

## 3.0 PLANNING AND DESIGN DATA

### 3.1 Resident Bedroom

#### 3.1.1 General

The resident bedroom has typically been utilized as an environment for private living space and personal care. It is also one of several settings that a resident will occupy each day, but the only setting where personal items may be displayed and/or stored and where privacy in personal care and/or service can occur. However, because it is bedroom space, the bedroom environment should encourage the resident, regardless of physical impairment, to remain outside of the bedroom as much as possible and utilize common living space so designed for that purpose as much as possible.

#### 3.1.2 Planning Considerations

Resident bedrooms are the basic building blocks of a Nursing Home facility. Bedrooms and their adjacent bathrooms typically account for up to 40% of a Nursing Home's overall area. Refer to Table 3.2 "Furniture Worksheet" when beginning the planning process for a Nursing Home resident bedroom.

##### 1. *Bedroom Design in Relation to Unit Configuration*

The resident bedroom configuration should contribute to the efficiency of the overall care unit, including the support of

efficient net and gross areas. Functional bedrooms do not diminish the need for a functional overall unit and building.

##### 2. *Individual Private Bedrooms and Bathrooms*

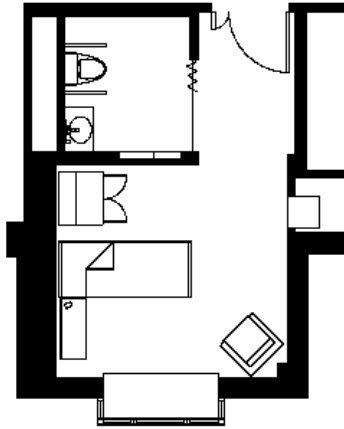
The recommendation of this VA Design Guide is to provide an individual bedroom for each resident. Ideally, this room also has its own bathroom.

The resident bedroom should offer options for personalization and at the same time encourage the resident to remain out of the bedroom as much as possible. Beds and room furnishings should have a 'bedroom' rather than an institutional appearance.

The resident bedroom should reflect the personality of the occupant. The décor, the nature of the furniture, the color schemes, and space for personal items should cater to the individual needs of the resident who occupies this personal space.

##### 3. *Bedroom Plans for Special Needs*

Variations from typical bedroom criteria and design may be indicated by a documented functional program describing special populations and their care needs. The bedroom may be arranged according to a resident's preferences and needs. The bed should function in one position that allows access for care on either side, including transfers and lift use. (See Figure 3.1) A method should be provided to keep individual possessions separate without confusion or clutter.



**Figure 3.1**

**Individual Bedroom with Toilet**

**4. Special Sub-Population Needs**

Special sub-populations may include terminally ill and bariatric clients as well as those with spinal cord injury, dementia or skilled nursing needs. These residents are defined as those requiring:

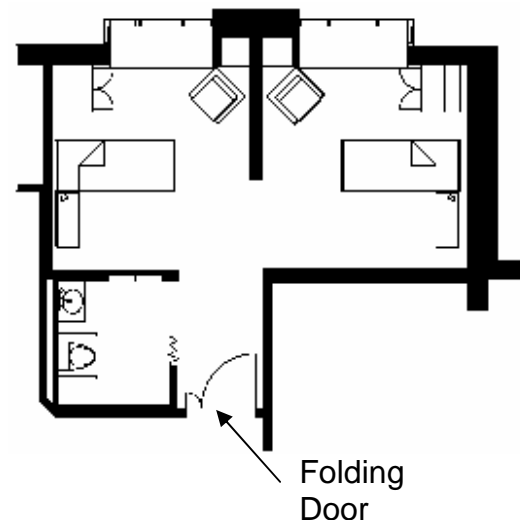
- Beds longer than 94" [2388 mm]
- Equipment for specialized care (e.g., respiratory care, spinal cord injury, or rehabilitation)
- Technology associated with palliative care
- Specified cognitive, memory or behavioral needs

**5. Individual Bedrooms with Shared Bathroom**

Under certain jurisdictions, requiring private bedrooms with individual bathrooms would preclude a state from developing a veterans' Nursing Home. Typical reasons for this exclusion would be per person square footage, per bed construction cost controls, or the inability to access a state's share of Medicaid reimbursement for people in single occupancy bedrooms. Therefore,

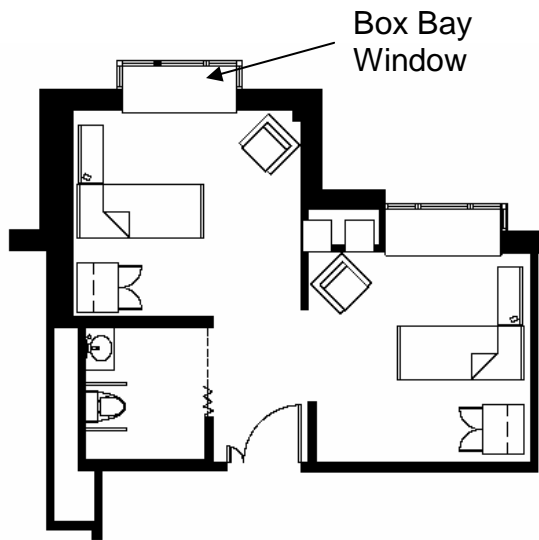
it may be necessary to consider the following:

- A bedroom that has two separate living spaces but only one entrance from the hall is deemed double occupancy. (See Figure 3.2).
- The living area for projects submitted with "biaxial" bedrooms should be functionally equivalent for each resident and be spatially comparable to any typical single occupancy bedrooms that are included in the design. (See Figure 3.3).



**Figure 3.2**

**Biaxial Individual Bedroom with Toe-to-Toe Bed Placement**



**Figure 3.3**

***Biaxial Individual Resident Bedroom with "L" Shaped Bed Placements***

### 3.1.3 Design Considerations

The resident bedroom should be designed to accommodate the following:

#### 1. Resident Uses

The bedroom should provide the resident with an identifiable area for convenient use:

- Seating next to the window
- Space or other provisions for display of personal items
- Access to storage units
- Headwalls designed with sufficient space for the bedside stand or dresser to be used for residents' water and personal items
- Use of wardrobes rather than built-in units to add to a bedroom's flexibility

#### 2. Clearances

The following are some of the clearances to consider during the design of a resident bedroom:

- Maneuvering space - 5'-6" [1676 mm]
  - Clearance at side of Bed - 3'-6" [1067 mm]
  - Clear headwall - 13'-6" to 14'-6" [4115 mm to 4420 mm]
  - Clearance at latch side of door - 1'-6" [457 mm]
- ADA, ANSI and ADAAG should be reviewed where respectively applicable.

#### 3. Door Swing Projections

The plans should indicate accessibility of the openings and ease of door use, including plans that avoid door conflict. All resident care and circulation areas should be designed to be free from impediments such as sharp projections, including those from mechanical devices and structural elements. Controls, hardware and other built-in details should neither intrude nor compromise the overall bedroom circulation and functions of care.

#### 4. Sinks

When two residents share a bathroom, a sink should be provided in the resident bedroom. In 2004, many jurisdictions approved the use of disposable, anti-microbial or alcohol wipes for hand washing in lieu of or in addition to sinks. Methods of dispensing these items should be included. The sink needs to be easily and equally accessible for any bedroom occupant, staff member or, visitor.

#### 5. Medical Gases and Concentrators

The facility may be designed to accommodate in-wall oxygen and/or portable concentrators or other equipment; space for it should be

identified on the bedroom plan as required.

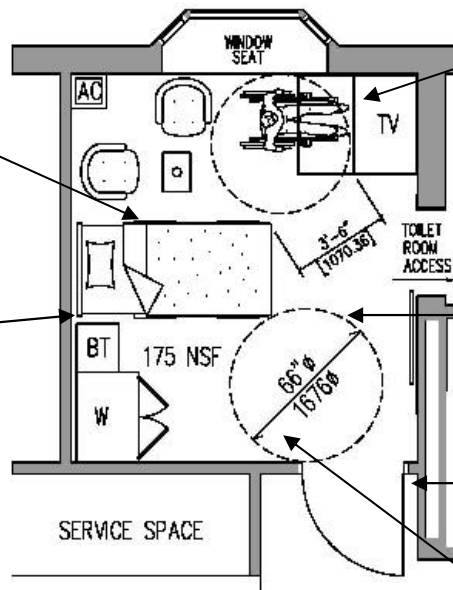
6. Resident Bedroom Module

Below are two examples of possible furniture configurations for a one bed

room. (See figures 3.4 and 3.5) Refer to Table 3.1 and 3.2 “Furniture Worksheet” as a guide when beginning the planning process for a Nursing Home resident bedroom.

87”-91” [2210 mm - 2311 mm] Bed in overall length that is adjustable in height and holds an 84” [2134 mm] mattress.

Bedside stand with lockable drawer for resident use



Optional furnishings or equipment: TV/hutch, desk, armoire or dresser. TV should be comfortably viewed from resident’s chair and bed.

5’-6” [1676 mm] Turning Radius in clinical area

4’-0” [1219 mm] Door

1’-6” [457 mm] Clearance at latch side of door

Figure 3.4

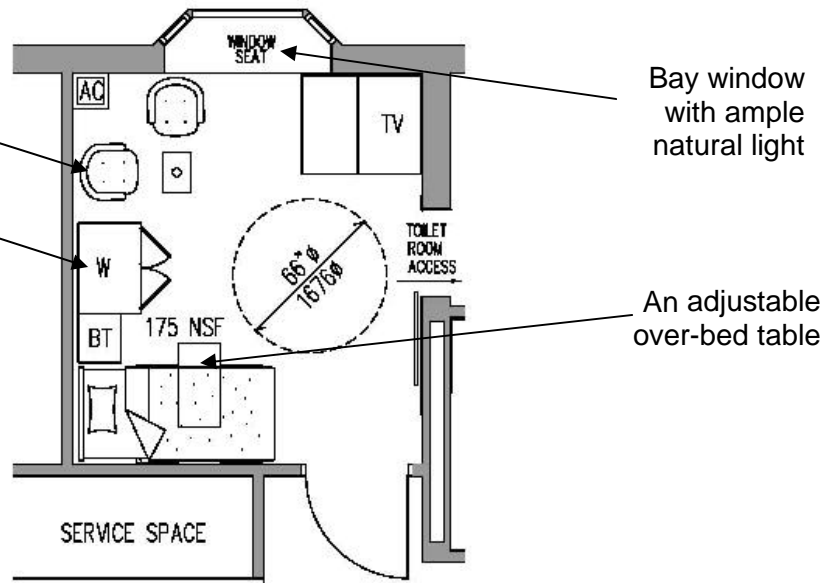
Resident Bedroom Module—Alternate Equipment Configuration #1

Visitor's chair with a floor area requirement of 23" w x 22" d [584 mm x 559 mm];

Wardrobe with 21"-22" [533 mm - 559 mm] of interior depth and 24"-42" [610 mm - 1067 mm] in width;

Note:

Doors to the room and bathroom should be integrated with room criteria for circulation and ease of use, including applicable ADA requirements for 18" [457 mm] clearance at the latch-side of the door.



**Figure 3.5**

**Resident Bedroom Module—Alternate Equipment Configuration #2**

### 3.1.4 Interior Considerations

Ample natural light and window area should be provided in resident bedrooms and consistent with local regulations and geographic considerations. Natural light is associated with resident well being and should be maximized wherever possible. Varying views and window treatments help differentiate bedrooms and improve resident wayfinding.

A bay window adds to the residential appearance of the bedroom. The window does not add to floor area but it can become an added seat for visitors, a display area, a desk, or a bookshelf. This feature is typically 17" [432 mm] from the finished floor. (See Figure 3.5)

Light and windows should be designed to optimize transparency and natural light, and allow access to vistas. Bedroom plans should support the following:

- The size and location of the window accommodates furniture, furnishings, and equipment, about 18"-36" [457 mm - 914 mm] at the side(s) of the opening.
- Daylight is supplemented by appropriately located, non-glare, artificial lighting fixtures. Indirect lighting may be incorporated with sufficient ceiling heights, which is usually 9'-0" [2743 mm] minimum.
- Ambient lighting should be supplemented by task lighting.
- Ceiling, floor and/or table lights are located to balance and optimize non-

glare room illumination consistent with Illuminating Engineering Society of North America, IESNA RP-28, 1998, Recommended Practice for Lighting and the Visual Environment for Senior Living.

### 3.1.5 Systems Considerations

N/A

### 3.1.6 Miscellaneous

#### 1. *Clinical zone*

The problem with strict application of ADA or ANSI criteria is that they compromise the residents' need to

transfer to a chair on the window side or to a wheelchair and/or lift on the clinical side of the bed. A preferred clinical access zone accommodates a 5'-6" [1676 mm] minimum turning radius. This is greater than the current minimum dimensions required by ADA's Architectural Guidelines (ADAAG, 2004).



## Furniture Worksheet

|   | ITEM                         | Unit of Measure               | Width       |      | Depth Total |      | Maximum Height | Refer to Table FW-2 |      |
|---|------------------------------|-------------------------------|-------------|------|-------------|------|----------------|---------------------|------|
|   |                              |                               | MIN.        | MAX. | MIN.        | MAX. |                |                     |      |
| 1   | <b>Bed</b>                   | Inches                        | 28          | 36   | 83          | 97   |                | Yes                 |      |
|   |                              | millimeters                   | 711         | 914  | 2110        | 2460 |                |                     |      |
| 2   | <b>Nightstand</b>            | Inches                        | 20          | 24   | 20          | 24   | 30             | Yes                 |      |
|   |                              | millimeters                   | 508         | 610  | 508         | 610  | 762            |                     |      |
| 3   | <b>Chest of Drawers</b>      | Inches                        | 36          |      | 20          | 24   | 54             | Yes                 |      |
|   |                              | millimeters                   | 914         |      | 503         | 610  | 1372           |                     |      |
| 4   | <b>Dresser</b>               | Inches                        | 36          | 54   | 20          | 24   | 42             | Yes                 |      |
|   |                              | millimeters                   | 914         | 1372 | 508         | 610  | 1067           |                     |      |
| 5   | <b>Wardrobe</b>              | Inches                        | 30          | 42   | 36          | 38   |                | Yes                 |      |
|   |                              | millimeters                   | 762         | 1067 | 914         | 965  |                |                     |      |
| 6   | <b>Wardrobe-Dresser</b>      | Inches                        | 30          | 42   | 36          | 38   |                | Yes                 |      |
|   |                              | millimeters                   | 762         | 1067 | 914         | 965  |                |                     |      |
| 7   | <b>Chair:</b>                |                               |             |      |             |      |                | Yes                 |      |
|   |                              | Lounge                        | Inches      | 31   |             | 32   |                |                     | 34   |
|   |                              |                               | millimeters | 787  |             | 813  |                |                     | 864  |
|   |                              | Wing                          | Inches      | 28   |             | 31   |                |                     | 40   |
|   |                              |                               | millimeters | 711  |             | 787  |                |                     | 1016 |
|   |                              | Recliner                      | Inches      | 28   |             | 35   | 62**           |                     | 41   |
|   |                              |                               | millimeters | 711  |             | 889  | 1575           |                     | 1041 |
| Desk or Straight Chair:<br>With or Without Arms | Inches                       | 20                            |             | 20   |             | 35   |                |                     |      |
| millimeters                                     | 508                          |                               | 508         |      |             | 889  |                |                     |      |
| 8   | <b>Wheelchair w/Footrest</b> | Inches                        | 42          |      | 26          |      | 36             |                     |      |
|   |                              | millimeters                   | 1067        |      | 660         |      | 914            |                     |      |
| 9   | <b>Over Bed Table***</b>     | Inches                        | 36          |      | 18          | 24   | 46             | Yes                 |      |
|   |                              | millimeters                   | 914         |      | 457         | 610  | 1168           |                     |      |
| 10  | <b>TV and Stand</b>          | To be established on site**** |             |      |             |      |                | Yes                 |      |
| 11  | <b>Writing Desk or Table</b> | Inches                        | 48          |      | 26          |      | 30             | Yes                 |      |
|   |                              | millimeters                   | 1219        |      | 660         |      | 762            |                     |      |

Table 3.1

## Notes:

1. Identify elements that affect space: HVAC, concentrators, medical technologies, communications or other features affecting layout or dimensions (Specify for each project)
2. Bed Length includes clearance of 3" from wall for typical head board and bumper to avoid wall damage. Check foot board controls; some controls add length to the bed (not included)
- \*\* 3. Extended lounge chair
- \*\*\* 4. Many states do not require; improved bathroom storage has reduced use/need.
- \*\*\*\* 5. Wall bracket mounting used to be common; however, higher TV's are reported more difficult to see and sound control is often a problem. TV's are now often found on a dresser, bedside stand or hutch.
6. Bathroom layout and door considerations need to be incorporated into bedroom design and mechanical/electrical plans.



Complete the following based on project needs and design.

### Furniture Worksheet – Deriving the Size and Shape of Resident Bedrooms

| ITEM                                 | v Typical  | Comments  |
|--------------------------------------|--|---|
| 1 Bed                                | <input type="checkbox"/> Typical in 87" range [2210mm]<br><input type="checkbox"/> All in 94" range [2388mm] | Several sponsors have been using beds with no footboard for a residential appearance  |
| 2 Bedside Stand                      | <input type="checkbox"/> Small; usable drawers   | Some will select this in larger dresser sizes; others may use hutch   |
| 3 Chest of Drawers                   | <input type="checkbox"/> Not typical   | May have chest as option or personal furniture from home.   |
| 4 Dresser                            | <input type="checkbox"/> May use night stand and wardrobe; 4 drawer  | Consider seasonal and off-season storage; need for hanging vs. folded.  |
| 5 Wardrobe                           | <input type="checkbox"/> Larger: 2-3' [610mm - 914mm]<br><input type="checkbox"/> May hold TV                | Closets may require sprinkler and may "fix" location of bed.  |
| 6 Wardrobe-Dresser Hutch             | <input type="checkbox"/> Option; often with other dresser or drawers.  | Some wardrobes do have a lower supply drawer, raising base for shoes.   |
| 7 Chair                              | <input type="checkbox"/> Wing or supported chair<br><input type="checkbox"/> May offer recliner space        | Both wheelchair & chair should fit  |
| 8 Over Bed Table***                  | <input type="checkbox"/> Occasionally used; more likely to groom in bathroom, eat in dining                  | Verify its use, need. Concerns with placement; its wheels make it risky as a leaning surface for those who are confused.                            |
| 9 TV and Stand or Hutch              | <input type="checkbox"/> Option: on dresser or its own stand.  | Wall mounted TVs have proven difficult to see; sound control and volume have been problematic in high wall mounts. Not all residents use/need a TV. |
| 10 Writing Desk or Table             | <input type="checkbox"/> Not Typical: May be option from own home See Over bed table.                        | Tables may be used by more robust residents   |
| 11 Wheelchair w/Footrest             | <input type="checkbox"/> One side bed access + space at foot for turning for typical+oversized chair         | Both wheelchair & chair should fit  |
| Wheelchair and Lifts                 | <input type="checkbox"/> Include measurements & sweep  |   |
| HVAC Units Size, Projection Location | <input type="checkbox"/> Vertical fancoil or valence units not requiring floor area {insert size}            | Fin tube or through wall systems under windows need to be included in floor plan studies for basic room size.                                       |
| Use of Concentrators                 | <input type="checkbox"/>   |   |
| Medical Gasses                       | <input type="checkbox"/>   |   |

Table 3.2



## 3.2 Resident Toilets and Showers

### 3.2.1 General

The VA Nursing Home Design Guide recommends a resident bedroom that has a full toilet room including a functionally accessible shower. The term “Resident Toilet Room,” in this Design Guide refers to the space adjacent to and accessed from a resident bedroom. These criteria also apply to individual toilet rooms that are designed without showers for use by residents elsewhere in the building (i.e., those near dining, activity and therapy areas and in bathing suites).

### 3.2.2 Planning Considerations

Resident toilet rooms for Nursing Homes require:

- Adequate lift use and transfer space requirements
- A 5'-6" [1676 mm] diameter turning radius
- Adequate space necessary for staff assistance on two sides of the toilet
- The provision for fold-up grab rails
- Adequate bathroom entrance width

These improvements are suggestions to address central issues in resident needs, Nursing Home care, safety, and operations. The resultant generates a room that may be at least 60 nsf [5.57 m<sup>2</sup>] in area without a shower.

