
DESIGNING WORKPLACES FOR SAFER HANDLING OF PATIENTS/RESIDENTS

Guidelines for the Design of Health and Aged Care Facilities

Foreword

There is a link between the layout and design of a workplace and the risk of musculoskeletal disorders. These guidelines were developed by industry for industry. They represent an important contribution to our knowledge about reducing risks through good design practices. Renovations or the building of new facilities provide an ideal time to incorporate occupational health and safety considerations into the planning process.

This practical material is specific to the health and aged care sector and focuses on the main areas where patient/resident handling occurs. The recommendations for the allocation of space are based on the space needed to perform the handling activities that occur in facilities. The guidelines consider both the needs of patients/residents and the occupational health and safety needs of direct care staff. An important feature of the guidelines is the inclusion of a consultation process with ultimate end users of the facility, during the planning phase.

I recommend these guidelines to all involved in the planning and design of health and aged care facilities.



Hon Bob Cameron MLA
Minister for WorkCover

December 1999

Acknowledgements

These guidelines have been prepared by the Workplace Design Working Party as part of the Victorian WorkCover Authority's Health and Aged Care Project, and are aimed at reducing injuries among staff who handle patients/residents. The Health and Aged Care project is linked to the Victorian WorkCover Authority's "Back Strategy", which aims to reduce the incidence and severity of back injuries in workplaces. The Health and Aged Care Project Consultative Committee, comprising key representatives from the Victorian WorkCover Authority and the health and aged care sector, provided valuable support and guidance throughout this project.

The working party was facilitated by Fiona Begg, an ergonomist with the Victorian WorkCover Authority, and assisted by an external consulting team comprising an architect and an ergonomist.

The Working Party gratefully acknowledges the contribution of all those people in the health and aged care sector who hosted site visits, participated in workshops or offered comments and advice at various stages of the project. The Austin and Repatriation Medical Centre kindly hosted the two workshops at the Royal Talbot Rehabilitation Centre, and staff of Royal Talbot assisted with the running of the workshops.

One particularly important source of information requiring acknowledgement by the working party is a report by the Swedish Institute for Hospital Planning and Rationalisation titled (in English) *Hygiene Rooms – functional space for personal hygiene in long term care*. The project team gratefully acknowledges the valuable contribution of Tore Larsson and Kay Wilson for drawing the report to its attention and for translating it from Swedish into English. The learnings from this report have enabled us to develop our guidelines.

The Working Party

The following organisations were represented on the working party:

- Austin and Repatriation Medical Centre
- Australian Hospital Care Limited
- Australian Nursing Homes and Extended Care Associations - Victoria
- Department of Human Services
- Injured Nurses Support Group
- National Association of Nursing Homes and Private Hospitals
- Peninsula Health Care Network
- Royal Australian Institute of Architects
- Victorian Association of Health and Extended Care
- Victorian WorkCover Authority

Supporting Organisations

The following organisations have expressed support for these guidelines:

- Australian Nursing Federation – Victorian Branch
- Australian Nursing Homes and Extended Care Association – Victoria
- Injured Nurses Support Group
- Private Hospitals Association of Victoria
- Victorian Association of Health and Extended Care
- Victorian Healthcare Association Limited

Table of Contents

1	Introduction	5
1.1	Why these guidelines have been developed	5
1.2	Aim	6
1.3	Tackling injury prevention during the building design process	6
2	Issues in Safe Handling of Patients/Residents	7
2.1	The size and nature of the problem of injuries from handling patients/residents	7
2.2	Common problems identified in new buildings	8
2.3	Selecting patient/resident handling equipment in relation to building design	9
3	Generic Functional Requirements and Operational Issues	10
3.1	General influences on handling of patients/residents	10
3.2	Classifying patients/residents according to functional capacity	11
3.3	General design considerations	14
4	Specific Spatial Requirements	20
4.1	Bedrooms	20
4.2	Ensuites and assisted toilets	24
4.3	Assisted bathrooms	27
4.4	Lounge/dining rooms (aged care and rehabilitation facilities)	28
4.5	Corridors	28
4.6	Equipment storage	30
5	Effective Consultation with Direct Care Staff in the Design of Facilities	31
5.1	Why consult direct care staff?	31
5.2	When to consult direct care staff	31
5.3	Preparing the ground for effective consultation	33
5.4	Helping staff to contribute fully to the consultation process	33
5.5	Who to consult	34
5.6	Challenges for architects and designers	35
5.7	Specialist ergonomics input	36
6	Regulatory and Financial Context	37
6.1	Building regulations	37
6.2	Occupational health and safety	37
6.3	The cost	37
7	Appendices	39
	Appendix A – References	39
	Appendix B – Workplace Design Process Checklist	40
	Appendix C – Workplace Design Safety Audit Checklist	43
	Appendix D – How the Guidelines Were Developed	47
8	Further Information	48

1.1 Why these guidelines have been developed

These guidelines are one step towards reducing the continuing high prevalence of musculoskeletal strain injuries among staff who handle patients or residents in Victorian acute and aged care facilities.

Key stakeholders of the health and aged care sectors and the Victorian WorkCover Authority are concerned about the high incidences of injuries, particularly back injuries, amongst staff who handle patients/residents.

In the health industry, 44% of all WorkCover claims are for back injuries, compared to 26% for the whole of the Victorian work force. Over half of all claims in the health industry are lodged by nurses.

Research shows that patient/resident handling is the most frequent cause of back pain and injury to nurses, and that poor work place design is a major contributing cause of these injuries, especially in patient rooms, toilets, bathing areas and corridors. Restricted space may lead to constrained and awkward postures during handling tasks, and poor workplace design may lead to unnecessary or double handling of patients/residents. There is, however, no single set of guidelines available to designers of acute or aged care facilities in Australia, which give adequate guidance in relation to design requirements for safe patient/resident handling.

The Building Code of Australia addresses questions of access for independent disabled people, but it does not consider the extra needs of access for disabled people who require assistance. It deals with some important safety issues such as fire safety, egress in emergencies, structural strength, and the design of stairs and balustrades. However, there are many more design factors with the potential to affect safe working conditions for the occupants, on which guidance is needed.

The Victorian WorkCover Authority has undertaken this strategic project in cooperation with the health and aged care sector to provide comprehensive guidance on how good workplace design can reduce manual handling injury risks.

1.2 Aim

These design guidelines are targeted at three prime groups: direct care workers who handle patients/residents, managers and designers. The aim is to assist acute health and aged care service providers, staff and designers to develop new, and redevelop existing, facilities in a way that will reduce risks to staff who handle patients/residents. The guidelines are intended to help a range of stakeholders, including funding agencies, owners, regulating agencies, accrediting agencies, planners, architects, project managers, business unit managers, and finally, the staff who do the actual day to day handling of patients/residents.

The guidelines may also be applied to existing workplaces when assessing patient/resident handling safety.

The guidelines provide best practice information for the design and layout of the main patient/resident handling areas within hospitals and aged care facilities, including:

- bedrooms
- bathrooms/ensuites
- dining/lounge and recreational rooms (aged care)
- corridors
- other relevant areas eg. equipment/aids storage

Patient/resident handling requirements and practices vary enormously across the whole spectrum of health and aged care. It is essential that these requirements be clearly determined for the particular group of patients/residents in question before these guidelines can be usefully applied.

1.3 Tackling injury prevention during the building design process

The prospect of building a new facility or refurbishing an existing building to accommodate patients or residents should be the trigger for an agency to make an all out attack on reducing staff injuries in the new/refurbished facility.

The organisation should take the opportunity to:

- review its safety policies as they affect patient/resident handling, and consider introducing policies to abolish manual lifting of patients/residents
- completely review and revise its work practices in relation to patient/resident handling in the new/refurbished facility
- decide what types and quantities of lifting equipment, fixed and mobile, will be provided, and determine the functional space and storage requirements for lifting equipment, including proximity to the point of use

These decisions should be taken in consultation with direct care staff and with business unit managers, in order to achieve the best solutions and a unity of commitment to the new work practices. Further information about consultation processes is given in section 5 and Appendix B.

2.1 *The size and nature of the problem of injuries from handling patients/residents*

The Victorian WorkCover Authority report *Workplace Injuries in the Health Industry 1996/1997* states that over half of all reported claims in the health industry are lodged by nurses, with average claims costs varying between \$5,000 and \$7,000.

A high proportion of claims within the health industry are related to back injury (44% in Victoria in 1996/1997). This is much higher than for Victoria as a whole where back injuries account for 26.4% of all WorkCover compensation claims. Body stressing and lifting/handling injuries accounted for 56.5% of all injuries in the health industry compared with 35% for all Victoria. Published research literature clearly shows that patient handling is the most frequent precipitating factor or cause of back pain and of overexertion back accidents to nursing staff.

The problem is not new. It was thoroughly documented 30 years ago by Ferguson (1968) in a landmark report titled a *Survey of Manual Handling In Repatriation Institutions*, commissioned by the Australian Commonwealth Department of Health. Until now, however, no comprehensive, strategic approach has been taken to deal with the problem. Ferguson (1968) reported that strain injuries were by far the greatest cause of lost time accidents in the Repatriation Department, and that manual handling, particularly of patients, was by far the most important source of such injuries. He concluded that the strain hazard can best be lessened by elimination, as far as possible, of the need for manual handling. He called for collaboration between various professions, including safety and engineering, from the design stage on, and extending to an examination of existing situations. He specifically called for systems of design and equipment to be considered on an ergonomic basis, in the light of their interaction with the human operator, and to be standardised in the Department and reviewed continuously.

Workplace layout and design aspects which increase injury risk include working heights, lack of space or cluttered work-space, narrow doorways, and narrow passageways. Restricted workspace also undermines or prevents the proper use of lifting equipment for patient/resident handling.

According to Engkvist et al. (1992), the three spaces where most accidents occur amongst nurses are the patient's room, the toilet and the corridor. As a result of studying nursing assistants in nursing homes Garg et al. (1992) recommended that redesign is needed in patient rooms, toilets, bathing areas, beds, wheelchairs and transferring devices.

Detailed guidance on functional space for hygiene rooms in long-term care was developed through a major research project conducted for the Swedish Institute for Hospital Planning and Rationalization (1979). This work included site inspections at 20 different hospitals and nursing homes built or renovated in the previous ten years, and interviews with patients and nursing staff. Trials – 280 in all – were then conducted in full scale mock ups in a laboratory, increasing the space by 100 mm at a time, until the task could be performed satisfactorily without bumping into the walls. Ten rooms were then constructed in the laboratory and another ten (total) in two hospitals, and the designs assessed. Based on this research, a number of design examples were developed and published in the report. This report of the Swedish Institute for Hospital Planning and Rationalization (1979) provided an important foundation for the guidelines presented here.

2.2 Common problems identified in new buildings

The consultants visited eight relatively new or renovated acute or aged care facilities in order to detect whether, under current regulations, standards and design practices, any design problems were still occurring which adversely affect the safety of patient/resident handling.

It was quite clear from these observations that the current Building Code of Australia and current standards do not provide adequate guidance for designing buildings for safe handling of patients/residents.

The patient/resident handling problems related to building design that were identified by consultation with staff and by inspection of these eight facilities included the following:

- Storage for patient handling equipment was inadequate and inconveniently located in almost every facility visited. Bathrooms were often used as storerooms, sometimes precluding their use as bathrooms. It was noted that in some aged care facilities, space is needed to temporarily store personal furniture after a resident dies.
- One recently built nursing home had bedroom doors too narrow to get beds through. If double rooms are included, beds may need to be moved around between rooms at times to assist gender management.
- Some bedrooms were too small to use a lifting machine. It was suggested that consideration should be given to having at least one bedroom big enough for a mobile shower/bath to be used (using a pat slide to transfer the patient).
- In toilets, some nurse call buttons were located out of reach of the patient/resident - typically on the wall behind the toilet.
- Some toilets were too close to the side wall to allow a staff member on each side to assist the patient/resident. It was suggested that large shared ensuites are better than smaller individual ensuites in many situations.
- Carpet squares were reported to be better for cleaning and hygiene control. Direct stick carpets allowed easier movement of mobile equipment. Some carpets were reported to be inappropriate for use with incontinent patients, because they retain odours. This was partly due to concrete floors. To overcome this problem some facilities sealed the concrete prior to laying carpet.
- Small-wheeled equipment was reported to be difficult to move on some carpets, but generally large wheeled equipment was easy to move.
- In one instance the plinth under the bath was observed to be too wide for a lifting machine.
- It was reported that some wash basins need to be set at the correct height to allow wheelchair access, including adequate clear space under the basin for the seated person's legs.
- Furniture was reported to be an impediment to resident movement in some dining rooms and activity rooms. In one case, four legged tables had been replaced by round pedestal tables high enough to allow wheelchair access. Frames and wheelchairs were reported to be a problem in some dining rooms.
- It was suggested that facilities need to be designed to accommodate the range of patients/residents likely to occupy them in the foreseeable future, taking into account policies such as Ageing in Place. One facility which had been designed as a hostel (low dependency) was being used as a nursing home (high dependency), giving rise to safety problems.
- It was suggested that more use should be made of automatic doors, and that consideration should be given to changing regulations which restrict their use in some facilities.
- It was reported that, in one case, security doors restricted movement of beds, and in another case, fire exit doors opened onto a grassed area, creating potential patient handling problems in emergencies.
- Nurse call systems were reported to cause a number of difficulties affecting staff safety. In several cases nurses in ensuites could not hear call signals, so that other staff could not summon help. In closed-in designs, nurses "disappear" from view and can be difficult to locate if needed.
- Space beside beds and/or at the foot of beds was observed to be inadequate in some cases. Location of privacy curtains restricted staff movement in some cases, even when room size was adequate. In many cases furniture or fittings obstructed staff access to suitable positions for manually assisting patients/residents.

2.3 *Selecting patient/resident handling equipment in relation to building design*

These are some issues, from the building design perspective, for consideration when selecting equipment for handling patients/residents.

- Does the layout of the facility accommodate policies relevant to safe patient/resident handling, such as a “no lifting” policy aimed at eliminating all lifting of patients/residents? In particular, is there adequate space for safe use and storage of equipment, and safe access?
- Do the agency’s purchasing procedures include a requirement for health and safety assessment and approval of all items prior to purchase?
- Do the agency’s purchasing procedures include provision for consultation with direct care staff in the selection and trial of patient/resident handling equipment?
- Is there sufficient information available about the proposed design of the building to ensure that the equipment will be compatible with the building and the new work practices?
- Is the patient handling equipment and furniture compatible with the design of the building?
- What is the footprint (i.e. floor area) covered by the equipment?
- What additional space is required by the occupant (e.g. arms and legs)?
- What space is required by the person operating the equipment?
- Will the equipment fit into or through all the spaces where it needs to go?
 - Adjacent to beds (three sides)
 - Adjacent to toilets
 - Adjacent to baths
 - Through doorways (bedroom, bathroom, toilet, ensuite)
 - Along the corridors and around the corners
 - Under height adjustable beds
- Is the plinth under the bath narrow enough to allow the base of the patient lifter to be manoeuvred into the correct position in relation to the bath?
- Is there sufficient and safe storage space for each item of equipment, and can it be stored close to the point of use?
- Are the floor surfaces on the routes over which the equipment will be transported compatible with the design of the equipment (consider: ramps, carpets, steps, lift doorways, size of wheels, steering characteristics)?
- Will the equipment itself constrain staff movement, and therefore contribute to a risk of strain injury?
- Does the equipment have any special anchorages, supports, etc, and do the floors and walls require any special protection from damage by equipment?
- Is the equipment suited to a range of sizes of staff and patients/residents?
- Can you be sure that the position of fixed equipment for handling patients/residents is correctly determined before it is installed?
- How manoeuvrable is equipment, including force required to push/pull?

