference 2006.
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- Gamble L, Fowler D. (2006). Essential patient and staff safety design considerations for mental health facilities. Proceedings of the Association of Canadian Ergonomics Conference Oct. 2006.
- Government of British Columbia, Partnerships of British Columbia Inc. (2012). *Project report: Interior heart and surgical centre (project agreement)*. Retrieved from website: <http://www.partnershipsbc.ca/files-4/documents/PBCIHSC.pdf>
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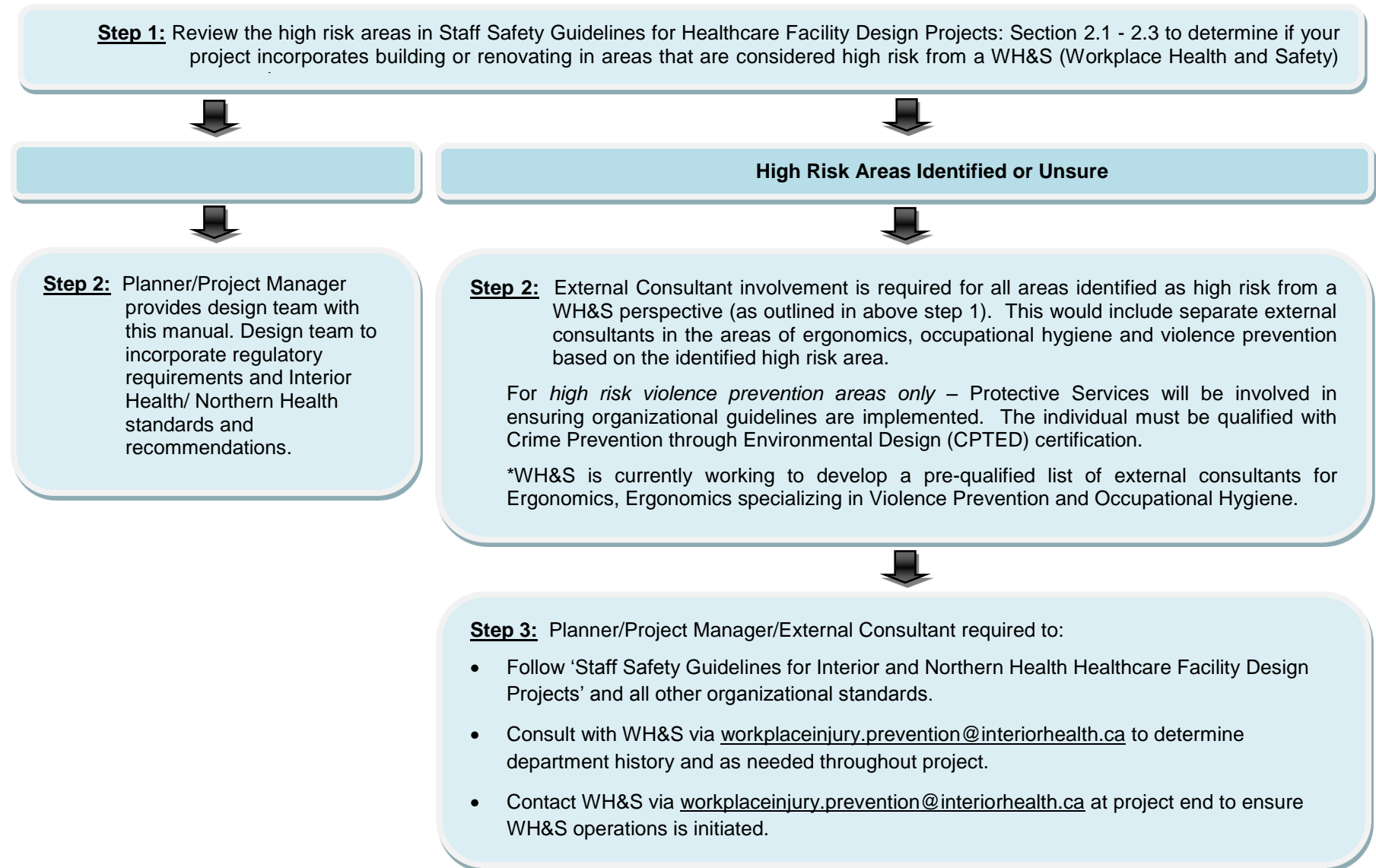
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15.0 Appendices

