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Dementia design guidelines: home and community care capital works program

Authored by
Lisa Hodges, Catherine Bridge & Katrina Chaudhary

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Glossary

Landmark: An object of note that distinguishes one area from another by its presence. E.g., grandfather clock, fountain, piano, etc.

Wandering path: A path that facilitates and encourages positive wandering. Such a path is continuous, passes through many different activity areas and has toilets and seats along the path.

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Introduction

Home based and community care is the preferred option for the majority of older persons, their families and carers. Thus services with a respite-effect, such as centre-based day care, are being promoted as a support that assists people with dementia and their carers. Dementia day respite care, also known as adult day care, not only provides respite to family caregivers but also therapeutic care for cognitively and physically impaired older adults (Leitsch, Zarit, Townsend & Greene, 2001). Aside from the care that staff provides and the increased opportunities to socialise, the physical environment of a dementia adult day-care centre has been recognised as an aid in caring for those with dementia (Day, Carreon & Stump, 2000).

As the person with dementia's competence decreases, the importance of the environment in determining their wellbeing increases (Brawley, 1997). As such, the design of the physical environment has come to be regarded as a therapeutic resource for those with dementia (Day, Carreon & Stump, 2000).

Purpose of the report

This report was written, at the request of the NSW Department of Ageing, Disability and Home Care (DADHC), for service providers, architects, interior designers, etc., to improve the ability of adult day centres to provide a safe environment which caters to the specific needs of people with dementia. The intent of the report is to map principles and the transactional nature of impairment and the environment. As "design is regarded as a therapeutic resource to promote well-being and functionality among people with dementia" (Day, Carreon & Stump, 2000, p. 397), environments such as adult day care centres, when well designed, can significantly compensate for decreased cognitive ability and can greatly impact behaviour and effect of people with dementia (Fleming, Forbes & Bennett, 2003).

These guidelines will apply to all capital grants for Home and Community Care funded centre-based day care facilities in the future and consequently, need to be considered by all architects, planners, builders and funding applicants involved in future design and construction processes.

Evolution of the environmental design of adult day care centres

Much literature exists regarding the design trends of the physical environment of those with dementia, including the shift from specific physical characteristics to holistic approaches (Calkins, 2001) and from institutional to home-like design (Fleming, Forbes & Bennett, 2003). However, the vast majority of the information available is specific to residential settings[1] with little information pertaining to community located day care

[1] See Day, Carreon, & Stump (2000) for a review.

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centres (Cahill, Drury, Lawlor, O'Connor & O'Connell, 2003; Day, Carreon & Stump, 2000).

The literature indicates that a myriad of different types of physical environments have been implemented in day care centres including purpose-built facilities, remodelled residences, nursing homes and the “church basement” type structures of undifferentiated large spaces (Diaz Moore, 2002, 2005). Unfortunately, the design of most day care facilities has been described as “impoverished” (Diaz Moore, 2005) as they generally have a vastly heterogeneous client population, an unsatisfactorily defined nature and are targeted towards undifferentiated, cultureless populations (Day & Cohen, 2000; Diaz Moore, 2005). There are, however, some positive reports of the physical environment of day care centres including those that are purpose-designed and built (Spinks, 2005). Such centres, if designed appropriately, allow for the therapeutic goals of the centre to be optimised by the environment.

Legislation pertaining to adult day care centres

The guidelines put forward in this report are not intended to replace the current legislative framework, but rather are designed to complement it. As community day care centres are public buildings, their design is likely to be regulated by the Building Code of Australia (BCA), the Disability Discrimination Act (1992) and local government guidelines.

Building Code of Australia

The Australian Building Codes Board on behalf of the Australian Government and State and Territory Governments annually manage and update the Building Code of Australia (BCA). The BCA contains technical provisions for the design and construction of buildings and other structures, covering such matters as structure, fire resistance, access and egress, services and equipment, and certain aspects of health and amenity (Australian Building Codes Board, 1996).

The goals of the BCA are to enable the achievement and maintenance of acceptable standards of structural sufficiency, safety (including safety from fire), health and amenity for the benefit of the community, both now and in the future. The BCS applies to all Australian states and territories.

Australian Standard 1428.1 (2001) & 1428.2 (1992)

The Australian Standard 1428 specifies the minimum design requirements for new public building work (Standards Australia, 2001) and for current public buildings (Standards Australia, 1992) to enable access for people with disabilities in Parts 1 and 2 respectively. The Standard notes that purpose-built buildings for people with disabilities should be designed with greater regard to the needs of the user group than to the requirements of the Standard and BCA (Standards Australia, 2001).

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Local Government Planning

Planning of community day care centres needs also to comply with the Local Government Planning requirements. Section 7(d) of The Local Government Act 1993 (NSW)[2], states that one of its purposes is to provide councils with "a role in the management, improvement and development of the resources of their areas". This Act includes regulations pertaining to environmental planning instruments; including the use and management of community land, building certificates and miscellaneous regulations (e.g., such as smoke alarms, etc.).

Issues of heritage[3] also need to be considered, however, it should be noted that the Disability Discrimination Act overrides issues of heritage where otherwise unavoidable (Martin, 1997).

Disability Discrimination Act (1992)

The Disability Discrimination Act (DDA)[4] is an Australian Commonwealth consolidated act. The intention of the DDA is to ensure that people with disabilities have equal rights as Australian citizens before the law. In part, this Act requires that Australians living with disabilities are given the same access to public areas as other members of the community. As community dementia day care centres are public buildings, appropriate access needs to be considered in the design of the centres.

Social climate changes

Historically, the advent of nursing homes created a hospital-like environment where the elderly who could not care for themselves for medical reasons could be cared for (Diaz Moore, 2005). However, it became clear that nursing homes were not always a suitable environment for the elderly. A continuum of care including assisted living and adult day care centres emerged to provide support and help in preventing or delaying the placement of the elderly, particularly those with dementia, in an institutional type setting by providing a supportive environment and respite for the family carer (Diaz Moore, 2005; Leitsch, Zarit, Townsend & Greene, 2001).

As of 2001, 37 million people of all ages were living with a form of dementia (World Health Organisation, 2001). In 2005 there were nearly 52,000 Australians newly diagnosed with dementia (Australian Bureau of Statistics, 1998). Although dementia is associated with a myriad of different conditions, Alzheimer's disease accounts for the majority of the prevalence with 50-75% of the condition being attributed to this disease (Fratiglioni, DeRonchi & Agüero-Torres, 1999).