3 Generic Functional Requirements and Operational Issues

3.1 *General influences on handling of patients/residents*

Two main influences on safe handling of patients/residents are:

- the built environment, including room layout, types and location of equipment, furniture, fixtures and floor finishes
- the level of dependence of the patient/resident

These can affect safe patient/resident handling as follows.

1. Staff work practices

- Common work practices include patient/resident handling being performed mainly during a couple of intense morning hours and evening hours. Rooms and equipment are therefore extremely busy during a short period of time. Some facilities, however, do spread tasks requiring patient/resident handling, such as showering and washing, over the whole day.
- Habits and traditional ways of working influence the way personal assistance is given. For instance, staff may rely on manual lifting and transfer, rather than using lifting devices.
- Training and education in safe patient/resident handling is often limited to manual lifting techniques rather than risk assessment and control, and is often not updated.

2. The type of facility

- Aged care residential units and wards for acute care accommodate patients/residents with varying degrees of functional disabilities.
- Some patients/residents might be completely bed-bound and in great need of personal assistance. Duration of care and rehabilitation varies between types of patients/residents.
- There is often a mixture of single and two bed rooms, and in acute health facilities some four bed rooms.
- The layout and design of some buildings makes reorientation of equipment difficult.
- Newly acquired aids and equipment do not always fit existing buildings and therefore cannot be used.

3. The functional capacity of the patient/resident

- The degree of functional and cognitive capacity of the patient/resident, and their need for assistance and aids, determines how the personal hygiene tasks of the patient/resident can be performed.
- Residents in aged care residential units are often frail and can have behavioural problems.
- The posture that the patient/resident is able to assume during the handling procedure affects the way handling is performed, and therefore has important implications for the design of the room.
- The type of aids used for patient/resident handling are also important to the design of the room.

4. Organisational culture and resources

- Manual handling safety policies, such as a policy to eliminate all lifting of patients/residents, should be the starting point for designing work practices and work places.
- Safety practices, management and supervision will affect handling practices.
- The availability of sufficient, suitable, workable handling aids, including fixed and mobile equipment, determines whether optimum lifting practices can be employed.

3.2 *Classifying patients/residents according to functional capacity*

The functional capacities of patients/residents are important determinants of staff handling procedures and essential considerations when developing the best functional layout and design of rooms. This section of the Guidelines classifies patients/residents into groups based on mobility and dependency. It is also important to consider future occupants of the buildings, as well as possible changes over time in the functional capacity of individual patients/residents. This is particularly relevant for aged care where residents who are now being admitted are frailer and more dependent compared to those admitted in the past.

When planning health facility and aged care rooms, two factors are critical: the patient's/resident's way of ambulating, and his/her need for assistance. Depending on mobility, there are four main patient/resident categories, namely:

- those who move about without any form of aid
- those who need some form of walking aid such as a stick, four-point stick, frame or support from staff
- those who move about in a wheelchair
- those who are bed bound

In the last two categories, it is likely that there will be a need for a lifting device for transfer to and from toilet seat or shower-trolley. It should also be noted that, even in the second category, a patient/resident may need staff assistance for on-bed movements.

Within these categories there are great variations. This includes the need for staff assistance, where three main dependency levels can be identified, namely:

- those who manage without assistance
- those who need assistance from one staff member
- those who need assistance from two or more staff

These categories can be combined in 12 different ways:

Alternative	Ambulatory Aid	Dependency Levels
1	None	1
2	None	2
3	None	3
4	Walking aid	1
5	Walking aid	2
6	Walking aid	3
7	Wheelchair	1
8	Wheelchair, can stand	2
9	Wheelchair, cannot stand	2
10	Wheelchair, can stand	3
11	Wheelchair, cannot stand	3
12	Full assistance	3

Despite this large range of functional abilities, the space requirements and design demands for health and aged care facility rooms for several of the categories are very similar. The number of categories can therefore be reduced to four main groups according to different dependency needs. All patients/residents can be allocated to one of these groups.

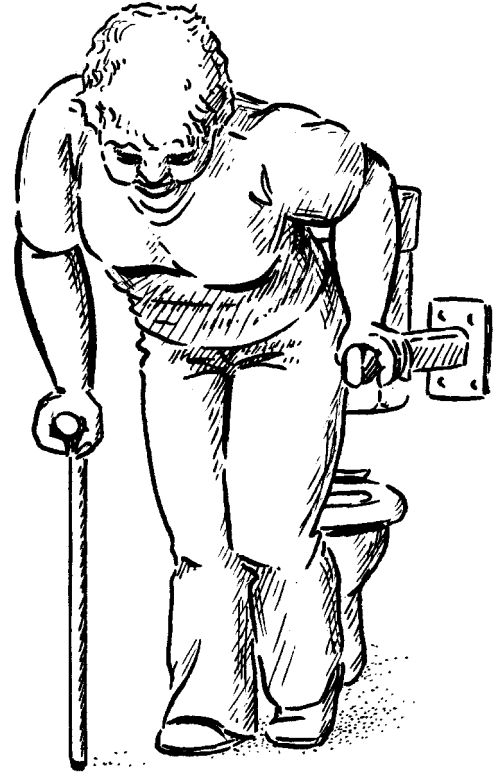
In all four groups, the patients/residents have some form of functional disability, which impedes their mobility and impacts on their level of required assistance. The disability can be related to physical and/or mental disorders. The patients/residents might need different types of aids and different levels of staff assistance to move around and attend to their personal hygiene. In addition, some people from all categories may need assistance with on-bed movements.

Group A – Fully independent

Patients/residents who walk with or without walking aids. They do not need assistance from staff to move about.

Walking aids which might be required include sticks, four-point sticks, wheeled frames or other supporting equipment. The patients/residents in this group might suffer from stiffness and restricted mobility of shoulders and arms, hips and legs, diminished functional ability due to partial paralysis and disturbed sense of balance. The patients/residents might rely on some staff assistance but generally can move about independently.

Staff need to be aware of the potential for these patients/residents to need assistance in a one-off situation or emergency. These patients/residents generally need some support aids in toilets, bathrooms, ensuites, etc. This is particularly relevant for aged persons who may not have any disabilities but due to their frailty do not have the strength to assist themselves, particularly in toilets where grabrails are provided. The patients/residents who usually fall into this group are: acute medical patients, acute surgical patients who have recovered from surgery, or low level aged care residents, or high level (wandering, dementia) aged care residents.



Group B – Partially dependent

Patients/residents who walk with or without walking aids, yet need some or full assistance from one or two staff to move about.

Walking aids which might be required are sticks, four-point sticks, wheeled frames or other supporting equipment. The patients/residents in this group might suffer from restricted mobility of shoulders and arms, hips and legs, and thus have difficulties in sitting down and getting up, and dressing and undressing. Diminished functional ability of one half of the body due to partial paralysis, disturbed sense of balance and reduced vision is common in this group.

Staff often have to provide partial assistance to these patients/residents in getting in and out of bed, on and off toilets and showering/bathing. This group of patients/residents need support aids in toilets, bathrooms, ensuites, etc. They generally comprise acute medical patients, acute surgical patients with some mobility, rehabilitation patients, low and high level aged care residents or patients/residents who require assistance with on-bed movement.



Group C – Dependent

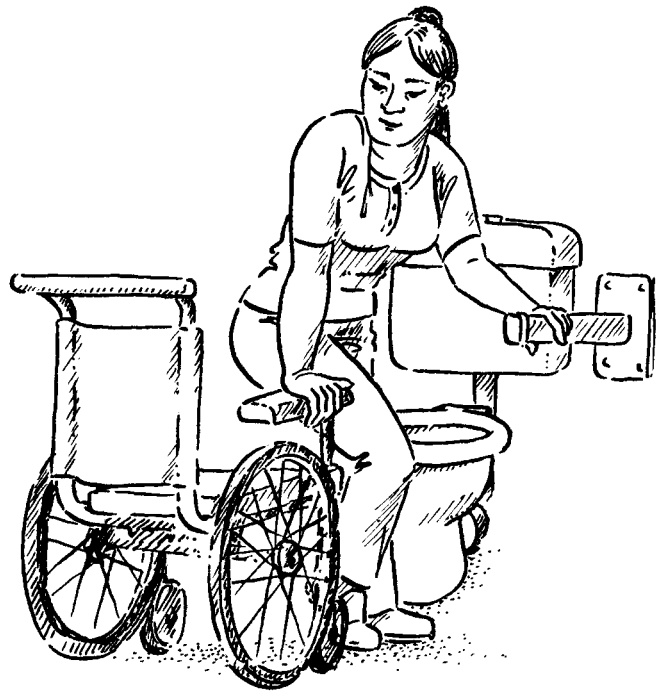
Patients/residents who need a wheelchair to move around. They still manage some tasks on their own, or they need some or full assistance from one staff member to cope.

Those who manage on their own have good functional capabilities of arms and hands, but might suffer from reduced leg and trunk function due to paralysis or amputation.

Those who need assistance for transfers in relation to personal hygiene tasks are able to stand on their legs. Their disability might be reduced functional capacity of trunk and/or one or all extremities, or one half of the body due to partial paralysis, disturbed sense of balance and/or cognitive impairment. The staff assistance may entail using a lifting device.

Although these patients/residents can help with transferring their weight they often need full assistance from staff in getting in and out of bed, on and off toilets and showering/bathing. Support aids in toilets, bathrooms and ensuites are essential.

They are either acute medical patients, acute surgical patients with minimal mobility, rehabilitation patients in the early stages of their program or high level aged care residents.

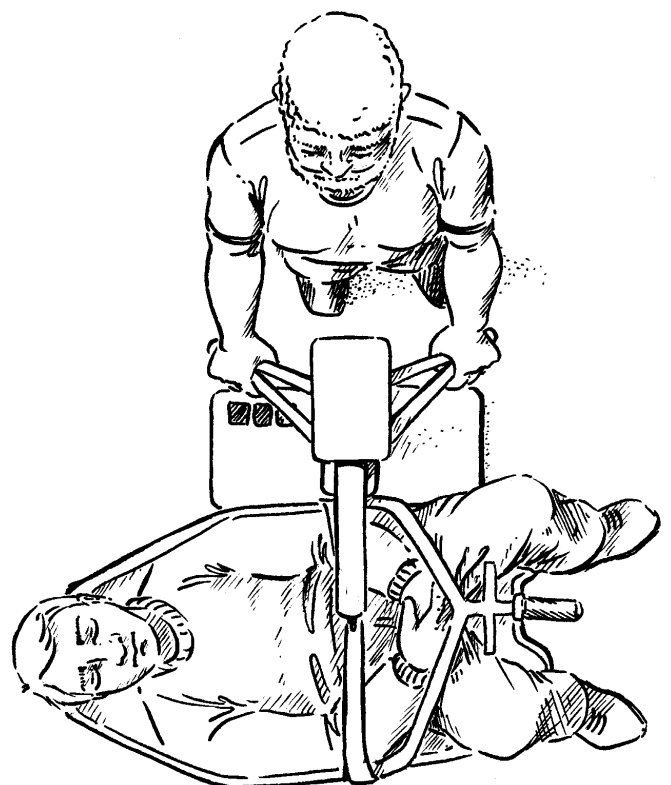


Group D – Fully dependent

Patients/residents who need a wheelchair to move around or are bed bound.

During transfers some of these patients/residents are able to stand with support. For those who cannot stand, the staff need to apply different forms of transferring techniques or use lifting devices in order to transfer patients/residents. In addition, the use of bath trolleys maybe required. The patients/residents in this group might suffer from reduced functional capacity of the trunk and/or one or all extremities due to paralysis or amputation, or reduced functional capacity of one half of the body due to partial paralysis, and/or cognitive impairment.

In all tasks, staff have to assist these patients/residents in their movements. Support aids in toilets, bathrooms and ensuites are essential. These patients/residents are severe medical/surgical acute patients or high level aged care residents.



These groupings fall into two main functional capacity categories impacting on design.

- 1 Patients/residents requiring minimal staff assistance (Groups A and B)
- 2 Patients/residents requiring either significant or full staff assistance (Groups C and D plus some Group B who need assistance with on-bed movement)

As a consequence, these two categories will have a significant impact on the functional layout and design of the rooms accessed by patients/residents. For instance facilities for Category 1 patients/residents could be designed around Australian Standard AS 1428 –β Design For Access and Mobility. By contrast, facilities for Category 2 patients/residents need greater space to allow staff to assist patients/residents in a safe working environment.

It is important that careful consideration be given to future occupants of the building, as those who may be Category 1 today maybe Category 2 tomorrow. If there is an intention to cater for ageing in place, the design should cater for the most dependent. In any case, a clear statement of likely future uses of the facility should be included in the master planning documents and in the facility design documents.

3.3 General design considerations

3.3.1 General planning considerations

An issue which arises due to the various purposes of the acute and aged care facilities is the actual function of each room, particularly in the case of bedrooms.

Acute health facilities

In acute health facilities the patient's stay is often short term, and as soon as they have recovered or are capable of being cared for in their own home, they are discharged. As a consequence the rooms do not have to cater for personal furnishings and may be more clinical. This can often result in specific rooms (e.g. intensive care, birthing), shared rooms (2 and 4 bed), central bathroom facilities and shared ensuites.

Depending on the patient's ailment, the number and size of mobile and fixed items of medical equipment that may have to be accommodated in the room can vary.

Rehabilitation facilities

Given their very nature, these facilities accommodate patients who are undertaking rehabilitation programs prior to being discharged home. They often stay medium term (3 to 8 weeks) and have a medical condition relating to stroke, amputation, motor accident or similar. Therefore the facilities need to resemble a homelike environment whilst catering for their intensive rehabilitation program, which can often see them progress from highly dependent to independent patients.

Aged care facilities

In accordance with government policy, aged care facilities need to be as residential as possible, whilst providing for a safe environment for both residents and staff.

These facilities are the residents' permanent home and as such, they often bring their own personal belongings and have a higher need for privacy. This results in single bedrooms, with space for personal furnishing and a number of visitors, single ensuites with storage space and greater emphasis on privacy.

Although these guidelines will not be providing detailed information on total room sizes, the above items need to be taken into consideration in association with the specific design requirements.