15.1 Process to Determine Level of WH&S Consultation in Capital Planning & Projects



EXECUTIVE SUMMARY

| | |
|------------------|---|
| Title | IH Standards for Medication Rooms for Acute Care Facilities |
| Purpose | To establish an IH standard for medication rooms in patient care areas in acute care facilities. |
| Top Risks | <ol style="list-style-type: none">1. (Patient) Patient harm due to errors where unsafe medication storage conditions (e.g. location in a high traffic area) or poor design (e.g. lack of adequate space) are listed as contributing factors.2. (Human Resources) Increased risk of drug diversion due to inadequate medication security.3. (Other) Failure to meet Accreditation Canada standards for medication storage. |
| Lead | Paul Filiatrault, Regional Manager, Medication Safety |
| Sponsor | Kevin Peters, Director, Pharmacy Services |

RECOMMENDATION

That IH P&T approve the attached standards for medication rooms on patient care units in IH acute care facilities.

BACKGROUND

The September 2011 Canadian Standards Association (CSA) Standards for Canadian Healthcare Facilities include mandatory and advisory requirements and recommendations for medication rooms on patient care units.

Use of automated dispensing cabinets (ADCs) is increasingly being recognized as a way to improve the safety and efficiency of hospital medication systems. No Canadian standards were available to guide the planning when ADCs were being implemented in IH facilities. Current medication rooms often lacked sufficient space for ADCs. This led to their placement in locations that do not meet Accreditation, ISMP or CSA standards.

The January 2014 Accreditation Canada Medication Management Standards now include criteria for ADCs based on ISMP Canada safe practice recommendations.

DISCUSSION

The work environment and a busy, chaotic work area were cited as the top two contributing factors in medication errors.³ The development of a standard IH medication room will be a useful resource when planning renovations or new construction of patient care units. To allow staff to concentrate on the task of selecting medications, the preferred location for ADCs is in a locked medication room.

The medication room should not be smaller than 9.5 m² in order to accommodate all the components needed when preparing medication doses for administration.¹ Medication rooms may need to be larger than this minimum footprint to ensure there is sufficient space around the typical configuration of three cabinets (Main/Aux/Tower) to allow for the opening of cabinet drawers/doors without interfering with the medication room door or with other staff who may be in the room. Space is needed next to the ADC to put MARs so they can be easily read during the ADC transaction.

Sufficient space is needed for a fridge, hand hygiene sink, lockable storage for controlled substances, storage for parenteral supplies, and adequate counter space to prepare parenteral or oral liquid medications and for the use of MARs and patient charts. The area underneath the counter should be open to store mobile transport systems (e.g. lightweight carts) when not in use. A workstation for computer and telephone is required to access medication information (e.g. online medication manuals, references, etc.).

Medication rooms must have a door that is equipped with a card reader (swipe card) for ease of access and to avoid the practice where staff keeps the door propped open.

15.2 IH Standards for Medication Rooms for Acute Care Facilities Decision Brief (Continued)

The room must have adequate ventilation and temperature control to avoid overheating of the electronic systems (e.g. fridge, ADC, computer) and to maintain proper storage temperature for medications. Sufficient overhead lighting must be available to allow for easy reading of the ADC screen, medication labels, information sheets and MARs. Auxiliary lighting should be available day or night.

There should be one medication room, containing one ADC station, for every 20 beds. This is the maximum recommended capacity to minimize nurse line ups at the ADC during medication administration times.

Medication rooms must be located in areas that are easily accessible to staff and in close proximity to patients in order to reduce excessive walking and workarounds. The clean supplies, that are used to prepare parenteral medications, may be co-located within medication rooms.