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[2] Local Government Act 1993 (NSW)

[3] Heritage Act 1977 (NSW)

[4] Disability Discrimination Act 1992 (Cth)

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Estimated future social climate

The Australian (and indeed the world) population is ageing. It is predicted that as of 2051, 24-26% of the Australian population will be over 65 years (Australian Bureau of Statistics, 1998). As the incidences of Alzheimer's disease and other dementias has been observed to rise exponentially with age (until at least 90 years of age) (Jorm & Jolley, 1998), it is then logical to assume that without the intervention of medical science, the prevalence of dementia will increase as the aged population increases. Indeed, it has been projected that by 2050, the total number of Australians newly diagnosed with dementia will exceed 730,000 (2.8% of the projected population) – a fourfold increase since 2000 (Access Economics, 2005).

This projected increase in the prevalence of dementia suggests that the demand for support from day care centres will be greater. To make the day respite world of our elders safer, healthier and more interesting, better understanding and clearly articulated design principles and performance objectives are needed.

Methodology

Systematic Review

An initial literature review was conducted pertaining to design needs and current best practice design policies for environments to be used by those with dementia. From this information, general principles of design requirements were identified, allowing for the appropriate reference materials to be selected from all the information pertaining to dementia specific day centres.

A systematic review, guided by the *Protocol guidelines for systematic reviews of home modification information to inform best practice* (Bridge & Phibbs, 2003) was implemented in this study. Specific terms were identified from the research question and literature review, which were used to search for relevant materials on electronic databases and the World Wide Web. Table 1 contains the search terms including those that were truncated.

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Table 1. Search Terms

Problem	Intervention	Comparison	Outcome	Target population
Assistance Community care Family Formal care Informal care Neighbour Personal Care Respite Care Support	Adult day care Adult day centre Day care Day care services Day centre Day respite	Hospital Institution Nursing care facility Nursing home Rest home	Approaches Criteria Design principles Framework Fundamentals Guidelines Rationale Solutions Standard Strategy	Dementia Demented Alzheimer's Cognition Cognitive impairment Memory loss Memory impairment Senile

A wide variety of electronic databases were selected to ensure the comprehensiveness of the search. The following is a list of all areas searched:

- Ageline (ageing in psychological, health-related, social, and economics)
- AMED (allied and complementary medicine)
- APAIS (health)
- ARCH (architecture)
- Cinahl (nursing and allied health)
- Current Contents via Ovid (science, social sciences, arts and humanities)
- Expanded Academic Index ASAP (humanities, social sciences, environment, science & technology)
- Family (family and society)
- Health and Society
- Medline via Ovid (allied health, health care, medical, biological, physical sciences)
- Sociofile/Sociological abstracts
- Web of Science (science, social science, arts and humanities)

Specific inclusion and exclusion criteria were developed to ensure that only the most relevant articles were included in the review. Material was only included if it was (a) accessible through the University of Sydney Library network or the World Wide Web, (b) written in English, (c) printed after 1990. Materials which did not meet the inclusion criteria or were conference abstracts, unpublished conference papers or whole of subject books were not included in the review.

With the background knowledge obtained from the literature review, the researchers were able to identify those references that both meet inclusion criteria and were

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relevant to the development of design principles specific to dementia day care centres only. A grey literature search was also conducted, yielding further World Wide Web reference materials to be included in the analysis. These reference materials were logged and their relevance to one of the potential design areas developed into a matrix[5].

Design principles and checklist

The matrix of reference materials, logged nine different general environmental concepts relevant to dementia day care centres. These concepts, in conjunction with architectural and interior design concepts (Bridge & Simoff, 2000a, 2000b), facilitated the development of nine dementia day centre design principles. The principles, practical examples noted in the literature and the regulatory documents discussed allowed for the development of a draft dementia day centre design checklist. This list, while not exhaustive, was designed to determine the validity of the principles in practice. In order to make this assessment, the NSW Dementia Reference Group was asked to recommend community dementia day care centres that exemplified current best practice and who could make an assessment as to the practical validity of the checklist. From these recommendations, Broughton House[6] and Chantal Day and Respite Centre[7] were selected.

Results

Results of the Systematic Review

The systematic search provided two-hundred and ten references that referred to the appropriate search terms. Of these, only twelve were included in the study as all other materials were identified as either not meeting the inclusion criteria or violating the exclusion criteria. The grey literature search provided another eleven materials for inclusion in the study. Finally, twenty-three different reference materials were identified and included for analysis. See Figure 1 for more detail regarding the inclusion/exclusion process.

[5] See Appendix A.

[6] See Appendix B for a case study of Broughton House.

[7] See Appendix C for a case study of Chantal Day and Respite Centre.

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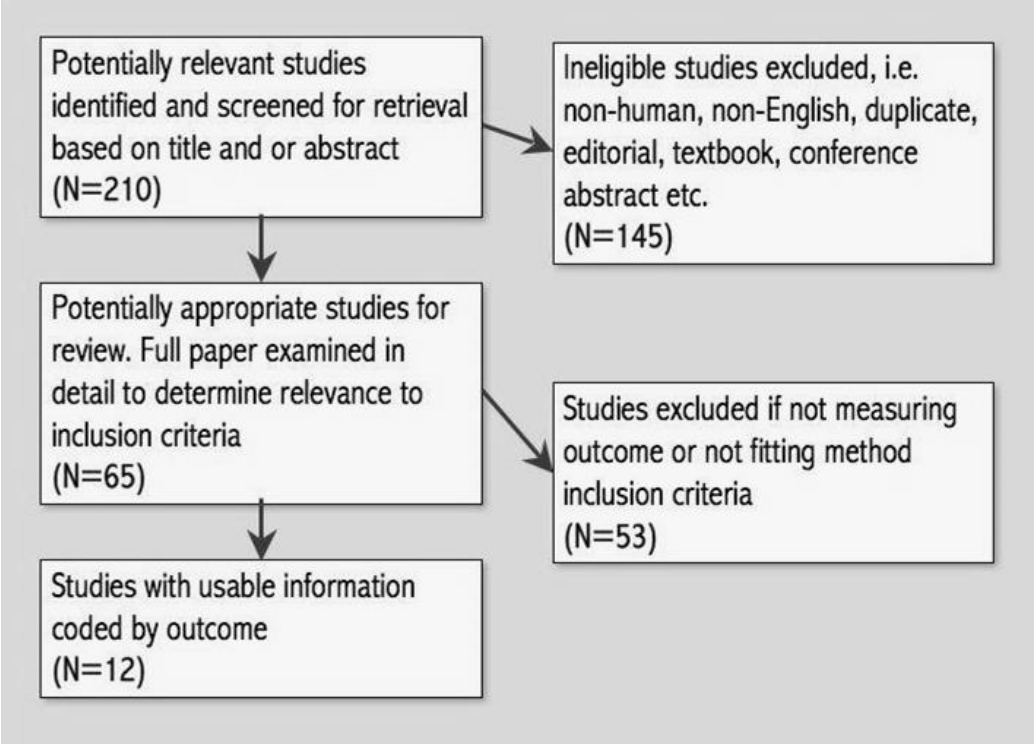

Figure 1. Review process flow of the systematic review

Type of resource (e.g., journal article, newsletter)

Of the twenty-three references retrieved by the systematic review and identified as relevant to the report, as shown in Figure 2, twenty (87%) were from a peer reviewed journal, two (8.7%) were from reports and one (4.3%) was from a guidebook.

