

Designing for Dementia Care

The interior environments of long-term care homes that cater to the needs of those with dementia are capable of being designed - or redesigned - to aid residents in all manner of ways. Keeping residents mobile and safe, and ultimately promoting a longer, happier and healthier life, is a product of interior design. When one enters a residence for those with dementia, the qualities of welcome, comfort, safety, and compassionate care are often communicated by interior design. The benefits of exposure to these qualities are equally accessible to residents, family members, visitors and staff.

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Interior design for dementia care residences

On entering a residence for those with dementia, the qualities of welcome, comfort, safety, and compassionate care are often communicated by interior design. This is true for family, visitors and staff; and for residents, whether prospective or already accommodated.

Light and colour

The two most important aspects for interior design of dementia residences are light and colour, especially colour contrast (Benbow, Oct./Nov., 2013).

Seniors need three times more light than younger adults due to yellowing and thickening of the lens, the constriction of the pupils, and cataracts (Dupuy, et al., 2013). In addition, seniors' eyes are

more sensitive to glare, have diminished depth perception and decreased contrast sensitivity (Brush, et al., 2002; 2003).

(See "The aging eye," next page).

Insufficient lighting

Several recent studies found that the amount of light in nursing homes was seldom sufficient to meet the visual needs of older people, thereby placing them at greater risk of falls. These studies recommended increasing illuminance levels, controlling glare, and using clear and contrasting colours (Lepeleire, et al., 2007; Sinoo, et al., 2011).

Two related studies explored increasing ambient or available light to around 2500 lux; as a consequence of this increase in

light, they found improvements in sleep and reduction of disruptive behaviours (Calkins, 2003; Calkins, 2009). The variety, selection and placement of lighting fixtures are critical to ensuring adequate and uniform lighting levels.

Colour contrast

Colour contrast, the difference in luminance (intensity of light or brightness) and/or colour that makes an object distinguishable, is critical as it relates to Fixtures, Fittings, Furniture and Finishes.

Fixtures are reasonably permanent, attached items; fittings and furnishings are free standing or lightly hung articles; finishes refer to particular surface textures,

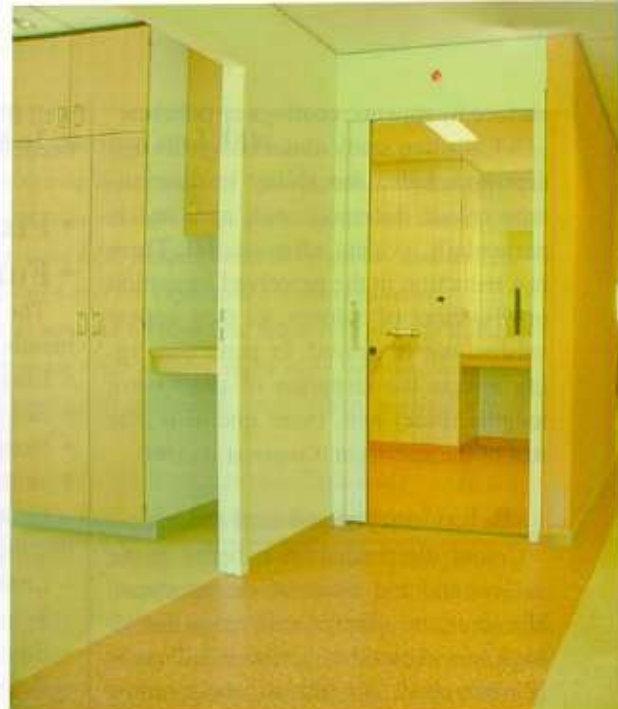
(Continued on page 6)

Prominent colour contrast can be used to provide foreground and clarity to objects:

- The colour of table settings must contrast with the table cloth/table.
- Chair contrast with floors.
- Sinks and toilets must contrast with the bathroom wall and floor.

See: <<http://www.enablenvironments.com.au/AdaptaHome/Colour/ColourPerceptionandContrast.aspx>>.





The Aging Eye - As people age, many changes occur which affect vision and colour perception. The thickening and yellowing of the lens alters the way colour is perceived (*right image above*). As a result, older people experience:

- a reduction in contrast perception, thereby resulting in difficulty differentiating between subtle changes in the environment such as carpets and steps;
- a reduction in the perceived saturation or vividness of colours (i.e. chroma); for example reds start to look like pinks;
- a reduced ability to discriminate blue colours. See: <www.enablingenvironments.com.au/AdaptaHome/Colour/ColourPerceptionandContrast.aspx>.