In addition to these issues, the intent is to encourage the inclusion of an individual shower in each resident bedroom. The rationale for including a shower is to:

- Integrate personal care
- Streamline time management
- Reduce the fears and discomforts commonly experienced in communal bathing

It is recommended that 95% of the resident bedroom bathrooms are consistent with the criteria outlined in this Nursing Home Design Guide and 5% should address self-transfer as outlined in ADAAG. Functional design and safe, assisted toileting should be available for toilet rooms adjacent to resident bedrooms and those used during dining, therapy, activity, or bathing.

#### 1. Assisted Bathrooms

The bathroom configuration criteria has been developed to better address assisted transfer and lifts to benefit residents and contribute to staff safety. For Nursing Homes, functionally accessible bathrooms accommodate a resident, a device such as a wheelchair/lift, and staff members for safe transfer.

#### 2. Statistics on Toilet Assistance

National data indicate that 76% of all Nursing Home residents have limitations affecting their independence in toileting; 24% toilet independently. In general, 50-58% of Nursing Home residents are incontinent.

Additional data showed that about 71% of Nursing Home residents have difficulties related to transfer. Typically, 1-2 staff members assist 39-42% of residents. About 29% are fully dependent during transfer.

### 3. Cost Incurred

Managing incontinence costs and staff injuries is a major objective for improved Nursing Home bathroom design.

Nationally, the cost of incontinence care is estimated at \$4.3 billion. Costs related to staff injury are involved also. Each year, about 18% of all Nursing Home workers are injured or become ill on the job. Eighty-one percent are back injuries, occurring during the lifting and turning of residents.

The Nursing Home industry paid close to \$1 billion in workers' compensation insurance payments in 1994.

### 4. Planning for the Residents

Individual bathrooms for each person are preferred based on best practices in continence care and hygiene as well as to minimize issues in roommate matching. No more than two residents should share a toilet room, if sharing is required.



**Figure 3.6**

#### **Bathroom Entry Maneuverability Challenges**

- **Bathroom Entry**

The clear width of the toilet room entrance needs to accommodate the

resident, whether independent, assisted, wheeling or wheeled, as well as his/her elbows and wheelchair foot support. Residents in wheelchairs with foot pedals or extensions need to be able to operate the door. (See Figure 3.6)

- **Clear Space**

Clear circulation space should be included in the toilet room to provide ease of movement for residents, who use devices independently, or those needing assistance and equipment.

- **Privacy**

Privacy is an entitlement. Residents should not be subject to indignities while being transferred, hoisted, toileted, or showered. Bathroom location, door selection, and the ability to respond to the residents' needs behind closed doors all contribute to respect for individual privacy.

- **Overall Fixture Use**

Residents should be able to utilize the toilet, sink, room supplies, and door with minimal repositioning. Generally, this is most effectively satisfied when both toilet and sink are on a back wall, facing the entry.

- **Showering**

The typical resident should be able to receive an assisted shower in his/her individual bathroom. Due to issues of balancing and pivoting, as outlined above, the individual should be able to receive this shower from a secure shower chair rather than a bench.

- **Self-Toileting**

For residents who propel themselves, toilet room design should accommodate items identified on Table 3.3.

- *For Staff Assistants*  
Residents are transferred by either one or two assistants, who should be able to assist weight bearing residents with transfer and safe lift use.
- *Door Operation and Entry*  
Staff should be able to open the door in a safe and efficient manner and close it prior to toileting a resident. The entry should be wide enough to allow staff to push the resident in, move around beside the resident in the wheelchair, and close the door before providing transfer assistance.
- *Assisted Transfer of Weight-Bearing Residents*  
Open space should accommodate a safe initial wheelchair position in preparation for transfer, sufficient area for both the resident and staff to safely stand, and open floor area for the resident to pivot onto the toilet. Staff should be able to assist residents onto the toilet, unimpeded. Floor area should allow the chair to be wheeled diagonally to the toilet, permitting sufficient floor space to stand.
- *Accommodating Mechanical Lift Action*  
Use of lifts in closed and open positions and space for staff footwork must be accommodated within the closed bathroom space. The lift should be within easy reach while the resident uses the toilet. Staff should not be required to hoist or lift the backs of wheelchairs.

### 5. Staff Assisted Transfers

During lift or wheelchair use for each type needed, staff should be able to do the following:

- Stand with feet apart and securely bend in the floor area, free of encumbrances from base cabinets, floor mounted rails, projections from the toilet, or obstacles from walls, rails, vanity tops or other fixtures;
- Get by the resident and/or device in order to perform personal care;
- Use sanitary products, hand-wash, bag and dispose waste, and operate the door with minimal repositioning of the resident, lift or wheelchair. (See Figure 3.7)



**Figure 3.7**

### *Assisted Toilet Transfer Challenges*

#### 6. Materials Management

Necessary cleaning supplies should be conveniently stored in secure areas. Staff or residents should be able to appropriately dispose of soiled items, such as in plastic bags, without placing goods or matter directly onto any surface. Soiled items should be stored in appropriately covered containers in areas off the main corridor.

### 3.2.3 Design Considerations

Many authorities and regulators are familiar with ADAAG and ANSI A117.1, which focus on self-toileting. A number

of design features are identified herein that address issues of Nursing Home residents and of the safety of staff assistants. Several of these may require advance review with or approval from authorities with jurisdiction over the proposed Nursing Home. To benefit both residents and staff, project design teams are advised to address these issues early in project planning.

### 1. *Application of ADA Architectural Guide (ADAAG)*

Strict application of State Building Code's ANSI A117.1 would require an 18" [457 mm] dimension from the center line of the toilet to the face of the side wall. Such interpretation responds to research involving wheelchair occupants, typically those with upper body strength, not unlike that of robust younger veterans, and the potential needs for a self-propelled, side or parallel transfer or similar maneuver. Such individuals should be accommodated, as should the predominant population of Nursing Home residents such as those needing space for staff assistance at either side.

The dimension of approximately 2'-8" [813 mm] from the centerline of the toilet to the sidewall or other obstruction (such as the edge of a sink, vanity or tissue holder) allows space for a standing staff member, wheelchair or lift. This will exceed the 18" [457 mm] requirement but allows space for the standing and bending of assistant(s) and the use of lifts.

Grab-rail needs of residents should be met with fold-up bars, which provide flexibility for staff and residents to use a variety of transfer methods and devices. (See Figure 3.8)



**Figure 3.8**

### ***Fold-up Toilet Room Grab Bars***

### 2. *Design Issues for Jurisdictional Review*

- *Toilets*  
This Design Guide includes illustrations showing flush-valve toilets. In some jurisdictions, and where available water pressures allow, tank-style toilets may be considered in order to provide quieter operation and a more familiar and residential appearance. Wall-hung, tank-style toilets with back outlets are available, thus maintaining housekeeping goals, including easy access for floor cleaning under and around the fixture, without compromising objectives of non-intrusive toilet use by other residents.
- *Omission of In-Room Bedpan Washing*  
Due to low volumes of use and disposable alternatives, requests are commonly made to omit bedpan washing and sanitizing facilities in resident bathrooms. Standard



bathroom bedpan equipment often results in unhygienic splatter or splash. Washing and sanitizing equipment can be inadvertently grabbed or used by residents. Such equipment is also inconsistent with goals of a residential model.

Where permitted by local codes, bedpan washing and sanitizing facilities may be included in a conveniently located soiled utility room. This is suggested as an alternative to being located in the resident toilet room. Provisions should be made for bedpans to be appropriately covered or bagged and sealed for safe removal.

- *Use of Fold-Up Grab Bars*  
To accommodate lifting and transfers, securely mounted, wall hinged, fold-up bars should be installed to individually and safely swing up or out of the way. Use of fold-up grab bars may need to be approved by local jurisdictions, particularly those applying state codes based on ANSI A117.1. The justification for applying for use of fold-up bars is to meet the functional needs of both residents and staff. Structural security and safety is of concern to many review agencies and should be reviewed with both the manufacturer and construction team, all of whom should be made aware of the heights and weights of the predominantly male veterans, as well as the care giving staff, who will use them.
- *Shower Chairs in Lieu of Fold-up Benches*  
Use of shower chairs is the preferred method of showering for the typical Nursing Home resident, to allow repositioning and to increase the

safety of both the resident and the assistant. ADAAG recognizes the use of shower chairs in medical facilities. The Access Board has pointed out, for purposes of interpreting ADA, which Nursing Homes are a subset of “medical facilities.” Provision of shower chairs rather than benches is consistent with ADAAG and should be provided in bathrooms in both resident bedrooms and bathing suites.

- *Omission of Back-Wall Grab Bar*  
Where permitted, the grab bar at the back wall may be omitted, if the fold-up side rails can be locked in an upright position and held for toileting when facing the toilet.
- *Floor Drains*  
If permitted by applicable codes, the resident toilet room may include a floor drain. Unless they are used periodically, floor drains may require regular maintenance to avoid problems of odor and sewer gas build-up. Methods for achieving proper maintenance may need to be indicated during plan review. The resident’s handheld shower may be helpful in drain maintenance.

The combined impact of space, fixture placement, door design, and rail placement and selection should be carefully coordinated to respond to movement, assistance and safety needs. Each resident should have immediate access to a toilet room from the resident bedroom without having to move through a public corridor.

- *Fixtures and Equipment*  
Fixtures should be selected and placed to accommodate the sweep of a minimum diameter of 5’-6” [1676 mm] three-point turn for suitable

mobility device(s) needed by the residents. Fixtures and equipment should include the following items:

- A toilet, a sink suitable for resident and staff hand-washing, and facilities for hygienically dispensing clean supplies and for soiled matter collection
- Hardware, or a system for assisting transfer, such as grab bars and lift or equivalent technologies
- A communication system, designed to be accessible to the user in a variety of positions, including from the toilet, sink and floor
- A mirror that is usable from a wheelchair as well as by staff to assist in grooming
- Accommodations as needed for individual or compact, fracture-style bedpans
- Operable door, preferably surface-mounted and not in-swinging

### 3. Clearances and Floor Area for Toilet Placement

The basis for estimating space clearance on either side of the toilet should include the following considerations:

- 18" [457 mm] should be allotted from the centerline of the toilet to the grab bars for Nursing Home residents capable of self-transfer from wheelchair and toilet, which allows sufficient space for grasping and leaning on the grab bars provided.
- For residents requiring assistance, incorporate space for one or more staff assistants to stand safely bend and to maneuver a lift next to the

toilet with at least 18"-20" [457 mm – 508 mm] clear on the wall side.

- When the sink and toilet are on the same wall, there should be a clear space between the sink or vanity edge and the side of the toilet, 18"-20" w x 18"-20" d [457 mm – 508 mm x 457 mm x 508 mm] (extending from the back of the toilet seat to its front). Both sides of the toilet need to be available for transfer assistance and positioning. The zone(s) for staff to stand should be indicated on the bathroom plans. Alternative fixture placements may be proposed if it can be demonstrated that the space and configuration accommodates one- and two-person transfers, as well as appropriate lifts, and for staff assistance on either or both sides of the toilet.

### 4. Fixture Heights and Features

A toilet seat height of 16"-18" [406 mm – 457 mm] above the finished floor should accommodate safe transfers. It may be necessary to customize toilet seat heights for certain users to correspond to wheelchair seats and/or accommodate different physical needs. Toilets are now available with easily adjustable seat heights, which benefit both self- and staff-assisted transfers.

While flush-valve toilets are prevalent in institutional settings, tank-style toilets provide quieter operation and a more familiar and residential appearance. Toilets should flush effectively while meeting applicable water use standards.

Toilets should be selected to permit easy access underneath for floor cleaning.

Fold up grab bars can now be adapted after installation to suit users' preferences. Some require space for mountings along the back-wall to provide necessary channels and locking.

When a toilet room is being designed to accommodate self- and staff-assisted transfers, the critical dimensions can be met with fold-up bars as follows:

- For a resident, grab bars are mounted on both sides of the toilet at 16" -18" [457 mm – 508 mm] from the center line of the toilet to the center line of the grab bar.
- The stand-by space for assisted transfer between wall and grab bar is a minimum of 1'-4" [406 mm] when the grab rail is down and 2'-8 to 2'-10" [813 mm – 864 mm] when the grab rail is up.
- Bars should be mounted so that the top is 2'-10" [864 mm] from the finished floor; some models are adjustable in height.
- Grab bars should project to the front edge of the selected toilet in order to permit the resident to hold on while leaning forward to maintain a low center of gravity.
- Fold-up bars average 2" [51 mm] in width and project about 29" - 33.5" [750 mm - 850 mm] from the back wall.
- The specific length of the bar will depend on such considerations as the choice of fixture, either tank-top or flush-valve, and toilet bowl, either traditional round front or elongated.
- Projecting mechanical chases and structural columns should not compromise the placement of fold-up grab rails or the space available for staff to stand alongside the toilet.

- Toilet paper can be located either on the grab bar or on accessible hardware that is suspended under the sink.
- Powder coated bars may be easier to grip than those of knurled steel.

##### 5. Sinks, Faucets, and Water Control

###### • Sinks

A sink should be provided in each resident toilet facility. The sink should be easily approached with clear space for knees and feet. Neither knees nor legs, including those supported by wheelchair footrests, should come in contact with pipes. Sink and plumbing may meet these objectives by specifying back outlet drains or other means of keeping plumbing from projecting forward.

###### • Hot Water

Hot water drawn from faucets used by residents should not exceed 110 degrees fahrenheit. Central mixing valves, leading to branch circuits, may be preferable to local mixing valves at each sink. This should protect residents from contacting excessively hot water supply lines and also reduce maintenance and insulation problems.

###### • Faucets

There is some indication that individual controls for hot and cold water are less confusing and usable by more people than single handle controls. Slightly extended blades for water control will satisfy most resident needs. Longer wrist extenders are available for customizing controls to particular hand use requirements. Faucets should be 16-18" [406 mm – 457 mm] from the person due to typical reaching requirements.



- **Vanities and Mirrors**  
The mirror should meet the sink or a splashguard at the back of the sink counter. Such designs will improve clean up. The countertop should have rounded rather than sharp edges.

#### 6. Doorway Criteria

The clear width of the toilet room entrance needs to accommodate staff movement from behind the resident to a safe footwork zone for transfer. This typically requires openings that are wider, to yield to both resident and staff. Clear openings of 4' [1219 mm] or more allow sufficient space for elbows, especially when a direct entry is unlikely due to the encumbrance of vestibule walls. A 32" [813 mm] clear opening is typically insufficient. The average wheelchair, if correctly aligned, may be pushed through a clear opening of 32" [813 mm] as required by the ADA. The necessary opening should permit realistic routes of a self-propelled or assisted resident from a bed or hall, which may involve a sweeping turn or less than perfect alignment. It is preferable that typical resident toilet rooms should have only one entry to respond to privacy needs and problems of intrusion.

In an open position, the resident bedroom door should not cover or impede access to the entry of the resident bedroom toilet.



**Figure 3.9**

**Wide Opening to Resident Toilet Room**  
*The Highlands, Wyomissing, PA*

Sliding doors tend to facilitate resident use. (See Figure 3.9) Solid doors that swing toward the resident conflict with lower extremities and wheelchair movement; doors that swing away from the person are difficult to reach and control.

To develop clear openings of 4' [1219 mm] or more, secure and sturdy, surface-mounted sliding or folding doors may be used. Such doors should have emergency access features. It should be possible for toilet room doors to be opened to provide assistance for a resident who has fallen or might be wedged against the door. Sliding the door on the outside of the bathroom may be preferable to interior or "in-wall" sliding or pocket doors. In-swinging doors may be used only if reverse-swinging safety latches are provided.

Sliding doors should open against a length of clear wall space sufficient to stack the width of the door. Hollow, paneled sliding doors are preferable due to their stability and weight.

Sliding or folding doors should be securely mounted, typically suspended from the top with no floor track across the opening, made of durable materials, with easy-to-maintain hardware. In its open position, use of electrical outlets or other utilities should not be blocked. Refer to section 3.4 of this Design Guide for common ways of arranging pairs of bedrooms and bathrooms to accommodate door stacking and implications for typical resident bedrooms of varying sizes and configurations. Sliding and folding doors should provide privacy with an appropriate acoustical seal that fully covers the opening.

Doors, hardware, and hardware mounting locations should be selected for convenient resident and staff use.

Hand grips should be provided at 29" - 34" [737 mm – 864 mm] from the finished floor so that they can be used by standing or seated residents. Appropriately located door pulls will reduce maintenance problems associated with the sliding tracks.

**7. Showers in Resident Bathrooms**  
Showers should be included in the resident toilet room design. (See figure 3.10) If included, the functional program should relate the assistive characteristics of residents to the shower design features in relation to size, area for assistance, and accessibility.

- **Floor Area**  
The floor area sufficient for a resident seated in a shower chair and a staff assistant is 5' x 4' [1524 mm – 1219 mm] if the adjacent bathroom floor area can be used for

staff footwork and lifts. There is typically a proportion of Nursing Home residents requiring supine positioning and other residents whose needs and preferences may not be met by the space and features of the typical resident bathroom fixture.



**Figure 3.10**

**Resident Bedroom Bathroom, Open Plan Shower**

Wavery Health Care, New Canaan, CT  
Photo credit: John Leffers, Lancaster, PA

- **Shower Chairs**  
Showers should be designed with space for resident to be seated in a repositionable shower chair with armrests on either side rather than on a fixed bench, which limits resident stability and staff access for assistance. If fixed seating is required in a jurisdiction, the space should be planned so that a sturdy rolling shower chair may be used when the bench is folded up. If shower chairs are to be used, they may be considered “movable health care equipment” and should appear as such in the project submission and budget.
- **Shower Fixture**  
The shower fixture itself should accommodate standing, seated, and

assisted showers, e.g., a handheld or “telephone” style shower head and hose. Staff assistants should be able to safely shower a resident without dousing themselves in the process.

#### 8. Drains and Floor Safety

Methods employed for keeping the floor safe and dry should be indicated on the plan and typically include the following:

- Water should drain to the rear of the shower or away from footwork zones of the toilet room floor. The floor may gently slope to the back to keep water from flowing to resident and staff circulation areas.
- The transition from the room’s dry floor to the shower’s wet floor should be designed to direct water flow to the drain and restrain it from the dry areas.
- The shower floor should be non-slip, preferably of an easy to clean, seamless rubber or equivalent material. Some materials are suitable both for room and shower floor use.
- Fixtures should have a shower hose that will reach diagonally across the shower space and/or around a seated occupant. Problems of dropped devices and related water spills on the room floor can be avoided.
- Shower curtains should be used to keep water within the shower instead of splashing onto floor.

#### 9. Closures and Mountings

For the typical shower in a resident bedroom, the closure should allow the resident and caregiver open access to the space available rather than separate resident from staff. Closures should not

impede access to room ventilation. Curtains are preferable to rigid doors. The option for a ceiling track rather than shower rod may provide easier maintenance and address potential hazards posed by shower rods.

#### 10. Temperature Control

In addition to scald control in the facility-wide plumbing system, scald control should be provided in the shower, preferably on a wall and on the handheld shower device. Fixtures and temperature controls should be available to residents and staff assistants’ at the most open or accessible “front” entry point to the shower. The objective is for controls and showerheads to be used both by capable residents and by assistants.

#### 11. Grab Bars in Showers

Grab bars should be provided at the entry of the shower in the most accessible location and along the back and side walls. (See figure 3.11).



**Figure 3.11**

**Shower Designed for Assistance**  
Moorings Park, Naples, FL;

### 3.2.4 Interior Considerations

#### 1. Lighting

Large, diffused lights, rather than point illumination sources, are recommended. Lighting for grooming at sinks should be 600 lumens or 60 foot candles, with overall room illumination at a minimum of 300 lumens and 30 foot candles.

- Lighting levels for the shower should achieve a minimum of 300 lumens or 30 foot candles.
- For skin care tasks, preferred levels should be 600 lumens and 60 foot candles.
- Consider a vapor proof fixture to illuminate the shower.
- Night light should be provided to draw attention to the location of the toilet room and should be shaded by using louvers.
- Non-glare, matte finishes should be used in the bathroom to diffuse reflected light.
- Natural lighting should be maximized wherever possible.

#### 2. Housekeeping

The following guidelines address proper facility upkeep.