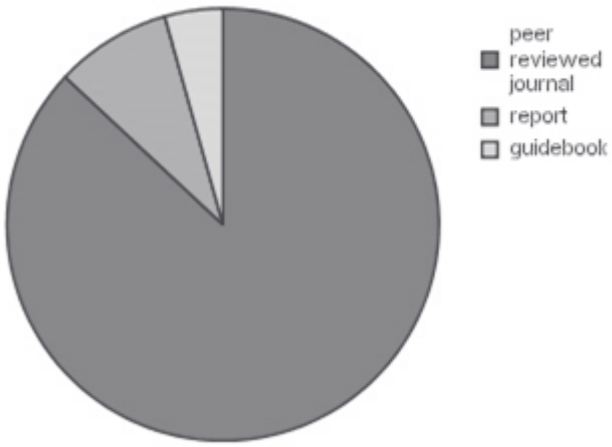

Figure 2: Percentage of reference types examined

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Methodology

A number of methodologies were employed in the references. As illustrated in Figure 3.. The majority of these (12, 52.2%) were based on expert opinion. Systematic reviews, quasi-experimental and case studies methods were each utilised in three (13%) references while a literature review and an exploratory descriptive study featured in only one (4.3%) reference apiece.

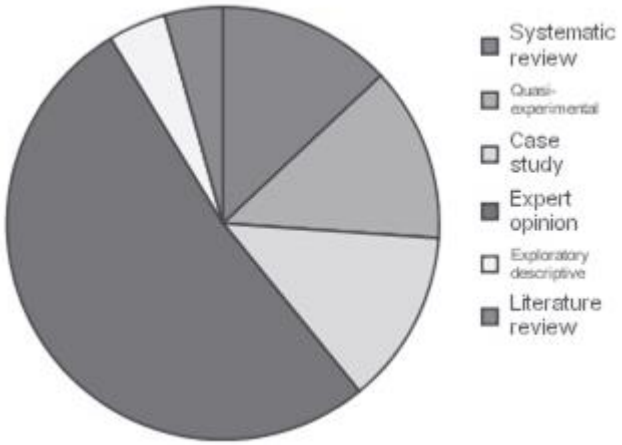

Figure 3. Percentage of methodologies evident in the literature

The fact that the majority of documents from which the following design principles are derived were based on expert opinion rather than a scientific methodology should be noted. Although the authors of these documents are generally regarded as experts in the field, this type of methodology does not enforce the same reliability and validity parameters on the findings stated as those based on empirical findings. Thus, although from an experienced and educated viewpoint, a limitation of the current literature is the paucity of findings founded on a strong evidence base.

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Nationality

The references were categorised into nationality according to where they were published (as opposed to where the research was conducted)[8]. As illustrated in, Figure 4, fifteen (65.2%) of the twenty-three references were classified as American, six (26.1%) as European and two (8.7%) as Asian.

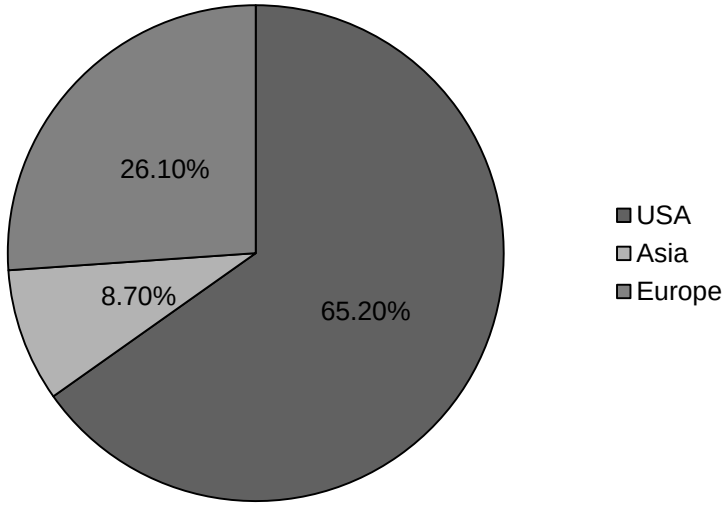

Figure 4. Percentage of nationalities evident from the review of the literature

Matrix Variables

The reference materials were examined for assertions regarding which features of an adult day care centre are necessary to create an optimum environment for people with dementia. Issues pertaining to dementia day care centres and physical safety, high negotiability, emphasis of helpful stimuli and de-emphasis of unnecessary stimuli, provision of orientation cues, provision of an atmosphere that instils feelings of security, facilitating meaningful activity and creating feelings of independence, autonomy and control were each discussed in between eleven and fifteen of the twenty-three reference materials. Fewer (6) reference materials discussed issues relating to managing wandering within dementia day care centres. It should be noted, however, that any given issue was noted in over one quarter of all reference materials included in the matrix, while most were formed from approximately half of the reference materials (see Table 2). This repetition within the reference materials supports the importance of each issue.

[8] See Appendix A for details as to the specific country of publication.

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Table 2: Matrix Variables

Principle	Frequency	Percentage of references
1. Support independence, autonomy and control	**15**	**65.2**
2. Support functionality through meaningful activity	**11**	**47.8**
3. Provide an atmosphere that is soothing, pleasant and non- threatening	**12**	**52.2**
4. Highlight helpful stimuli and provide orientation cues	**15**	**65.2**
5. Reduce extraneous stimuli	**14**	**60.9**
6. Provide for wandering	**6**	**26.1**
7. Be highly negotiable	**12**	**52.2**
8. Be safe and secure	**13**	**56.5**
9. Meet the needs of staff	**11**	**47.8**

Development of the design guidelines and the checklist

The nine issues observed in the reference materials included in the matrix suggested general environmental concepts that are important to implement in a dementia day care centre environment to maximise its therapeutic capabilities. These were considered with architectural and interior design concepts (Bridge & Simoff, 2000a, 2000b) and developed into the following nine design principles:

1. Services that afford independence, autonomy & control by being adaptable to the users.
2. Spaces that afford meaningful & culturally appropriate activity.
3. Interior and exterior detailing that is familiar & non-threatening.
4. Spaces, access points, pathways & services that use appropriate modes (light, colour, pictorial, verbal, tactile) for presentation of essential information to assist appropriate task completion (i.e. cueing stimuli).
5. Spaces, access points, pathways & services that eliminate unnecessary complexity & reduce extraneous sensory stimuli.
6. Spaces, access points & pathways services that reduce agitation & opportunities for meaningless wandering.
7. Spaces, access points, pathways & services that afford approach, reach, manipulation, and use regardless of user's limitations (i.e. highly negotiable).
8. Spaces, access points, pathways & services that are tolerant of user related error (i.e. safe & secure).