Colour contrast and resident safety issues

✓ Bold patterns, such as stripes and zig-zag lines, can be perceived as moving objects.

✓ Especially for people with a dementia, changes in hue and colour value (contrast) are often perceived to be changes in floor level.

✓ Care providers should avoid bold, high contrast patterns on floors, especially specks, stripes and chequered patterns, as they may be perceived as steps or even as 'holes' in the ground.



Source: <<http://www.enablingenvironments.com.au/AdaptaHome/Colour/ColourPerceptionandContrast.aspx>>.

✓ LED lighting can be mounted under bed frames for floor lighting and creating a lighted passage at night, including enough light for nurses to perform resident checks.

✓ LED lighting under a mirror and along a handrail can be used to light a bathroom.

Floor junctions and contrast

✓ Linoleum floor covering that run up continuously to the wall should not be used as it makes it difficult for a person with dementia to distinguish where the floor ends and the wall begins.

✓ Ensure thresholds between rooms do not have highly contrasting floor colours as the threshold might be perceived as a change in floor level. They may also be mistaken for shadows. ■

surface treatments, coatings or polishes.

A Canadian study almost 25 years ago determined that the ability to discriminate colour decreases with age, and is particularly evident after age 60. There is a reduction in the perceived saturation or vividness of colours, as they appear washed out or grayed. In particular, aging affects the reception of short wave lengths (blue) and, more gradually, the rest of the spectrum (Cooper, et al., 1991).

Behaviour, mood and colour

Colour discrimination is better in the yellow and red areas of the spectrum. However, the effect of colours on the behaviour and mood of seniors is still poorly researched. The use of colour coding is controversial and should be limited to saturated primary colours such as blue, yellow, red and secondary colours such as green, orange and purple rather than lighter shades and pastels which may appear gray to older eyes (Dalke, et al., 2006).

Research has also found that persons with dementia experience increased difficulty with colour discrimination, depth perception, and contrast sensitivity (Cronin-Golomb, 1995; Pache, et al., 2003; Rizzo, et al., 2000; Wijk, et al., 1999).

Critical colour element

Contrast, or colour value, is the lightness (tint) or darkness (shade) of a colour. This is the critical colour element that is supported by research for designing environments for seniors. A British study recommends a contrast differential value of 30% on a gray scale to enable persons with visual impairments to distinguish an object from its background or field. Twenty percent may be adequate in some

well illuminated situations, while 70% is needed for signage (Bright and Egger, 2008).

• Fixtures • Fittings • Furniture • Finishes

The Center for Health Design recommends that all surfaces should be:

- Easy to maintain, repair and clean.
- Not support microbial growth.
- Nonporous and smooth.
- Seamless (Malone, et al., 2011).

Generally, fixtures, fittings and furnishings should:

- Look familiar.
- Belong in a domestic setting.
- Be comfortable and safe to use.
- Be colour-contrasted against background surfaces.
- Be suitable for people with reduced manual agility; C-shaped handles, for example, are easier to use than door knobs (Interior Design, Victoria, Australia, 2014).

• Fixtures - lighting

Lighting fixtures are of 3 basic types:

a) ceiling mounted,

- b) wall mounted, and
- c) free standing portable floor lamps or table lamps.

It is important that lighting fixture bulbs have a high **Colour Rendering Index (CRI)** so that colours appear natural (i.e., a CRI between 70 - 100).

The temperature of the light emitted as measured on the Kelvin scale, is important, with lower values - <3000 - providing a warmer appearing light, and often preferred for lounges, with higher values - >3000 - closer to daylight and delivering cooler but truer colours, and health and behaviour benefits related to sleep patterns. (See Kelvin scale below)

Light-emitting diode lights

LED (light-emitting diode) lighting is quickly becoming the fixture of choice in terms of cost effectiveness. Savings in care facilities using LED lighting are estimated at 50% of the operating cost of CFL (compact fluorescent lamp) bulbs. Also, the long life of LED lighting virtually eliminates maintenance.

The Kelvin scale

Which bulb value should be chosen?