3.3.2 Patient/Resident handling equipment

Staff should be provided with, and encouraged to use, suitable aids to assist them in handling patients/residents. There are different types of fixed and mobile equipment, including electric and hydraulic machines, which vary in weight capacity (typically up to 250 kg) and size (typically up to 1150 mm in length and 650 mm in width). The following diagrams show typical lifting machines.

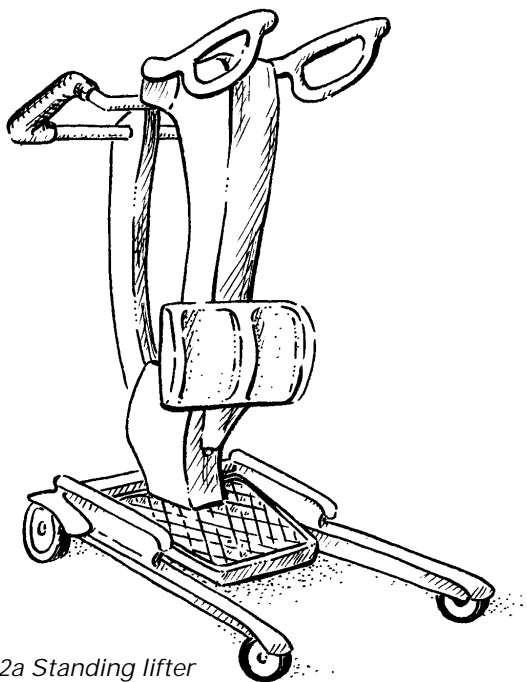


Figure 3.3.2a Standing lifter

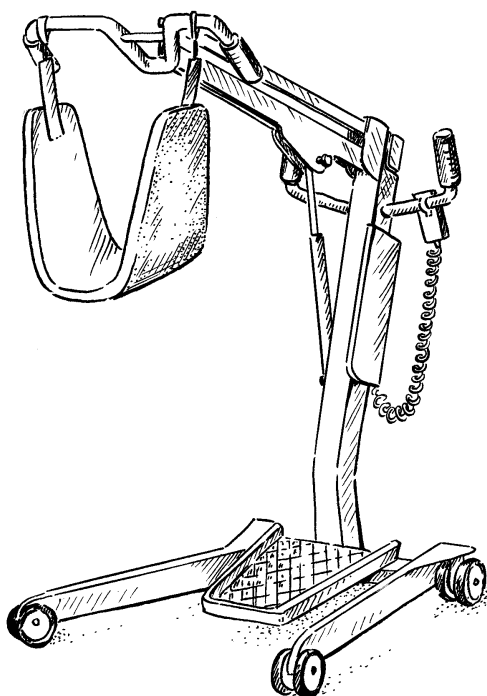


Figure 3.3.2b Sling lifter

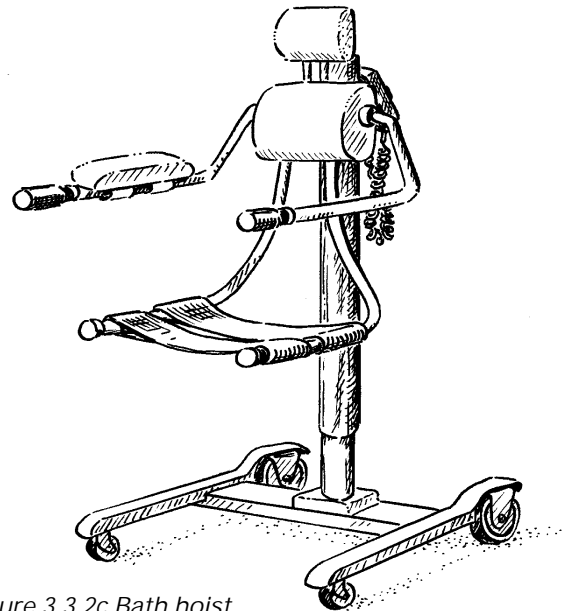


Figure 3.3.2c Bath hoist

It is important to select machines which are easy to push (including on carpet if necessary) and easy to manoeuvre, with handles well positioned to give good mechanical advantage when turning, and with wheels which swivel easily. Also check that machines are stable and cannot overbalance when loaded.

Adequate storage space should be provided for lifting machines, close to the point of use. In aged care facilities, residents are not normally transported through corridors in such machines. One staff member may push the resident in a wheelchair followed by a staff member pushing the empty lifting machine.

Fixed overhead lifting devices have great potential to make patient/resident handling safer and more efficient, and their use should be strongly encouraged wherever practicable. They are becoming more popular, particularly in bedrooms, bathrooms and ensuites where they have the potential to save space. However, they can restrict room layouts. For example, in a bedroom, the bed cannot be moved to a new position as the overhead-lifting machine is fixed. This is particularly relevant for aged care facilities. The ceiling supports may require additional structural members to take the load. Some people believe that such devices make an aged care facility look less homelike. Clever design can overcome this problem, for example by installing recessed tracks, and providing small cupboards in the wall for the device to be stored out of sight.

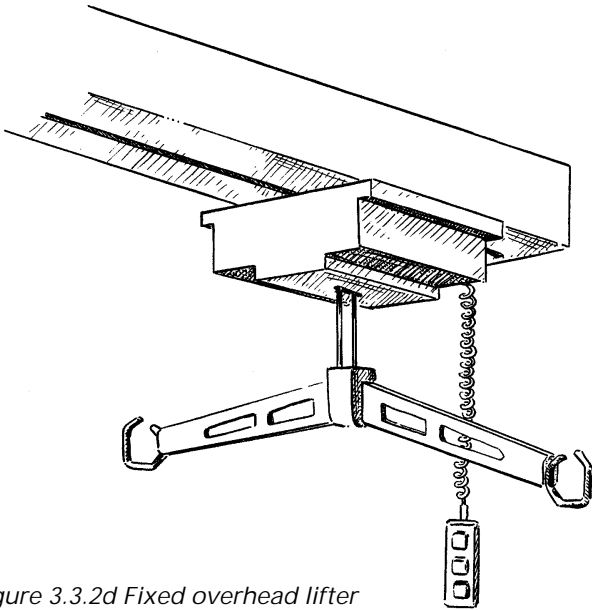


Figure 3.3.2d Fixed overhead lifter

Even if a decision is taken not to include overhead tracking in the original construction of a new facility, ceiling structures should be designed to allow the installation of ceiling tracks at a later date. It is better to consider this at the building design stage, to avoid conflicts with services in the ceiling space and structural ramifications.

For patients/residents who can't sit up, a more recently introduced patient/resident support aid is the bath trolley. The patient/resident can be transferred directly onto the bath trolley in their bedroom using a lifting machine or patient slide, and then wheeled to the bathroom where they can be bathed and dried. They can then be returned to their bedroom where they can be transferred into bed. However, such procedures should not breach the privacy and dignity of patients and residents.

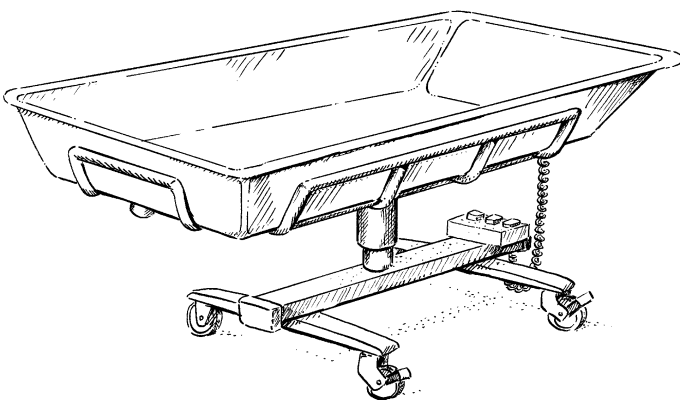


Figure 3.3.2e Bath trolley

Another welcome trend is the purchase of adjustable beds, which enable staff to raise or lower the height of the bed to assist in the handling of patients/residents. These beds are often larger in size than standard beds.

There are many other lifting and manual support devices. One source of information is the Independent Living Centre. The centre is part of Yooralla, and can provide information on the selection of equipment and aids that can assist people to be more independent in the home and the workplace.

3.3.3 Furniture and fittings

There are a number of items of furniture and fittings found in acute and aged care facilities, some of which are necessary in the delivery of medical services (e.g. oxygen, gas, suction, IV and blood pressure machines) and other items (e.g. bedside tables, fixed shower screens, privacy curtains, etc.). These fixtures can impede staff when handling patients/residents. Choosing appropriate movable fittings, such as bedside tables, can contribute to better access and therefore to safer handling procedures. This also includes appropriate adjustable beds (electronic/hydraulic) and special lounge chairs that can assist in reducing staff injuries.

There should be enough electrical outlets for all personal and agency equipment, and they need to be located so as to minimise cords trailing across circulation areas, which can cause tripping hazards or impede movement of wheeled equipment.

3.3.4 Doors and door openings

Doors and doorways can either assist or hinder staff when handling patients/residents. Even simple things such as types of door handles and their positioning can be critical. For example, lever type handles at the appropriate height enable staff to easily open doors whilst supporting or manoeuvring patients/residents. Consideration should also be given to the weight of the door to ensure that it is easy to open and close. Full height doors can be relatively heavy. There are a number of different door types on the market including solid, semi-solid and hollow core. Door openings need to be high enough to allow access for equipment likely to be used such as intravenous drip poles, fracture frames and electric beds. Generally 2040 mm high (standard door opening) will suffice. In special circumstances this may have to be increased to 2400 mm high.

All doorways through which patients/residents manoeuvre must have at least 900 mm clear width when the door is fully opened (for both hinged and sliding doors). Sliding doorways must be wide enough and have stops to avoid damage to fingers when holding the handle or hand grip during opening. This allows for staff assistance, large equipment, wheelchairs and walking frames. In addition, to enable uninhibited access for disabled persons, Australian Standard AS 1428 – Design for Access and Mobility (section 7.3.1) requires a 460 mm minimum clear space of wall on the latch side of the door.

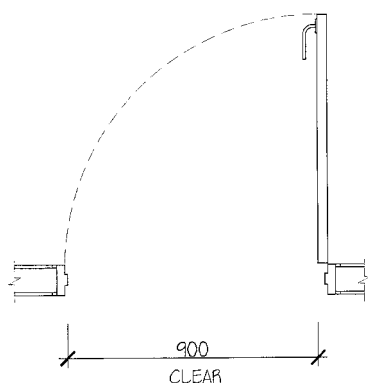


Figure 3.3.4a: Minimum clear width of opened hinged door

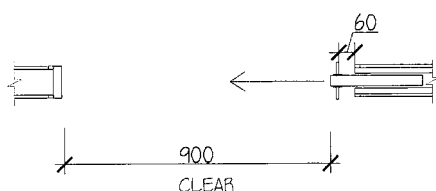


Figure 3.3.4b: Sliding door

For doorways through which beds or large patient/resident trolleys are transferred, a minimum clear width of no less than 1070 mm (for a 1 metre wide bed, with a wide enough corridor to allow turning, i.e. 1800 mm) and preferably 1350 mm is recommended. This can be achieved through providing two door leaves: one at 950 mm (which allows for 900 mm clear space during general usage) and the other 400 mm.

Generally aged care bedroom doors are 1070 mm minimum and acute bedroom doors are 1350 mm to cater for medical equipment which is fixed to the side of the bed. Door openings to bedrooms must be wide enough so that beds can be manoeuvred through without being tilted onto their sides.

A key element that needs to be considered when designing acute and aged care facilities is door swings. Doors must not open into a zone which impedes manoeuvring of patients/residents, nor swing out into a circulation area. The movement of staff and patients/residents needs to be incorporated into the design process. Automatic sliding doors have great advantages in certain situations, especially where space is restricted. Fire doors linked to hold open devices controlled by smoke detectors reduce impediments to safe patient/resident handling and should be installed wherever possible.

Another issue associated with doors is door furniture. For handles, lever type is best for hinged doors and 'D' pulls for sliding doors. The positioning of such door furniture is equally important to provide ease of use and reduce injuries.

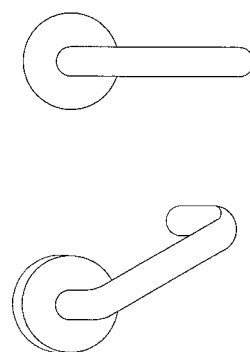


Figure 3.3.4c:
Lever type door
handles (hinged doors)

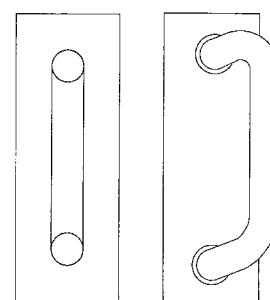


Figure 3.3.4d:
'D' Pull door handles
(sliding doors)

Door closers on swing doors can be a hazard, and should generally not be used on doors to patient/resident rooms, ensuites, toilets and bathrooms, or in other doorways frequented by patients/residents. Door closers can contribute to the risk of injury from patient/resident handling because the staff member often has to hold the door open against a closing force, whilst trying to assist the patient/resident. It can be very awkward trying to reach the door while supporting the patient/resident, then stepping back to allow space to pull the door open, holding it open while moving through the doorway, and then releasing it without allowing the door to swing back against the patient/resident. Door closers with hold open devices may reduce some of the risk, but they should be used only where there is a specific need. It is recommended that door closers be used only where absolutely essential, and generally not in patient/resident traffic areas.

3.3.5 Floors and floor coverings

Floor coverings can impact on staff work practices and on occupational health and safety in five main ways:

- 1 Cleaning/maintenance procedures
- 2 Manoeuvrability of equipment
- 3 Risk of slipping or tripping
- 4 Spread of flame, and the density of smoke produced
- 5 Fatigue on feet and legs (the types of shoes staff are wearing should also be considered)

In order to reduce the risk of slips and falls, floor surfaces should comply with Australian/New Zealand Standard AS/NZS 3661 – 1993 Slip resistance of pedestrian surfaces. A hazard can exist at the junction of different floor finishes (e.g. where vinyl meets carpet). At such points careful consideration needs to be given to low profile junction or diminishing strips. Having different types of floor finishes in the one room (e.g. carpet and vinyl) should be avoided as it often results in varying floor levels (diminishing strips) and can create a feeling of unsure footing. Unexpected changes in floor friction create a risk of slipping.

Any carpet that is used should be low profile and securely attached to the floor structure allowing for easy movement of wheeled equipment and wheelchairs. However, this provides a hard surface to stand on and may contribute to fatigue and aches and pains for staff who walk or stand on the surface for long periods. Careful consideration needs to be given to reducing such impact whilst not impeding staff pushing/pulling equipment. The use of cushioned back vinyl may overcome this without increasing noise or vibration.

Shock absorbent underlays may reduce stress on staff, provided that they do not make equipment difficult to move.