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9. Spaces, access points, pathways and services that meet the needs of staff.

These design principles are conceptual guidelines and are therefore open to subjective interpretation. Consequently, they alone may not be adequate in guiding the design of optimum dementia day care centre environments. To provide reliability between interpretations of the principles, a checklist[9] was formed from the guidelines, legislations discussed previously and design information in the literature. This audit style checklist of items provides a concrete guide to what features support the design principles and consequently, how to incorporate them into the dementia day care centre environment.

To ensure that the guidelines and checklist were valid in the practical context (as they were developed from theory only) they were reviewed by the service providers at Broughton House and Chantal Day and Respite Centre. Following discussion between staff care providers at their respective facilities, both of the service providing teams responded positively to the principles and checklist items, noting they are appropriate in practice. They also offered suggestions pertaining to additional items in the checklist, making it more inclusive of physical design supporting independence, autonomy and control.

Discussion

The impact of the design principles identified by this study is discussed in the current literature and is reviewed below.

Services that afford independence, autonomy and control by being adaptable to the users

People with dementia can be independent and autonomous in utilising their skills, provided that they are protected from the potential danger created by their attempts to perform lost abilities (Zeisel, 2001). Marshall (1998) asserted that design should enhance self esteem and confidence and reinforce the personal identity of the person with dementia, while the U.S. Congress, Office of Technology Assessment (1992) noted that the physical design features of the environment should support the independence, autonomy and control of people with dementia.

The importance of perceived control and freedom of choice has been associated with an increase in life satisfaction and a decrease in the negative effects of stress in both the healthy population (Kiewa, 2001) and amongst those with dementia (Calkins, 2004). As the world around the person with dementia can be particularly stressful and the opportunities for enjoyable activities are reduced, the physical design of an adult day care centre should allow the program to offer choice. For example, this includes having more than one activities room to provide the choice of sitting in a quiet room or

[9] See Appendix D.

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participating in more demanding activities such as singing (Cohen & Day, 1993). One of the service providers consulted in the validation of the checklist and principles commented on the importance of having a quiet room available to take an agitated client, describing it as “a little haven”.

Providing options that allow for being present for activities, yet not actively participating in them, exposes people with dementia to social and sensory stimulation (Cohen & Day, 1993) and facilitates the maintenance of a sense of autonomy. It has been observed that a centre which provides a variety of environmental options is more likely to be meaningful to more clients (Calkins, 2004).

Spaces that afford meaningful and culturally appropriate activity

The presence of dementia affects many cognitive functions including; recall, orientation, learning capacity, language, calculation, and judgment (Thompson, 1997; World Health Organization, 1992). Even so, every person with dementia, with the exception of those at the very end stages, has remaining skills. These may be as complex as gardening or cooking or as simple as listening or drinking tea (Zeisel, 2001). However, latent capabilities may “lie dormant unless they are purposefully brought out” (Bakker, 2003, p.46). Therefore, providing activities that best maintain the person’s residual skills and that stimulate his or her optimum potential should be facilitated by the day care centre (Alzheimer’s Disease International, 1999).

The activities in which a person with dementia engages can contribute to a positive self-image and a sense of fulfilment (Cohen & Weisman, 1991). As dementia robs the individual of so much, including their skills and identity (Fleming, Forbes & Bennett, 2003), it is critical that the environment supports those abilities that remain. Nagy (2002) asserts that opportunities to engage in familiar household activities, interests and even chores maintains a connection to a person’s identity. The presence of a garden, kitchen or laundry affords access to many such familiar activities (Alzheimer’s Disease International, 1999; Fleming, Forbes & Bennett, 2003).

Many domestic activities that can be carried out at a day care centre require considerable planning at the design stage. Alzheimer’s Disease International (1999) asserted that an ideal centre has two kitchens: one for the use of the staff in preparing meals and a kitchenette to be used by the clients while supervised by staff. They assert that the latter may facilitate the clients’ practice of their learned skills and experience of the positive feelings associated with performing a familiar task when many tasks around them have slipped from their reach. While Nagy (2002) concurs that the kitchen is an important resource for those with dementia to access, he disagrees that a separate kitchen is necessary for those with dementia to use provided it has such safety features as keyed electric stoves, lockable electric switches, burn covers and unobtrusive staff supervision.

Brawley (2001) noted that spending time outside is necessary for well-being, therefore, carefully planned outdoor areas are valuable for all, in particular those with a cognitive

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impairment. The use of a secure outdoor area also has provision for meaningful activity (Tyson, 2002). The presence of a garden to tend to, a washing line to use or grass to be mowed are examples of activities familiar to many older adults that can stimulate memories (Brawley, 2002b).

Interior and exterior detailing that is familiar and non-threatening

Alzheimer's Disease International (1999) asserts that the essential quality of a successful day care centre is that it is welcoming and domestic in character.

It is widely accepted that the person with dementia more easily recalls their distant past than their recent past (Fleming, Forbes & Bennett, 2003). Therefore, Fleming, Forbes and Bennett (2003) assert that recent furnishings and décors are less congruent with the person with dementia's mental state. The US Congress, Office of Technology Assessment (1992) also noted the importance of establishing pathways to the familiar, healthy past in those with dementia. An atmosphere modelled after the non-institutional, homelike qualities can support people with dementia in maintaining ties to the healthy and familiar (Cohen & Day, 1993). These healthy and familiar environments assist in the creation of a soothing, pleasant and non-threatening environment, qualities necessary in an adult day care centre (Singapore Ministry of Health, 2002).

Having things from the past in the present environment reaffirms its familiarity and allows for exercise of remaining long term memory capabilities (Cohen & Day, 1993). However, it should be noted that culture is particularly important to those with dementia, yet this factor has been largely neglected in the designing of environments for people with dementia (Day & Cohen, 2000). Therefore, the background of people with dementia should be taken into account when designing the environment, as what is familiar and significant from one person's past may not be from another's.

As incidences of incontinence are often associated with dementia (Brawley, 1997), an area to bathe clients who are incontinent is necessary in a dementia day care centre (Alzheimer's Disease International, 1999; Diaz Moore, 2005; Singapore Ministry of Health, 2002). It is widely known that bathing can be a particularly stressful experience for the person with dementia (Brawley, 2002a; Fleming, Forbes & Bennett, 2003). The presence of a non-threatening environment is particularly important during times of stress for the person with dementia. To keep the experience of bathing as pleasant as possible for the client, the area being used to bath should be calming, with a non-threatening, domestic style design (Brawley, 2002a; Day, Carreon & Stump, 2000; Diaz Moore, 2005). Brawley (2002a) has asserted that providing a pleasing décor, reducing noise and glare, increasing illumination, implementing the use of a hand-held shower and providing domestic touches such as richly coloured towels and some furniture and can create a less threatening environment.