- 5250K (Sunlight)
- 4200K
- 3850K
- 3500K
- 3200K (Halogen Bulb)
- 2600K (Incandescent Bulb)

Kelvin is a unit of measurement used to describe the hue of a specific light source. This is not necessarily related to the heat output of the light source; rather, it is the color of the light output. The higher the Kelvin value of the light source, the closer the light's color output will be to actual sunlight. Bulbs with an output of 3500K or lower on the scale will have an amber hue (between yellow and orange).

Bulbs in the mid-range of 3500K-4100K will have a white hue. Bulbs in the higher 4100K+ range will tend toward a blue hue and closer to, or exceeding, sunlight. ■

(See below: LED Kelvin Scale)

See: <<http://www.justbulbsnyc.com/images/Kelvin%20Temperature%20Chart.png>>

LED Kelvin Scale showing the mood effects associated with the different temperatures.

Kelvin Colour Temperature	2700K	3000K	3500K	4100K	5000K	6500K
Associated Effects and Moods	<ul style="list-style-type: none"> • Friendly • Intimate • Personal • Exclusive 	<ul style="list-style-type: none"> • Calm • Warm 	<ul style="list-style-type: none"> • Friendly • Inviting • Non-threatening 	<ul style="list-style-type: none"> • Neat • Clean • Efficient 	<ul style="list-style-type: none"> • Vibrant 	<ul style="list-style-type: none"> • Bright • Alert • Replicates the Natural Sun
Appropriate Applications	<ul style="list-style-type: none"> - Restaurants - Hotel Lobbies - Boutiques - Retail Stores 	<ul style="list-style-type: none"> - Libraries - Office Areas - Homes 	<ul style="list-style-type: none"> - Public reception - Showrooms - Bookstores - Office Areas 	<ul style="list-style-type: none"> - Office Areas - Meeting and class rooms - Mass Merchants - Hospitals 	<ul style="list-style-type: none"> - Retail Stores - Office Areas - Factories 	<ul style="list-style-type: none"> - Galleries - Museums - Jewelry Stores - Examination Areas - Printing Co.

LED light fixtures can be designed with adjustable Kelvin values, with higher cooler values for daytime use, and lower warmer values for evenings. (See *Kelvin Scale* previous page). Also, research is underway to evaluate the efficacy of an automated LED lighting system which mimics the Kelvin value changes of daylight throughout the day to help ameliorate the symptoms of dementia in residents (Ellis, et al., 2014).

Lighting locations

To avoid glare, lighting should be indirect. Consider illuminating vertical as well as horizontal surfaces, i.e., use up-lighting fixtures such as wall sconces, cove lighting as well as shaded ceiling fixtures. Placement and shading of overhead lights are important to avoid glare and light and dark "puddles," particularly in corridors where fixtures are too far apart (Hyde, 1989; Calkins, 2003).

Recessed ceiling lights can result in dark ceilings which may not be helpful. Corridor lighting should be dimmable and include ceiling and wall up-lighters on different switched circuits.

In bedrooms, lighting should be double-switched: operable from the bed and near the door. Lighting should also be dimmable, and switches should be pressure-plate type (Van Hoof, et al., 2010).

A minimum of two ceiling fixtures is recommended for single bedrooms with supplementary task lighting for reading. A night light or motion sensor is good for trips to the ensuite.

A word of caution on LEDs

The first wave of new and innovative lighting products can be problematic as there is a rush of new manufacturers trying to capitalize on the growing market. There have been concerns expressed regarding some LED fixtures in terms of quality and durability, i.e., light is not as bright as claimed and life expectancy is overestimated.

As yet there is no standard way to rate the lifetime and reliability of LED lighting products. The colour delivered by some LED fixtures shifts over time and becomes less accurate. Some LEDs flicker noticeably and some cause glare, particularly at high output levels.

Be sure the LED products selected meet North American standards and provide reasonable warranties covering all the elements of the fixture (Brodrick, 2014). ■

Lighting under the bed

A 2005 study in a nursing home found that LED lights under the bed frame and in the ensuite could improve sleep quality and help to reduce falls. Researchers replaced the overhead light with LED lights under the bed frame, around the ensuite door, and under the grab bar and mirror. (See page 5)

The LED lights were operated by photo sensor and motion sensor controls. They came on only at night when a resident got out of bed or when staff checked on a resident. Staff and residents reported positively on the changes. Previously, residents were disturbed when staff turned on the overhead light to check on them (Figueiro and Rea, 2005).