- Toilet room cleaning may be hindered by:
  - Fixtures and finishes that trap soil
  - Toilets that do not completely flush
  - Toilets that are floor-mounted rather than wall-hung
  - Toilet rooms lacking appropriately designed floor drains
  - Undersized toilet rooms, which result in more floor clean-up

- Appropriately dispose of linen and waste with minimal travel to central unit areas.
- Identify and resolve the source of foul odors. It is not acceptable to mask odors that indicate underlying health problems. Avoid the following conditions:
  - Hydrophilic floor surfaces such as ceramics and some installations of vinyl composition tile (VCT) tend to absorb foul substances and release odorous bi-products from microbial growth. It is advised to seal floors with an appropriate polymer prior to applying VCT to reduce odor problems.
  - Grout or other labor-intensive hydrophilic or heavily creviced surfaces must be maintained by deep cleaning to reduce dried matter and mitigate odors.
- Appropriate fixtures and finishes to encourage efficiency:
  - Continuous surfaces and durable wall treatments tend to be easier to maintain providing that there is one floor surface for toilet room and a shower.
  - Changes in finishes typically require distinct cleaning techniques or chemicals.
  - Staff should not need to kneel to clean bathrooms.

#### 3. Storage and Materials Management

Storage should be provided for each resident's grooming items and care products. If the toilet room is shared, individual and separate storage should be provided for these grooming items. Storage may be located in the toilet room or in another location such as in a basket kept in each resident's wardrobe.

Clean, disposable products, including bedpans, may be stored in the toilet room or other identified space. If storage is provided for clean incontinence products in the bathroom, the width should be sufficient to hold stock products. This results in approximately 10" - 18" [254 mm – 457 mm] of additional depth.

Identify facilities for sanitary use of portable urinals and bedpans in design plans. Clean pre-packed items may be stowed in stock brackets, under the sink, or in built-in storage units.

### 3.2.5 Systems Considerations

N/A

### 3.2.6 Miscellaneous

#### 1. *Charts and Tables*

Alternative bathroom configurations, proposed for typical residents, should address the proportion of residents who will use the alternative and respond to the criteria discussed in Table 3.3.

**Checklist of Equipment and Users to be Accommodated**

| <b>Bathroom Users</b>       | <b>No Device</b> | <b>Walker, Wheeled Walker</b> | <b>Standard Wheelchair</b> | <b>Oversized Wheelchair: Electric or Wide Manual</b> | <b>Battery Operated Mobility Cart</b> | <b>Standing Lift</b> | <b>Seated Lift</b> |
|-----------------------------|------------------|-------------------------------|----------------------------|--|---------------------------------------|----------------------|--------------------|
| Individual Resident         | √                | √                             | √                          | √  | √                                     | N/A                  | N/A                |
| Resident and One Assistant  | NA               | √                             | √                          | √  | √                                     | √                    | √                  |
| Resident and Two Assistants | NA               | √                             | √                          | √  | √                                     | √                    | √                  |

**Table 3.3**



| <b>Criteria to Encourage Self-Toileting Checklist</b>                              |   |
|--|---|
| <i>To promote self-toileting, resident bathrooms should address the following:</i> |   |
| <input type="checkbox"/>   | <b>Entry, Turning and Open-Space</b><br>The resident should be able to wheel in forward to an open zone of space for transferring. The resident should not have to back out.  |
| <input type="checkbox"/>   | <b>Balance</b><br>Residents' balance and secure positioning are improved with two-sided grab rails meeting both jurisdictional requirements and the actual weight bearing needs of the user.  |
| <input type="checkbox"/>   | <b>Transfer</b><br>Space is available for the resident's foot work and footrest use, enabling the resident to conveniently rise up from and get back into their wheelchair.   |
| <input type="checkbox"/>   | <b>Handwashing</b><br>Sufficient space permits a resident to transfer with minimal repositioning and maneuvering. In addition, it must be possible to streamline access from toileting to handwashing.                                |
| <input type="checkbox"/>   | <b>Reach</b><br>Residents should be able to reach faucets, soap dispensers, paper towels, and to appropriately use their individually-stored grooming supplies.   |
| <input type="checkbox"/>   | <b>Personal Grooming and Skin Care</b><br>Residents should be able to see in mirror to either groom or advise staff assistants. As this involves different eye levels, an elongated mirror is usually preferable to a tilting mirror. |
| <input type="checkbox"/>   | <b>Disposal</b><br>Disposal facilities should be available for use by the resident engaged in self-care.  |
| <input type="checkbox"/>   | <b>Privacy</b><br>Door opening and closing should be possible from the wheelchair.  |
| <input type="checkbox"/>   | <b>Side Transfer Option</b><br>Those residents preferring or needing to back in and make a side transfer should be accommodated (see Mace, 1991).   |

**Table 3.4**



### 3.3 Bathing Suites

#### 3.3.1 General

Consider the following planning and design factors when choosing to incorporate a bathing suite into a Nursing Home facility.

#### 3.3.2 Planning Considerations

Bathing is a very personal experience. Studies have found that when the bathing suite is recognized as a safe place, and where comfort and hygiene are provided in a respectful manner, resistance is significantly decreased. Therefore, in addition to technical considerations, the bathing suite should reflect a “spa like atmosphere” or an atmosphere as close to a home-like bathing suite as possible. The décor, furnishings, interior surfaces, and color therefore should appear as deinstitutionalized as possible.

Challenges include:

- Space limitations
- Fear of falling
- Anxiety related to lifting (particularly mechanical lifts that raise the person up and over a tub)
- The impact of other room apparatus and stored items
- Temperature fluctuations
- Water sprayed in the face
- Unfamiliar appearance of the room and ambient noise.

##### 1. Bathing Suite Operations

Typical resident functions within the bathing suite include:

- Assisted showering and/or self-showering with “stand-by” assistance

- Assisted tub bathing, including lift use
- Grooming and hygiene
- Toilet transfer assistance
- Relaxation and healing
- Storage of personal products

Typical staff functions within the bathing suite include:

- Assistance in the hygiene and grooming of residents
- Skin care
- Weighing of resident
- Sanitation of tub or shower used and clean-up between each resident user
- Maintaining personal safety for each resident
- Water management design concerns, which include drainage, floor contour(s), and selection of floor materials.

##### 2. Preferences

Tubs go unused when staff assistants are unfamiliar with tub operation, when re-fill or clean-up is time-consuming, when staff members feel unsafe during lift use, and when lifts are mismatched to the tub. Consider the following:

- Assisted tubs may be preferred for residents uncomfortable with water splash and spray or with the confining walls of a shower.
- Tubs may be preferable for the care of large residents and those with bariatric related needs. Tub use may decline when the capacity for balance and cognitive functions lead to care plan changes.
- Each typical Nursing Home resident should have convenient access to an assisted tub and a functionally accessible shower designed with

space for safe staff assistance, preferably located near to his/her living space.

- Showers in bathing suites can provide space not readily available in resident bathrooms. These showers should accommodate larger width shower chairs, individuals requiring leg extensions on wheelchairs, and supine showering such as for spinal cord injury patients. (See Figure 3.12)



**Figure 3.12**

**Open Shower in Bathing Suite**

*NY State Veterans Home at Montrose, NY.*

- In addition to bathing, some tubs may be used for comfort, agitation reduction, and vestibular stimulation provided through options such as bubbling from water jets.

**3. Fixtures per Nursing Care Unit**

Bathing requirements are set forth in regulations in terms of fixtures such as the shower head(s) or tubs rather than the rooms per number of residents. Regulations set minimum guidelines of one fixture for each 16 to 20 people. A room may have more than one fixture providing a choice of features.

**4. Applicability to Nursing Homes with In-Room Showers**

Shower fixture requirements usually refer to buildings equipped with resident toilet rooms without showers and may be relaxed when functionally accessible showers are provided in individual resident bathrooms.

**5. Lift Use**

Due to staff injuries and the operational costs of such injuries and absences, the prevalence of mechanical lift use is increasing. As of 2004, OSHA had legislation pending, which project sponsors should verify, that may establish additional criteria for lift use and/or design. In addition to government websites, refer to sites maintained by professional organizations for Long Term Care such as AAHSA.org and AHCA.org and the references for this chapter.

**3.3.3 Design Considerations**

**1. Fixtures and Space for Use**

A basic bathing suite includes the following:

- Assisted shower for use while seated, standing or in a supine position
- Tub designed for lift use
- Lift(s) designed for a specific tub and used for transport
- Functionally accessible toilet and sink
- Space necessary for staff and residents' movements in transfer
- Clean linen, soiled linen, trash and storage
- Accommodations for individual personal care items.

## 2. Common Options

Consider a more residential approach including some of the following:

- A grooming center or vanity, mirror, power for dryer and shaver
- Wheelchair scale and/or other methods for weighing residents
- Cabinets for personal items
- Space for hanging robe, personal clothing or cover.
- Wheelchair storage/parking
- Wheelchair hair washing facilities for persons who do not use the central facility.

## 3. Full-Assist Showers in Bathing Suites

Bathing suite showers should be designed to accommodate needs that cannot be readily met in typical resident room showers. Typically, a 7'-6" x 7'-6" [2286 mm x 2286 mm] or equivalent floor area will accommodate:

- A resident, seated in a shower chair, and a staff assistant
- The space necessary to move the resident
- Space for the assistant to circulate around the person being showered.

## 4. Assisted Tubs

Specific tubs and their lifts must be selected prior to establishing room layout.

## 5. Lift Use

Bathing suite dimensions should accommodate the base of each lift, which may have "closed" and "open" positions, and footwork room for the resident and one to two staff members. Mechanical lifts have increased in popularity, particularly where the resident is larger than the staff member

and/or only partially able to bear weight. Space for lift access and staff assistance should generally be accommodated in Nursing Home bathing suites. Lift features and sizes vary and include mobile versus fixed equipment such as lifts attached to specific tubs. Dimensions of several models should be accommodated in the design:

- Hydraulic and manual standing lifts
- Hydraulic and manual seated lifts
- Supine bath transfer systems
- Shower chair to minimize the need for pull-down benches and lift combinations

Best practice has been to minimize use of lifting methods that elevate or suspend residents into the air. No one method appears to satisfy all resident needs due to factors such as overall weight and size as well as their weight bearing capacity as well as ergonomic preferences of the caregiver(s). Design teams are urged to obtain experienced professional input on specification, to ensure that the lift supports the types of residents to be transferred in veterans' homes while minimizing staff risks.

## 6. Basis for Establishing Clearances Needed for Lift Use

Lift clearances should be based on equipment for bathing and options for transfer. Bathing lift examples and sizes appear in several websites. Illustrations of lift space can often be found in manufacturer's brochures. However, information on required clear floor space may have to be directly requested from the manufacturer.

Sponsors are strongly advised to accommodate a space of about 7'-2"

[2184 mm] for supine and some standing lift systems. The average space recommended for supine lifts is 30" w x 75" l [750 mm x 1900 mm).

### 7. Bathing Suite and Shower Floor Drains and Slopes

Water management is a perpetual concern, as its control can minimize hazards and falls. Floor drains are recommended for rooms that have showers or tubs. Four-inch drains should be used to accommodate unplanned incontinence with largely perforate face plates that enable staff to wash any fecal matter into the drain with a handheld shower head.

In showers, drain the water to the rear of the shower and/or away from footwork zones. The floor may gently slope to the back to keep water from flowing to resident and staff circulation areas. Two drains provide a flatter and more secure area for shower chairs as well as level space for staff to stand while providing assistance.

### 8. Grab Rails

Grab rails should be provided at the entry of the shower in the most accessible location, preferably near the shower head. Vertically mounted "zigzag" or "W" style rails may provide support options for standing, leaning from and sitting in this location. Horizontal rails are to be placed along the back and side walls at a height of 39" - 42" [991 mm – 1067 mm] from the finished floor, unless otherwise specified through local codes and ordinances.

### 9. Closures

Shower curtains should be used rather than rigid doors. Shower curtain hardware should be mounted to

accommodate both resident and staff, including the use of showering equipment.

### 10. Hot Water

Store hot water at 140°-160° F. Refer to Section 2.4 Systems Criteria for information on water storage and mixing valves.

### 11. Bathing Suite Layouts

Figure 3.13 offers an example of a common bathing suite with shower and tub, although it could be modified. The diagram illustrates:

- Shower zone (7'-6" x 8'-6") [2286 mm x 2591 mm] with diagonal opening for easy assistance, whether the resident is standing, seated, or supine on a shower trolley. A handheld shower is included.
- In tub zone, 5'-6" [1676 mm] turning radius for assistive device.
- A bathing zone of 8'-6" x 12' [2591 mm x 3658 mm]. For this diagram, assisted recumbent tub dimensions and characteristics were used.
- An open resident toilet room and vanity is shown with a headwall of about 8' [2438 mm]
- A soiled linen storage room is shown, about 49 nsf [4.55 m<sup>2</sup>], with separate containers for flat linen items, incontinence products and personal clothing and trash.
- Storage of 2' x 4' [610 mm x 1219 mm] is provided in full-length cupboards.
- For equipment, about 42 nsf [3.90 m<sup>2</sup>] is provided including an alcove for using and storing a wheelchair scale as well as an area for lift storage and recharging.

- A seat may be available for use while dressing. Mirrors for grooming are located over the sink, and a full-length mirror is inside a cupboard door. (See Figures 3.13, 3.14 and 3.15).

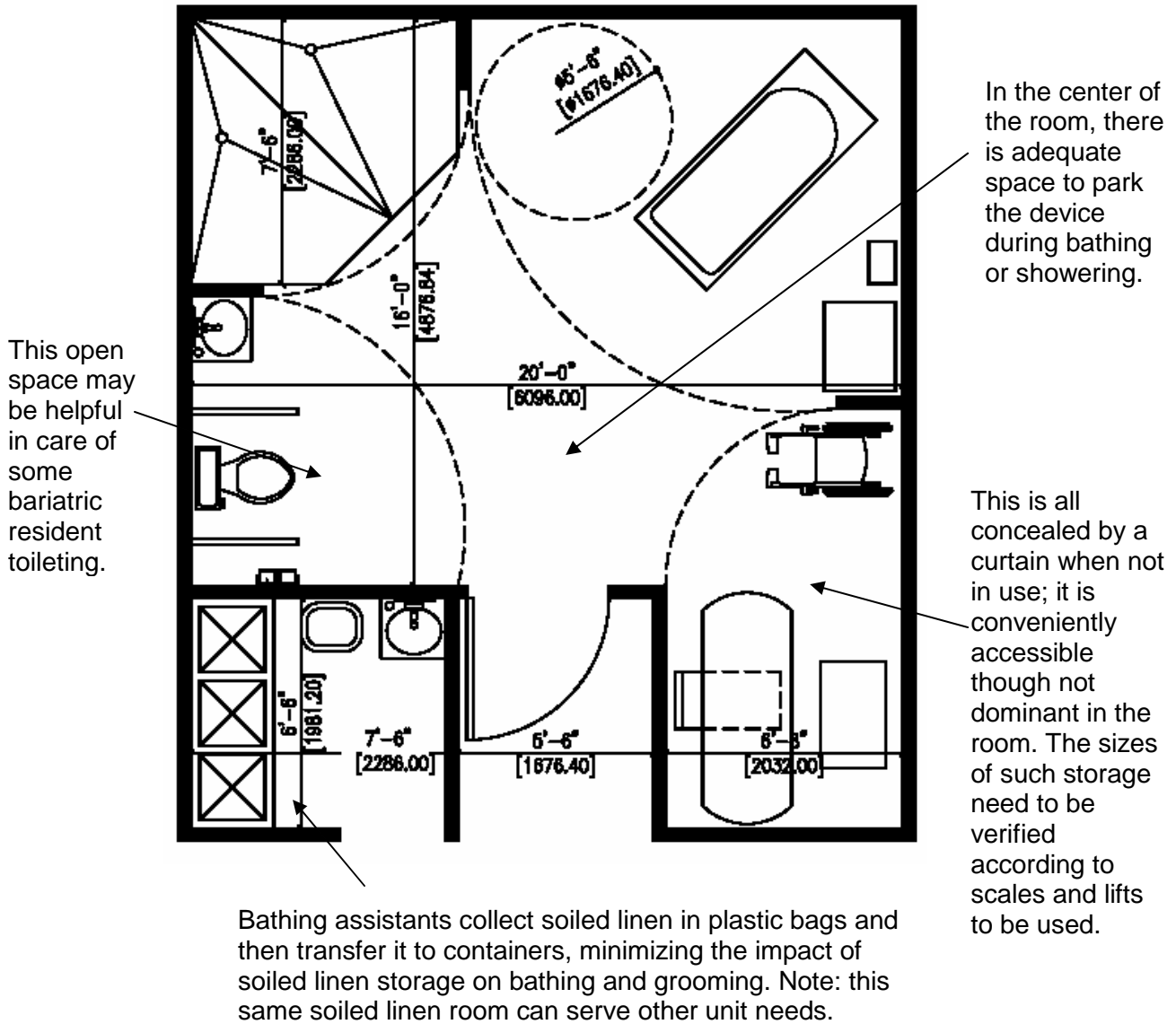
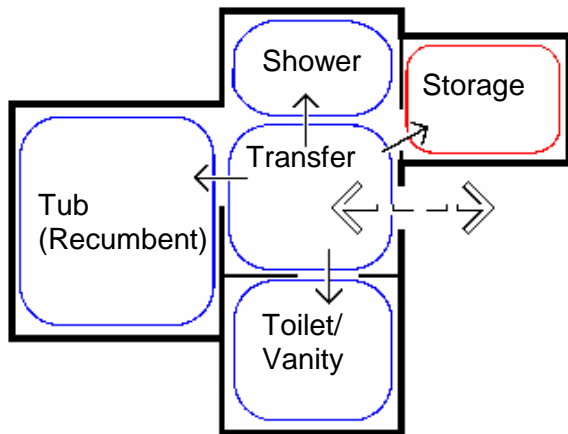


Figure 3.13

Bathing Suite with Shower, Tub and Sample Lift Clearances.





**Figure 3.14**

**Open Plan Bathing Suite with Grooming**

**3.3.4 Interior Considerations**

Options below help define bathing as a comfort for the individual, refocusing residents away from institutional model attributes:

**1. Window and Visual**  
Consider the following:

- A window (screened for privacy) to allow natural light.
- Non-glare surfaces for floors and walls improve visual comfort and may reduce falls.
- Lighting levels for the general room should be 30 foot candles, 300 lumens and the skin care and grooming areas should be 60 foot candles, 600 lumens.
- Art and accent colors on curtains. Great effort has been made to allow fixtures to blend into the background so that the equipment itself does not dominate the space. Art should be selected for use in moist settings such as ceramic art.

**2. Acoustics**

Due to the prevalence of hard surfaces in bathing suites, there are few opportunities to improve the acoustics or apply noise-reducing materials. Textural variety may reduce some problems with background noise transmission or the commonly experienced “echo” problem. Tub selection criteria should include low noise levels. Other opportunities to reduce noise include window coverings, shower curtains, cubicle curtains and flooring.



**Figure 3.15**

**Bathing Suite with Grooming and Storage.**  
Peabody Retirement Center, North Manchester, IN;

**3. Texture**

Lightly textured floor coverings may be added to improve footing. Vestibular stimulation, a bi-product of whirlpool, hydro sonic or other water jet action, may promote relaxation and provide pain relief.

**4. Natural/Familiar**

Plants and familiar objects, including grooming implements, contribute to the goals of a pleasant ambiance. Music featuring natural stimuli may be incorporated into the design.

### 3.3.5 Systems Considerations

N/A

### 3.3.6 Miscellaneous

#### 1. Sample Performance Criteria for Tub Selection

Recumbent tubs may provide the most options, when only one model will be used in conjunction with a supine shower trolley and appropriately sized shower area. Recumbent tubs may have advantages for transfer, hydrotherapy and body core temperature. The basic assisted tub should:

- Have a door opening to avoid elevated lifting unless resident users are transported and bathed in supine position
- Have fast fill and drain modes
- Enable residents to either sit or recline in the unit.

Portable shower trolleys may be preferable to providing elongated tubs. Verify fill rates for elongated tubs and whether use of a shower trolley is more effective.

- As applicable, check on the pieces required for supine bathing and storage implications.
- Even though some shower trolleys partially fold, space must be provided for storage when other users will be in the bathing unit.

A handheld shower attachment may be useful for hair washing, rinsing the resident, and for cleaning the tub.

#### 2. Method for Estimating Numbers of Bathing Suites

Residents have individualized care plans that identify the numbers of baths or showers per person per week. Expectations for baths appear to be increasing as a means of providing skin care.