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Spaces, access points, pathways and services that use appropriate modes

(light, colour, pictorial, verbal, tactile) for presentation of essential information to assist appropriate task completion (i.e. cueing stimuli)

As noted above, those with dementia experience many cognitive deficits. These include memory loss, disorientation, sensory loss, a loss of ability to interpret what they see, hear, feel, taste and touch and the inability to cope with multiple, competing stimulus within the environment (Bakker, 2003; Brawley, 1997; Calkins, 2004). This may result in an individual's failure to locate an area. Consequently, people with dementia require "environments that provide positive quality, meaningful, and familiar cues to help them function at their optimum level of competencies" (Calkins, 2002, p.v).

A strategy to assist those with dementia in 'wayfinding' is to provide emphasis towards stimuli that might make clearer the position of an intended place. This highlighting can be achieved both directly and indirectly (Fleming, Forbes & Bennett, 2003). Direct highlighting involves making the intended place or object the focus of attention, while indirect highlighting emphasises a tool to guide the person to the intended area. Direct highlighting pertains to Principle 7 and will be discussed in 4.7.

When implementing indirect highlighting, the positioning of the indicator needs to be considered. Unlike many other populations, people with dementia often cast their eyes downward, so positioning of signs becomes critical to their success. According to Namazi and Johnson (1991), a sign posted above a door is unlikely to be seen, however, a sign closer to the floor will have a greater chance of being in the eye line of the person with dementia. Although successful, indirect strategies such as signage do not yield as greater success as direct strategies (Namazi & Johnson, 1991). It has been suggested that wayfinding is optimal when supported by both indirect and direct highlighting (Namazi & Johnson, 1991).

Another strategy to assist wayfinding is through the use of landmarks (Brawley, 1997; Coons, 1991). A landmark is a distinctive object or feature, and therefore makes the area distinctive from others. Brawley (1997) notes that the colour of a room or hallway is not as effective at creating this distinction between areas as object cues are. She notes that a grandfather clock in one room and a wall hanging in another are examples of effective landmarks.

Other strategies to highlight positive stimuli include aids to recognition, such as photos and familiar objects, and increasing the level of illumination (Brawley, 1997; Fleming, Forbes & Bennett, 2003; Namazi, Rosner & Rechlin, 1991), although some studies have noted a link between increased illumination and agitation levels.

Disorientation and confusion regarding time, place, identity and/or social situation is common amongst people with dementia (Brawley, 1997; Cohen & Weisman, 1991). Consequently, the person with dementia can be oriented by using environmental cues. A view to the outside can provide information about time, season and geography (Brawley, 1997; Cohen & Weisman, 1991; Nagy, 2002). Note that a view through the

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exit door is not advised, as this may encourage wandering (Brawley, 1997). Indeed, Dickinson, McLain-Kark and Marshall-Baker (1995) noted that exit attempts from a dementia care unit decreased substantially when a blind blocked the view through the exit door.

People with dementia have a particularly strong deficit in discriminating between certain hues (Brawley, 1997; Cronin-Golomb, Sugiura, Corkin & Growdon, 1993). Therefore, using contrasting colours on the opposite sides of the colour wheel will highlight the presence of helpful stimuli, such as grabrails, when the stimulus and background are each coloured from opposite sides of the colour wheel (Arditi, 1995; Brawley, 1997). However, Burke (2003) suggests that colour contrast is only effective when the light available is sufficient to perceive colour. He asserts that tonal contrast (or luminance contrast) rely less on the prevailing light conditions and are an effective strategy for designing for those with diminished visual capacity. Although an important design feature of environments for people with dementia is that all areas be well lit (Brawley, 1997), it is then suggested that both colour and tonal contrast be considered in designing dementia day centres to ensure an optimally supportive environment in every situation.

Spaces, access points, pathways and services that eliminate unnecessary complexity and reduce extraneous sensory stimuli

People with dementia appear to be less able to screen out unwanted stimuli and often become more confused, agitated and anxious when over-stimulated (Brawley, 1997). For example, loud and sudden noises startle everyone, but cause particular distress to those with dementia. As such, an environment accommodating this group should endeavor to minimise unnecessary stimuli. Such stimulation includes light[10], loud or sudden noise and sources of over stimulation[11] (Brawley, 1997; Fleming, Forbes & Bennett, 2003).

As adult day care centres can be a louder environment than that experienced at home due to their social nature, it is necessary to minimise noise where possible. To that end, the use of intercoms, phones, alarms and other appliances that create startling loud noises should be avoided in areas where people with dementia spend time. As a good day care centre encourages activities that involve noise[12] (Alzheimer's Disease International, 1999), it is important that multiple spaces be provided to accommodate those wishing to participate in organised activities and also those who wish to be in a quieter space.

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[10] Such as in the form of glare, sudden contrast in light and dark and excessive brightness.

[11] Such as clutter, busy entrance areas, etc.

[12] For example, noise from singing and dancing.

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Bright daylight entering the centre needs to be controlled (Brawley, 2001). The amount of light entering into a room can be moderated using adjustable blinds that allow partial sunlight when in direct sunlight and full natural light when not (Brawley, 1997). Sudden light contrast, such as that experienced when moving from exposure to direct sunlight outside to dimmer light inside can be countered by keeping the connecting area (entrance foyer, etc.) well lit. Excessive brightness should be avoided. Internal lights should be fitted with appropriate wattage bulbs and positioned to ensure that they do not shine directly into a person's face.

People with dementia may have a greater difficulty in resisting visual distractions than others (Cronin-Golomb, 1995) and have difficulty in dealing with high levels of stimulation (Fleming, Forbes & Bennett, 2003). To avoid this over-stimulation, areas where the people with dementia spend time should be removed from the entrance area (Cohen & Weisman, 1991) that would foreseeably have a high level of pedestrian traffic and noise. Creating a visual barrier within the room (such as screens between activity areas) will block the person with dementia's line of sight adjacently. However, the care provided by the staff of the centre should never be compromised, so positioning of such barriers would have to be carefully thought out to suit the staffing and room configuration of each individual day care centre to avoid creating staff 'blind spots'.

Clutter should be eliminated as it is both visually distracting and potentially physically dangerous for trips and bumps. Consequently, adequate storage and rubbish disposal facilities are critical (Cohen & Weisman, 1991).