In practice, rooms generally have the following floor finishes:

Room	Facility	Floor finish
Bedrooms	Acute	Cushioned vinyl or carpet
	Aged care	Carpet
	Rehabilitation	Cushioned vinyl or carpet
Bathrooms/Ensuites	All	Non slip vinyl or epoxy
Corridors	Acute	Vinyl or carpet
	Aged care/Rehabilitation	Carpet
Dining rooms	All	Vinyl or carpet
Lounge rooms	All	Carpet

Where carpet is used on concrete floors, it is recommended that the concrete floor be sealed prior to laying the carpet, or that vinyl backed carpet which can be seal welded be used. This assists in preventing urine and other body fluids penetrating the concrete slab and then generating unpleasant odours through bacterial action. The use of appropriate cleaning procedures and equipment is also important.

3.3.6 Nurse call systems

Nurse call systems play an important part in staff handling of patients/residents, particularly in emergency situations. If the system is inadequate, staff often don't wait for assistance which can lead to inappropriate manual handling of patients/residents resulting in work related injuries. The major problems that can occur with a simple/traditional nurse call system include:

- Staff not being aware how critical the situation is when the nurse call system is activated
- Staff not being able to relay messages to other staff for back-up
- Staff not being aware that the nurse call system has been activated (e.g. staff member is in ensuite and does not hear the nurse call system being activated in another room)

To help with these problems, consideration should be given to installing a radio paging nurse call system. This should include personal pagers for staff and could incorporate pendant nurse call buttons for the most dependent patients/residents. Such systems can be integrated with the fire detection system and can provide for quicker response in emergency situations. The strategic location of nurse call buttons in rooms should be carefully planned. It should be noted that in toilets, a nurse call button located on the rear wall will be out of reach of many patients/residents. Where drop down grab rails are installed on both sides of a toilet, a call button and toilet roll may need to be attached to the drop down grab rail. An additional call button could be provided within reach, when the drop down grab rail is folded away.

3.3.7 Electrical and mechanical fittings

The appropriate location of electrical and mechanical fittings (e.g. air conditioners, ducted vacuum systems) can also have an impact on staff handling procedures and prevention of staff injuries. Design considerations include:

- Type of equipment to be plugged in
- Frequency of location
- Head clearance
- Ease of use and access
- Restrictions on patient/resident usage
- Elimination of cords across walkways

3.3.8 Lifts

Lifts can have an impact on patient/resident handling procedures. The key elements to be considered include:

- Door openings (width and height)
- Internal dimensions (allow for staff to stand on either side of bed/trolley)
- Position of controls
- Door hold-open times
- Accuracy of leveling between lift floor and external floor
- The horizontal width of the gap between the lift floor and the external floors, relative to the diameter of the wheels of mobile patient handling equipment including lifting machines and beds

3.3.9 Fixing of grab rails and handrails

The design sizing and location of grab rails and handrails is nominated in AS 1428 – Design for Access and Mobility. It is highlighted that the fixing of such supports “shall be able to withstand a force of 1100 N applied at any position and in any direction without showing visible signs of deformation or loosening of the fastenings”.

4 Specific Spatial Requirements

The factors which have the most impact on designing rooms for appropriate patient/resident handling procedures are the patient's/resident's functional capacity, their dependence on staff assistance, and the use of equipment. The staff work patterns are also important to the overall design of the facility.

The patients/residents have been divided up into two main categories with four sub-groups (section 3). The patients/residents in these groups have all, more or less, some degree of decreased functional capacity.

The care team should develop a handling plan for each patient/resident. A range of equipment should be available to cater for different handling needs.

The demands that patients/residents with functional disability make on interior design and equipment are often very different to those of able bodied people. When designing and positioning the furniture and equipment, it is important to consider the different needs. Staff may need to have the equipment and furniture placed on the right or the left dependent on whether that person is right or left handed. The patients'/residents' requirements and preferences may be in conflict with those of staff. It may be that general solutions which satisfy all wishes cannot be made. In some situations, the different demands can be met by duplicating the equipment or by having equipment that is easily moved. In other cases, the demands can be met by having special alternative areas.

These guidelines have focussed on the following main areas in which manual handling of patients/residents occurs:

- bedrooms
- ensuites/bathrooms
- lounge/dining rooms (aged care only)
- corridors
- equipment storage

This section provides recommendations on the spatial requirements in individual rooms for manual handling tasks, taking into consideration staff work patterns and lifting equipment. It does not necessarily provide for total room layouts or specify minimum room sizes, as these factors will be influenced by other activities which occur in the room.

4.1 Bedrooms

There is a range of practices for staff handling of patients/residents which occur in bedrooms, including transfers in and out of bed, and on-bed handling. These can vary from minimal staff assistance to total dependence on staff and lifting equipment. Hence spatial requirements can vary significantly.

However, in most acute and aged care facilities at any given point in time during the life span of the building, a bed could accommodate the most dependent patient/resident, being category D, as detailed in section 3. As these patients/residents place the greatest demand on spatial requirements, this section on bedrooms will focus on their handling needs. All bedroom layouts will depend on the size of the bed, which can vary greatly.

Another influence on designing bedrooms is work practices. For example, in acute (surgical) facilities the practice of transferring patients from their beds onto trolleys to be taken to surgery has recently changed, with the whole bed now being transported to the surgery unit.

A minimum space of 650 mm needs to be allowed on both sides of the bed for making the bed. Beds that are less than 500 mm high may require more space for making the bed.

Another key element in the spatial design of such rooms is the location of other loose furniture and equipment such as a bedside table, visitor chair and medical equipment. Allowance for space to accommodate such furniture and equipment needs to be taken into consideration.

When designing bedrooms, consideration also has to be given to items which will be located out of the clear zone. This includes storage of wheelchairs, walking frames, location of television, wardrobe, shelving for flowers, nurse call buttons, medical support equipment and access to ensuite.

4.1.1 Single bed rooms

Figure 4.1.1a is based on a lifting machine which does not exceed 1200 mm in length and 700 mm in width. It assumes that the bed has enough clearance underneath for the lifting machine base.

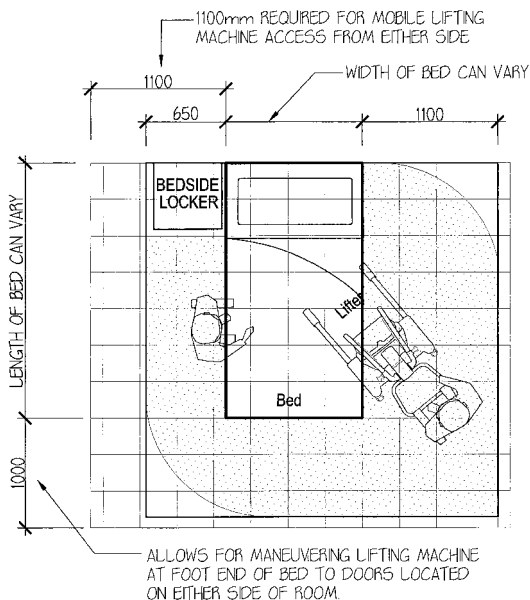


Figure 4.1.1a: Single bed room mobile lifting machine

Figure 4.1.1b is planned using a fixed overhead lifting device. Fixed overhead lifting machines may also be used to transport patients/residents directly from their bed to the ensuites and back. It should be also noted that the spatial area required for this procedure could also be adopted for instances where staff provide physical support to less dependent patients/residents in transferring to and from bed. The wheelchair in this example is based on a maximum size of 700 mm (w) x 900 mm (l). It assumes that the staff member will push the wheelchair in backwards.

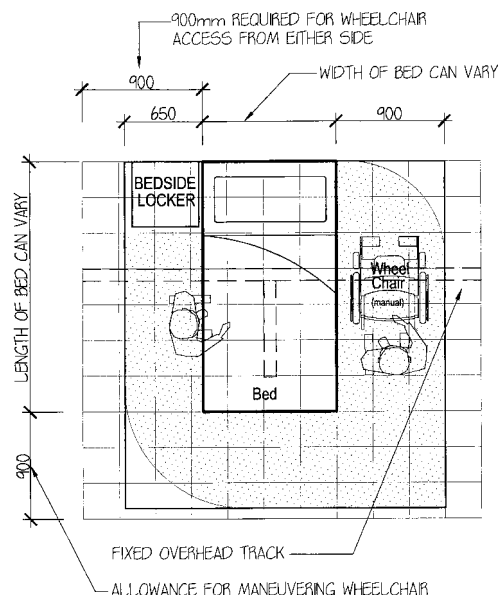


Figure 4.1.1b: Single bed room fixed overhead lifting device

Figure 4.1.1c shows space required for patients/residents being transferred onto a trolley by staff using a "Patslide".

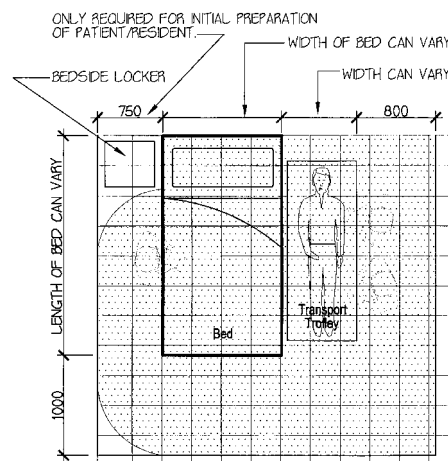


Figure 4.1.1c: Single bed room space required for 'Patslide' transfer to trolley

Notes for Figures 4.1.1a to 4.1.1c

- 1 The dimensions shown in the diagrams are not the total bedroom floor area (i.e. the perimeter walls of the room are not shown).
- 2 The measurements shown are clear space requirements and any furniture or equipment within this zone should be easily movable (i.e. no fixed or large/heavy furnishings within this area).
- 3 If wheelchairs or lifting equipment are larger than shown, spacial dimensions may have to be increased.
- 4 Spacial requirements are based on adjustable beds, so that staff do not have to bend when attending the patient/resident or making the bed.

4.1.2 Multiple-bed rooms

Often acute health and aged care facilities have more than one bed in a room. This can include 2-bed and 4-bed rooms in acute health, and 2-bed rooms in aged care. As a consequence there may be times when a number of staff are in the one room assisting two or more patients/residents, with beds being configured differently (e.g. footend to footend or side by side). This section provides for those situations.

Figure 4.1.2a shows manoeuvring a mobile lifting machine in a side by side situation. To optimise space it is based on positioning the mobile lifting machine between the two beds if access is required from both sides (refer to Figure 4.1.1a). Since only a curtain separates the two beds, slight intrusion is possible into the other bed zone when actually manoeuvring the lifting machine into position, providing it does not create other safety problems, such as knocking into objects on the other side of the curtains.

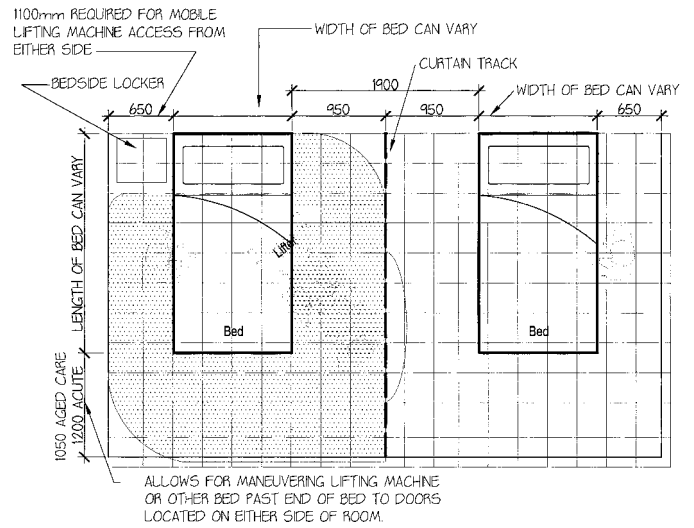


Figure 4.1.2a: Multiple-bed rooms – side by side mobile lifting machine

Figure 4.1.2b shows spatial requirements in a 2-bed room with a fixed overhead lifting device.

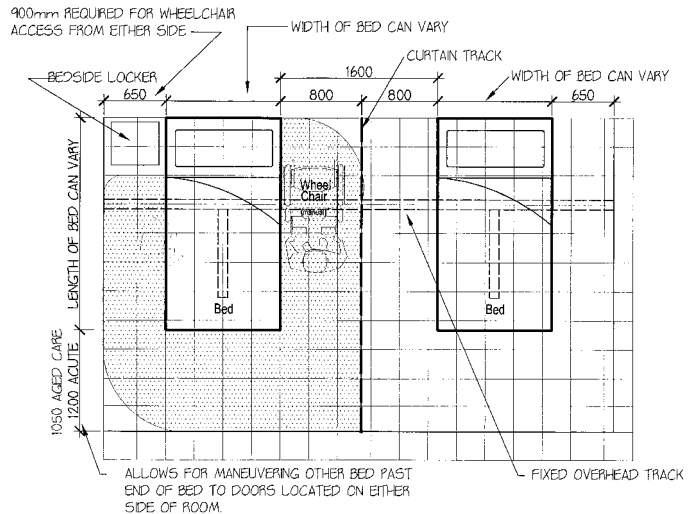


Figure 4.1.2b: Multiple-bed rooms – side by side fixed overhead lifting devices

Figures 4.1.2c and 4.1.2d show spatial requirements when beds are located end to end. Note that the dimensions shown are not the actual total bedroom floor area.

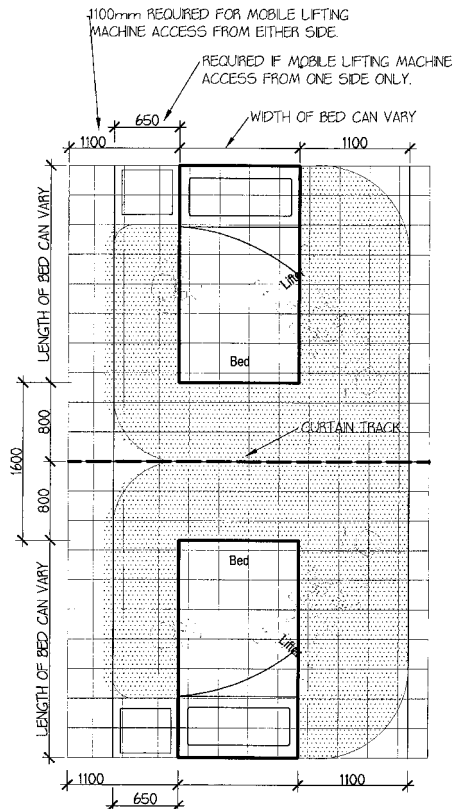


Figure 4.1.2c: Multiple bed rooms – footend to footend mobile lifting machine

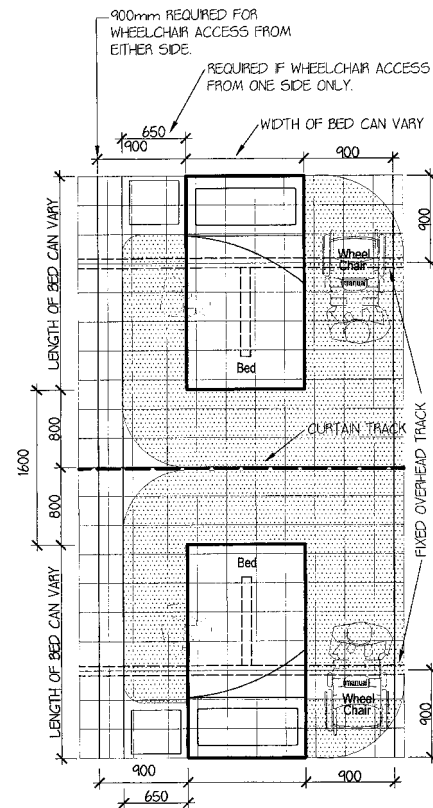


Figure 4.1.2d: Multiple bed rooms – footend to footend fixed overhead lifting devices

If using a "Patslide" to transfer patients/residents onto a trolley then refer to Figure 4.1.1c for spatial requirements of trolley and staff.