- *Numbers of Baths*  
The provision of in-room showers has not precluded the need for bathing suites for typical residents. Particular sub-populations, as identified in the program of care, may use bathing suite facilities less frequently warranting a different calculation.
- *Time*  
The assumption that each bath and clean-up requires 30 minutes, and that baths are not taken during meal times, leaves a window of 8 hours per day over an interval of perhaps 12 hours. This computes to 16 slots of bathing time per suite per day. Applying this information and goals for the frequency of showering or bathing should help determine the number of bathing suites needed.
- *Ratio Proposed*  
Plan bathing suites should be provided at a ratio of about 1:20 to 1:24 and fixtures at about 1:12 or portion thereof per resident.



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## 3.4 Resident Unit Design and Operations

### 3.4.1 General Considerations

Nursing Home layouts and facility appearances have been transformed by merging residents' needs with a better understanding of staff operations. It is the residents' needs that shape schedules and services. Design must correspond with how residents and staff circulate within the occupied areas, thus producing smaller group living experiences. Considerations include:

- Smaller resident neighborhoods
- Increased resident to staff contacts
- Nursing assistant(s)' need for support facilities
- Better gathering spaces
- Equipment space for staff

### 3.4.2 Planning Considerations

Jurisdictional and regulatory factors affecting unit size(s) are as follows:

#### 1. *Minimums*

Staffing minimums are often stated as a ratio of licensed nurses and nursing assistants to the residents. Unit design should correspond to regulated minimums as well as the staffing levels that meet the needs of the residents.

#### 2. *Plan Review*

Functionally appropriate design responses may require advance review with jurisdictional authorities. These include the following:

- Sight lines
- Plans illustrating staff functions on various shifts
- Communication systems
- Reference points for walking distances

- Charting facilities and implications of electronic systems
- Call lights
- Continuous handrails

#### 3. *Operational Considerations*

Facilities are increasingly organizing residents in a series of smaller clusters and neighborhoods for care during the morning and afternoon and larger units for nursing coverage at night. Units of 36 to 48 persons also may function as sub-units (neighborhoods) of 18 and 24 respectively, based on daytime staffing ratios. For states mandating units of 60 beds, sub-units of 30 beds may be operationally more practical.

#### 4. *Special Populations, Smaller Units*

When facilities identify services with very distinct populations and staffing requirements, they can elect to provide smaller units. This is accomplished by dividing a typical 30 to 48 person unit and operating a portion of that unit as specialized care.

#### 5. *Staffing Patterns*

Staffing patterns based on resident needs may contribute to the design of units. In addition, the licensed nurses available for direct care at night should help establish the unit size as there are generally more licensed nurses available on days than on night.

#### 6. *Combining and Linking Units*

The points at which resident units attach to one another provide ways for streamlining operations. (See Table 3.5) Examples are:

- *Unit-to-Unit* - Judicious placement of activity and therapy suites, meeting rooms, porches and similar "destinations" may provide

opportunities for designers to create attractive, shared, common facilities located at short distance from each unit. (See Figure 3.17)

- *Unit-to-Commons* - Well-placed unit connections streamline service traffic associated with meal service and materials.
- *Unit Organization Points to Distribute Staff* - The options are:
  - On or Between Units
  - Associated with a Particular Sub-Population
  - Central to Units
- *Efficient Connections* - Short connections or halls between units or services and commons should be designed to include secondary functions to avoid uninhibited stretches of halls and costly tunnels.

#### 7. *Single-Story Considerations*

Veterans' facilities have made an unusual commitment in Nursing Home facility design to develop single-story projects. (See Figure 3.16) Reasons for favoring single story projects are:

- For Residents
  - Improved outside access and more possibilities for enjoying natural stimuli.
  - Greater sense of security in terms of evacuation.
  - Less reliance on elevators to ease maneuvering and increase attendance of off-unit programs.
- For Staff
  - Less time spent off-unit for accompanying residents to therapy, programs, and care appointments
  - More convenient access from units to amenities such as therapy and activities
- For Administration and Services
  - Use of a basement service level for linen collection at neighborhood intersections
  - Use of golf carts and exterior methods of circulation and delivery

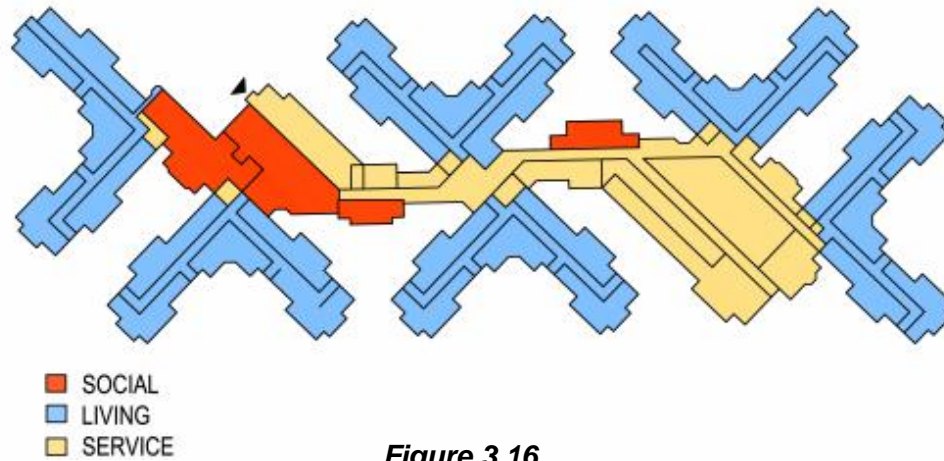


Figure 3.16

**Functionally Connected Units in a One-Story Building**  
New York State Veterans Home Montrose, NY

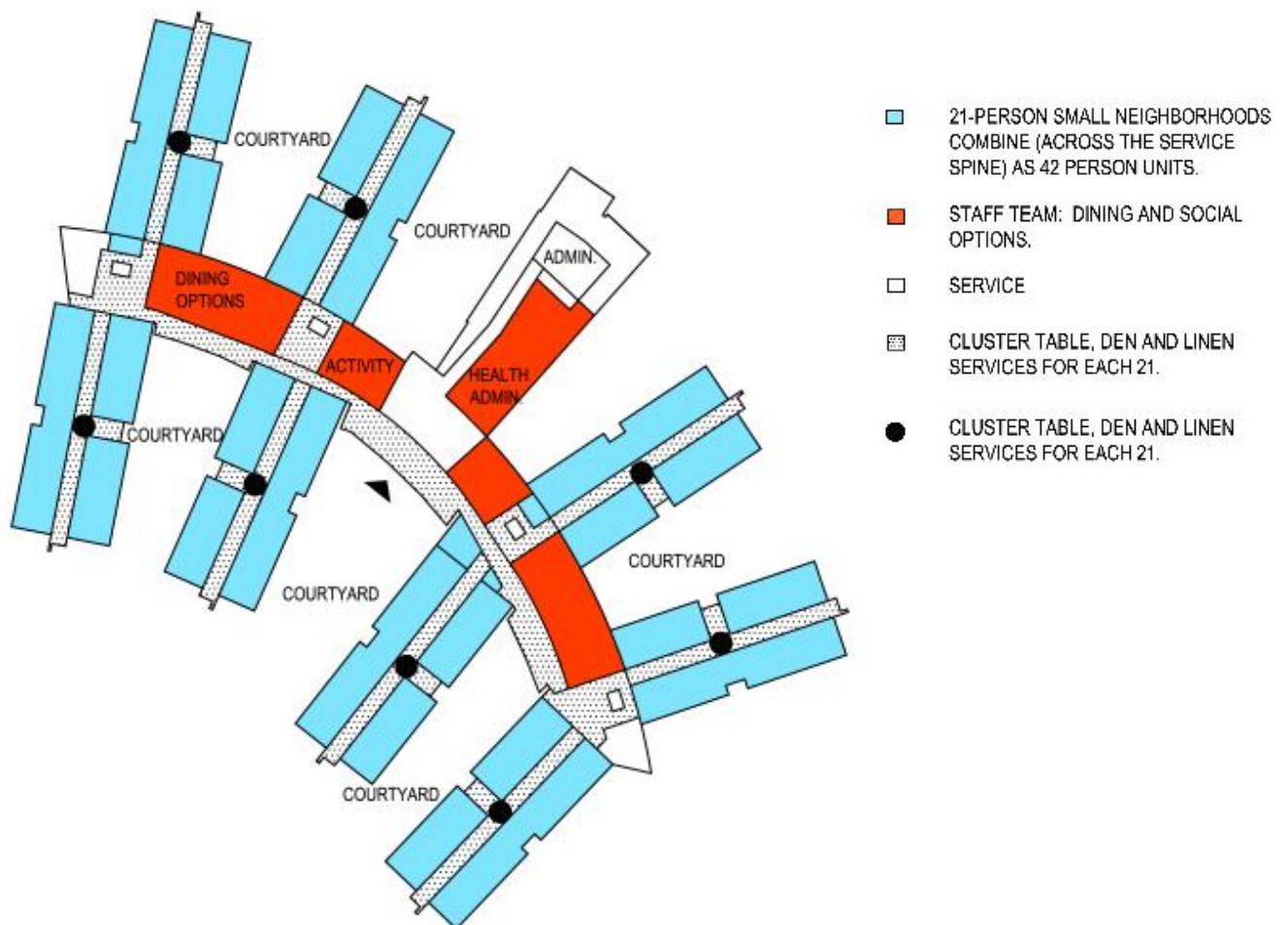


Figure 3.17

**Combining Units into Buildings**  
Washington Veterans Home Retsil, WA

### 8. Multi-Story Facilities

Multi-story facilities are the result of site or program related factors. Two-story buildings allow units to share staff and common spaces. Multi-story projects can often obtain some of the same aesthetic advantages provided in the single-story facilities; for example:

- Distributing common spaces vertically as well as horizontally
- Designing verandas, porches and extensions of programs to the outside, with operable windows incorporated (See Figure 3.18)
- Designing higher ceilings and clerestories for common spaces on upper floors
- Creating destination features by orienting vistas toward particularly engaging views, which are visible only from upper floors



**Figure 3.18**

#### **Multi-Story Facility Amenities**

CO State Veterans' Home at Fitzsimons, Aurora, CO

### 3.4.3 Design Considerations

#### 1. Visual and Auditory Monitoring

Staff should be able to continually observe areas where residents emerge from their bedrooms as well as monitor

unit exits and entries. This may be accomplished by designing so that:

- Staff routinely encounter residents
- Views are unobstructed from work desks to halls, dining, gathering areas and outside spaces
- At night, licensed staff have a view of desks used by nursing assistants
- Equipment and low voltage wireless systems are used to provide information about door positions, to monitor specific medical equipment, and sometimes to monitor the risky movements of identified wanderers
- Staff members are outfitted with wearable communication systems to provide continuous coverage as they circulate through a "neighborhood" or unit.

#### 2. Walking Distances

Design the Nursing Home with short travel routes down corridors, through units, and between resident rooms and dining areas. The following are recommended travel distances:

- *For Older People.* Average travel distances of 50' to 60', with extremes of less than 80', can encourage resident ambulation and self-propulsion.
- *For Nursing Assistants.* Typical walking distances of 30-80' are preferable (and illustrated in this Design Guide) in comparison to building configurations with centralized staff assignments that can generate distances of 320' or more.
- *For Licensed Staff and Physicians.* Optimizing walking distances for licensed staff and physicians is important, as many are required to cover the extremes ("ends-to-ends")



of the unit. Distances may range from 80' to 340'.

- *Best Practices.* “Interlocking” room design is included. These create short cuts and reduce gross area.
- *Lessons Learned.* Several unit configurations have led to caution regarding the development of courtyard plans, race track units with rooms grouped around a center service core and two single-loaded corridors, and round units as these increase walking and complicate sight lines for night care.

### 3. Resident Rooms Adjacent to Social Areas

Residents should have a social destination directly available from their room(s). Spaces for social and other activities should be inviting and comfortable to encourage residents to get out of their rooms. (See Figure 3.19) These spaces should be nearby and be designed and furnished in a manner to provide way finding and comfort.



**Figure 3.19**

#### **Social Spaces Adjacent to Resident Bedrooms**

*The Highlights at Wyomissing, PA;  
SFCS Architects, Roanoke, VA*

Staff should have work, storage and communication facilities located near their assigned resident rooms. Care is less fragmented and less “regimented”

when each staff member has the space and resources necessary to respond to residents’ needs and schedules. Residents should spend less time waiting for assistance to get to social areas.

- Decentralized support facilities for nursing assistants simplify relationships and increase their time with each resident. By clustering residents, the flow in a typical day, including movement to and from dining and activities, can be streamlined.

### 4. Flexible Communications

Clustering should respond to the efforts of nursing assistants and nurses to overcome limitations of fixed, central call systems and utility hubs, to minimize steps back and forth to manage the systems. Flexible communication systems are critical to the success of decentralization and they require linking unit hardware through appropriate software design.

### 5. Nursing Assistants’ Clusters

Support facilities clustered around one nursing assistant may include the following:

- Facilities for clean linen, soiled linen and supplies
- Work space
- Repeater center for call system
- Computerized chart with controlled access

### 6. Neighborhoods

The following may be provided for residents and shared by two or three nursing assistants:

- Great room, den or social area

- Kitchen area for snacks and socialization
- Bathing suite
- Porch or outside access

### 7. Staff Stations, Team Centers and Cluster Desks

Three commonly designed unit work spaces for nursing staff that respond to a facility's operations, staffing, and care, are staff stations, team centers and dynamic cluster desks.

- **Staff Stations** - The staff station is an identifiable hub and may work in conjunction with a team room and cluster desks. The traditional nursing station has become a cluster desk with access to security panels as well as location that can be used for night staff. In most jurisdictions, smaller stations for management of nursing and related care are viable. Smaller desks may seat 1-2 people and other staff members may be located along a corridor and in the team room. (See Figure 3.20). When meetings and care planning are done in the team room, it is preferable that participating staff be visible and monitor unit security features.



**Figure 3.20**

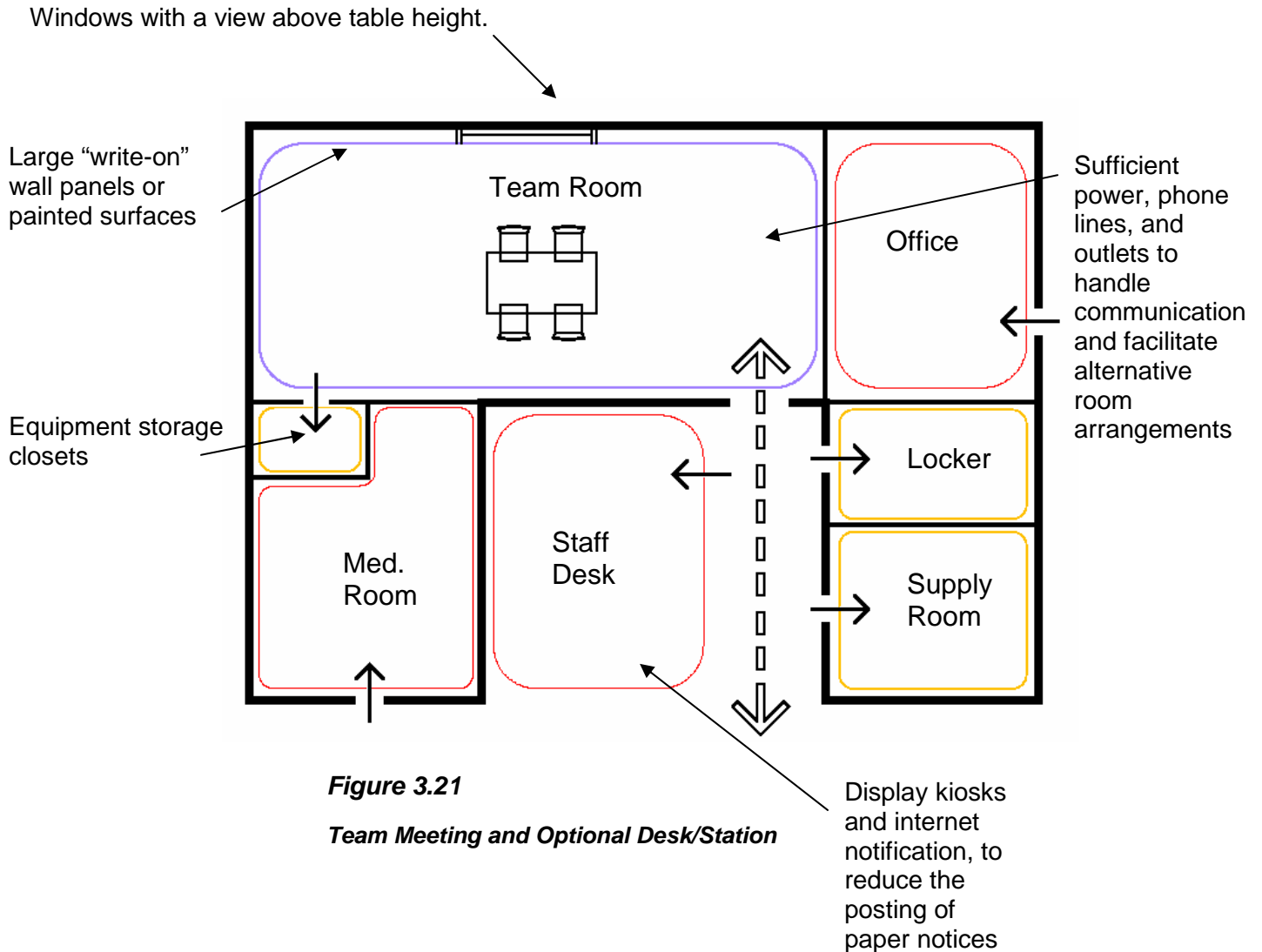
**Small Station, Team Work Area Nearby**  
Nevada Veterans' Home  
Boulder City, NV

Some accommodation should be made to manage the resident call system when the desk is not staffed. This may include use of wireless technology that has been programmed to reroute resident call signals. Low profile desks help residents in wheelchairs approach staff. The design should prevent access to private information and computer cables.

In some settings, a completely decentralized approach to staffing may work best. For some Nursing Homes, this may include replacing the traditional staff station with a "living room" where charts are kept in cabinets with charting done in the resident bedroom via a hand held device or in alcoves outside or inside the resident bedroom.

- **Team Centers** - Team center design should address the following (See Figure 3.21):
  - An alternative to conducting administrative transactions and meetings in an open-plan staff station
  - Equipment and related items necessary for center function (see Guide Plate #7)
  - Required staff for two adjacent neighborhoods of one unit for care planning
  - Part-time use





**Figure 3.21**  
**Team Meeting and Optional Desk/Station**

- Dynamic Cluster Desks -** Appropriately equipped, decentralized work desks respond to the assigned positions of nursing assistants and the needs of the nursing staff. (See Figure 3.22) Dynamic cluster desks are not stations that are staffed continually but are used as needed with personal information protected from unauthorized access and view. These desks may be located near 1-2 nursing assistants’

clusters of rooms and used by them, licensed staff, and medical professionals making room-to-room rounds. (See Figure 3.24) These workstations are dynamic because an array of equipment allows protected access to records, transmission of orders, and coordination of documentation. Storage should be customized to each cluster’s or unit’s focus. (See Figure 3.23).