ALTERNATIVES

If there is insufficient space for a medication room, ADCs must be located in an isolated environment or an area of limited foot traffic to ensure a minimal number of distractions while carrying out the important work of medication preparation.³

CONSULTATION

| Position | Date Information Sent | Date Feedback Received | Type of Feedback |
|--|-----------------------|------------------------|------------------|
| Tyler Digby | June 12, 2013 | Oct 29, 2013 | Consultation |
| Elaine Jensen | July 16, 2013 | - | Information |
| Chelsea Argent, Pharmacy PPL, VJH | July 16, 2013 | Nov 18, 2013 | Consultation |
| Gord McGreevy, Regional Coordinator, Parenteral Services | July 16, 2013 | Nov 19, 2013 | Consultation |
| Colleen McEachren, Director Initiatives, Acute Services & Medical School | Oct 7, 2013 | Nov 4, 2013 | Consultation |
| Alison Bannerman, Clinical Project Coordinator Capital Planning & Projects | Nov 4, 2013 | Nov 6, 2013 | Consultation |
| Pharmacy Managers | Nov 5, 2013 | Nov 5, 2013 | Consultation |
| Janice de Heer, Corporate Director, Infection Prevention & Control | Feb 5, 2014 | Feb 7, 2014 | Consultation |

TIMELINES

| Milestone | Lead | Date of Completion |
|--|------------------|--------------------|
| Decision brief written | Paul Filiatrault | June 11, 2013 |
| IH Medication Management Working Group | Sherry Miyashita | Dec 18, 2013 |

APPROVALS

| Milestone | Lead | Date |
|--------------------------------------|----------------------------|--------------|
| IH Pharmacy & Therapeutics Committee | Paul Filiatrault | Jan 24, 2014 |
| HAMAC | Warren Rosart/Kevin Peters | Feb 28, 2014 |

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15.2 IH Standards for Medication Rooms for Acute Care Facilities Decision Brief (Continued)

APPENDIX 1 – Summary of Mandatory Requirements

- The net area of medication rooms may vary in configuration but it shall not less than 9.5 square meters.¹
- Rooms may need to be larger than 9.5 square meters to allow for the opening of ADC drawers and tower doors without encumbrances to several staff who may be in the room at the same time.^{1,3}
- Each ADC configuration must have adequate capacity to store all of the medications required to supply a maximum of 20 beds (*exception*: drugs with specific storage, security, or safety requirements).
- A place is needed near the ADC to put MARs where they can be easily read during the ADC transaction.
- Industrial grade refrigerator with temperature monitor and alarm, meeting standards for cold chain management of biologicals.^{1,2,5,6}
- Lockable metal cabinet, permanently mounted and attached to the building, for the storage of controlled substances not kept in ADCs.^{1,2}
- A minimum of 6 lineal feet of counter area to enable two nurses to simultaneously prepare their medication doses. The open space underneath the counter is to be used to store the lightweight carts used for taking the MAR and medication dose(s) to the bedside during administration.^{1,2}
- Dedicated space on the floor, in close proximity to the counter where parenteral products will be prepared, for the appropriate pharmaceutical waste container(s).
- Storage space to separate look-alike, sound-alike medications; different concentrations of the same medication; high-alert medications; and expired, damaged and contaminated medications pending removal.²
- Storage for drug information texts, charts, and other resources.³
- Hand hygiene sink mounted on the wall adjacent to the door and away from medication preparation area due to risk of splashing and aerosolization.¹
- A workstation equipped with a computer and telephone.^{1,3}
- A 3' x 4' bulletin board exclusively for medication-related notices (e.g. safety alerts, bulletins, etc.).
- Sufficient overhead lighting must be available to allow for easy reading of the ADC screen, medication labels, information sheets and MARs. Auxiliary lighting should be available day or night.^{2,3}
- The room must have adequate ventilation and temperature control to avoid overheating of the electronic systems (e.g. fridge, ADC, computer) and to maintain proper storage temperature for medications.
- The room will have a lockable door, equipped with a card reader (swipe card) for ease of access of authorized staff.^{1,2,3}
- Medication rooms must be located in areas that are easily accessible to staff and in close proximity to patients in order to reduce excessive walking and workarounds.³

APPENDIX 2 – Advisory Recommendations

- One medication room for every 20 beds; which is the maximum recommended capacity for each ADC station to minimize nurse line ups during medication administration times.
- Use of additional technology solutions that enhance the security of controlled substances.
- Space for clean supplies necessary to prepare parenteral medications.