Consideration must also be given to using beds on wheels which will enable staff to move the bed on the occasions that they need additional circulation space.

Another key element in the spatial design of such rooms is the location of other loose furniture and equipment such as a bedside table, visitor chair and medical equipment. Allowance must be made for space to accommodate such furniture and equipment.

Notes for Figures 4.1.2a to 4.1.2d

- 1 The dimensions shown in the diagrams are not the total bedroom floor area (i.e. the perimeter walls of the room are not shown).
- 2 The measurements shown are clear space requirements and any furniture or equipment within this zone should be easily movable (i.e. no fixed or large/heavy furnishings within this area).
- 3 If wheelchairs or lifting equipment are larger than shown, spacial dimensions may have to be increased.
- 4 Spacial requirements are based on adjustable beds, so that staff do not have to bend when attending the patient/resident or making the bed.

4.2 Ensuites and assisted toilets

Ensuites and assisted toilets are often planned for the movement of independent patients/residents with disabilities. Detailed consideration in allowing for staff assistance is often overlooked however, for example the situation of two staff assisting in the transfer of a patient/resident and the use of mobile lifting machines.

The following diagrams show the spatial requirements for manual handling around individual fixtures.

4.2.1 Toilet transfers

Note that these diagrams exclude hand basins and showers, as they will be provided outside the minimum spatial zone required for toilet transfers.

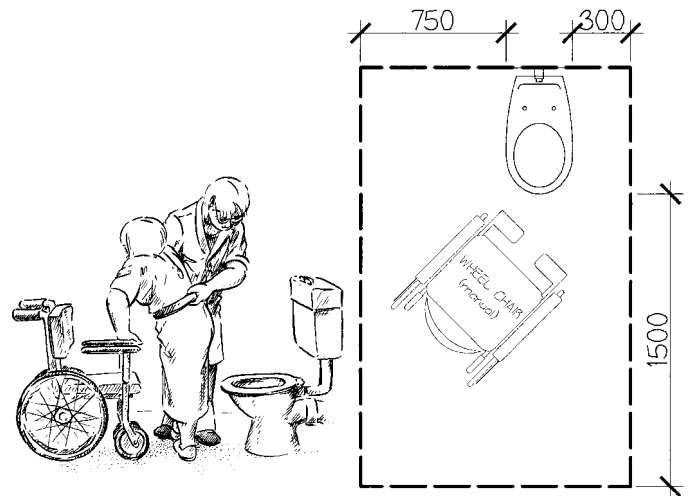


Figure 4.2.1c: The functional area for a wheelchair bound patient/resident who can stand on one leg. Requires assistance by one staff with frontal transfer. The wheelchair is placed as indicated in the figure

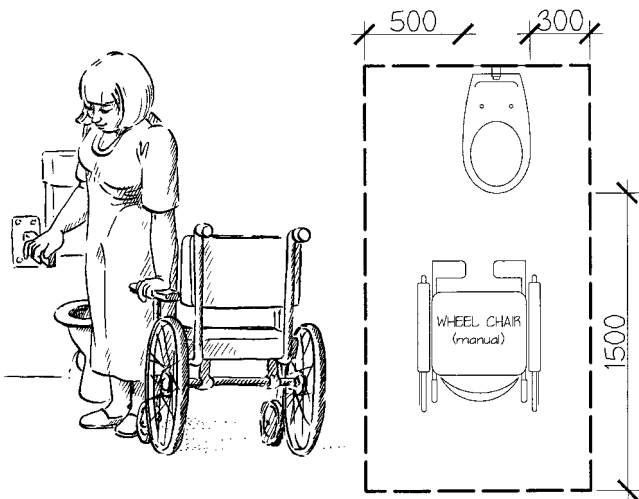


Figure 4.2.1a: The functional area needed by an independent wheelchair person – frontal transfer

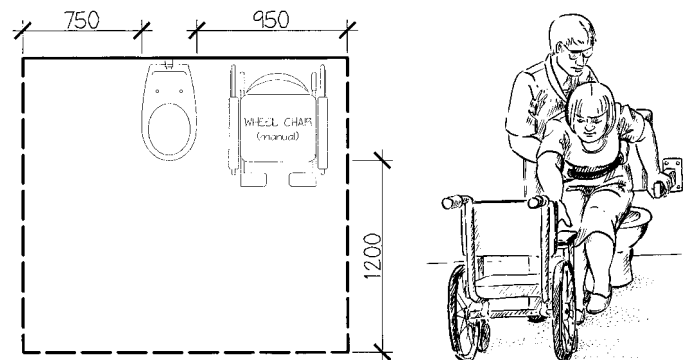


Figure 4.2.1d: The functional area for a wheelchair bound patient/resident who requires assistance in a side transfer

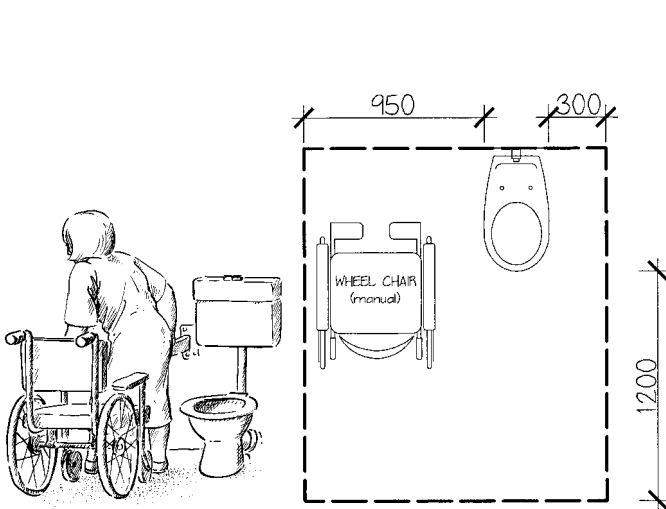


Figure 4.2.1b: The functional area needed by an independent wheelchair person – side transfer

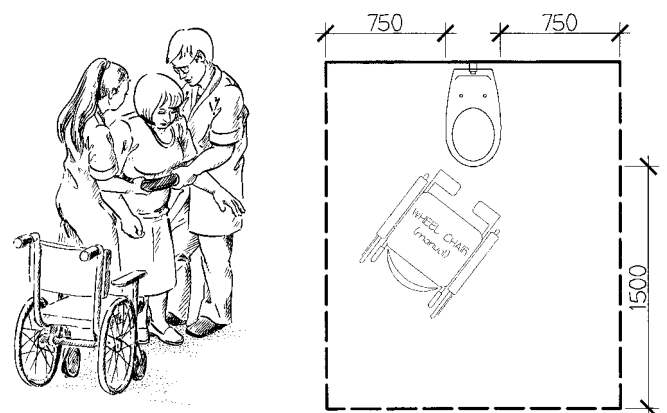


Figure 4.2.1e: The functional area for a patient/resident who can stand on both legs. This transfer, requires the option of two staff assisting by standing either side. The wheelchair is placed as shown in the diagram. This is also sufficient space for a patient to transfer with the help of a swivel board/turntable.

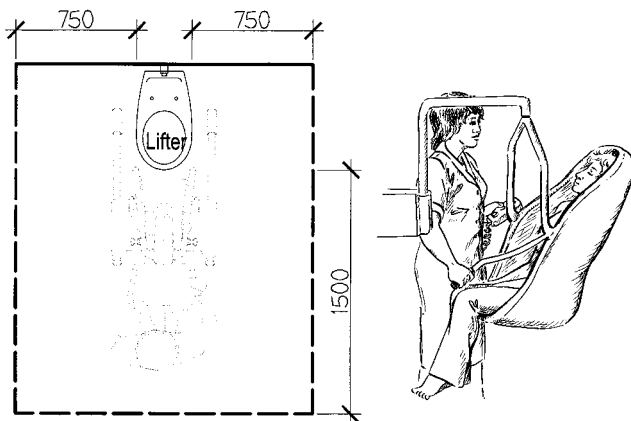


Figure 4.2.1f: The functional area needed for a patient/resident in a lifting machine and with assistance of one or two staff on either side. The transfer to the lifting machine has been done outside this area

Another consideration which should be incorporated into the design is enhancing the ability of patients/residents to contribute to their rehabilitation by assisting themselves or staff when they are transferring. The positioning and type of grab rails is critical in these situations.

For Design Category 1 patients/residents, the Australian Standard AS 1428 – Design for Access and Mobility is usually most appropriate. But for Design Category 2 patients/residents, where you are providing for up to two staff to be involved, it is recommended that the use of drop down rails on either side of the toilet be included. These provide flexibility, allowing enough space for staff to assist on either or both sides, and they can be easily folded away for patients who do an independent transfer from a wheelchair located parallel to the toilet.

The grab rails need to be sufficiently strong and sufficiently well mounted to withstand a force of 110 kg applied at any point in both downwards and sideways directions. It is likely that a vertical support from the floor to the end of the rail will be needed. If the rails are installed too far away from the toilet (to the side) the horizontal component of the force exerted by the patient/resident will need to be greater.

Many commercially available drop down grab rails are not strong enough, and many are provided with quite inadequate fixing mechanisms. During building design, the structural consultant should specify the anchoring required.

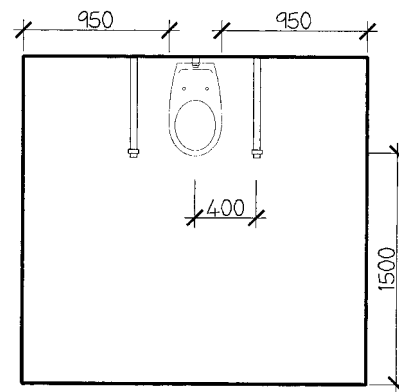


Figure 4.2.1g: Drop down grabrails either side of toilet. This allows for the option of full staff assistance, or sideways transfer from either side.

4.2.2 Ensuites

For ensuites there can be a range of design layouts depending on where the individual fixtures are positioned, and whether they are single or shared ensuites. Shared ensuites can provide a safer handling environment in a cost effective way, providing that privacy is not compromised. The following diagrams are examples of some layouts. The critical element is the spatial dimensions.

Wheelchair access to basins and tables

When installing wash basins for use by independent wheelchair users, the underside of the basin should be 660 mm above the floor, with no obstructions under the basin at that height for a distance of 254 mm back from the leading edge of the basin. The sink should project at least 457 mm from the wall or from any structures or fittings at foot level, that is from the floor up to 165 mm above floor level. Exposed drain pipes and hot water pipes must be insulated.

Notes:

1. Doors swings and sliding doors are shown as options. If swinging inwards, they need to be provided with removable hinges or an option to allow them to swing outwards in emergency situations.
2. The location of the shower floor gradient is important in relation to toilet transfers to and from wheelchairs. If too close, then the wheelchair will tend to roll away from toilet. Water should drain to the centre of the shower area.
3. If there is a shared ensuite between two rooms, then the location of the doors is even more critical and will result in increased circulation space within the ensuite.
4. The shell construction of a prototype ensuite would assist staff in understanding and endorsing the design layout.
5. It is recommended that all ensuites within a facility should be of similar layout and design. This will assist staff in developing standard handling procedures.
6. The use of non-slip floor finishes is essential.

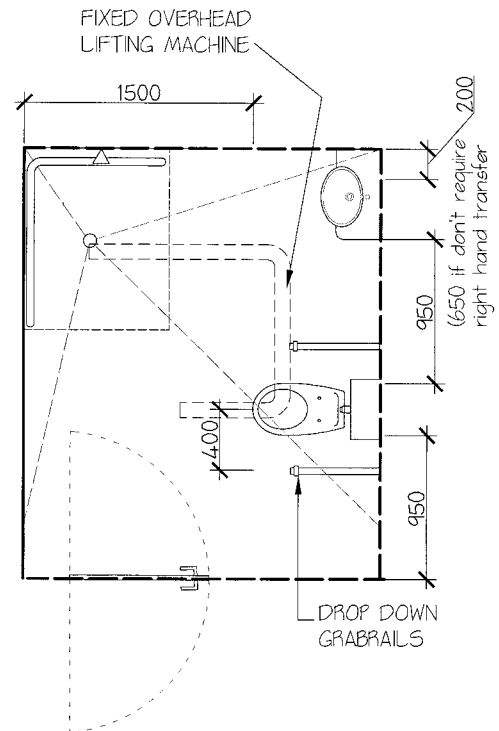


Figure 4.2.2b: Single ensuite

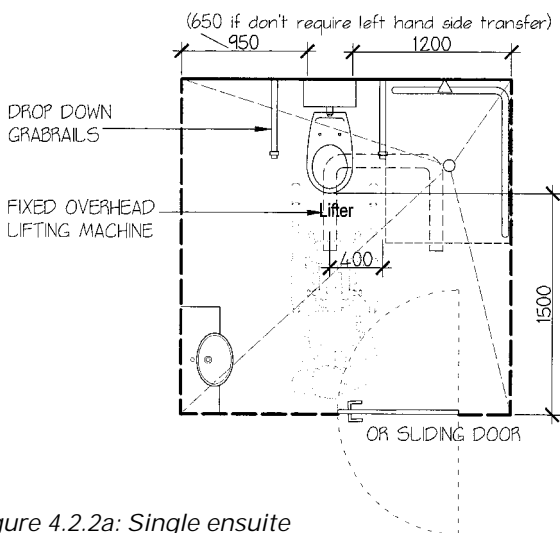


Figure 4.2.2a: Single ensuite

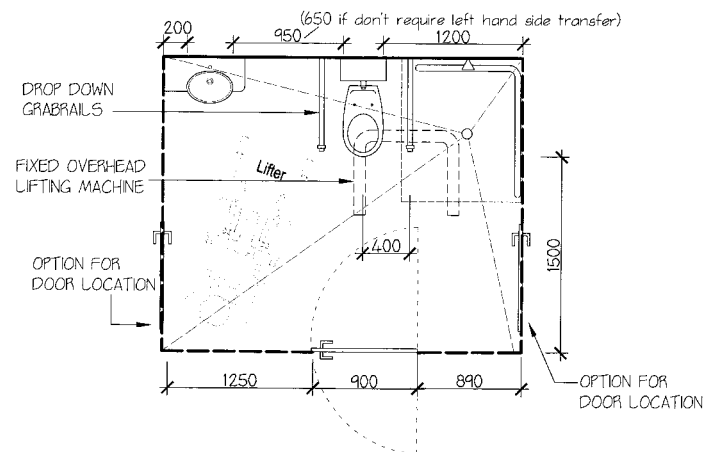


Figure 4.2.2c: Single or shared ensuite

Notes for Figures 4.2.2a to 4.2.2c

- 1 Door location is optional and will vary depending on relationship to bedroom layout.
- 2 If the ensuite is shared between bedrooms it will require an additional door, and the depth of the room may need to be increased.
- 3 The position of the hand basin is optional, but needs to take into consideration movement of wheelchairs (i.e. Australian Standard AS 1428 – Design for Access and Mobility).