Lighting and nutritional intake

Research has shown that increased lighting in dining rooms can improve nutritional intake (Brush, et al., 2002). Persons sitting by the window or wall

benefit from increased natural and reflected light. Those sitting in the middle of the room may have inadequate light unless there are sufficient overhead fixtures to boost the light intensity to the recommended 550 - 1100 lux.

Floor and table lamps make good task lighting fixtures and can be easily controlled by users. Floor lamps should have a good stable base, while table lamps need to be impact resistant, stable and easy to clean.

Light switch plates should be in good contrast with the wall, and positioned low enough for wheelchair use (<1200mm, or 47 inches).

Double-switching fixtures are recommended (Calkins, 2003).

• Fixtures - ensuite

It is recommended that ensuite fixtures be easily visible from the resident's bed, particularly the toilet. Ensuities need grab bars in showers, beside toilets and near sinks for safety; these fixtures should contrast (be distinguishable) with walls for easy visibility.

Faucet's should be traditional in appearance with separate lever or cross handled taps and clear indication of hot and cold, i.e., marked with a clear indication large enough to be seen and understood such as 'H' and 'C,' or 'Hot' and 'Cold'.

The vanity unit should contrast with the sink and provide wheelchair accessibility. Mirrors need to be adjustable and either removable or easily covered since some dementia residents reach a stage where they no longer recognize themselves in a mirror and become agitated.

Toilet seats should contrast with the commode bowl and reservoir which

Suggestions for colour selection

- Colour contrast and good lighting help people's navigation, orientation, mobility, independence and involvement.
- Too many colours together can be distracting.
- Colours that are too well co-ordinated often lack sufficient contrast.
- Elders are best able to discriminate strong colours at warm end of the spectrum.
- Colours with a high degree of brightness, such as yellow and yellow-green, are highly visible.
- Colours such as peach, coral and apricot tones flatter skin tones and add warmth to any setting.
- Pastel blues and lavenders are hard for older people to see and often look grey.
- People with colour vision issues are less sensitive to colours on either end of the colour spectrum. Reds and blues will look darker.
- Combine light colours, such as yellow or green, with dark colours, such as red or blue, to produce the most effective contrasts.
- Avoid dark green against bright red, yellow against white, blue against green, and lavender against pink.
- Colour combinations for effective colour contrast are light colours against black, dark colours against white, light yellow against dark blue, and light green against dark red. ■

(Interior Design, Victoria, Australia, 2014).

needs to contrast with flooring and walls. Toilet roll holders can contrast with walls to add visibility. Toilets are easier to transfer to, and get on and off from, if higher than regular domestic height, i.e., 400 - 460 mm (16 - 18 inches).

Showers should have a low lip, preferably no more than 13 mm (1/2 inch) to be accessible. Shower curtains should not have large patterns or life-like objects depicted.

• Fittings

Vertical blinds provide flexibility to minimize glare and the amount of daylight entering a room; they should be easy to clean.

Fabric curtains create a cosy atmosphere and help reduce noise. Curtains should be plain, light coloured with a high LRV (Light Reflectivity Value) and contrast with walls. Curtains should be closed at night to reduce reflective glare, with blackout curtains not a bad choice for bedrooms.

Bedding should be plain and contrast with the flooring. Different coloured sheets can be helpful. Personalized quilts or bedspreads can help the resident identify their room. Cushions and throws can create a home-like feel in bedrooms and living rooms.

Memory boxes (containing personal memorabilia) adjacent to a resident's door are helpful as a memory aide in helping the resident identify his/her own room. LED-lit memory boxes will make them even more visible and draw attention to their contents.

For dining, placemats or table cloth that have a good contrast to plates and utensils help residents see their food better. Research has shown that this kind of colour contrast increases consumption.

Brightly coloured plates have been shown to stimulate intake; (See page 4) and plates with a colour-contrasting border better define the edges of the plate (Brush, 2002).

Pictures and art work should have low reflective glass to reduce glare.

Graphics or signage are best seen at, or below, door handle height as visually impaired persons and those with dementia tend to look down. Text on signs should be in good contrast with background,

minimum font size of 60 pt. (2.1 cm) with serifs, using upper and lower case. Common toilet rooms should be well marked with signage including both text and graphics (Benbow, March/April, 2013).

• Furniture

Generally, the furniture in nursing home residences should be familiar, home-like, safe, comfortable, sturdy, accessible, and assist in identifying each room's purpose.

Stability of furnishings is important as chairs and tables are often used for support and leverage in 'sit to stand' exercises and walking therapy. The ability to rise safely from a sitting position is critical to independence.