It is not always possible to remove extraneous stimuli. For example, a storeroom in a day care centre is necessary for the staff to utilise, however, it is not an area that a person with dementia should venture into. It has been observed that the presence of doors which people with dementia attempt to open and can't is a source of agitation (Namazi & Johnson, 1992). In such a case, designing to the limitations often experienced by those with dementia (such as contrast insensitivity and depth perception deficits) can mean that a door and handle painted the same colour as the wall will not grab the attention of the person with dementia, unlike the door to the secure outdoor area which has appropriate signage and is painted in a colour contrasting that of the surrounding wall. This strategy minimises the extraneous stimulation encountered by the person with dementia and reduces the agitation experienced.

Larger, more populated, busy areas are known to confuse people with dementia (Fleming, Forbes & Bennett, 2003) and cause agitation. Sloan, Mitchell, Preisser, Phillips, Commander and Burker (1998) noted that larger unit sizes were associated with greater patient agitation, intellectual deterioration and emotional disturbance, while Cohen and Day (1993) reported that small groups of people with dementia have been noted to yield enhanced relationships between residents with dementia and staff. A reduction in disruptive behaviour has been observed when greater space per person with dementia is implemented (Morgan & Stewart, 1998). Therefore, small physical

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areas populated by a small group would be optimum in ensuring the environment best suits the clientele.

Spaces, access points & pathways services that reduce agitation & opportunities for meaningless wandering

Wandering is a behaviour often observed in people with dementia (Cohen & Day, 1993; Fleming, Forbes & Bennett, 2003; Heard & Watson, 1999). It has been identified as having a number of causes including boredom, disorientation, habit and an attempt to leave a loud and agitating environment (Coons, 1988). Wandering related to disorientation can best be dealt with by providing a more highly negotiable environment with good visual access and simple layout (Coons, 1991) and highlighting helpful stimuli (Cohen & Day, 1993).

Wandering related to boredom or habitual activity can be accommodated with pathways that not only provide exercise, but also provide opportunities for residents to encounter landmarks familiar to their younger adult life and to be passively involved in activities without requiring direct participation, thereby exposing them to social/sensory stimulation (Cohen & Day, 1993; Coons, 1991).

The key concern related to those who wander is that they might wander away (Lai & Arthur, 2003); therefore, a secure area in which to safely wander is required. Fleming, Forbes and Bennett (2003) and the Singapore Ministry of Health (2002) contend that allowing access to a stimulating secure area has been shown to significantly reduce agitation in people with dementia, while Coons (1988) asserted that wandering behaviour subsides in a supportive and rich environment. Therefore, a dementia day care centre should provide such a supportive environment and encourage those who display wandering behaviours to experience meaningful wandering via the use of a wandering path[13]

Cohen-Mansfield and Werner (1999) suggest that if those experiencing dementia are offered an attractive alternative to wandering, they are likely to take it. Therefore, an ideal wandering path should go through many secure rooms including the secure outdoor area of the day care centre and should showcase activities alternate to wandering to participate in or observe. It should pass landmarks to assist in orientation (Cohen & Day, 1993), toilets and sitting areas and never have a dead end, but rather form some type of loop (Alzheimer's Disease International, 1999). The access points to these secure areas should not be locked (Brawley, 2002b; Gitlin, Liebman & Winter, 2003), as this does not encourage meaningful wandering, rather, the presence of locked doors has been observed to heighten agitation (Fleming, Forbes & Bennett, 2003; Namazi & Johnson, 1992).

[13] A path moves through the centre and facilitates and encourages positive wandering.

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Spaces, access points, pathways & services that afford approach, reach, manipulation, and use regardless of user's limitations (i.e. highly negotiable)

Those with dementia experience demands additional to those imposed as a consequence of normal ageing (Brawley, 1997; Cohen & Day, 1993; Cronin-Golomb, 1995). For example, pertaining to vision, people with dementia may experience greater deficits in colour discrimination, depth perception, contrast sensitivity and the ability to ignore or resist visual distractions than those ageing normally (Cronin-Golomb, 1995). Consequently, simplicity in design is required to avoid adding to confusion (Brawley, 1997). An example of this is what Gitlin, Liebman, Winter and Gitlin (2003) refer to as reducing "environmental complexity by relaxing rules" (p. 93). This includes removing locks from appropriate doors, making the space easily accessible for the elderly, installing easily understandable light switches, controls, etc. and providing many easy to locate access points to different spaces (Brawley, 2002b; Cahill, Drury, Lawlor, O'Connor & O'Connell, 2003; Day, Carreon & Stump, 2000; Diaz Moore, 2005; Gitlin, Liebman & Winter, 2003; Gori, Vespa, Magherini & Ubezio, 1998; Marshall, 2003; Singapore Ministry of Health, 2002; Tyson, 2002).

Another example of affording approach, reach and manipulation of the environment by those with dementia is through the use of direct highlighting[14]. An example of this is to ensure the toilets are directly visible (Fleming, Forbes & Bennett, 2003). This makes the environment simpler as the user does not need to manipulate entrances or remember where places are if they can be seen directly. Direct highlighting of helpful stimuli has been demonstrated to be very effective. A study by Namazi and Johnson (1991) noted that demented patients' use of toilets was increased by over 800% when leaving the curtains around them open when not in use.

A day care centre may make the approach easier for the clients by literally facilitating access to the centre. Much of the literature pertaining to adult day care centres suggests that providing transport is a valuable resource that the program might offer (Alzheimer's Disease International, 1999). Even if this is not available, the facilitation of vehicles to drop clients right on the doorstep, not only prevents them from exposure to the weather, but also facilitates the arrival of older clients and their caregivers (Alzheimer's Disease International, 1999; Cohen & Weisman, 1991).

[14] Drawing attention to the intended target directly as opposed to drawing attention to an aid to the target.

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Spaces, access points, pathways & services that are tolerant of user related error (i.e. safe & secure)

As noted above, the incidences of Alzheimer's disease and other dementias has been observed to rise exponentially with age until at least 90 years of age (Jorm & Jolley, 1998). Consequently, the majority of people attending an adult day centre catering for dementia are likely to be elderly. Therefore, supporting features such as slip-resistant flooring, grabrails and appropriate access into and within the building need to be considered (Colombo, Vitali, Molla, Giolia & Milani, 1998; Thompson, 1996).

The confusion and memory loss caused by dementia (Brawley, 1997; World Health Organization, 1992) creates a need for the presence of safety features in the environment such as safety switches and hot water controls (Fleming, Forbes & Bennett, 2003).

As noted in 4.6, wandering is common in people with dementia (Heard & Watson, 1999). As a consequence of the confusion and diminished cognitive abilities of people with dementia, those who wander may become hurt or lost if allowed to wander from the premises or supervised areas. It is then imperative to the client's safety that the area be secure to avoid them wandering into an uncontrolled environment (Coons, 1988; Fleming, Forbes & Bennett, 2003).