Figure 3.22

**Dynamic Cluster Desk**

NY State Veterans' Home at Montrose, NY  
Perkins Eastman Architects

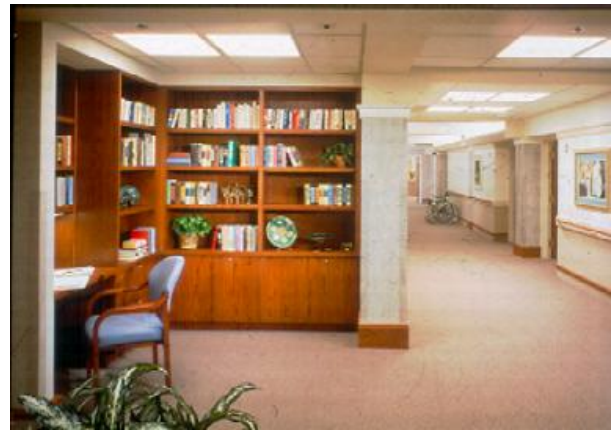
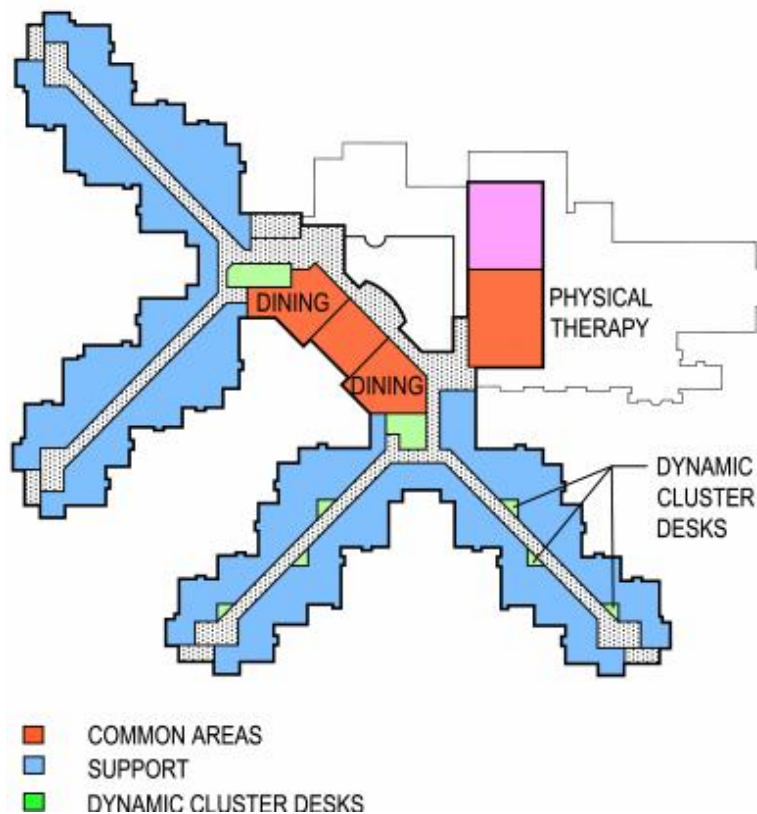


Figure 3.23

**Cluster Desk Integrated into a Library Alcove.**

Shalom Park, Denver, CO;  
KKE Minneapolis, MN with Boulder Associates, Boulder, CO



**COMMON AREAS**

- Dining Room
- Family Dining
- Activity
- Bathing Suite
- Resident Phone
- Toilet
- Outdoor Gardens

**SUPPORT AREAS**

- Team Center
- Exam
- Medication
- Social Work
- Toilet
- Cart Niche
- Personal Laundry
- Clean Linen
- Clean Supply
- Soiled Linen
- Janitorial
- Storage (O2)

Figure 3.24

**Collaborative Care: Nursing Assistants, Nurses and Dining Staff**  
Adapted from State Veterans' Nursing Home at Fitzsimons, Aurora, CO

### 8. Offices on Units

Staff preferences differ with regard to whether licensed staff and others require on-unit offices and/or access to private consulting rooms. Assigned office space is contingent upon the unit size and function. Increasingly, when nursing administration is located elsewhere, one office or room is made available for counseling, clergy, or as a quiet work room for physicians or consultants. (See Figure 3.25) Units that focus design on open staff stations, open team centers, and cluster alcoves are likely to benefit from at least one closed area, assigned, shared, or used as needed.



**Figure 3.25**

*All Purpose Staff Work Room/Library  
Jewish Home of San Francisco*

### 3.4.4 Interior Considerations

#### 1. Natural Light and Casual Gatherings

Natural light and casual gathering space may facilitate staff care. Methods of introducing natural light include clerestories, well-places, windows and a “J” style arrangement of rooms. (See Figure 3.26).

In some pod designs, the center gathering space is almost entirely interior space, lacking daylight or views.

When clusters are only service oriented, natural light and living amenities are compromised, and the advantages of small groups of residents go unfulfilled. When clusters are only architectural forms or places for social gathering, they may add to circulation space, while increasing both construction and staffing costs without necessary health support. Refer to Section 2.3 Perception and Interiors for more information regarding interiors.



**Figure 3.26**

#### *End Windows and Clerestory or Skylight*

*Garden House II Alzheimer's Care, Weinberg Campus, Buffalo, NY*

### 3.4.5 Systems Considerations

The first requirement of communication systems on a unit is that they help staff respond to residents and staff requests for assistance. The second important requirement is that they monitor fire alarm systems, exits and systems for other devices such as wandering, falls and oxygen.

#### 1. Performance Requirements for Communications and Low Voltage Systems

The following are issues to address in systems planning:

- Wearable communication devices that will allow staff members to communicate from multiple locations rather than returning to a single location to manage calls.
- No one communication device currently exists to adequately supply the needs of the Nursing Home staff.
- Since duty distribution may vary from unit to unit in the same facility communication systems must be highly adaptable so staff themselves can adjust the equipment to the staffing pattern required. The system should accommodate staffing pattern changes.
- Intent is to keep extraneous noise at a minimum.

- Location of base stations by shifts and/or by unit.
- The need for a programming and a low voltage system consultant service.

A functional program description regarding the ways in the reliance on TV monitoring for remote management requirements should be addressed.

#### **3.4.6 Miscellaneous**

There are certain staff operational issues to consider when planning a Nursing Home facility. Table 3.5 provides three key examples of how facility planning can directly impact the effective operation of a nursing unit.

The three key examples are:

- Connections to other units and common facilities
- Horizontal connections and service routes
- Vertical circulation distributed among pairs of units.

See Table 3.5 for more information.

|   | Source of Potential Labor Trap or Savings             | Description of Objective  | Description of Problem(s)  | Goal Examples  |
|---|---|---|--|--|
| 1 | Connections to other units and common facilities      | <p><b>a.</b> To attach units to commons at a staff intersection or hub, and</p> <p><b>b.</b> To attach so that staff and deliveries do not pass rooms prior to reaching service destination.</p>            | Privacy is compromised when visitors or service staff encounter resident rooms, rather than common space with staff work area.   | <p><b>a.</b> Food is delivered to unit or neighborhood without passing rooms;</p> <p><b>b.</b> Soiled linen is removed without passing rooms in another neighborhood;</p> <p><b>c.</b> Visitors arrive at information and/or control point.</p>  |
| 2 | Horizontal connections and service routes             | <p><b>a.</b> To minimize service routes from central areas to each unit;</p> <p><b>b.</b> To maximize the useful destinations along central circulation.</p>  | The collection system of soiled linen and waste, across units, needs to be developed to address efficiencies for both nursing and environmental services. This may require elevators, chutes, separate service routes and/or external access with motorized carts rather than "pushing" heavy carts. | <p><b>a.</b> Attach units by the facilities they share;</p> <p><b>b.</b> Eliminate long connector corridors or distribute commons along connectors;</p> <p><b>c.</b> Provide the option for an external service drive or an underground route;</p> <p><b>d.</b> Limit the walking distance to clean or soiled utilities to a maximum of 80'.</p> |
| 3 | Vertical circulation distributed among pairs of units | <p><b>a.</b> Provide efficient nurse-to-nurse communication between pairs of units;</p> <p><b>b.</b> Link nurses and nursing assistants for back-up;</p> <p><b>c.</b> Improve access by clinical staff.</p> | <p><b>a.</b> Unsupervised, invisible exits;</p> <p><b>b.</b> Corridors with no view of staff;</p> <p><b>c.</b> C.N.A.s cannot find nurses.</p>   | Locate vertical transportation so it does not interfere with the efficient communication and sharing of functions (i.e. break, conference or dining rooms) among units.  |

**Table 3.5**  
**Operations' Considerations in Combining Units into a Building**



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## 3.5 Alzheimer's Care and Dementia Support

### 3.5.1 General

It is estimated that people with diminished memory are the predominant resident population of Nursing Homes, accounting for 50-75% of the residents present on a typical day. Estimates include the following:

- 44% are identified with dementia and 28% are described as depressed;
- 54% of US Nursing Home residents are part of behavior management programs; and
- 7-15% wander.

Alzheimer's Association estimates that the prevalence of the disease is expected to increase along with the increase in people over 85 years, from about 4.5 million in 2000 to 5.5 million in 2020 and perhaps 9 million in 2040.

Nursing Homes increasingly offer specific programs and facilities for two sub-populations of their cognitively impaired residents:

- Those who suffer from diminished memory and flawed judgment but are active and fairly physically adept.
- Those who are profoundly physically and mentally impaired.

There is no one accepted practice for meeting these population needs. As sponsors have gained experience in improvising care and services for these individuals, they have increasingly relied on the environment as a critical resource for their dementia care services.

### 3.5.2 Planning Considerations

#### 1. Residents and Alzheimer's Care

The Nursing Home should be ready to respond to residents experiencing any and all of the following:

- Flawed judgment affecting personal safety
- Agitation
- Insufficient attention span for eating and drinking fluids, dressing, and exercising
- Difficulties processing information and/or recalling immediate events or sequences
- Difficulty in multi-tasking
- Greater risk of falls
- Wandering, pacing, and rummaging
- Inability to make needs known
- Difficulties translating from symbols to actions
- Confusion in larger groups and unfamiliar surroundings.

#### 2. Other Related Sub-Populations Served

In addition to adult onset cognitive decline, veterans care may include dedicated programs and provision of small units for people with other defined behavioral challenges such as:

- Post-traumatic stress syndrome;
- Severe clinical depression;
- History of substance use;
- Chemical exposures and dependencies; and
- Recommendations for small group units respond to basic unit layout, operations, and applicable safety and security.

#### 3. Staff and Alzheimer's Care

Alzheimer's disease and related conditions progressively transform

individual residents. Unpredictable behaviors that can impact the unit staff are:

- Demands on staff are greater in terms of oversight of both the people and the environment.
- Staff strives to refocus stimuli and behavior toward foci that provide comfort and reduce anxieties.

#### 4. *Designated and Distinct Units for Memory Support*

When designing distinct accommodations for those with Alzheimer's and related disorders, consider the following:

- Provision of smaller units with specially trained staff
- Secure areas for those who wander
- Provision of engaging, individualized programs.

### 3.5.3 Design Considerations

This section provides guidelines for achieving a safer, more responsive design.

#### 1. *Safety and Security*

The design of areas for people with limited judgment should incorporate a combination of the following measures:

- *Location in the Building* - Provide active residents with ground-level dwellings that provide, on the same floor, dining areas and secure access to the outside.
- *Perimeter* - Provide perimeter control, door identification, an approved system for exit control, and door alarms and release. As appropriate, consider time release and/or magnetic locks, key pads, and specially designed hardware

that locks or unlocks doors selectively upon the approach of identified individuals.

- *Boundaries Directly Outside Unit Exits* - Methods for providing outside unit boundaries defining secure gardens are to include perimeter fencing of minimum 7' height, motion detection and sensors, concealed entries, and off-set fences.
- *Exits* - Investigate the integration of communication from exits, call systems, and motion detectors to radios and/or wireless systems by working with communication consultants or professionals.
- *Controlled Access* - Control access to areas not specifically designed for use by residents and those spaces that require cognitive judgment such as stoves, soiled linen, running water, and office equipment.
- *Monitors* - Consider including fall and bed monitors, security cameras and sound monitoring equipment.
- *Windows* - Window openings should be controlled to minimize risky elopements, yet operable to allow for fresh air.
- *Floor Safety* - Design should eliminate the need for ramps, as floor levels should be continuous. Consider institutional-grade floor surfaces that appear like carpet but clean with one process to minimize potential problems associated with wet floors and time associated with floor finishing.
- *Personal Possessions* - Make accommodation for storage, appropriate access, and protection of personal possessions.

#### 2. *Reduced Agitation*

To reduce environmentally induced agitation, mitigate potential sources of

background noise including traffic, HVAC systems, ice machines, and overhead paging systems. Reduce unnecessary travel through a unit as feasible.

### 3.5.4 Interior Considerations

#### 1. Room Recognition

Visual, auditory and tactile cues are used in dementia care to encourage stimulation, for example:

- Fresh aromas to signal dining and stimulate digestion
- Interior design techniques to camouflage features of the environment that are not essential to the resident. (See Figure 3.27) Consider using the same tone for walls and doors of utility areas and placing utility room signs above eye level.



**Figure 3.27**

**Monitored Exit Door with Art.**  
Epworth Villa, Oklahoma City, OK  
ADG, Inc., Oklahoma City, OK.

- Personal items to identify a door, such as memory boxes

- Distinctive, illuminated destinations in view upon leaving one's room
- Non-glare lighting at levels appropriate to general and task lighting (see IESNA, 1999)

#### 2. Personal Possessions

Reinforce individuality by using safe display methods including storage units and protection of small items in appropriate display units. While fabric art, including vertically hung quilts, can contribute to individuality, they need to meet applicable flammability requirements.

#### 3. Engaging Activity

Dementia care programs manage symptoms by providing simple stimuli and familiar objects, inviting touch, and offering options for appropriately dissipating emotions such as digging, sports, walking, or actively rocking. Residents with fragmented memory benefit from exercise and the perception of freedom. The specific routines of daily life, emphasis on natural stimuli and home style dining will vary from facility to facility. Develop specific ways of working with both active people and those exhibiting more profound needs.

#### 4. Blended Dementia Populations and Small Nursing Care Units

It is possible to design a program and unit that serves both active and more sedentary individuals with Alzheimer's and similar needs. Consider sharing some service facilities and staff members with more traditional Nursing Home care. On such units, assigned staff:

- Facilitate more continuous group programs

- Engage those who can function in groups, with varying levels of participation or attentiveness
- Monitor, simultaneously, the more active residents who may freely move about, explore and engage
- Provide small group dining
- Have ready access to small, secure outside space.

#### 5. *Active Residents and Small, Dedicated Alzheimer's Care Units*

Small, distinct, and home-like units are one option for meeting the needs of cognitively impaired residents who are mobile and energetic and/or restless or particularly disoriented. Consider the following:

- Small groups limit the impact of the physical environment and the unpredictable behaviors of residents on each other.
- In these smaller settings, staff may be diversified in their duties. This can simplify food service and provide a more relaxed environment. This is necessary for responding to wandering residents, while simultaneously caring for those who are occupied.
- Connect several small units so that pantries, licensed nursing staff, and environmental services may be shared.
- Consider small units with home-like ambiance for those residents who receive licensed nursing care due to severe clinical depression, behavioral management, or psychosocial needs.
- Small units can be used for in-patient hospice care during more acute stages of symptom management,

supplementing palliative and end-of-life care offered through home care or in other settings.

#### 6. *Program Rooms*

Residents' needs can be supplemented for memory support programs with in-house day care or specially outfitted program rooms. Program rooms are generally a secured area at about 36 nsf [3.34 m<sup>2</sup>] per person, including the room, bathroom(s), wander garden, staff work space, storage, and collateral materials that residents can touch, use and explore. Figure 3.28 illustrates a series of individual and group activity options.

#### 7. *Sensory Stimuli Technology*

For profoundly mentally impaired individuals, Nursing Homes use large items to engage the person through his/her basic senses of vision, audition, touch and vibration. Figure 3.29 illustrates stimuli that can be incorporated into program space, casual gathering areas, or even adapted for use in small alcoves virtually surrounding an individual.

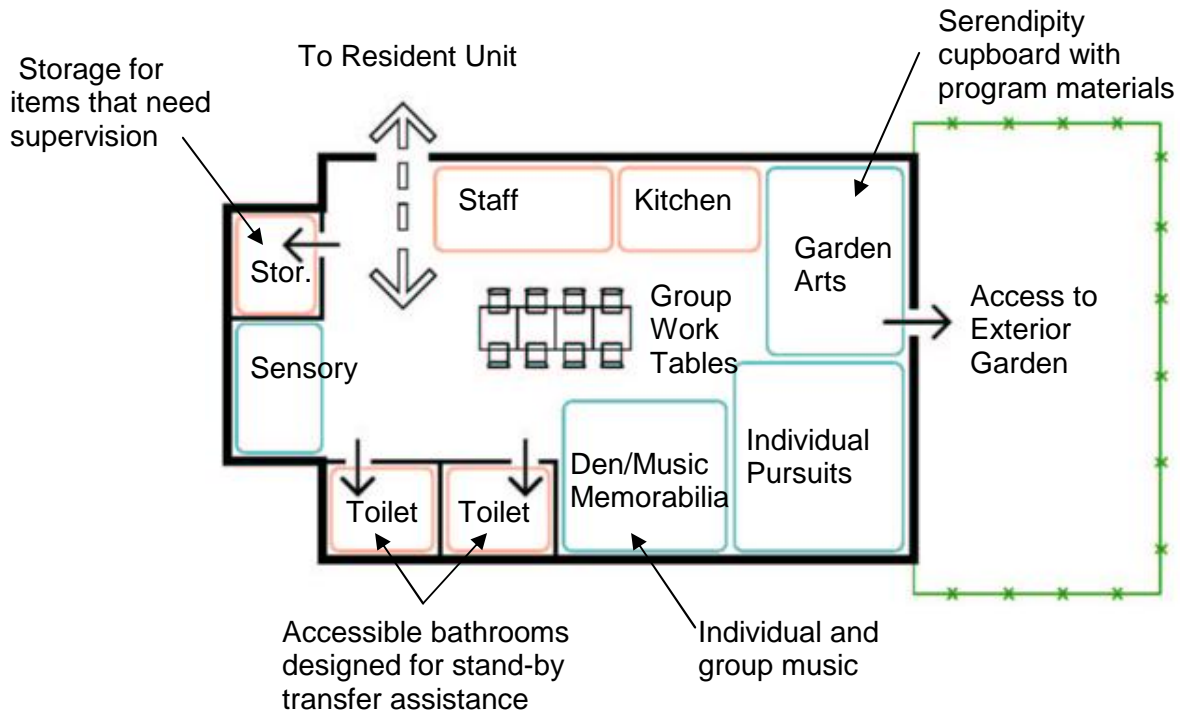


Figure 3.28

Memory Support in a Program Room

|  |  |   |
|--|--|---|
|  |  | <p><b>Left:</b> Abacus: Table models: 10-18" x 10-18"; also standing floor/wall models of 10" deep, 3' long and 3-4' high.</p>  |
|  |  | <p><b>Right:</b> 'Ups and Downs' similar to above: table models and floor models.</p>   |
|  |  | <p><b>Left:</b> Stacking cups, figures. May be strung until used or placed on spoon or other shelves; available (18" square).</p>   |
|  |  | <p><b>Right:</b> Reeds, flowers, cattails; fresh or dry, as individual pieces inside; gardens outside; floor planters or jardinières. Part of art. Sizes vary.</p>  |
|  |  | <p><b>Left:</b> Soft books; Pop-up Cards. Flat on shelves, placed on tables. 1' linear space.</p>   |
|  |  | <p><b>Right:</b> Relief surfaces for tracing used on flat tables with pressure sensitive paper/cloth. Leaf, buckle, coin, gelatin mold. 2' linear space. Grouped and wall hung; in trophy cases or shelves.</p> |

Figure 3.29

Examples and Dimensions for Sensory Stimulation Equipment

Initial stimuli are generally selected for their familiar appearance, bold features, movement, or potential to produce curiosity, relaxation or simple non-verbal responses. Military service and veterans groups may be helpful in identifying and obtaining specific items, which may range in size from a ship's wheel or car to smaller items. Carts and room feature kits are available for purchase to supplement donated items.

#### *8. Active Residents: Medium-Sized Units*

The more home-like the facility is made, the better the resident will respond to the environment.

By combining the options of active program rooms and distinct units, facilities may limit the confusion of some residents in medium-sized units by incorporating features to:

- Accommodate individual activity
- Serve simultaneous small groups
- Provide continuous monitoring of the space
- Privately work with individuals
- Manage noise
- Minimize service traffic





## 3.6 Activity and Social Spaces

### 3.6.1 General

Design Veterans' Nursing Homes to include a variety of social opportunities, both on- and off-unit, which can be customized according to mental and physical needs.

### 3.6.2 Planning Considerations

#### 1. Resident Participation

Nearly all residents engage in some social interaction, leisure pursuits, sensory stimuli, and/or music-related programs. The typical resident may have 10 to 13 hours per day available for personal and casual activities. For most residents, less than 10% of this time (or 1 to 3 hours per day) is spent in organized, professionally led programs.

Special events may draw about 50% of a Nursing Home population about 1 to 4 times a month for the more frail residents, more often for the more adept. Volunteers and veterans' groups contribute to strong social calendars in most veterans' Nursing Homes.

Typically, 60-75% of the participants are likely to use wheelchairs during their social activities.