Seating height is best at approximately 120% of a resident's lower leg length (LLL) - the distance from the heel to the joint line of the knee with shoes on. Appropriate chair height requires less knee extension, less work by the quadriceps, and less leaning forward. Seat height higher than this, or lower than 80% of lower leg length can impede safe transfer and result in falls; this applies as well to chairs, toilets and beds (Capezuti, et al., 2008; Kuo, 2013).

Earlier studies reported that, historically, as chair height increased from 17 to 22 inches, successful rising from chairs doubled, with nursing home and community subjects reporting less difficulty. Research also found that increased seat compressibility and associated seat height adjustment interfered with chair egress, but cautioned that seating comfort must be balanced with ease of egress (Malone and Delinger, 2011).

Arm rests and foot positioning are also major factors in the 'sit to stand' movement (Janssen, et al., 2002).

To accommodate a variety of leg lengths, beds need to be adjustable to lower heights to enable easy rising, and chairs need to be provided in a variety of seating heights and have arm rests.

Chairs

Care needs to be taken to avoid seating designs with 'pinch zones' where fingers and hands can get stuck.

Consider lounge seating that addresses incontinence issues, i.e., water repellent, stain resistant, easily cleaned fabric, and

removable pop-out cushions.

It is preferable to have flow-through chair designs (i.e., no fabric deck below the cushion) for ease of cleaning and to avoid fluids pooling within the frame of the seat. Also useful is a 'clean-out' area on chairs so that items are not caught between the seat and back frame.

Sofas, love seats and arm chairs should be designed for good support for proper body alignment with orthopedic back support for the small of the back - and with arm rests.

Chair upholstery should avoid piping in the lower section which could restrict blood flow in resident's legs.

Seating needs to be high enough (51 - 56 cm; 20 - 22 inches), with not too deep a seat (51 - 56 cm).

Medium density foam is suggested to provide sufficient firmness for the 'sit-to-stand' movement, i.e., no sag. Too severe a seat posterior tilt angle and seat back recline can impede resident egress. It is also easier to rise from chairs designed to allow feet to move to a more posterior position.

Dining chairs should be selected that are easy to move and stable, with arm rests that are easy to grasp and to push from when getting up.

Also important is good lower lumbar support, medium density foam, and seat padding with fire retardant, anti-microbial and water resistant fabric such as crypton or vinyl fabrics. Consider height and weight of users, and provide a variety of choices including some suitable for bariatric residents (Hughes, 1995).

Upholstery should have good colour contrast with walls and floor. Joints and fasteners should be durable and of high quality. Restricted in-line castors on two of the chair's legs, combined with friction glides on the other two, can facilitate sliding in and out - particularly for heavy residents (ComforTec Seating Inc., 2014).

Tables

Tables need to have sturdy support which can be pedestal based, or with well-braced legs. The latter has the advantage of increased stability which is an important consideration since residents often use table edges for support in rising from their chair. (Cont'd. .)

The table top should have rounded corners and contrasting curved edges. A height of 790 mm (31 inches) is suggested with 735 mm (29 inch) clearance underneath for wheelchair access. Square tables are preferred for dining as they provide a clearly defined eating area for each person.

Wardrobes and dressers

Wardrobe, also known as an armoire, is a standing cupboard used for storing clothes and is preferred over a fixed closet for ease of repairs and replacement, as well as flexibility of room arrangement.

Recommended by this writer is an open section for daily clothing, with a latched closed section for storage, and contrasting handles on both wardrobes and dressers. Alternatively, a wardrobe could have two sections with one smaller section colour-contrasted for daily use and the other side coloured similar to the wall to deter rummaging.

Tops of night-tables and dressers should have no sharp corners.

Be aware of durability issues: vinyl wrap/melamine, low-pressure laminate (LPL) on tops, doors, and drawers are not as damage resistant as high pressure laminate (HPL). A combination of HPL and LPL is acceptable if LPL is restricted to vertical or low-impact surfaces. Finally, particle board construction is not as durable as wood, plywood or medium density fiberboard as the substrate.