Although some do advocate the use of locking doors as a preferable means of preventing wandering, "locks are the first and most important barrier necessary to prevent a wander-prone loved one from leaving the safety of home" (Warner, 1999b, para. 6), it has been noted in the literature that simply locking the doors and physically preventing those with dementia from opening the door is associated with increased levels of agitation on the part of the client (Fleming, Forbes & Bennett, 2003). The use of alarms on the doors and gates has been suggested (Coons, 1988; Spinks, 2005), however, as noted previously, loud sudden noises are known to startle people with dementia and lead to increased agitation (Brawley, 1997). Therefore, if an alarm system is to be used, it needs to be one that avoids startling those attempting to leave and the other people with dementia utilising the environment. An example of an alternative to a traditional alarm system is the use of chimes or bells at exit areas (Coons, 1988; Warner, 1999a), however, this technique is only successful if the staff members hear the alarm, so another form of precaution is necessary.

As one of the consequences of dementia is reduced depth perception (Brawley, 1997), many studies have examined the effectiveness of other strategies in preventing people with dementia from entering into unsecured areas. Although there are contravening reports as to the effectiveness of each method, it has been reported that covering the door handle or escape bar with a piece of cloth or otherwise camouflaging the door handle deters people with dementia from attempting to open a door (Alzheimer's Disease International, 1999; Brawley, 1997; Dickinson, McLain-Kark & Marshall-Baker, 1995; Namazi, Rosner & Calkins, 1989). Other reports have suggested that

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camouflaging the door itself may be an effective strategy in deterring/reducing attempted exits (Cubbin, 1999) as may be the presence of a mirror on or in front of the door (Mayer & Darby, 1991) or a two dimensional grid taped to the floor in front of the door (Hussian & Brown, 1987). It should be noted that Brawley (1997) suggested that visual barriers such as tape grids in front of doors are not effective in deterring escape when a view to the outside is presented. Therefore, the installation of blinds to block such inviting views from exit points is recommended (Dickinson, McLain-Kark & Marshall-Baker, 1995).

Whichever strategy or strategies are utilised to prevent exit attempts and reduce the agitation clients may experience when confronted with a door that they cannot open, it should be noted that the above mentioned subjective barrier measures have not been proven to be 100% effective in preventing exiting. Price, Hermans and Grimely Evans (2006) concluded in their review of subjective barriers in preventing cognitively impaired people from wandering that no conclusive evidence that such barriers do prevent those with dementia from wandering has thus far been published. Consequently, it would be advisable not to rely exclusively on one method. Although finding the mirror on the door technique to lessen exit attempts, Mayer and Darby (1991) still observed some people with dementia leaving through the door and asserted that this approach “can only serve as a part of a comprehensive approach to the management of wandering” (p.609).

Spaces, access points, pathways & services that support staff

An area of research not often addressed in the current literature pertaining to the impact of the dementia day centre environment is the relationship that it has with staff. Lawton and Nahemow (1973) suggested the existence of a competence-environmental press model based on the premise that an environment exacerbating a constant amount of pressure or “press” can become too much for an individual as their competence declines and they cease to function adaptively. Lyman, Pynoos and Cohen (1993) assert that as for those with a cognitive impairment, the “environmental press” model also applies to staff of dementia day care centres.

Caring for the impaired elderly is both demanding and stressful (Lyman, Pynoos & Cohen, 1993), however, it had been observed that staff stress can be managed when working with those with Alzheimer’s disease if the demands of working with this population can be minimised and the staff have some element of control over the working environment (Lyman, Pynoos & Cohen, 1993). Diaz Moore (2002) noted that empowering staff members to redirect participants in terms of setting were associated with positive effects. As discussed in the principles above, the physical environment of the dementia day centre has the potential to allow both control over the environment and a reduction in difficult behaviours (e.g., wandering) when designed appropriately, thereby reducing the stress experienced by staff and facilitating a probable positive secondary impact onto the client with dementia (Calkins, 2005).

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A few design guidelines in the current literature do touch on the needs of staff in environments for those with dementia. Some are quite broad, simply stating that the design of the day care centre "must meet the needs of staff" (Singapore Ministry of Health, 2002, p. 13) and "demonstrate care for staff" (Marshall, 1998, p. 16), while others are more specific. The more specific needs discussed include the need for adequate staff space (Cahill, Drury, Lawlor, O'Connor & O'Connell, 2003; Diaz Moore, 2005) including offices (Spinks, 2005) and a staff room for relaxation and counselling when necessary (Alzheimer's Disease International, 1999). It has indicated that staff too may benefit from the use of therapeutic outdoor areas (Brawley, 2002b; Tyson, 2002), while Cohen and Day (1993) reported that a working environment with small groups of people with dementia have been noted to contribute to staff perception of tasks as being more manageable.

Conclusion

Many people have developed the principles presented here over many years, but they have rarely been applied rigorously or reliably to the newer emerging day respite centre developments located in our communities. The following checklists[15] are designed to make the concepts explicit to all those involved in planning, design and construction. They are designed to be used at all stages of construction and modification and highlight the design principles most likely to make the day respite world of our elders safer, healthier and more interesting. It is therefore important that clearly articulated design principles and performance objectives can be easily understood and applied and the application of the principles is measurable in its impact.

In applying the checklists it is intended that they be used to inform communication and the development of specifications. They are not intended as a pattern or rulebook whereby one absent component means a fail. Instead, it is hoped that novel solutions and design innovation are encouraged so that the intent of the principles is achieved.

The case studies[16] may be helpful in reflecting on what others have done and what they believe works well. The nine dementia day centre principles detailed in this report appear to impact the effectiveness of the environment as a therapeutic resource and the user satisfaction of both clients and staff. However, further empirical research is needed to measure their impact so as to ensure that they can be appropriately applied and remain relevant to a wide variety of situations over time.

[15] See Appendix D.

[16] See Appendices B and C.

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ISBN: 1 86487 850 9 Occasional paper Series ISBN: 1 86487 563 **www.homemods.info**

References

Access Economics. (2005). Dementia estimates and projections: Australian states and territories. Retrieved 15th May, 2006, from http://www.accesseconomics.com.au/reports/austdementia.pdf

Alzheimer's Disease International. (1999). *Planning and design guide for community-based day care centres.* . London, UK: Alzheimer's Disease International.

Arditi, A. (1995). *Color Contrast and Partial Sight: How to Design with Colors that Contrast Effectively for People with Low Vision and Colour Deficiencies*. New York: The Lighthouse.

Australian Building Codes Board. (1996). *Building Code of Australia*. Canberra, ACT: Australian Uniform Building Regulation Co-ordinating Council.

Australian Bureau of Statistics. (1998). 1998 Feature Article - Population Projections 1997 – 2051. *Australian Economic Indicators.*

Bakker, R. (2003). Sensory loss, dementia, and environments. *Generations, 27*(1), 46-51.