#### 2. Staff Time

For each 45-60 individuals, the typical Nursing Home employs about one person for its recreation staff; nursing assistants and others fill in as time is available. Typical groups for daily activities number 6-20 people. Recreation staff usually meets groups

of impaired residents rather than individually take residents to central areas for routine, daily activities. On-unit social spaces should be designed for group work areas instead of dining accommodations. Staff members should not be required to rearrange heavy furniture or remove unused chairs before holding such activities. Nursing staff should be able to conveniently monitor residents in on-unit social spaces.

#### 3. Translating Volumes of Users into Space Sizes

To arrive at sizes appropriate to accommodate the residents including their devices, the equipment used and fixed room features for five common social amenities. Refer to Table 3.6 at the end of this section.

#### 4. Focal Points

Assembling people in wheelchairs or recliners around a staff station and/or in the halls is not acceptable for casual gatherings. Residents' focus should be toward meaningful life references, such as art and nature rather than medical records, staff stations or staff communications.

#### 5. Jurisdictional Requirements

Space requirements vary for social, activity, and visiting space such as recreation, quiet and family spaces. Develop a functional program to address activities, casual seating, destinations and specialized facilities, such as those for people with Alzheimer's disease or other related disorders.

### 3.6.3 Design Considerations

Design activity spaces and social areas to respond to the different residents' abilities and needs. Refer to Table 3.7 at

the end of this section.

Provide three types of spaces: on-unit casual gathering, designated activity, and multi-purpose social hall/assembly areas. These may be organized into destinations, such as Main Streets, that imitate local venues.

1. Guidelines for Designing Accessible Rooms with Tables

Appropriate space for access into and throughout social spaces furnished with tables increases comfort and ease of use. Figure 3.30 illustrates a method of establishing trade-offs between table size, table arrangements, clearances for circulation, cart deliveries, and resulting room sizes.

As shown in Figure 3.30, the 48”[1219 mm] square tables, arranged at diagonals, provide circulation of 48” [1219 mm], including turning space without conflicting with other occupants, while conserving on overall square footage needed. Larger and round tables will increase the area required. Smaller tables may result in conflict due to the allowances required underneath the table for wheelchairs, foot pedals, and table bases or legs. Use of these same sized tables, placed on a parallel grid results in a larger space in order to meet aisle widths. Some variation in table size, i.e., use of two-person and six person tables, is encouraged. These criteria have led to the recommendation of 36 nsf [3.34 m<sup>2</sup>] per resident occupant in dining and social areas planned for resident use at tables. (See Figure 3.31.)

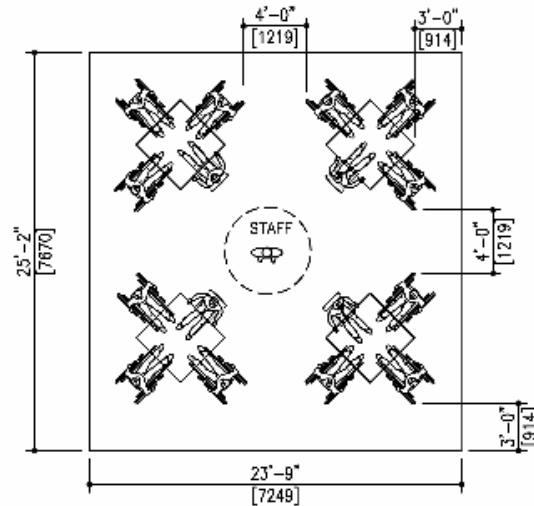


Figure 3.30  
Table Size, Space Needed and Arrangement Study



Figure 3.31  
Resident Dining and Social Area  
New York State Veterans Home  
Montrose, NY

2. Organizing Individual Destinations: A Main Street

Off unit-program spaces may be organized and presented so that small individual spaces are grouped. These may include barbershop, mailroom, meeting room, private dining, card/playing, porch or garden(s), patriotic features and military memorabilia, outdoor views, volunteer centers and

shops. These areas become an experience or destination, even when not using a specific space.

### 3. On-Unit Casual Gathering

On-unit gathering spaces are provided, at a ratio of one per each 12-24 persons. On-unit, casual spaces include features such as windows with views, tables, gardens, country kitchens, exercise space or equipment, music listening and participation. (See Figure 3.32) Such spaces are used for residents with comprehensive impairments as an alternative to lining residents up in corridors. Accommodate areas for resident supervision such as staff work areas located in close proximity to casual gathering areas. Functions for on-unit areas include:

- Reading
- Conversing and storytelling
- Serving snacks
- Viewing outdoors
- Celebrations
- Family visiting;
- Selective media use



**Figure 3.32**

**Casual On-unit Gathering Space**  
CO State Veterans Home at Fitzsimons, CO

### 4. Destinations and Designated Activity Spaces

Included are a chapel, hair or personal care area, canteen, computer library, and controlled outside access areas. Consider including an activity room, a dementia care program room and fitness facilities.

### 5. Multi-Purpose Social Halls

Plan multi-purpose rooms for 40-60% of the residents. Higher capacity may be needed to accommodate peak participation, such as holiday events with invited visitors, which may experience participation of 80%. Other criteria include the following:

- Ease of entry access - multiple or double doors; adequate space for seating; a central location; good sight lines to a stage, screen or other focal point; and effective acoustics.
- Seating plans and focal points should address participation for wheelchair and non-wheelchair occupants.
- Include adequate and convenient table and chair storage.
- Provide a uniformly level floor, consistent with the proportion of wheelchair users.

### 6. Examples of Activity/Social Areas

Activity rooms accommodate baking, table arts and wet and dry crafts, holiday projects, games, cards, project displays, and pets. For pottery work, firing should be done in a space that appropriately protects residents and staff from the heat and hot surfaces.

- *Kitchenettes* - These may satisfy nourishment requirements for nursing care and also may be part of an activity program with separate, secure storage. A kitchenette with a table

encourages private dining, birthday celebrations, small group occupational therapy, special bariatric dietary programs, and family-staff meetings.

- **TV/Media Center** - The television should not dominate the visual and acoustical environment of all social areas. A TV and media center may be in a room that serves as a point for cross-facility contact with other veterans' groups, facilities for low-vision viewers and hearing impaired listeners, or a distance education center.
- **Gaming Areas** - Gaming areas should provide equipment and space for playing, watching, and celebrating gaming and sports. Gaming areas encourage additional participation from spectators. (See Figure 3.33) Plan multi-functionally gaming areas such as a club, party room, or a destination for younger or energetic residents for evening use.



**Figure 3.33**

**Games Open to Passers-By**

NY State Veterans Home, Montrose, NY;

- **Fitness, Exercise and Stretching** - Emphasize lifelong wellness programs and provide senior-friendly equipment in dedicated

fitness centers. Consider location with restorative therapy services. (See Figure 3.34)



**Figure 3.34**

**Fitness Adapted for Nursing Homes**

Virginia Mennonite Health Center, Harrisonburgh, VA

**7. Barbershop/Beauty Salon**

The traditional barber or beauty shop is a special destination, often located along a Main Street. (See Figure 3.35)

Grooming shops average 120 min to 400 nsf max [11.15 m<sup>2</sup> to 37.16 m<sup>2</sup>] and are planned for:

- Adjustable height sinks that facilitate care of those in wheelchairs and minimize uncomfortable positioning;
- Stations average 60 nsf [5.57 m<sup>2</sup>]. Stations are equipped with a telephone, a manicure cart and grooming equipment, and locked storage for chemicals.





**Figures 3.35**

**Barber and Beauty**  
Eastern Veterans Home,  
Boulder City, NV.

### 8. Canteens

A canteen is a drop-in gathering space, store, area for eating, and destination during visits. Locate space adjacent to another social space or dining area. (See Figure 3.36).



**Figure 3.36**

**Canteen**  
Photo furnished by Nevada Veterans' Nursing Home, Boulder City, NV.

### 9. Pets On-Unit

Animals are frequent visitors in health care facilities and Nursing Homes.

Short or long term stays by pets are encouraged. State health department regulations may require a series of safeguards and even training for pets-in-residence. Typical requirements for facility pets include:

- A distinct eating/sleeping place that is not in a dining room for residents or staff, and separately stored pet supplies.
- Birds need to be kept in aviaries. Tabletop cages average 20 nsf [1.86 m<sup>2</sup>] and sanctuaries are 60 nsf [5.57 m<sup>2</sup>] or larger.
- Animals, if welcomed, may also use "dog houses" and/or pet visiting areas, including facilities for dog curbing, to minimize staff clean-up and soiled resident-use areas.

### 10. Smoking Room

Smoking behavior has been and continues to be controversial in Nursing Homes. Consider accommodating smoking, with a policy of one supervised person at a time. Ensure that smoke does not negatively affect residents or staff when windows to a smoking room are opened. If outside smoking is permitted, provide designated areas sufficiently far from dwelling areas and offices to limit second hand smoke transmission.

### 11. Meditation and/or Multi-Faith Chapel

Provide an inside chapel for meditation/contemplation or small ceremonies. Supply moveable, rather than fixed, chairs to accommodate people of varying mobility needs. Accommodate small formal services and ceremonies as well as impromptu visits throughout the day. Offer a dedicated area of 140 min to 450 max nsf [13.01 m<sup>2</sup> to 41.81 m<sup>2</sup>] according to facility size,

with capacity to open onto multi-function rooms for additional seating. (See Figure 3.37).



Figure 3.37

**Chapel with Flexibility.**

MO State Veterans Home, Warrensburg, MO.

**3.6.4 Interior Considerations**

N/A

**3.6.5 Systems Consideration**

N/A

**3.6.6 Miscellaneous**

Refer to the following tables to assist in the planning of activity spaces in a VA Nursing Home facility.

**Estimating User Counts and Space Sizes for Activities.**

| Items To Consider   | Individual, Casual Area(s)   | Casual Seating Near Staff  | Small Group  | Meetings: Typical Groups   | Assembly  |
|---|--|--|--|--|---|
| <i>Estimates Based on Total Nursing Population, Typical</i>                 |  |  |  |  |   |
| Number of participants  | 1 to 3<br>1-2 per unit   | 3 to 5<br>1-3 per unit   | 6 to 9<br>0-1 per unit at specific times   | 10 to 24<br>Scheduled: one for 1 or between 2 units.   | 30-70% of residents depending on assistance. 1-4 times a month  |
| Examples  | Observing, talking, looking at media, fish, birds, activity  | Visiting, observing fish, birds, music listening   | Family visit, discussion, support group, sensory function                                      | Recreation, baking, gardening, animal visits   | Music, performance, movies, exercise, also: formal religious, holiday, fairs  |
| Basis for size per person gathered. (In net square feet (nsf) per resident) | 28-32 nsf [2.60-2.97 m <sup>2</sup> ] for alcove, no table. 36 nsf [3.34 m <sup>2</sup> ] for seating at tables or for oversized seating alone | 28-36 nsf [2.60-3.34 m <sup>2</sup> ]. Add space for fish tank, birds, other focal point, window | 32-36 [2.97-3.34 m <sup>2</sup> ] Assume tables for 2-4 or 6. Add space for focal point, media | 28 nsf [2.60 m <sup>2</sup> ] for meetings, no tables. 32-36 nsf [2.97-3.34 m <sup>2</sup> ] for groups, meetings at tables. Add Storage | Wheelchair and straight chair seating at average of 25 nsf/person [2.32 m <sup>2</sup> ]/person x Estimated (30-70%) + stage. Area for military displays, AV. |

Table 3.6



Common Locations for Offering Specific Activities

| Themes and  | Casual Space On-unit   | If in a Specially Designated Room  | Multi-Function Central  | Other Ways of Accommodation   |
|---|--|--|---|---|
| <b>Music</b>  | Listening area   | Performance, practice  | Participate, join   | Before dining: Listen, Join   |
| <b>Exercise, Movement, Stretching</b>   | Chair exercise with leader, music, light-weight ball toss  | Fitness area, game space, billards, adapted ball   | Chair exercise, ball toss, net target, fitness, dance   | Halls, outside physical therapy   |
| <b>Casual Social</b>  | Discussions, reading, seasonal events with food  | Canteen or country store, "Main Street", library/newspaper   | Parties, holiday theme "socials"  | On any hall with "peddler's cart," staff offices, pre-function dining   |
| <b>Memory and Mental Support: High Function</b><br>refers to those with good memory who seek mental stimulation | <b>High function:</b> Internet, tech use, drive simulator, collections, puzzles<br><b>Alzheimer's:</b> Theme circle, catalog reading, object focus, cues, Montessori, lotto - matching, walk inside, energy outlet, current events | <b>High function:</b> Library, computer<br><br><b>Alzheimer's (Active):</b> Program in-house, Day program, Montessori, baking, secure garden<br><br><b>Alzheimer's (Heavy Care):</b> *program room"/highly, sensory, natural | Speakers, comedians, animal visits, travelogues, vintage movies, events involving traditional costume, food, music and equipment. | 1 to 1 visits, more small groups of 6-12, contact with family (phone, mail, internet). Use of "touchable or usable" environmental features (art, smell garden, collections for sharing) |
| <b>Arts, Manual Dexterity</b>   | Arts, crafts   | Rubbings, dough, adapted art   | Making items for use in sports  | Work with color, natural arts, herbs  |
| <b>Spiritual</b>  | Devotionals, ceremonies  | Chapel, meditation, garden, or room  | Faith services, music, liturgy  | In room visits, pastoral office   |
| <b>Discovery – "Found Activity"</b>   | See "great room", use of landmarks, "memory lane"  | Walk/wheel to Main Street, porch, canteen, garden, activity rooms, games, TV, media centers, barber/ beauty, pets  | Children's programs, fairs and carnivals, preparations for these can also be fun to watch or help set-up.                         | Volunteer visits, children visits, bringing, pets and animals to the unit or room.  |
| <b>Outings</b>  | Trips, all types: sports restaurant, play  | Controlled trips: van outings to secure places   | Wheel outside, winter garden, drive, porch  | Varies by locations, season, need safe area for bus use.  |
| <b>Personal Pursuits</b>  | Focus on movement: fish, action outside  | <b>High function:</b> many, varied.<br><br><b>Alzheimer's:</b> 5-15% wander, rummage, pacing   | <b>High function:</b> volunteer, visit, collect/decorate, news  | <b>High Function:</b> TV, family contact, organizing personal possessions   |

Table 3.7

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## 3.7 Rehabilitation Therapy and Clinic

### 3.7.1 General

Therapeutic and clinical areas are essential components to a Nursing Home facility. Clinical areas treat the immediate needs of the resident from medical to psychological. The functions provided in therapy areas bring a sense of usefulness and personal pride to the residents. The rehabilitation therapy types discussed in this guide are physical, occupational, speech and hydrotherapy.

### 3.7.2 Planning Considerations

#### 1. Physical Therapy

Physical therapy programs include twelve or more common types of equipment and five or more treatment “modalities” such as packs, stimulation and extremity treatment tanks. A physical therapist generally works with 1-3 residents at a time that requires a varying combination of equipment or treatment modalities. (See Figure 3.38)



**Figure 3.38**

#### **Physical Therapy Room**

*Nevada Veterans' Nursing Home  
Boulder City, NV.*

In addition to physical therapy, kinesiotherapy may be employed to provide restorative care for residents no longer candidates for rehabilitation. Kinesiotherapists focus on utilizing exercise physiology for maintenance of function.

#### 2. Occupational Therapy

Occupational therapy includes an adaptive kitchen, access to a training toilet, table(s) for small groups, and a wide variety of stimulating equipment and tabletop devices. (See Figure 3.39) Occupational therapy includes the use of a standing box and computer stations and access to a mat table. Therapists also require facilities for splinting or making supports.



**Figure 3.39**

#### **Occupational Therapy**

*CO State Veterans Home, Fitzsimons, Aurora, CO; Boulder Associates, Boulder, CO*

#### 3. Speech Therapy

Speech therapy engages a therapist with one resident that enables the therapists to use a variety of devices to stimulate language skills. Consider providing a computer station with listening facilities in this area.

#### 4. Hydrotherapy

There are two recommended treatment styles for hydrotherapy: extremity and therapy/resistance pools. Uses of extremity immersion are for arms, shoulders and ankles.

Therapy/resistance pools are a tool for strengthening the body, reducing pain and providing skin care.

Figure 3.40 illustrates the combination of these four major aspects of therapy into a single floor plan.

Incorporate an open center or gym area to provide flexible area for use with portable upper and lower body equipment, therapy balls, and to provide space for transfers:

Provide double doors or minimum single door 4' [1219 mm] wide entrances to accommodate residents' circulation into therapy spaces.

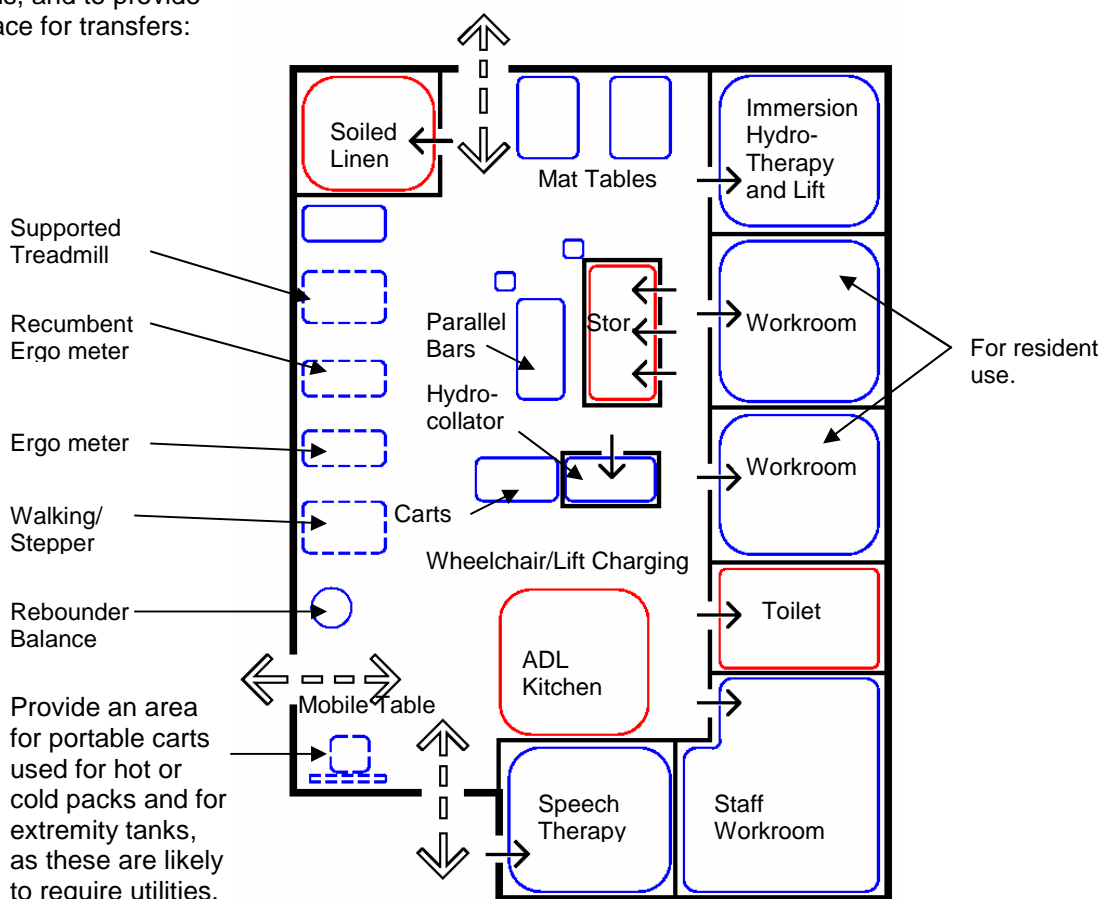


Figure 3.40

Rehabilitation Gym Therapy Plan

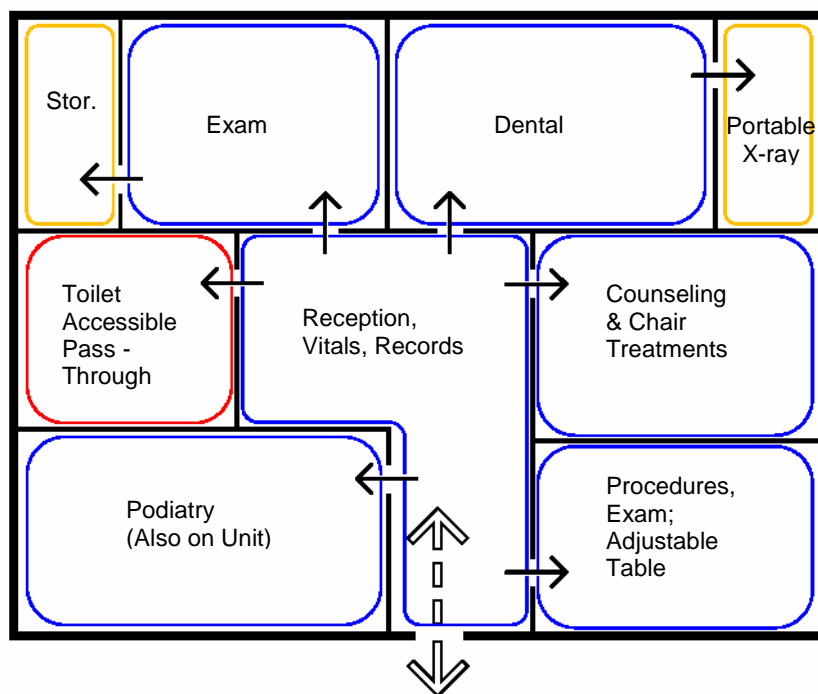
#### 5. Clinic Functions

Provide clinic space when there are no acceptable alternatives such as

adjacent medical center, for equipment-intensive examinations and treatments, including dental, vision, podiatry and

similar procedures. Consider providing clinic space for other aspects of medical

care and treatment including counseling. (See Figure 3.41).