4.3 Assisted bathrooms

The most common types of assisted bathrooms use:

- fixed peninsula type bath (attached to a wall at one end, with clear space on three sides)
- mobile shower trolleys

Mobile shower trolleys have become more popular recently, particularly in facilities where patients/residents are immobile and totally reliant on staff assistance. The practice of incorporating showers within assisted bathrooms is becoming obsolete due to newer facilities providing ensuites to all bedrooms. However, to satisfy the requirements of the Building Code of Australia, assisted bathrooms without assisted showers must have showers which comply with Australian Standard AS 1428 - Design for Access and Mobility. The provision of toilets in an assisted bathroom is optional, although there is an advantage in being able to accommodate patients/residents who are incontinent and may need to access toilets quickly when in the bathroom.

A key feature in an assisted bathroom (with peninsula type bath) is the ability to manoeuvre the lifting machine so that the base can easily fit under the bath. Designers may overlook the difficulty in manoeuvring such equipment when a person is in the carry seat.

Another consideration, particularly for aged care facilities, is that patients/residents should not be transported from their bedrooms to the bathroom in a lifting machine, as this contravenes the Commonwealth dignity requirements. Hence the person will need to be lifted from a wheelchair in to the bath via a lifting machine.

Where the bath and toilet are fixed items, the use of a fixed overhead lifting machine can reduce the amount of circulation space required. This has the potential to save space and reduce building cost.

To ensure staff are not putting undue stress on their backs, the height of baths is also important. The options include a fixed bath which is installed at a higher level, or the provision of a hydraulic bath where the height can be adjusted, the latter being preferable because they are more suitable for staff of varying heights.

The use of non-slip floor finishes in wet areas is essential.

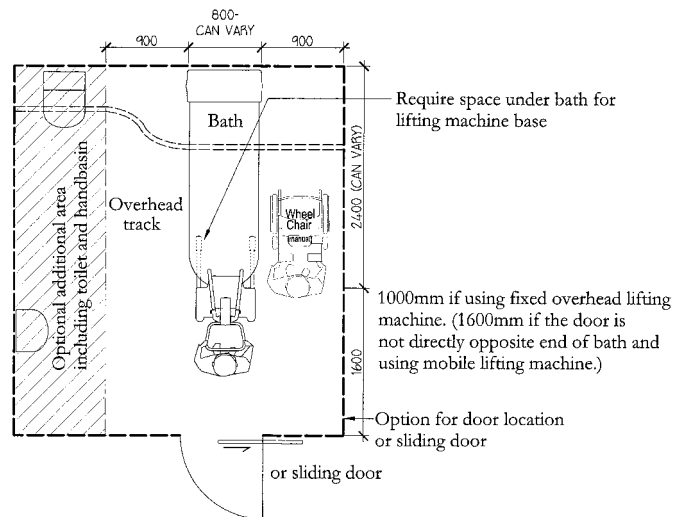


Figure 4.3a: Peninsula/Island bath

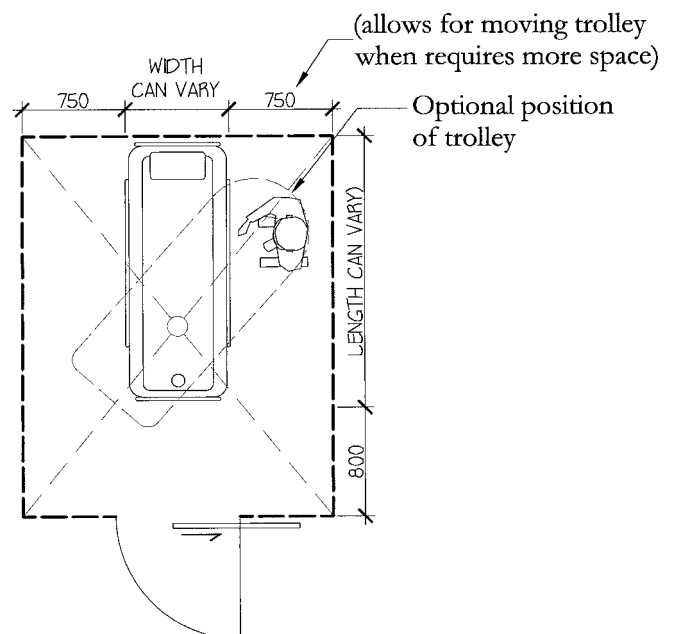


Figure 4.3b: Mobile shower trolley

4.4 Lounge/dining rooms (aged care and rehabilitation facilities)

The spatial requirement for handling procedures in lounge rooms where residents are being transferred from wheelchair to a seat/chair is very similar to the figures 4.2.1a to 4.2.1e (toilet transfers).

The main issue in lounge rooms is often the proximity of other furniture. This is particularly relevant with the increased usage of large recliners which are heavy to move and more difficult for residents to get in and out of. There is also a trend to provide a number of small lounge rooms spread throughout the facility rather than one large central lounge room. As a consequence each small lounge room still provides for the television, stereo and ornaments which has resulted in proportionally reduced circulation space. It is recommended that a floor area allowance of 3 m² per person be provided for lounge rooms (Reference – Department of Human Services Aged Care Residential Services Design Guidelines).

In dining rooms, a person in a wheelchair will most likely remain in their wheelchair to sit at the table. It is usually only those residents using a walking stick or frame who are likely to require some staff assistance in sitting down and getting up. Often the main issue is getting to the table through the maze of seats in restricted circulation space. Careful design consideration has to be given to residents in wheelchairs and to those using walking aids manoeuvring around in a dining room. This should include allowance for storage of such equipment away from the tables. As a general design consideration, an allowance of 2m² per person should allow for tables, seating (including staff assisting residents) and circulation.

For wheelchair access to tables, a pedestal table is preferred with edge mounted legs. The underside of the table should be 660 mm above floor level or higher, and the table height should be approximately 787 mm. The table length, from edge to support pedestal, should be at least 533 mm and preferably 600 mm.

4.5 Corridors

Although not a great number of direct patient/resident handling procedures take place within corridors, the main issue is manoeuvrability, particularly for people in wheelchairs, people using walking aids and staff pushing equipment. In addition, the building regulations stipulate minimum widths of corridors for emergency egress purposes.

Generally, acute care buildings require a minimum clear width of 1800 mm (i.e. handrail to handrail), (note that main access corridors to areas such as theatre, x-ray, should be 2400 mm clear). Corridors in aged care facilities maybe reduced to 1500 mm, however door openings may need to be wider or it maybe advantageous to widen corridors to 1800 mm clear at points where bedroom doors open onto the corridor (note that the Building Code of Australia currently requires “1800 mm in nursing homes where patients are transported in beds”).

Specific reference is made to the Building Code of Australia clause D1.6(f) which relates to corridor widths and door opening sizes.

It is recommended that in aged care facilities the corridor width be 1500 mm clear (subject to door opening size), but be increased to at least 1800 mm clear width to allow for larger pieces of equipment to pass and where there are bedroom doors opening opposite one another.

It is essential that clear width for corridors not be used for the storage of equipment or protruding hand basins. Consideration should therefore be given to providing recessed hand basins and storage areas for equipment such as lifting machines.

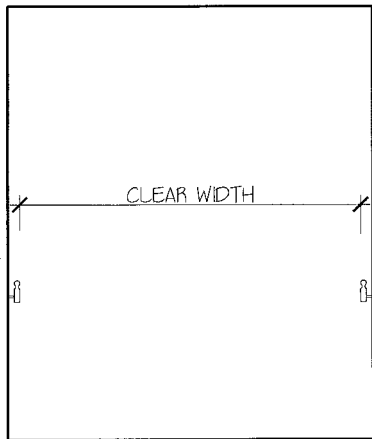


Figure 4.5a:

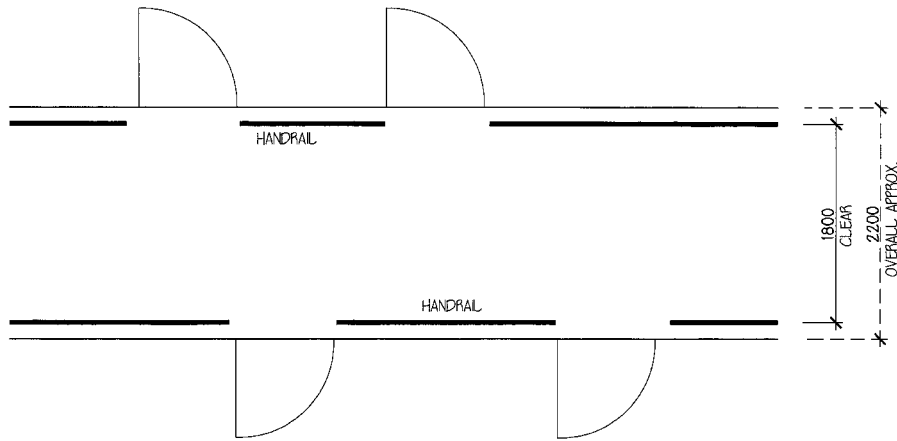


Figure 4.5b: Acute health facilities

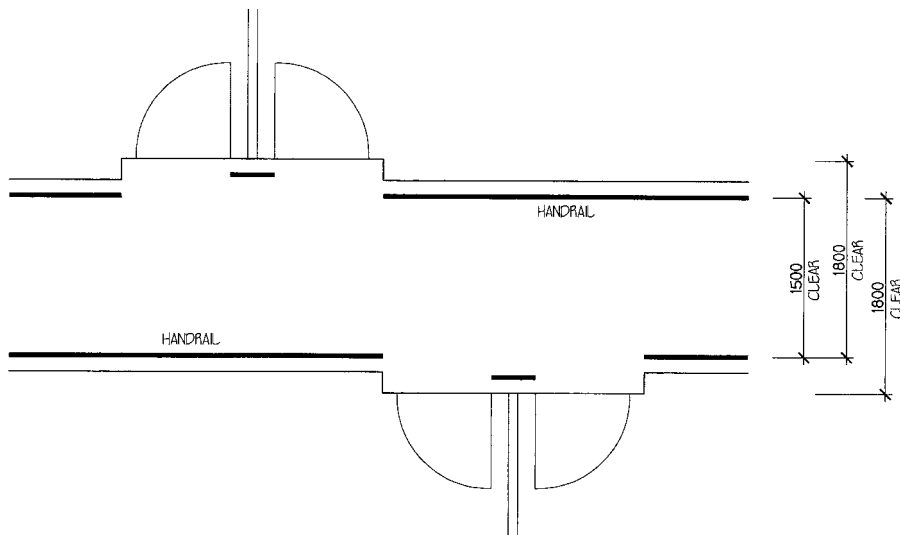


Figure 4.5c: Aged care facilities

4.6 Equipment storage

The spatial requirements for the storage of handling equipment such as mobile lifting machines, wheelchairs, commodes and shower chairs are often overlooked or ignored. As a consequence, such equipment is then left in corridors, bedrooms or other bathrooms which, in turn, creates safety problems for staff and patients/residents. It is important that the total storage requirements be ascertained during the design phase.

4.6.1 Mobile lifting machines

The strategic location of storage for mobile lifting machines is important with respect to accessibility by staff. If they are stored too far away, staff may be reluctant to use them, and staff travel is increased, which may put patients/residents at risk due to the delay in time.

It is recommended that mobile lifting machines be available to staff within 20 metres. Their actual storage should allow for easy access. A preferred option is directly off a main corridor and in a recessed alcove. They should not be stored in circulation areas where they inhibit movement.

4.6.2 Wheelchairs

The storage of wheelchairs often presents a dilemma: do you store them in one central location or do you provide space within the actual bedrooms? This will depend on the usage. For example, in aged care facilities which residents may occupy for long periods, once they have commenced using a wheelchair, they will probably continue to use it for the rest of their life. As a consequence, it is preferable to store their wheelchairs in their bedrooms, where they will need to use them first and last thing of the day. Provision of a specific storage area within the bedroom is preferred so that while residents are in bed, the wheelchairs can be stored out of circulation space.

However, in acute facilities where the patients' stay is often short and their individual requirements can vary significantly from patient to patient, the storage of wheelchairs may be better in small strategically located store rooms which may also accommodate other equipment.

Suitable parking places need to be provided for charging of battery operated lifting machines and wheelchairs.

4.6.3 Commodes and shower chairs

Commodes and shower chairs can be stored in the shower area of the ensuite, as they are used whenever patients/residents use the ensuite. Shared ensuites only require one commode/shower chair per ensuite.

5.1 Why consult direct care staff?

The term “direct care staff” refers to the workers who perform the everyday work of the business unit, as opposed to senior managers of the organisation. Direct care staff in this case means workers who routinely handle patients/residents.

Consultation with direct care staff should be seen as an important business opportunity to add value to a project by improving the quality of the finished product, and by contributing to long term harmony within the new facilities.

Consideration could also be given to consulting patients/residents, especially in the case of facilities for longer term patients/residents, but the importance of the health and safety of staff needs to be given high priority in design decisions.

Most health or aged care design projects necessarily have some degree of staff involvement in various stages of the design process. This process is normally adequate for obtaining the views of senior managers, but often it may fail to elicit much of the very useful knowledge, experience and insights that the staff who work directly with patients/residents have developed over time. The front line workers are a valuable source of detailed information, because they know the work practices and the workplace more intimately than anyone else, thus helping to get the design right in the first place, and avoiding the need for costly alterations to newly occupied facilities. If they have been properly consulted, workers are likely to have a greater sense of ownership of the end result, regardless of any shortcomings.

Under Victorian law, elected health and safety representatives must be consulted regarding any changes to the workplace which may affect the health and safety of workers (*Occupational Health and Safety Act 1985*). The Victorian *Occupational Health and Safety (Manual Handling) Regulations 1999* require that an employer must take all practicable steps to make sure that both the equipment used and the work practices carried out are designed to be safe from a manual handling point of view. Similar provisions exist in other Australian jurisdictions. The regulations require assessment of manual handling risks, where practicable, in consultation with any health and safety representative for the designated work group of which those employees are members.

5.2 When to consult direct care staff

Staff consultation consumes time for all the parties involved and therefore has the potential to add to the overall financial cost of the design process. A time efficient schedule of consultation is needed. Effective consultation may reduce the overall costs associated with a project, especially if calculated over the lifetime of the facility.