15.3 Interior Health WH&S Ergonomic Recommendations for Care Team Stations and Reception Areas

| Concern | Recommendation | Rationale |
|--|---|--|
| Unit clerk/ Main Reception area <ul style="list-style-type: none"> configuration | Avoid long straight sections of desk; L-shaped or U shaped preferred Approximately 3.7 sq m (37.5 sq ft) required | Limits need for unit clerk to over reach and scoot along desk; both can result in shoulder and hip joint injuries |
| <ul style="list-style-type: none"> legroom | Ensure 36" minimum desk area on either side of L-shape desk that is free of drawer units Do not place pencil drawers in this space; pencil drawers will be part of a 3 drawer unit | Allows room for Kardex and patient charts to be placed in front of monitor Unit clerks tend to require significantly more desk space than they are allotted due to their need for placement of charts, addressographs, form holders, etc. |
| <ul style="list-style-type: none"> space behind area | Optimal to have a minimum of 5' free space behind unit clerks chair when positioned in the working position (total 8' from front of desk) | This is usually a high traffic area and often congested |
| <ul style="list-style-type: none"> counter depth | Minimum of 30" for working area where monitor will be; minimum 24" on other surfaces | Usually have a lot of equipment on the desk surface |
| <ul style="list-style-type: none"> transition counter | Height 42-44" Ensure 13" clear space under transition counter and top of desk No lip on transition counter Depth of counter is dependent where monitor will be | Allows for privacy of charting; hides computer wires; 13" height off desk allows for a binder to be placed upright under transition counter |
| <ul style="list-style-type: none"> chart holder | Avoid built in horizontal/vertical slots; commercially available products preferred | allows for more flexibility in future if needs change |
| <ul style="list-style-type: none"> drawer unit | 3 drawer or 2 drawer unit (one drawer and one file drawer) placed at end of one branch of the desk; usually 16" outside drawer width is sufficient | often staff will ask architects for lots of storage space and as a result the architects will remove necessary legroom to add drawer and cupboard units which eventually have to be removed |
| <ul style="list-style-type: none"> printer / fax machines | Ensure these are within close proximity but in a position usable by other staff Ideal to have printer positioned on a lower work surface so top of printer is at a max of 44" height off the floor Consult IMIT to determine Standard IH Printer measurements and ensure these are factored into design | |
| <ul style="list-style-type: none"> proper office equipment | Eligible for a task intensive chair Also promote height adjustable keyboard tray, telephone headset, footrest and desk wedge Ensure architect is aware of IH office equipment standards In new building make sure these items are included in the equipment list so can be properly budgeted for | |

15.3 Interior Health WH&S Ergonomic Recommendations for Care Team Stations and Reception Areas (Continued)

| | | |
|---|--|--|
| <ul style="list-style-type: none"> Form racks/holder | <p>Often require maximum 20 spaces for letter sized forms with in frequent use range; recommend commercially made products that sit on desk</p> <p>lon busy units like Emergency usually require up to 50 letter sized form slots to make collating of charting packages/bundles etc. easier; this can be placed outside main nursing station if needed; floor to 66" height shelving unit with slot system works well for this</p> <p>Spend sufficient time with Unit Clerk to type and frequency of forms required</p> | <p>Form racks are frequently built into the millwork and offer little flexibility if needs on the unit change.</p> |
| <ul style="list-style-type: none"> access to electrical outlet | <p>Request that one duplex plug be placed above desk height near unit clerk area</p> | <p>Allows unit clerk to plug in batteries chargers etc.</p> |
| <p>General Charting Area</p> <ul style="list-style-type: none"> general configuration | <p>Determined by layout; staff seem to prefer an island for charting and a few computer workstations; if computerized charting needs will change to require more proper computer workstations</p> | |
| <ul style="list-style-type: none"> depth of counter | <p>Minimum 30"</p> | <p>Allows writing space with chart in front</p> |
| <ul style="list-style-type: none"> legroom | <p>Ensure minimal cupboards and drawer units; drawer unit should be mobile (on sliders)</p> | <p>Allows flexibility if needs change</p> |
| <ul style="list-style-type: none"> access to electrical outlet | <p>1 to 2 duplexes placed above desk height</p> | |
| <ul style="list-style-type: none"> doctor dictation center | <p>If planned for within the nursing station, ensure architect has the IH standard for dictation booths</p> | <p>This has been a successful design at other sites</p> |