**Figure 3.41**

**Clinic Plan**

*NY State Veterans Home, Montrose, NY.*

### 3.7.3 Design Considerations

#### 1. Space Criteria

For a full-service rehabilitation therapy program provide a minimum space of 1,200 nsf [111.48 m<sup>2</sup>]. A modified program for small facilities (i.e., for non-Medicare certified programs) requires a minimum of 650 nsf [60.39 m<sup>2</sup>]. For small to medium facilities, those of about 130 beds, provide 24 nsf [2.23 m<sup>2</sup>] per person. Depending upon program and population focus for larger facilities, 12-20 nsf [1.12 – 1.86 m<sup>2</sup>] per person is recommended. This area does not include space required by any optional therapy or resistance pool.

Actual room dimensions and area vary with pool and water management system selected. For clinic space, including internal resident-use corridors, accommodate users in wheelchairs and those requiring transfers. Determine actual clinic size in the functional program. (See VA Space Criteria 7610 for specific requirements).

#### 2. Private Treatment

Examples of areas that give the option of privacy are:

- Mat table treatment
- Bathroom for toilet training and/or equipment fittings
- Office for consultation or work with

- an individual who prefers solitude
- Speech therapy
- Computer use or interactive learning about particular devices with options for video or DVD training
- Use of program or features by memory or cognitively impaired individuals

### 3. Equipment Storage

Provide at-hand storage for large and small items including equipment and parts for adaptable, heavier, rigid equipment. (See Figures 3.42 and 3.43)



**Figure 3.42**

**Therapy Equipment Storage**  
Waveny Health Care, New Canaan, CT.



**Figure 3.43**

**Therapy Equipment Storage**  
NY State Veterans' Home at Montrose, NY.

### 4. Service Spaces

Portable water, clean linen and related clean therapy supplies; soiled linen and equipment facilities; and janitorial facilities should all be available.

#### 3.7.4 Interior Consideration

##### 1. Sensory Functions

The design should address the following:

- Non-glare lighting (see IESNA, 1998, RP-38-98)
- Adequate illumination
- Noise abatement
- Textural variety
- Secure floor material.

#### 3.7.5 Systems Considerations

N/A

#### 3.7.6 Miscellaneous

##### 1. Identifying Equipment

Supplement passive pieces of equipment such as mat table, parallel



bars, therapy steps and/or ramps by a variety of machines with surrounding space for staff assistance and transfer. For examples of such equipment as well as larger space defining pieces, see Table 3.8. Benchmark numbers are offered, illustrating pieces of each type

of equipment found in medium-to-medium-large veterans' facilities. Adjustable and smaller profile items should address the weight bearing capacity of the residents and the bariatric needs of a veterans' therapy program.

### Sample Equipment Dimensions

| Equipment Example   | Quantity (fill in) | Length (Depth from Wall)                                 | Width  | Height   | Spacing  | Comments  |
|---|--------------------|--|--|--|--|---|
| 1<br>Mat Table; Low Mat Platforms                           | 1 to 2             | 7'-8" [2134 - 2438mm]                                    | 4'-6" [1219 - 1829mm]                                  | 1.5 to 3.2' [457 - 985mm]                              | 5-5.5' [1524 - 1676mm] sides, 3-3.5' [914 - 1067mm] end          | Some hold only 350 lb; privacy curtain                          |
| 2<br>Training Stairs (One Side Access)                      | 0 to 1             | 2.5' to 5.4' [762 to 1651mm]                             | 2 to 5' [610 to 1524mm]                                | 3.3' to 4.6' [1016 to 1397mm]                          | 5-5.5' [1524 - 1676mm] on entry/exit sides                       | Options for pull-out steps; other sizes 8.5' [2591mm]ht in use. |
| 3<br>Rebounder(s)/ Balancers                                | 0 to 2             | 3.3' [1016mm]  | 3.75' [1143mm]   | 2.8' to 5.5' [787 to 1676mm]                           | 5-5.5' [1524 - 1676mm - entry, 3-3.5' [914 - 1067mm] assist      | Staff may assist all around; ht. to 7' [2134mm] in use          |
| 4<br>Portable Ramp  | 0 to 1             | 3.7' to 7' [1118 to 2134mm]                              | 3.7' [1118mm]  | 4' to 4.8' [1219 to 2286mm]                            |  | Staff on either side.   |
| 5<br>Treadmill(s)<br>a. Standing Type<br>b. Support/Suspend | 0 to 1<br>0 to 2   | 5.2' to 7' [1575 to 2134mm]<br>5' to 6' [1524 to 1829mm] | 1.2' to 3' [356 to 914mm]<br>5' to 6' [1524 to 1829mm] | 4' to 5' [1219 to 1524mm]<br>6' to 8' [1829 to 2438mm] | 5.5' [1676mm] access point(s); 3-3.5' [914 - 1067mm] assist zone | May position standing treadmill sideways or diagonally          |
| 6<br>Recumbent Bikes  | 1 to 2             | 4.7' to 6.3' [1422 to 1930mm]                            | 2' to 3' [610 to 914mm]                                | 4' to 5' [1219 to 1524mm]                              |  | Seat height adjusts.  |
| 7<br>Rowing Machines  | 0 to 1             | 7.75' [2362mm]   | 4.25' [1295mm]   | 2.2' [660mm]   |  | Low to floor; see alternatives, below.                          |

Table 3.8

## Sample Equipment Dimensions (Continued)

| Equipment Example   | Quantity (fill in) | Length (Depth from Wall)   | Width   | Height  | Spacing   | Comments   |
|---|--------------------|--|---|---|---|--|
| 8<br>Mini-cycles, Ergometers (movable)  | 1 to 4             | 1.7' to 2'<br>[508 to 610mm]   | 1.5' to 2'<br>[457 to 610mm]  | 1'<br>[305mm]   | Use seated 3-3.5' [914 - 1067mm] apart  | Floor/table use: pedal and/or upper body   |
| 9<br>Ergometers for Upper Body (fixed)  | 1 to 2             | 5' [1524mm]  | 3' [914mm]  | 4.5' to 5'<br>[1372 to 1524mm]  | 5'-5.5' [1524 - 1676mm] entry, 3-3.5' [914 - 1067mm] assist   | Seat higher than recumbent bikes   |
| 10<br>Exercise Balls<br>Floor Rack size   | Set of 5           | 18"-30"<br>[457-762mm]<br>About 6'<br>[1829mm]   | 2.2' to 3'<br>[660 to 914mm]  | 2.5'-7'<br>[762 - 2134mm]   | Use on mat and 5-18 sf [465 - 1672mm] gym area  | 5 sizes re: user height. Option: store on high shelves or floor rack   |
| 11<br>Soft Free Weights<br>a. Wall mounted rack<br>b. Portable or fixed rack on floor stand<br><br>c. Wall Pulley Ropes<br>d. Bilateral Wall Pulley | TBD<br><br>0 to 1  | Rack Sz.:<br>5'-1' [127 - 305mm]d -<br>2' to 3' [610 to 914mm]d<br><br>6" [152]d,<br>6' to 6.5'<br>[1829 to 1981mm]<br>pull out and seat allowance | Rack: 2' to 3' [610 to 914mm],<br>2.5' [762mm]w<br><br>2'<br>[610mm]w and 4'8" [1422mm] w | Rack: 3' [914mm] h;<br>5.4' [1651mm] h;<br>3.6' [1092mm] h<br><br>6-8' [1829 - 2438mm] from ff; 7'3" [2210mm] from ff | Used at stand, in gym or on mat 6' [1829mm] diam<br><br>Sit or stand 7' [2134mm] diam to use; extend arms and legs. | Multiple sizes; can be on portable racks for use at chair or mat table<br><br>Wall mount block; pull ropes to user. May ceiling mount; used sitting, standing, and supine. |
| 12a<br>Stall bars   | 0 to 1             | 6"-8" [152 - 203mm]d   | 3'-3.5' [914 - 1067mm]  | 8'<br>[2438mm] from floor   | Pull self up from seat  |  |
| 12b<br>Fixed point rails  |                    | 6"-1' [152 - 305mm]d   | 3' [915mm]  |   | 5'-6" [1676mm] circle   | Wall mounted; for pull-ups; require blocking.  |
| 13<br>Rolling Table for 1   | 1 to 2             | 3' [914mm]   | 3.5' [1067mm]   | 2.4' [737mm]  | 5'-6" x 30" [1676 x 762mm]  | Use from chair   |

Table 3.8

## Sample Equipment Dimensions (Continued)

| Equipment Example  | Quantity (fill in) | Length (Depth from Wall)    | Width                       | Height                         | Spacing   | Comments  |
|--|--------------------|-----------------------------|-----------------------------|--------------------------------|---|---|
| 14 Sturdy Stackable Chairs                                   |                    | 1.5' to 2' [4572 to 6096]   | 1.5' to 2' [4572 to 6096]   | 16"-18" seats [4064 - 4572mm]  | May need 3' [915mm] apart                         | Use for peddling, wet treatments; weights                                 |
| 15 Hydrocollator: for moist heat                             | 1                  | 2' [610mm]                  | 2' [610mm]                  | 2.4' [737mm]h                  | Generally docked                                  | Mobile or fixed cart; check utility needs.                                |
| 16 Whirlpool Tank(s) (Extremity use)                         | 1 to 2             | 2.1' to 3' [635 to 914mm]   | 2' to 3.5' [610 to 1067mm]  | Tank 1.3' to 2' [406 to 610mm] | Use next to a seat or mat table; otherwise docked | Some mobile; check power; plumbing; May be able to use space above carts. |
| 17 Mobile Carts (1-3)<br>a. For cold pack<br>b. For paraffin | 1 to 3             | 1.25' [381mm]               | 1.7' to 3' [508 to 914mm]   | About 29' [737mm]h             |   |   |
| 18 Standing Box  | 0 to 1             | 42" [1067]                  | 38" [965mm]                 | 42 to 54" [1067 to 1372mm]     | Varies  | Large; hard to move.  |
| 19 Shoulder Wheel  | 0 to 1             | 38" [965mm] dia             |                             | Arc                            | 1' to 3.3' [305 to 1016mm] arc                    | Wall mount or stand.  |
| 20 Treatment Table   | 0 to 1             | 72" to 78" [1828 to 1981mm] | 28" [711mm]                 | 30" [762mm]h                   | 3' to 4' [914 to 1219mm] around                   | Hydraulic option  |
| 21 Loose Mat(s)  |                    | 2 to 2.5' [610 - 762mm]     | 4' to 6.5' [1219 to 1981mm] |                                |   | Stacked in piles.   |

Table 3.8

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## 3.8 Dining and Food Service

### 3.8.1 General

In the Nursing Home, dining is one of the most important aspects of the resident's stay. The importance of dining ambiance including comfort, noise reduction, and a pleasant atmosphere conducive to socialization and appetite enhancement cannot be underestimated.

Resident-focused dining involves a commitment to creating a pleasant atmosphere of dining as well as offering food choices, developing appropriate menus, and planning the central production and on-unit distribution methods. Dining services have become the hallmark of the Nursing Home's commitment to resident-centered care. Not only are facilities complying with requirements for food freshness, appropriate temperatures, and safety in food handling, but also with the focus on the "culture" of Nursing Homes. Great strides have been made in developing methods for responding to resident's dietary preferences, which include relaxed dining schedules and significant attention to both the physical and social environment for eating.

Current trends favor presentation, providing a situation in which residents may smell and see their food and make their preferences known. Residents are given choices rather than having to adhere to menu selections they or others have made in advance. Fresh aromas may be particularly beneficial for residents with complex physical needs and memory deterioration. This has fueled efforts to bring a fresh, culturally

familiar, and "home style" ambiance of dining into the Nursing Home setting.

### 3.8.2 Planning Considerations

Among the residential model concepts that are encouraged is the use of a country kitchen concept. This includes dining/kitchen areas that are "neighborhood" based, small and conducive to encouraging residents to eat and socialize. It is desirable for residents to have access to food during the day, have a place for continual breakfast and snacks or nutritional supplements during the day.

Provide on-unit seating as the primary place for dining and/or dining within close proximity of the residents' dwelling areas. Get residents out of their rooms for eating wherever possible. An area for beverage stands, furniture, storage, and the working/display areas of the serving kitchen should be included during facility planning as per the functional program.

#### 1. Jurisdictional Requirements

State health departments have traditionally focused great attention on food production, temperatures, handling and storage. To address regulatory concerns regarding food temperature and appearance, established dining times are set through the development of a care plan. Assistance can be obtained for the development of resident-centered dining plans from those authorities having jurisdiction. Consider sizing the dining room so that 95% of the residents, staff and some visitors can be present at one time. Issues to consider in this plan include:

- Training required for food service workers,



- Requirements on the role of a central kitchen,
- Food warming regulations,
- Fire protection,
- Dishwashing equipment and water temperatures,
- System for managing special diets.

## 2. Resident Functions

The resident typically receives three meals and 2-3 between-meal nourishments each day. Consider emphasis on providing residents' plates directly at a table, a course at a time, rather than food on a tray.

## 3. Staff Functions

Based on variations in assistance, some residents may eat in 15-20 minutes, others may be queued and selectively assisted, a third group may be fully assisted, typically one at a time rather than hand fed in groups. The closer the dining room is to the residents' rooms, the more time staff has to assist with meals. Serving includes distribution of beverages and may include presentation of the choices for the day such as an example of meals displayed on a tea cart. Although staff hand feed about 25% of residents, there is some indication that on-unit food presentation may reduce this number.

Staff provides oversight and work with those needing clinical assistance related to eating. Through training, food service and other trained staff jointly verify special diet needs and compliance. The use of computers and a more mobile dietary staff have contributed to the possibilities for such models of managing special diets.

## 4. Meal Distribution Options

The central kitchen generally continues

to be used for bulk preparation of vegetables, meats, combining ingredients, special diets and desserts served at noon and night. Local serving kitchens are used for completing many breakfast items, including breads and brewed beverages, prepared directly before the resident. The design of work areas for the central kitchen is the same; however, with few trays made-up in the kitchen, the need for tray lines is greatly reduced.

The models outlined here require a different training model for food service personnel and tend to result in engaging the staff as part of food presentation on a unit rather than focusing the labor force on activities within the kitchen alone. Professional consultation from peers and experienced providers is required to customize the labor model. The following are options available for resident-centered dining using local food distribution systems:

### Food Service

There are 3 food service systems recommended for a Nursing Home facility:

- *Country kitchen systems* where food is delivered in bulk, generally to the less visible portion of the unit pantry. This happens in advance of the meal.
- *Bulk-based systems* where food service staff may prepare all or a portion of the meal on a plate and set it before the resident at his or her table.
- *Tray-based systems* with some selection where trays arrive with certain items set-up in the kitchen.

The dining room may be in operation for

2 hours at breakfast, 1-2 hours at lunch and 1 hour in the evening. To maximize food service staff time, dishwashing of residents' dishes and utensils is done on the unit or between two pantries, using appropriate equipment and meeting requirements for water temperature. It is common for food service staff to interact with the residents during dining and participate with nursing assistants in some of the beverage distribution and clean-up.

- Clean-up
- Maintaining high standards of orderliness and safety in food handling
- Information management
- Quality control and supervision
- Safety - particularly in terms of floor covering
- Room temperature and plans for HVAC, relative to maintaining food temperature.

Central Kitchen (See Figure 3.44)

With the assistance of professional food service consultants, kitchen design should identify how the following operations will be accomplished:

- Receive inventory
- Delivery and distribution or serving

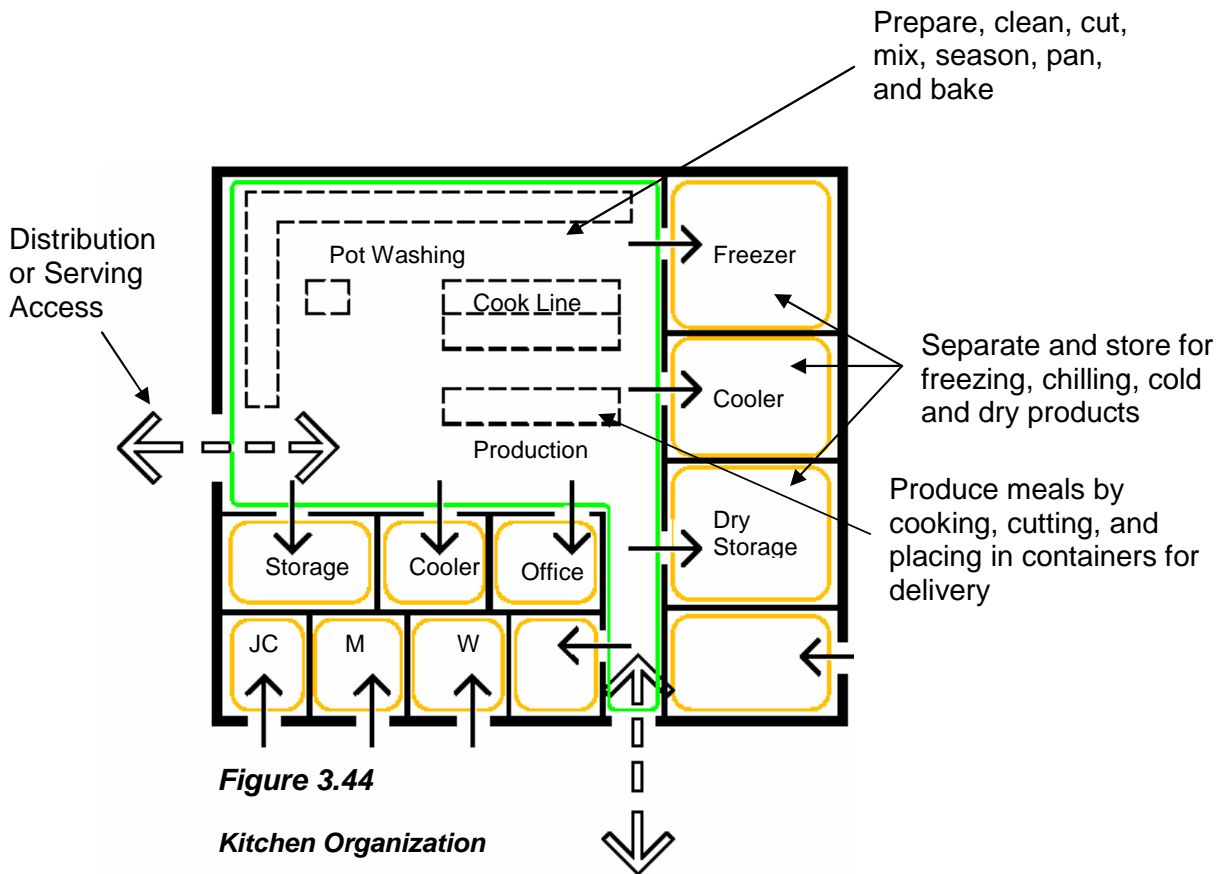


Figure 3.44

Kitchen Organization

### Cook Chill Production Options: Central Kitchen and/or Off-Site.

Nursing Homes generally have full kitchens. However, labor shortages in some markets have motivated sponsors to consider new methods for consolidating cooking times and production schedules. The experience with cook chill methods in resident-centered Nursing Homes with selective menus are relatively recent. The following are methods of food preparation:

- Method One - the food comes to units in special carts on trays where it is warmed for serving, releasing some cooking aromas.
- Method Two - cook chill is one production technique, used for some meals and special diets; some breakfast menus have been particularly challenging to satisfy requiring alternatives to cook chill.
- Method Three - cook chill production is used for bulk preparation and plating occurs on resident units.