Since much of the valuable knowledge of the direct care staff is in the fine detail of the work processes and workplace layout, it is essential that they have considerable input at the design development stages. Most of their consulting time should be invested there, refining the details.

However, some of the most important decisions affecting safe patient/resident handling are made at the earlier design stages, and some of these decisions may benefit from direct care staff input. For example, the relative levels of the floors in adjacent buildings will affect the slopes of any adjoining ramps where patients/residents may have to be moved between the two buildings. In a psychogeriatric setting, for example, the absence of a natural indoor walking circuit for patients may involve staff in a lot of unnecessary supervision and handling of wandering patients/residents.

As a third example, easy access between certain departments may reduce patient/resident handling, but to ascertain this may require direct care staff input at the master plan stage.

Examples of specific issues requiring consultation at different stages of the design process are set out in the table on the following page.

TABLE 5.2.1 Agenda for consultations throughout the design process

Stage of design process	Agenda for direct care staff consultation
Master plan	<ul style="list-style-type: none"> • patient/resident handling load and safety – between buildings, between different levels and between departments • agency develops patient/resident handling safety policy, such as a “no lift” policy, and program including workplace design processes
Feasibility study	<ul style="list-style-type: none"> • establishment of formal consultative process for the project, budgeting for staff time • selection and induction of staff representatives into the process, including adequate documentation, briefing by design team and skills training • identification of the functional capacities of patients/residents likely to occupy the facility in its life time • staff to be requested to start to think about their needs and patient/resident handling practices
Schematic design	<ul style="list-style-type: none"> • test design philosophy and assumptions • define patient/resident handling safety objectives, specifications and performance indicators • users inspect other good examples of similar existing facilities • relationships between other components: meals, therapy, support services and their location • room functions and relationships identified • overall layout, room sizing, work practices, space required to use patient/resident handling equipment, storage practices, access, visibility • preparation of room data sheets • feedback on schematic design • approval
Design development	<ul style="list-style-type: none"> • major consultation re 1:50 fit out plan • suitability and location of furniture, fixtures, finishes, services • mock ups (prototypes) if required • specialist ergonomics review if required • feedback on plan with explanation to staff by architect • approval
Contract documentation	<ul style="list-style-type: none"> • material selection • inspection of samples
Construction	<ul style="list-style-type: none"> • what services will be interrupted during construction and relocation? • logistics of relocation and occupancy • site inspection as final visual check and to assist smooth transition to new facilities
Post occupancy	<ul style="list-style-type: none"> • participation in evaluation of the functional and safety outcomes of the design (including manual handling safety)

5.3 *Preparing the ground for effective consultation*

The first essential prerequisite for an effective consultation process is mutual respect and trust between the direct care staff and the leaders in the design process: the agency's project team, and the external consultants, especially the architects. Ideally a productive working partnership can be developed between the direct care staff and the designers. Like any other human relationship, this partnership needs to be soundly established, and maintained in a spirit of good faith.

From the organisation's point of view, this relationship is likely to be typical of its normal human resources management practices as carried out at line manager level. Managers may have to invest considerable effort to personally accept the need for – then to establish and maintain – a process which genuinely seeks out and considers the views of direct care staff. It is important that managers regularly inform and provide feedback to staff, including final outcomes and reasons why their ideas are or are not being incorporated into the design.

Therefore a consultation process needs to be established which:

- is clearly documented and circulated to participating staff and their constituents beforehand, including the purpose and scope of the consultations, the time lines, and the names and roles of all participants
- includes a written record of the proceedings of the consultations, in the form of minutes of meetings or a brief memo, file note or report, with copies circulated to all participants and to the project committee
- includes appropriate feedback to the participants regarding issues raised in the consultation, especially any issues not resolved in discussions, or any staff requests which are not included in subsequently approved stages of the design
- clearly specifies the decision making procedures and the powers and responsibilities of the different parties and the different committees involved in the design process
- is conducted in language which all participants can easily understand

5.4 *Helping direct care staff to contribute fully to the consultation process*

To get the best out of the investment of staff time the following procedures are recommended.

Staff need to be allocated sufficient paid time to participate. The work involved should be recognised as important core business of their work unit, and they should not be expected to do extra work in their own time. Their positions should be back-filled to release them to prepare for and attend meetings. This means that the resources have to be paid for out of someone's budget – either that of the relevant business unit, or charged against the project budget.

Staff may need training to give them sufficient technical knowledge and skills to actually communicate properly with the designers. Some of the skills required include:

- the language of architects (i.e. most lay people do not understand a "GPO" to mean a power point)
- the communication tools used by architects, especially two dimensional, black on white, line drawings including plan views and elevations, and the symbols used on these drawings; use of more visual media such as 3 dimensional representations and colour may help workers to better visualise the design

Direct care staff also need practical help in visualising the design. In particular, they need help in translating the scale of the drawing to real life. Unlike a map, architects' drawings do not have scale bars - only a scale ratio. To translate this to actual size, it helps to have a scaled ("engineer's") ruler to read actual dimensions straight off the drawing, and a tape measure to demonstrate the actual dimensions proposed. The layout of full scaled room plans using marking tape on the floor, with actual sizes of beds, furniture, equipment, can greatly assist in this process. Another useful technique is to make scaled cut outs (on graph paper) of furniture and equipment including, if possible, human space envelopes, and place them on the architectural drawings to identify the optimum layout of the workplace. An ergonomist can be consulted regarding the human space envelopes.

Staff may need to be encouraged to participate fully in discussions. This may require some explanation of, and possibly coaching in, formal meeting procedures where these are used as part of the consultation process. Chairpersons of meetings need empathy and skill to ensure that the views of all participants are heard and fully considered. The incorporation of workshops with small working groups can often encourage participation.

Practical steps are also needed to compensate for a possible lack of assertiveness by staff in an unequal power relationship. Many hospitals have a long established and well defined hierarchy of power, with medical practice at the top, nursing subservient to medical practice, and other employees having a lower status again. The direct care staff who need to be consulted may be relatively low down in the hierarchy within their own business unit. Whilst they may have good ideas about their work, if they feel intimidated by the unequal power relationship with their employer or the architect, they may not articulate these ideas and valuable information will be lost. This is especially the case for staff who have limited English language communication skills.

Some staff may fear ridicule if the design does not work out well in practice. They need to be supported, but also need frank and open discussion of the implications of their ideas in order to help tease out the positive and negative aspects of their suggestions. Such frank discussion should be seen as a mark of respect, of taking their suggestions seriously, and is preferable to polite dismissal of their ideas, or worse still, silent dismissal of a suggestion without discussion.

Apathy by staff is a potential barrier to consultation, especially if they are not convinced of the worth of their involvement. Encouragement, and a clear explanation of the importance that will be placed on their valuable input, may help overcome such reticence.

5.5 *Who to consult*

Both the method and the outcome of choosing who to consult is important to the success of the design process. The aim is to obtain informed opinion from those who do the everyday work in the unit. Normally a business unit manager is already one step removed from the everyday work routine. However, it is important that people responsible for making decisions about work practices, namely the business unit managers, are also present and actively involved in the discussions along with the direct care staff representatives.

The selection process should be such that all the staff feel that they are represented and that they all have a chance to put ideas forward or ask questions. A call for nominations and a democratic election by workers may be an optimum method of selecting representatives.

The following attributes may help a worker participate fully in the consultation process:

- good communications with and respect by fellow workers
- awareness of and commitment to the duties and responsibilities that go with the consultation process
- availability for the duration of the process
- good knowledge and experience of working in the unit
- ability and willingness to communicate ideas and ask questions
- an interest in improving staff safety, well being and efficiency

When the facility being designed is a new enterprise and the direct care staff have not yet been selected or employed to work in the facility, and therefore cannot be consulted, efforts should be made to consult direct care staff in a similar facility.

5.6 *Challenges for architects and designers*

These guidelines should help managers to properly brief their design consultants, and should help everyone involved in the design process to be more confident in challenging the solutions put forward by the designers.

Architects and designers need to work with the project management team at the beginning of the project to ensure that a timely, thorough and cost effective process is established for getting the most out of direct care staff consultations.

It can be potentially frustrating for architects and designers, with many years of experience and many successful health or aged care building projects to their credit, to have to spend valuable time waiting for a user group to come up to speed, or to have to go over the same old ground with each new user group. Project fees are minimised by competitive tendering and therefore budgets - and designers' time - are limited.

Experience has indicated that architects and designers involved in health and aged care facilities design in Victoria vary widely in their methods of user consultation and in their degree of empathy with direct care staff. This variation may extend between firms, as well as between individual architects and designers within the same firm.

Architects and designers need a high level of interpersonal skills, tact and humility when seeking to resolve differences of opinion between themselves and direct care staff. Until trust has been established, some staff may display strong feelings about the design process because of historical or organisational factors which have nothing to do with the architect. Workers' emotions can be heightened by a concern that a new building project is a rare opportunity to solve a lot of their workplace problems - perhaps once in their working lifetime - and they place very high stakes on getting it right.

Architects can be the victim of inappropriate internal consultative mechanisms, which result in more work for the architect because the user consultations were not as productive as they needed to be. Internal organisational politics and unresolved power struggles can preclude some of the right people from being consulted, or can render the consultation process less effective because of oppressive time schedules or inadequate information. Failure to delegate for fear of relinquishing decision making power may be a temptation for some senior managers.

Architects need to tune into the direct care staff members' concerns and needs, take them seriously, and develop mutual respect and trust with the direct care staff. The direct care staff consultation process should be viewed as a business opportunity to improve the design and the acceptance of the design, rather than as a process necessary merely to appease the users and the client.

Architects need to communicate in language that all participants in the consultations can easily understand.

5.7 Specialist ergonomics input

It is advisable to engage specialist ergonomics input to assist the design process.

Workplace ergonomics seeks to optimise the working environment to best suit people's capabilities and limitations. In regard to the design of health and aged care facilities, specialist ergonomics input can:

- help the staff to participate more effectively in the consultation process
- provide quantitative information about the sizes, space requirements and capabilities of people, and the implications of this information for the design

It is preferable to use an ergonomist with specialist experience in the design of health or aged care facilities, and who either has a specialist qualification in ergonomics, or who is a Professional Member of the Ergonomics Society of Australia (Certified Professional Ergonomist). The staff of the facility, and/or their elected occupational health and safety representative, should be consulted when selecting the consultant.

The ergonomist can coach staff in the accurate interpretation of drawings, using a variety of techniques including tape measure, full-scale markings on the floor, scaled templates of equipment and functional work spaces. The ergonomic investigation can start with a walk through survey of the existing work place and work practices to identify existing hazards and opportunities to remove hazards at the design stage. This also helps to establish a rapport between the ergonomist and the direct care staff so that they can quickly begin to understand each other's point of view and language.

The ergonomist can identify crucial aspects of the work practices or of the building design which have a bearing on patient/resident handling risk factors, and can help the users to develop improvements.

Whilst it is possible for ergonomists to review drawings in their own office, with minimal or no time spent on site, it is difficult for the ergonomist to make certain judgements without knowing the details of, and the rationale for, the proposed work practices. Therefore a site visit by the ergonomist and consultations with direct care staff are recommended as important steps in the ergonomics input to the design process.

6.1 Building regulations

The design and construction of acute health and aged care residential facilities must comply with the relevant building regulations. These include the Building Code of Australia (BCA), Australian Standards and those of relevant authorities such as water and power regulatory authorities.

The Building Control Act requires building projects to obtain building permits prior to commencement of any building works, and usually a certificate of occupancy at the completion of the building works and prior to the occupancy of the new works. This is achieved through compliance with the Building Code of Australia. This is a performance based document allowing for some flexibility in the adoption of its contents, providing such interpretation does not put people at risk.

The Building Code of Australia provides for a number of building classifications which in turn impacts on specific building requirements. Acute health and aged care residential facilities fall under two classifications:

- Hospitals and Nursing Homes – Class 9A buildings
- Hostels – Class 3 buildings

Due to the recent restructure of aged care residential services by the Commonwealth Government to provide for one Residential Classification Scale (RCS) and “Ageing in Place” the requirement to have separate building classifications for nursing homes and hostels may become obsolete. As a consequence the Australian Building Codes Board is currently reviewing the building requirements for nursing homes and hostels. However, the outcome of this review is unlikely to be implemented for some time.

Another key element of building regulations is the Building Code of Australia referral to relevant Australian Standards. One which has a major impact on the design of acute health and aged care residential facilities is Australian Standard AS 1428 – Design for Access and Mobility. However, this Australian Standard primarily focuses on patients/residents who can assist themselves with the appropriate physical support aids and space for manoeuvring. As a consequence the spaces allocated in this Australian Standard do not allow space for staff assistance or mobile lifting machines. However, as these guidelines address the needs of patients/residents who require staff assistance they often exceed the minimum requirements of Australian Standard AS 1428 – Design for Access and Mobility.

6.2 Occupational health & safety

The Victorian *Occupational Health and Safety Act 1985* requires employers to provide safe workplaces and safe systems of work. In regard specifically to patient/resident handling, the Victorian *Occupational Health and Safety (Manual Handling) Regulations 1999* require, among other things, that an employer must take all practicable steps to make sure that both the equipment used, and the work practices carried out, are designed to be safe from a manual handling point of view.

6.3 The cost

The cost of implementing the recommendations of these Design Guidelines should be seen in terms of return on capital investment. Any additional capital expenditure of increased floor space and or special lifting equipment can be offset by the reduction in WorkCover claims and other human resource related expenditure, leading to reduced recurrent expenditure.

However, each project should consider its specific needs and evaluate these against the Design Guidelines. For example, a particular accommodation unit may have 50% of its occupants totally independent and the other 50% relying on staff assistance to varying degrees. As a result, only half the facility may need to conform to the spatial and lifting procedures as set out in these Design Guidelines. The remaining part of the facility need only comply with Australian Standard AS 1428 – Design for Access and Mobility. However, as the life of the building is likely to be 25 years, one needs to be careful in considering the patient/resident types it is providing for now and throughout the future life of the building.