Appliances

Microwave ovens are often found in assisted living and supportive housing residences; however, for persons with vision and/or cognitive impairments there are safety concerns. It is recommended that any microwaves supplied to seniors' residences have easy-to-use controls. Although difficult to find, microwave features to look for include:

- one touch operation with sensors that stop cooking automatically and prevent over-heating so that users do not have to estimate cooking time;
- an automatic defrost function;
- well-spaced buttons and large text and numbers;
- a handle is preferred over a push button opener;

- sound prompts are helpful;
- a clear glass window with a bright interior light to see the food while cooking;
- large-text manuals and training should be made available in the use of the ovens.

Some authorities feel that microwave ovens should be removed for the cognitively impaired to prevent fires (Tomoko, et al., 1997).

Flooring

Flooring needs to be long lasting, durable, easily and economically maintained and cleaned, and comfortable to walk on. (See chart below, 'best selections. . .')

Glare is a serious concern with flooring, especially near or adjacent to exterior windows. A particular issue is the unnecessary waxing and buffing of resilient flooring which increases glare - as well as slips and falls.

The Center for Health Design, after an exhaustive literature review, recommended the following criteria for the selection of flooring:

1. Reduces slips, trips and falls;
2. Reduces resident and staff injuries associated with falls;
3. Reduces noise levels;
4. Reduces staff fatigue;
5. Reduces surface contamination and potential risk of infections;
6. Improves Indoor Air Quality (IAQ);
7. Improves resident/family satisfaction;
8. Represents the best return on investment (Nanda, Malone & Joseph, 2012).

The main flooring choice for facilities

is between carpeting and resilient flooring (vinyl, linoleum).

Research has shown that large bold patterns on floors can confuse and immobilize dementia residents, and contribute to falls (Perritt, et al., 2005).

Large high contrast patterns can appear as holes or barriers - (page 5); thus, it is preferable to use low-contrast smaller patterns, solid colours or natural appearing material, e.g., wood (real or imitation).

Flooring needs to be stable, firm and slip-resistant, yet cushioned for falls. Cushioning properties should be balanced with roller mobility for wheelchairs and transport chairs in areas such as corridors.

Carpeting

Research has shown that low-pile (flatter) carpet does not adversely affect balance in older healthy seniors; however, some difficulty was evident if visual input was limited (Dickinson, et al., 2001). This suggests that care should be taken in using carpet in facilities designed for residents with middle-to-late stage dementia and where balance, gait and vision are major resident issues.

High performance carpeting has the advantage of noise absorption, while resilient flooring is easier to clean. Where spillage is likely (e.g., bathrooms, sinks), flooring should be impermeable, easily cleaned and textured.

Both carpet and resilient flooring come as tiles or strips for easy replacement. Such tiles are not impermeable unless edges are sealed.

Making the best selections in flooring, walls and upholstery*

Flooring Type	Life Cycle	Initial Cost	Maintenance
Terrazzo	Long life	High	Very low
Linoleum*	Long life	Above average	Very low
Rubber	Long life	Above average	Very low
Porcelain tile	Long life	Average	Low
Welded-seam sheet vinyl	Moderate	Average	Moderate
Vinyl planks and tile	Moderate	Average	Moderate
Carpet	Moderate	Average	Moderate/above average
Vinyl composition tile	Moderate	Lowest	Maximum

* Leadership in Energy and Environmental Design (LEED) rating.

* Adapted from Byrd, A., Making the best selections in flooring, walls, hard surfaces and upholstery, *Health Facilities Management*, August, 2009.

Carpeting should be low pile and resistant to water, mildew and stains. Higher quality carpet will prove more durable.

Nylon carpets tend to be stain resistant, durable and cost effective. Long term maintenance should be an important factor in carpet selection.

Transitions from one flooring material to another should be smooth, with little if any change in level to prevent tripping.

Where necessary, thresholds should be a maximum 13mm (1/2in.) high and bevelled. To encourage movement where different flooring materials meet, it is best if there is little if any colour contrast change, and certainly no visible stripe or block of contrast, for example, a floor mat (See page 5).

If building entry and floor mats are used, they should have beveled edges and be firmly anchored. All flooring should contrast with walls and base boards. First-time costs need to be balanced with life-cycle costs. (See box adjacent page).

Highly contrasting flooring can be used to discourage residents from moving into a designated area, e.g., a dark coloured floor stripe is read or interpreted as a chasm and so avoided by those with dementia. Some architecture design operations use a black, six inch wide door threshold to deter dementia-challenged residents from wandering into house-keeping rooms and kitchens.