### 3.8.3 Design Considerations

Design for more residential dining experiences in the Nursing Home may focus on four areas. However, even these areas may be affected by individual decisions, including the preparation of some food off-site or the selective use of cook chill as part of the

sponsor's service delivery system. Residential food service design typically addresses the following:

#### 1. *Central Kitchen*

In addition to equipment specification and layout, kitchen planning must address specific operational implications of resident-centered dining, details affecting floor safety, and high standards of sanitization.

#### 2. *Decentralized Food Service Pantry or Serving Kitchens*

Planning on-unit food service should address four functions: (See Figure 3.45).

- *Function 1: Work Area.*

The work area includes commercial equipment such as a freezer, reach-in coolers, institutional sinks and may include dishwasher, cart storage, and dry food storage. Depending upon decisions on the heating of food, the work area or the display kitchen may have facilities for heating including a grill or combination oven. It will also include a handwashing station. The work area has direct access to a service corridor or central spine of the building so that food can be delivered and pots or pans removed with minimal impact on resident living areas.

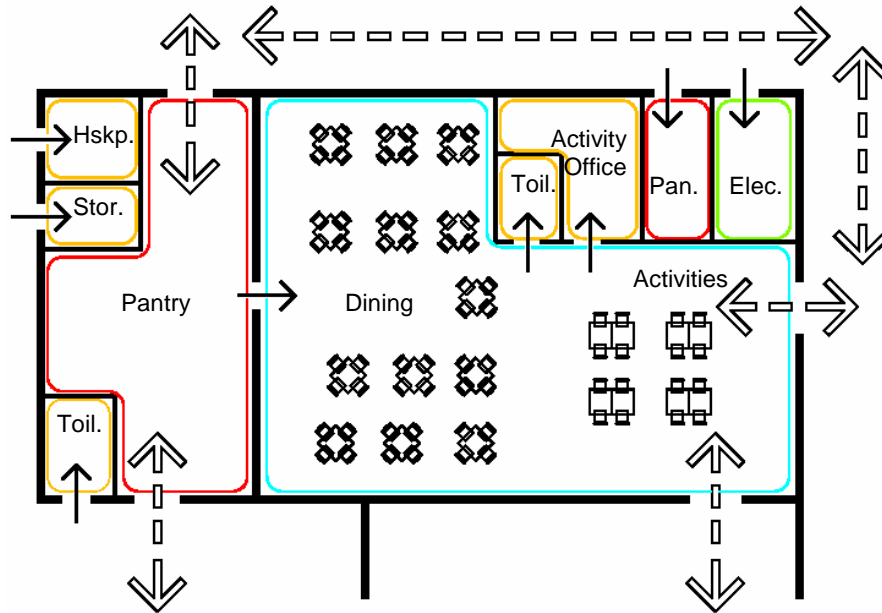


Figure 3.45

**Pantry Service and Adjacent Dining Rooms**

- **Function 2: Fresh Food Display Kitchen or “Country Kitchen”**  
 This area is directly connected to the work area and contains more residential appearing equipment and facilities to plate food. (See Figure 3.46) Standard items include the following:
  - Steam table with enough wells to provide choices for the residents;
  - Plate raising equipment
  - Cold table
  - Soup wells or area for kettles and serving
  - Reach-in refrigeration
  - Work area for some items to be “prepared” to offer alternatives to the food delivered from the kitchen
  - Microwave or convection oven.



Figure 3.46

**Staff Area of a Display Kitchen**  
 Messiah Village, Mechanicsville, PA.

- **Function 3: Beverage and Ice**  
 Residential looking beverage bars may be out in the dining area for use by nursing staff and residents throughout the day to fulfill hydration needs and requirements. (See Figure 3.47) These areas also may be used for condiments, breakfast

items, serving equipment and tableware and decorations. Special attention needs to be given to selection of ice machines and location of ice in bulk. The goal is to minimize machine background noise and to respond to the needs of the nursing and food service staff as well as the higher functioning residents for gaining access.



**Figure 3.47**

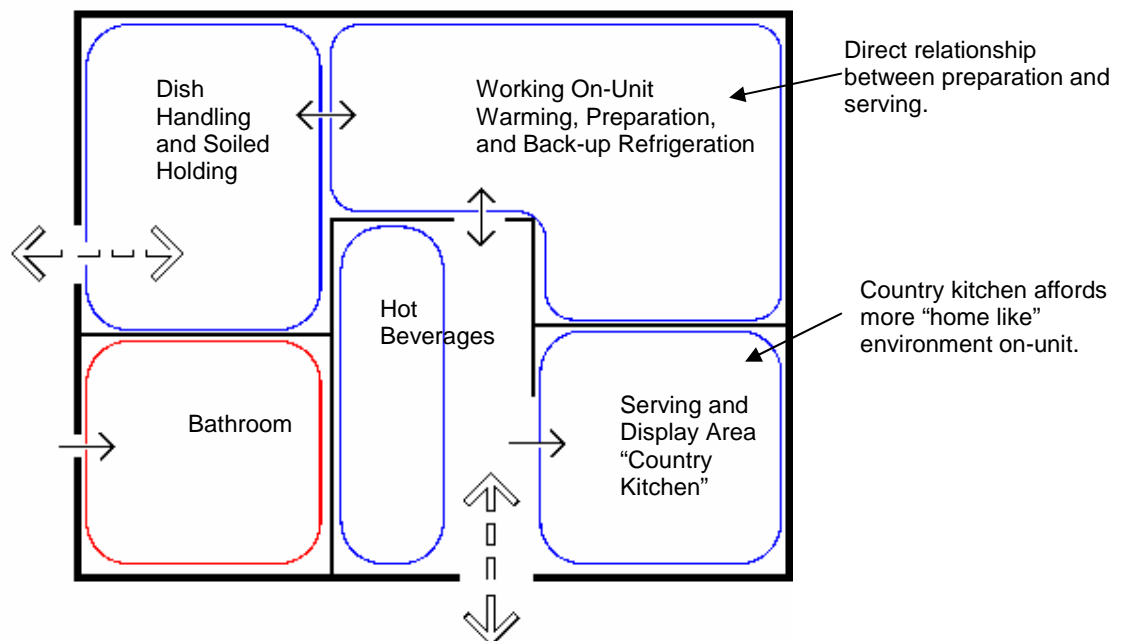
**Beverage and Condiments Storage Area**  
Peabody Health Care, Manchester, IN.

- **Function 4: Handwashing**  
Provide handwashing stations in the display kitchen and in the working areas behind them. These stations are designed into dining rooms for resident and staff convenience.

**3. On-Unit Dining**

Refer to Section 3.6 earlier in this section, which provides a basis for sizing dining rooms, and service aisles and consider the following: (See Figure 3.48)

- Provide 36 nsf [3.35 m<sup>2</sup>] per person to accommodate wheelchair users and aisles.
- Provide 28 nsf [2.60 m<sup>2</sup>] per person on units serving a predominantly ambulatory population.
- Provide noise abatement and other sensory experiences of the dining space.



**Figure 3.48**

**On-Unit Serving Kitchen**



#### 4. Option for Canteen

A canteen should be used primarily by staff and visitors. It can also serve as an alternative venue or destination for resident off-unit snacks, vending or eating.

#### 5. Nourishment Station Requirement

Many jurisdictions require that nursing staff have 24-hour access to a facility for nourishments, ice and beverage service. These facilities are increasingly “designed” as part of the dining room, on-unit dens, or great rooms with appropriate methods for securing food products and securing the controls for any heating devices.

#### 6. Other

Other issues for design include staff dining, special events, outside eating, and improved methods concerning special diets, ADL kitchens, activity kitchens, bariatric dining, and enteral feeding.

### 3.8.4 Interior Considerations

Lighting requirements should include 500 lumens and 50 foot candles for eating areas. Refer to Part 2.0 Section 2.3 for further lighting recommendations.

### 3.8.5 Systems Considerations

N/A

### 3.8.6 Miscellaneous

1. Major shifts in food presentation have resulted in altered methods of operation. More relaxed meal schedules, less rushed resident transport, more choices in food items and quieter, sensory rich dining experiences have contributed to the

sense that there is more time to address residents’ needs, thereby helping restructure daily routines. Relaxed dining makes it more feasible to be resident-focused than schedule-driven. It was once an accepted practice to produce food in a central kitchen, place it in uniform and covered vessels on institutional-looking trays, and deliver all or most of the meal at once to a group of assembled and waiting residents. The basis for this system was a series of concerns regarding food temperature, appearance, and safety in handling. However, with industry averages of 45 minutes from the time food was portioned in the kitchen to when it reached the residents, food deterioration was a continuing struggle.

If it is necessary to provide selective pantry service, priority should be considered for heavy care residents including:

- Residents whose life experiences are primarily sensory and are receiving palliative care
- Residents with attention deficits such as those who are active and have Alzheimer’s disease or related disorders,
- Residents receiving hospice care who may not eat traditional foods or meals.

Breakfast is notably improved by successful decentralized food programs, since residents have more flexibility in orchestration of their morning care and dietary needs. Breakfast consists of an initial “continental” approach. Beverages and fruits can be delivered to the residents’ great room or unit “den” at dawn for early risers, followed by morning care and subsequently a warm breakfast in the dining room.

Meanwhile, other residents may prefer a later start and only a warm breakfast.

*2. Statistics*

Nationally, about half of all Nursing Home residents (54%) eat independently.

Of those assisted, 21% are described as fully dependent, and the other 25% are partially assisted.

About 37% eat mechanically altered diets.

Of all residents, a small proportion receive special treatments affecting the ability to eat, including 7% who are “tube fed,” 9% using assistive devices, and 2% who receive suctioning.

## 3.9 Linen and Materials Management

### 3.9.1 General

A good linen and materials management program operates in the background, ensuring that residents are less aware of the personal service needs of others and focused on more stimulating and satisfying aspects of daily life.

The purpose of this chapter is to identify the issues of linen and materials management, including location, storage and convenience. Methods for estimating linen and storage are included in Table 3.9 at the end of this section.

### 3.9.2 Planning Considerations

#### 1. *Volumes*

National laundry associations estimate that Nursing Home residents produce about 10-13 lbs. of laundry per person per day.

#### 2. *Clean Linen*

Clean linen refers to loose or bagged sheets and towels; pre-packaged incontinence supplies; and freshly laundered personal clothing.

#### 3. *Soiled Linen*

The following items are deemed soiled:

- Used sheets, towels, wash cloths
- Worn clothing
- Opened items (towels, cloths)
- Yellow bag material (human waste), which is unhealthy for staff to rinse
- Red bag material (medical waste).

#### 4. *Clean and Soiled Linen Room Sizes*

Consider the option of taking overall

requirements for central linen space and dividing this up into smaller, well-located utility areas. Verify with local jurisdictional authorities.

#### 5. *Personal Clothing and Items*

Requirements referring to the management of residents' personal soiled linen vary by jurisdiction and may include:

- Storage in sealed or labeled net bags, kept in a closed container in the resident toilet room, and should not encumber access.
- Bagging in plastic or net and stored in a ventilated soiled linen room.
- Soiled linen storage for personal garments also generally requires a ventilated area not typically provided in a resident room closet.
- Handbags, backpacks, extra shoes, residents' personal clothing, flowerpots, holiday decorations, wheelchair parts, and oxygen concentrators are neither clean nor soiled items.

#### 6. *Bedpans*

- If washable bedpans are incorporated in the plan of care, facilities need to be available for washing and sanitizing, while protecting staff and other residents.
- Disposable bedpans are generally preferred by residents and staff.

#### 7. *Fire Protection*

Alcoves are appropriate for conveniently locating clean linen and supplies, though they must maintain access to a sprinkler head.

### 8. Universal Precautions

The Center for Disease Control (CDC) and OSHA each address aspects of contact with potentially infectious materials. Address the following:

- Minimize staff handling of soiled linen
- Design to reduce the need to touch door handles and faucets.

### 9. Ventilation

Linen storage should meet prevailing ventilation requirements.

### 10. Disposables

The option for using disposable incontinence products may be controlled through local ordinances covering waste management.

### 11. Recycling

As more Nursing Homes turn to bottled water for residents' hydration needs, consider recycling.

## 3.9.3 Design Considerations

### 1. Clean Linen

Provide clean linen rooms or alcoves between the work assignment areas of pairs of nursing assistants, or on each hall. (See Figure 3.49) Store linen on washable wire carts rather than shelves. A linen cart for 14 to 21 individuals averages 42" w x 26" d x 54" h [1067 mm x 660 mm x 1372 mm]. Provide 12-24" [305 x 610 mm] clearance to the walls on either side of the cart(s) chosen, to be used for hanging articles of back-up clothing or lift slings on loops or hooks.



**Figure 3.49**

### Clean Linen Alcove with Doors

CO State Veteran's Home Fitzsimons, CO.

Limit heights of clean linen and supply carts to 4'-6" [1372 mm], so staff will have a less obstructed view of people and other equipment as they wheel through the halls that residents occupy. Consider use of mid-sized carts for off-loading fresh linen, and larger carts in the clean linen storage alcoves.

### 2. Soiled Linen/Utility Room

Soiled laundry should be collected in appropriately sized and sealed containers such as small, frame style, wheeled carts with lids, or in larger, wheeled barrels, (50 gallons) for about 25-35 lbs of linen.

The volume, frequency of pick-ups, sizes and numbers of containers define soiled linen space needs. Provide containers for each of the following:

- soiled clothing
- flat items of linen, trash, and medical waste.

Reduce the prominence of soiled utilities by designing for smaller containers,

functionally located throughout a unit. Refer to Table 3.9 at the end of this section for assistance in translating containers, resident volumes and storage implications.

Appropriately contain soiled linen by bagging as each individual is dressed, toileted or otherwise given personal care. Do not pre-wash any items; this should be done in institutional grade washers specified with extraction systems.

Provide separate containers for medical waste, soiled flat goods, paper or disposable products, and soiled clothing. Soiled utility work rooms provide equipment and facilities for dealing with special linen needs, including bedpan flushing and/or sanitizing equipment as required. (See Figure 3.50)

For low volume of use, consider disposable bedpans. Comply with regulations regarding requirements for bedpan flushers. Where provided in soiled utility workrooms, bedpan washing should be managed in an enclosed system such as using a rigid arm, flush rim sink with a method for controlling splatter.

Provide conveniently located hand-washing sinks and disposable anti-microbial wipes on exit route for use prior to touching door hardware or other surfaces. (See Figure 3.51)



**Figure 3.50**

**Open Plan Soiled Linen Room**  
The Highlands, Wyomissing, PA.



**Figure 3.51**

**Soiled Linen Room**  
Village Shalom, Kansas City

In most jurisdictions, linen and trash chutes with appropriate sprinkler and cleaning systems may be used in multi-story Nursing Homes.

### 3. On-Unit Supplies

There are at least two types of supplies that require accommodation on Nursing Home units:

- Clean personal supplies are used by nursing assistants and include small products like shampoos and lotions. Par stock should be provided on each unit; individual items, assigned



to a resident, may be located near where they are used, such as in bathing suites or individual resident bathrooms. (See Figure 3.52)



**Figure 3.52**

**Clean Personal Care Supplies**

*CO State Veterans Home at Fitzsimons, Aurora,*

- Clean medical supplies are generally controlled and used by licensed staff. Clean medical supplies should be provided on each unit. They may be stored in distinct supply rooms, medication rooms and/or in alcoves, depending upon the volumes, frequency of deliveries, and the goals for product control. (See Figure 3.53)

**4. Oxygen Storage and Medical Gases**

Oxygen use should be available on each unit. This may be accomplished using concentrators, portable canisters and/or piped-in oxygen, depending upon the anticipated diagnoses of residents, access to supply, and functional program.

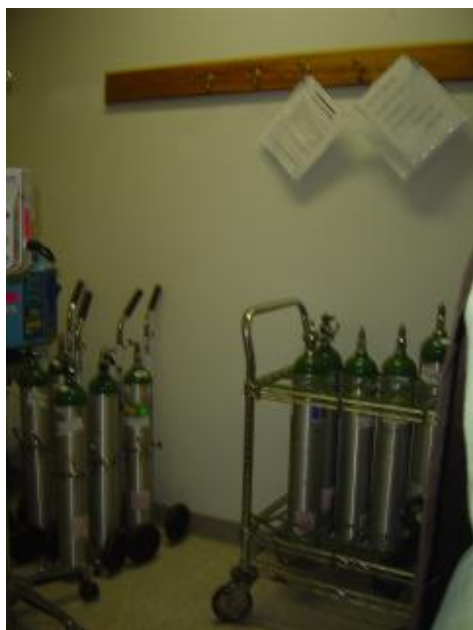


**Figure 3.53**

**Clean Medical Supplies**

*Baltimore Rehabilitation & Extended Care Center, Baltimore, MD*

- Tanks of other compressed gases such as nitrogen may be stored with concentrators; however, nothing else should be stored with or stacked on top of oxygen tanks and equipment.
- To supplement this storage, provide an emergency tank at the staff stations and on crash carts, located near multi-function social halls and larger dining rooms.
- Provide an 80 nsf [7.43 m<sup>2</sup>] on-unit oxygen storage room. (See Figure 3.54). Provide one central oxygen storage room in facilities with multiple nursing units. Size this area according to the functional program.



**Figure 3.54**

**Oxygen Canister Storage**  
 Armed Forces Retirement Home  
 Washington, DC.

**5. Integrating Linen, Supplies and Unit Design**

Good design responds to service item use and storage, product volumes, carts selected, and inconspicuous, convenient locations. Solutions would include:

- Equipment that supports the residential character of the surroundings
- Alcoves or off-sets (See Figure 3.55)
- Floor plans that minimize bulky linen collection traffic in resident use areas by using small local carts, taking routes through less public areas and/or use of linen chutes
- External pick-up using small carts. (See Figure 3.56)

On-unit washers and dryers are also encouraged as a means of establishing independence of residents.



**Figure 3.55**

**Alcoves Used for Active Equipment Needs**  
 CO State Veteran's Home Fitzsimons, CO.



**Figure 3.56**

**Exterior Linen Pick-up Using Battery Carts**  
 Moorings Park, Naples, FL.

**3.9.4 Interiors Considerations**

N/A

**3.9.5 Systems Considerations**

N/A

**3.9.6 Miscellaneous**

Many sponsors prefer to design less obtrusive soiled linen systems. One

way to accomplish this is by using smaller, less institutional looking carts and more points of pick-up. Use Table 3.9 to estimate linen cart and space needs as well as to plan central or

shared soiled linen pick-up alcoves and soiled utility rooms.

**Soiled Linen Management and Space Needs.**

| Number of Residents | Est. Weight (All types at 6 to 11 lbs. each) | Small Framed, Wheeled Carts. Number of 39 Gallon Linen Carts (1)       | Large Wheeled Barrels, Number of 50 gallon barrels (2)                           |
|---------------------|--|--|--|
| 7 to 8              | 42 to 88                                     | 3 to 4 based on what is separated; 1 to 2 pick-ups.                    | 2 assuming separation of soiled flat linen, soiled personal laundry and trash    |
| 14 to 16            | 84 to 176                                    | 4 to 6; 2 pick-ups per day   | 2 to 3; 2 pick-ups per day   |
| 21 to 24            | 126 to 264                                   | 6 to 8; 2 pick-ups   | 3 to 4; 2 pick-ups per day   |
| 35                  | 210 to 385                                   | See barrels; staff would probably also park 12 to 16 carts in the hall | 3 to 4; 3 pick-ups; volume beings to affect air quality                          |
| 40 to 45            | 240 to 795                                   | 12 to 16 with 2 pick-ups per day                                       | 4 to 5; 3 pick-ups per day to manage volume and help air quality                 |
| 60                  | 360 to 666                                   | 24 to 32 carts with 2 to 3 pick-ups per day                            | 4 to 6; 3 pick-ups per day; staff would put some containers in halls. See above. |

**Table 3.9**

**Notes:**

- 1 Average size = 22”l x 20”d x 32” to 40”h; Each holds about 15 lbs. dry, or 13 lbs. damp
- 2 Each holds 25 lbs. dry or 22 lbs. damp

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