References

The following material was considered in the development of these Design Guidelines:

- Barrett, R and P. Milburn. "Lumbar loads in occupational bed making: a static planar analysis." *Journal of Occup Health and Safety - Australia NZ*. 13.1 (1997): 35-46.
- Borys, D. "Health & Safety in Hospital Building Design." Dissertation, Graduate Diploma in Occupational Hazard Management, Victorian Institute of Occupational Safety & Health. (1993).
- Commonwealth Department of Health and Family Services – Aged and Community Care Division. "Guidelines for use in Ascertaining the Quality of the Built Fabric of Aged Care Facilities." (Date unknown).
- Department of Human Services – Victoria, Aged Care Division. "Residential Care Guidelines." (1995).
- Drury, C. "Influence of restricted space on manual materials handling, - Industrial back pain in Europe." *Ergonomics*. 28.1 (1985): 167-175.
- Engkvist, I et al. "Over-exertion back accidents among nurses aides' in Sweden." *Safety Science*. 15 (1992): 97-108.
- Engkvist, I et al. "Interview protocols & ergonomics checklist for analysing over-exertion back accidents among nursing personnel." *Applied Ergonomics*. 26.3 (1995): 213-220.
- Garg, A, B. Owen and B. Carlson. "An ergonomic evaluation of nursing assistants' job in a nursing home." *Ergonomics*. 35 (1992): 979 - 995.
- Keyserling, WM, L. Punnett, LJ. Fine. "Trunk posture and back pain: Identification and control of occupational risk factors." *Applied Industrial Hygiene*. 3 (1988): 87-92.
- Kuorinka I, M. Lortie, and M. Gautreau. "Manual handling in warehouses: the illusion of correct working postures." *Ergonomics*, 37.4 (1994): 655-661.
- Mital, A, AS. Nicholson, MM. Ayoub. "A guide to manual materials handling." Taylor and Francis, Washington, D C. (1993).
- "Pressalit Multi System Technical Manual".
- Pryor, P. "Back Injury Prevention - A Resource Manual." Australian Nursing Federation (Vic. Branch) and Victorian Healthcare Association.(1997).
- Swedish Institute for Hospital Planning and Rationalization. "Hygiene Rooms - functional space for personal hygiene in long term care." *SPRI Report 21*. (1979).
- Takala, E and R. Kukkonen. "The Handling of Patients on Geriatric wards." *Applied Ergonomics*, 18.1 (1987): 17-22.
- Victorian WorkCover Authority. *Workplace Injuries in the Health Industry 1995/96 & 1996/97*. (1998).

Appendix B

Safe Handling of Patients/Residents – Workplace Design Process Checklist

This checklist is designed to be used by business unit managers and direct care staff representatives at all critical stages in the design process for new acute or aged care facilities, as set out in section 5.2 of the guidelines. Different questions will be relevant at different stages as the design process proceeds.

Occupational health & safety policies and practices

1. Does the agency/facility have any occupational health and safety policies that have implications for the way buildings are designed to minimise the risk of injury to staff who handle patients/residents?
2. Does the organisation have any policies relevant to the safe handling of patients/residents, such as a “no lift” policy? If so, how do these affect the way buildings should be designed to minimise the risk of injury to staff who handle patients/residents?
3. Has the organisation carried out risk assessments of patient/resident handling in accordance with the requirements of the *Victorian Occupational Health and Safety (Manual Handling) Regulations 1999*?
4. Are there opportunities within the design process to ensure compliance with the *Victorian Occupational Health and Safety (Manual Handling) Regulations 1999*?

Master plan

5. What patient/resident movements will take place between different departments, or between different floors, or between different buildings?
6. What work practices are proposed for these transfers, and has a risk assessment been carried out on the proposed work practices?
7. Are the proposed work practices sufficiently safe, or should changes to the master plan be considered (slopes of ramps, minimising changes of floor level, minimising patient/resident handling distances)?

Consultation process

8. Has a process for staff consultation been developed and documented including the purpose and scope of the consultations, the time schedule, and the names and roles of all the participants?
9. Has the process been communicated to staff?
10. Have the staff expressed acceptance of the proposed process?
11. Has budgetary allowance been made to pay for staff time spent on the consultation process?
12. Are all members of the consultation team able to attend all consultation meetings?
13. Have the latest drawings been circulated to all participants?
14. Do any participants need assistance with understanding the drawings?
15. Do any participants need help with visualising what the design will be like at full scale?
16. Are the outcomes of consultation meetings documented and circulated to participants?
17. Are the outcomes of any unresolved issues communicated to all participants, with reasons as to the resolution?

Feasibility study

18. What type of patients/residents are likely to occupy the facility in the foreseeable future (i.e. 10 years)?
19. What type of assistance are these patients/residents likely to need in their bedroom, bathroom, toilet and the corridor?
20. What method of assistance will be used in each location - no lifting, team lifting, mobile lifting machines, or fixed lifting equipment?
21. Will the patients/residents need to be moved regularly to receive various therapies (e.g. electroconvulsive therapy)? What handling practices will apply for movements between therapies?

Schematic design

22. How much space is needed in each critical location to safely perform each of these transfers (beside the bed, at the toilet, at the shower, at the bath, through doorways, in corridors)?
23. What fittings are needed for the patients/residents to assist themselves, and where should these be located (e.g. grab rails, fold down shower seats)?
24. Will there be patients/residents who wander, and are there any special features in the layout of the building that need to be considered to minimise staff handling of these patients/residents (e.g. a natural walking circuit, places where they might congregate)?
25. Will beds ever need to be moved through doors (even on rare occasions or on an emergency basis)?
26. What width of beds will be used?
27. How wide do the doorways and corridors need to be to allow beds to be wheeled in and out?
28. Considering the answers to the previous questions in this section, are there any remaining patient/resident lifting tasks which have not been considered, or for which safe handling procedures have not been established?
29. In the existing set up, or in similar set ups in other places, are there any fittings or items of furniture which obstruct staff from optimum handling practices (e.g. bed side tables, fixed lifting equipment)?
30. How many mobile patient/resident transfer aids (wheelchairs, lifting machines, bath chairs, commodes etc) will be needed in the new unit, and where should they be stored so that they can easily be used and will not obstruct patient/resident rooms, corridors or bathrooms?
31. Have all the patient/resident handling and space issues identified in this section been considered by the project team and fed into the design process?

Design development – checking the plan for patient/resident handling risks

32. On a copy of the 1:50 fit out plan, for one patient/resident in each type of room, mark with a pencil the spot locations or routes where the patient/resident may be transported assisted by staff. Include within bed transfers, within room transfers, and movements about the unit as a whole.
33. On the edge of the plan, indicate the type of handling procedure proposed for each transfer (type of lift, if any, number of staff, type of equipment).
34. Mark with a cross any places where, in your opinion, patient/resident handling could be difficult or risky.
35. Highlight on the plans the location of any furniture or fittings which may make handling difficult or unsafe.
36. For each of the potential risks identified, check for compliance with your unit's policies and practices for safe handling of patients/residents.
37. For each of the potential risks identified, refer to the relevant part of section 4 of the design guidelines for safe patient/resident handling and check whether sufficient space has been allowed.
38. For each of the potential risks identified, check what aids are needed (e.g. grab rails, patient/resident handling equipment); check where these are located, and where mobile equipment will be stored.
39. Is any further information needed to help assess risks (e.g. mock-ups, specialist ergonomics advice, visits to other units)?

Contract documentation – material selection

- 40. If carpet is to be used, will it be suitable for pushing mobile equipment on?
- 41. Do all pedestrian surfaces, both wet and dry, have suitable slip resistance characteristics?

Construction

- 42. Will any services or spaces which staff currently use be changed during the period of construction?
- 43. Will these changes have an impact on staff safety?
- 44. Will there be risks to staff during relocation to, and initial occupancy of, the new unit (e.g. bed pushing, other unusual manual handling tasks)?
- 45. If possible, visit the site as construction proceeds, and “walk through” as many patient/resident handling tasks as possible as a check of the space, equipment, furniture and fittings needed to perform each task safely.
- 46. Are any changes to the design required as a result of the site visit?
- 47. Have changes to work practices, furniture or equipment been prepared for, prior to moving in?

Post occupancy evaluation by end users

- 48. Identify, through review of incident reports and consultation with all staff, any minor or major shortcomings of the design, with special reference to strain injury prevention.
- 49. Conduct a formal inspection audit of the unit using the Workplace Design – Safety Audit Checklist (Appendix C).
- 50. Recommend any changes needed to the unit's policies and procedures to control any risks identified.
- 51. Summarise any changes needed to future designs of similar facilities.
- 52. Submit the summary report to the agency project management team, to the relevant safety committee and to any relevant external bodies (e.g. the Department of Human Services for public hospitals, the Board of Directors for private hospitals).

Appendix C

Safe Handling of Patients/Residents

Workplace Design – Safety Audit Checklist

This checklist is designed to:

- be used in conjunction with the guidelines for Designing Workplaces for Safer Handling of Patients/Residents
- help unit managers and direct care staff to audit the design shortly after occupying newly built acute or aged care facilities
- help evaluate how safe the work practices are for staff when handling and moving patients/residents
- help reduce any remaining risks related to handling and moving patients/residents within the unit
- facilitate feedback to people responsible for the design of future facilities, in order to learn from the experience with this unit
- assist in auditing patient/resident handling safety aspects at various stages throughout the design process
- help assess patient/resident handling safety in existing facilities

Name of facility or business unit _____

Location _____

Owner or Health Care Network _____

Inspection carried out by (list names) _____

Checklist completed by _____

Position _____

Signed _____

Date _____

Signed (Business Unit Manager) _____

Signed (OH&S Manager) _____

Question	Yes/No N/A	Comments	Recommendations for action or for future designs
1	Is there enough space on both sides of all beds to allow safe on-bed movement of patients/residents?		
2	Is there enough space on both sides of all beds to allow transfers to and from bed?		
3	Is there enough clear space at the foot of all beds to allow safe handling and movement of patients/residents?		
4	Do furniture or fittings near beds impede safe patient/resident handling?		
5	Are the privacy curtains located so as to enable unimpeded access to, and movement of, patients/residents?		
6	Can the beds be easily moved within the bedrooms when required?		
7	Can the beds be easily moved into and out of the bedrooms when required?		
8	Can the patient handling equipment be easily moved around within bedrooms when required?		
9	Can the patient handling equipment be easily moved into and out of the bedrooms when required?		
10	Can the patient/resident handling equipment be easily moved in and out of ensuites and assisted toilets when required?		
11	Can the patient handling equipment be easily moved around within ensuites and assisted toilets when required?		
12	Is there enough space on both sides of all toilet bowls to allow staff to safely assist patients/residents as required?		
13	Are appropriate patient/resident aids, such as grab rails, provided in optimum positions (so as to assist but not impede access) within ensuites and assisted toilets?		

Question	Yes/No N/A	Comments	Recommendations for action or for future designs
14 Can the patients/residents easily reach the nurse call buttons in toilets and ensuite?			
15 Is the floor surface in ensuites suitable for safe movement and handling of patients/residents, i.e. non-slip, free from steps or steep gradients, and with adequate drainage?			
16 Is the floor gradient for the shower located far enough away from the toilet to avoid wheelchairs rolling away down the slope?			
17 In the event of an emergency in a toilet or ensuite, is suitable access available from outside (privacy latches operable from outside, inward swinging doors or removable doors)?			
18 Can the patient/resident handling equipment be easily moved around within assisted bathrooms when required, and can the lifting machine go close enough to the bath?			
19 Are appropriate patient/resident aids, such as grab rails, provided in optimum positions (so as to assist but not impede access) within assisted bathrooms and strongly constructed and mounted?			
20 Can the patients/residents easily reach the nurse call buttons in assisted bathrooms?			
21 Is the floor surface in assisted bathrooms suitable for safe movement and handling of patients/residents, i.e. non-slip, free from steps or steep gradients, and with adequate drainage?			
22 If overhead lifting equipment has been installed anywhere in the unit, is it easy to use and does it serve its intended purpose?			
23 Do the patient/resident lounges, activity rooms and dining rooms provide a safe environment for patient/resident movement handling?			

Question	Yes/No N/A	Comments	Recommendations for action or for future designs
24 Are the corridors safe for patient/resident movement and handling (handrails, floor surfaces, slopes, obstructions, smoke doors)?			
25 Is there enough dedicated storage space within the unit for patient/resident handling equipment?			
26 Is the patient/resident handling equipment stored sufficiently close to where it needs to be used?			
27 Is there adequate access to and from the unit as a whole, including emergency exit routes, to enable safe patient/resident handling?			
28 Is there sufficient appropriate patient/resident handling equipment available within the unit?			
29 Is the design of the facility compatible with implementation of a policy to eliminate all lifting of patients/residents?			
30 Can help be summoned quickly and without fail via the nurse call system?			
31 Are there any other issues regarding safe handling of patients/residents in this unit that warrant attention?			

How the Guidelines Were Developed

The Victorian WorkCover Authority, as part of the Health and Aged Care project established a Workplace Design Working Party to develop workplace design guideline layouts to assist staff in safe handling of patients/residents. The working party comprised representatives from:

- Victorian WorkCover Authority
- Private and public service providers
- Peak employer and employee organisations
- Department of Human Services
- Royal Australian Institute of Architects

Consultants were appointed to develop the Design Guidelines in consultation with, and under the direction of, the working party.

The Design Guidelines were developed in seven stages.

Phase 1 – review of existing information

The first step was to identify and review available information relevant to safe patient/resident handling, the design of acute health and aged care residential facilities, and relevant building regulations and Australian Standards.

One particularly valuable source of information was a report by the Swedish Institute for Hospital Planning and Rationalisation titled *Hygiene Rooms - functional space for personal hygiene in long term care*. The project team gratefully acknowledges the valuable contribution of Professor Tore Larsson and Kay Wilson for drawing the report to our attention and for translating it from Swedish into English.

Phase 2 – evaluation of existing facilities

Phase 2 of the process was to visit and evaluate eight hospitals/aged care residential facilities which had been either recently upgraded or newly constructed, and evaluate their performance in terms of staff handling of patients/residents. This was followed by collating and analysing all the information gathered in Phase 2 with all relevant information being consolidated for usage in the development of the Design Guidelines.

Phase 3 – consultative workshop

To achieve consultation with a broader spectrum of people involved with manual handling of patients/residents a workshop was held attended by approximately 60 people. This was a proactive approach to obtain constructive input from key stakeholders regarding suitable room layouts for patient/resident handling. The workshop program was structured to maximise both participation and consultation. It focused on three key issues: room layout, consultation processes and the Building Code of Australia and Australian Standards. This material was fed into the guidelines.

Phase 4 – drafting the guidelines

The consultants prepared a first draft, which was reviewed by the working party and refined in preparation for wider distribution and comment.

Phase 5 – consultation and feedback

A second draft was distributed to key stakeholders in the health and aged care industry for comment. A second workshop was held to assist in industry consultation and feedback. About 20 written comments were submitted in response to the second draft.

Phase 6 – mock-up

A field trial using a full scale mock-up of selected patient/resident handling activities was conducted at the Austin Hospital following release of the second draft, in order to test the guidelines in a simulated trial.

Phase 7 – finalisation of the guidelines

The consultants refined the guidelines in consultation with the working party on the basis of feedback received in writing and via the second workshop.

Further information:

Victorian WorkCover Authority
Ergonomics Unit
Level 24
222 Exhibition Street
Melbourne VIC 3000

GPO Box 4306
Melbourne VIC 3001

Telephone: (03) 9641 1744
Facsimile: (03) 9641 1573

Email: manual_handling@workcover.vic.gov.au
Website: www.workcover.vic.gov.au

For specific guidance regarding workplace layouts and designs in your facility, you may need to engage an architect and/or ergonomist. These professionals can be found under “architects” and “ergonomists” or “occupational health and safety professionals” in the Yellow Pages. Ensure that any consultants engaged have appropriate qualifications and experience and provide contact details of clients that they have previously worked with.