• Finishes

Surfaces need to be familiar, easily cleaned and durable. Patterns with life-like objects, or specks on the floors, can precipitate falls when residents bend to pick up a "leaf" or a particle. Wavy-line patterns on carpets can create nausea, and patterned wallpaper can be disorienting.

Because pastel colours appear gray, where they appear will require contrasting adjacencies, edges or borders for separation of object and field. Warm tones (yellows and reds) are most easily seen.

Finishes on walls, flooring, furniture, etc., should be non-glare, preferably a solid colour without a pattern or very subtle pattern of low contrast.

On the walls, eggshell or silk-finish paint is recommended to reduce glare. Ceilings should have a Light Reflective Value (LRV) of more than 80, walls more

than 60, and floors a 30 to 40 LVR.

Finishes should provide a contrast between walls and floors. Base boards should contrast with walls and floor. Chair backs should contrast with walls, and chair legs with floors.

Doors should stand out from surrounding walls by use of colour and contrast with the wall or door frame molding. Some facilities use different door colours and styles to distinguish resident rooms.

Handrails should contrast with walls. Acoustic ceiling tile, drapery and wall hangings can soften hard surfaces and mitigate noise.

Camouflage, such as painting doors the same colour as walls, or masking doors with murals, can be useful in redirecting residents for their own safety.

Consider wall and corner protection such as chair rails, corner guards, crash rails, acrovyn-type lower wall covering.

One caution: acrovyn-type wall covering can blister if installed above electric heaters or exposed to direct sunlight.

Features

Special Features are useful to add attractiveness and points of interest such as for an aquarium, aviary, fireplace, grandfather clock, retro elements, etc. These can be placed at navigational decision points to act as landmarks or be part of a feature wall (Benbow, March/April, 2013).

Bright and colourful hanging works-of-art and murals can provide pleasant memory stimulation.

Cushions and throws can add warmth and accent colour. Plants are appreciated and help create a homelike ambience; in the residents' rooms they can provide something for them to be responsible for.

Conclusion

Lighting and contrast are the two basic principles to follow in providing Interior Design for dementia residences.

A simple rule of thumb would be to minimally double the amount of light normally provided for younger adults.

Designers need to utilize indirect lighting, Light Reflective Values in ceilings and walls, as well as value contrast for the safety of those with low vision so that they can see and navigate their environment in order to:

1. detect level changes, i.e., the edge of a table or counter top;
2. locate a handle or door;
3. determine where floor and wall meet;
4. distinguish objects from their background, i.e., chairs and carts in their path, table settings (Dupuy, et al., 2013).

In addition familiarity, safety, durability, warranty, and on-going service are all important in the selection of fixtures, fittings, furniture and finishes. ■

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Points of 'enlightenment'

- Consider the illumination of vertical as well as horizontal surfaces. By lighting the walls, the room appears brighter and much more inviting.
- Shield all light bulbs by using shades or louvers, or use frosted bulbs. When light bulbs are not shielded, such as those in some chandeliers, glare occurs. Glare also occurs when Compact Fluorescent Lighting bulbs are placed into 'down' light fixtures that are not made for them, and no attempt is made to shield the bulbs.
- Consider having at least one or two lighting fixtures that are visibly evident, and locating them in areas where breakage is not likely to occur. For example, the fixture could be a wall sconce or a desk lamp. This point is particularly applicable if indirect lighting is planned, since people like to see where the light is coming from. ■

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A 2007 British study reviewed lighting in seniors housing and made the following recommendations for improvements:

- more individual lighting switches to enhance flexibility, e.g., dimmable lights;
 - a better match between number of fittings and room size;
 - additional spaced ceiling, wall-mounted 'up lights' and free standing uplighters for even lighting;
 - improved lighting where residents circulate, i.e., corridors, landings and stairs;
 - correct size and fitted shades to reduce glare;
 - lights in cupboards and wardrobes;
 - under-unit lighting in kitchens;
 - more portable and adjustable task lights - especially in activity/lounge areas.
- (Percival, 2007 - "Lighting the homes of people with sight loss: an overview of recent research"). ■

About the author - William (Bill) Benbow, M.S.W., is a planner, development consultant, researcher and writer from Victoria, B.C., with experience and interests in facility functional programming and design guidelines. He has had numerous articles published on functional design of nursing home facilities. The author welcomes comments and suggestions. Checklist for Interior Design available from author. **Contact:** <billbenbow@shaw.ca>. **Website:** <[wabenbow.com](http://www.wabenbow.com)>.