Brawley, E. C. (1997). *Designing for Alzheimer's disease: Strategies for creating better care environments*. New York: John Wiley & Sons, Inc.

Brawley, E. C. (2001). Environmental design for Alzheimer's disease. *Aging & Mental Health, 5*(Supplement 1), S79-S83.

Brawley, E. C. (2002a). Bathing environments: How to improve the bathing experience. *Alzheimer's Care Quarterly, 3*(1), 38-41.

Brawley, E. C. (2002b). Therapeutic gardens for individuals with Alzheimer's disease. *Alzheimer's Care Quarterly, 3*(1), 7-11.

Bridge, C., & Phibbs, P. (2003). *Protocol guidelines for systematic reviews of home modification information to inform best practice*. Sydney: University of Sydney, Faculty of Health Sciences and Architecture.

Bridge, C., & Simoff, S. J. (2000a). Computer-assisted Evaluation of Access to the Built Environment. In G. Moore, J. Hunt & L. Trevellion (Eds.), *Environment-behaviour Research on the Pacific Rim : proceedings of PaPER98, the 11th International Conference on People and Physical Environment Research, Faculty of Architecture, University of Sydney, Sydney, Australia, 3-6 December, 1998* (pp. 353-363).

Bridge, C., & Simoff, S. J. (2000b). Disability access to the built environment: On-line evaluation and information dissemination. In L. Eder (Ed.), *Managing Healthcare Information Systems with Web-Enabled Technologies* (pp. 239-265). Hershey, PA: Idea Group Publications.

ISBN: 1 86487 850 9 Occasional paper Series ISBN: 1 86487 563 **www.homemods.info**

Burke, T. (2003). Significance of tonal contrast in dementia accommodation. *Geriaction, 21*(3), 11-15.

Cahill, S., Drury, M., Lawlor, B., O'Connor, D., & O'Connell, M. (2003). "They have started to call it their club". *Dementia, 2*(1), 85-103.

Calkins, M. P. (2001). The physical and social environment of the person with Alzheimer's disease. *Aging & Mental Health, 5*(Supplement 1), S74-S78.

Calkins, M. P. (2002). Environments that make a difference. *Alzheimer's Care Quarterly, 3*(1), v-vii.

Calkins, M. P. (2004). Articulating environmental press in environments for people with dementia (Making the most of the day: Quality of life and meaningful activity). *Alzheimer's Care Quarterly, 5*(2), 165-172.

Calkins, M. P. (2005). Environments for late-stage dementia (Building Ideas). *Alzheimer's Care Quarterly, 6*(1), 71-75.

Cohen-Mansfield, J., & Werner, P. (1999). Outdoor wandering parks for persons with dementia: A survey of characteristics and use. *Alzheimer's Disease and Associated Disorders, 13*(2), 109-117.

Cohen, U., & Day, K. (1993). *Contemporary Environments for People with Dementia*. Baltimore: The John Hopkins University Press.

Cohen, U., & Weisman, G. (1991). *Holding Onto Home: Designing Environments for People with Dementia*. Baltimore: John Hopkins University Press.

Colombo, M., Vitali, S., Molla, G., Giolia, P., & Milani, M. (1998). The home environment modification program in the care of demented elderly: Some examples. *Archives of Gerontology and Geriatrics, Supplement 6*, 83-90.

Coons, D. (1988). Wandering. *The American Journal of Alzheimer's Care and Related Disorders and Research, 3*(1), 31-36.

Coons, D. (Ed.). (1991). *Specialised Dementia Care Units*. Baltimore and London: John Hopkins University Press.

Cronin-Golomb, A. (1995). Vision in Alzheimer's disease. *The Gerontologist, 35*(3), 370-376.

Cronin-Golomb, A., Sugiura, R., Corkin, S., & Growdon, J. (1993). Incomplete achromatopsia in Alzheimer's disease. *Neurobiology of Aging, 14*, 471-477.

Cubbin, G. (1999). No way out. *Nursing Standard, 13*(44), 18-19.

Day, K., Carreon, D., & Stump, C. (2000). The therapeutic design of environments for people with dementia: A review of the empirical research. *The Gerontologist, 40*(4), 397-416.

June 2006; 2nd ed., November 2007; 3rd printing. May 2014
ISBN: 1 86487 850 9 Occasional paper Series ISBN: 1 86487 563 **www.homemods.info**

Day, K., & Cohen, U. (2000). The role of culture in designing environments for people with dementia: A study of Russian Jewish immigrants. *Environment and Behaviour, 32*(3), 361-399.

Diaz Moore, K. (2002). Observed Affect in a Dementia Day Centre: Does the physical setting matter? *Alzheimer's Care Quarterly, 3*(1), 67-73.

Diaz Moore, K. (2005). Design guidelines for adult day services. Retrieved 18th January, 2006, from http://www.google.com/search?q=cache:om8Ddkdn2UIJ:www.aia.org/SiteObjects/files/Diaz_Moore_color.pdf+%22design+guidelines+for+adult+day+services%22&hl=en

Dickinson, J., McLain-Kark, J., & Marshall-Baker, A. (1995). The effects of visual barriers on exiting behaviour in a dementia care unit. *The Gerontologist, 35*(1), 127-130.

Fleming, R., Forbes, I., & Bennett, K. (2003). *Adapting the ward for people with dementia.* Sydney: The Hammond Group.

Fratiglioni, L., DeRonchi, D., & Agüero-Torres, H. (1999). Worldwide prevalence and incidence of dementia.. *Drugs Aging, 15*, 365-375.

Gitlin, L. N., Liebman, J., & Winter, L. (2003). Are environmental interventions effective in the management of Alzheimer's disease and related disorders? A synthesis of the evidence. *Alzheimer's Care quarterly, 4*(2), 85-107.

Gori, G., Vespa, A., Magherini, L., & Ubezio, M. C. (1998). The day care center for demented people: Organization, programs and evaluation methods. *Archives of Gerontology and Geriatrics, Supplement 6*, 241-246.

Heard, K., & Watson, T. S. (1999). Reducing wandering by persons with dementia using differential reinforcement. *Journal of Applied Behaviour Analysis, 3*(3), 381-384.

Hussian, R., & Brown, D. (1987). Use of two-dimensional grid patterns to limit hazardous ambulation in demented patients. *Journal of Gerontology, 42*, 558-560.

Jorm, A. F., & Jolley, D. (1998). The incidence of dementia: A meta-analysis. *Neurology, 51*(3), 728-733.

Kiewa, J. (2001). Control over self and space in rock climbing. *Journal of Leisure Research, 33*(4), 363-383.

Lai, C. K. Y., & Arthur, D. G. (2003). Wandering behaviour in people with dementia. *Journal of Advanced Nursing, 44*(2), 173-182.

Lawton, M. P., & Nahemow, L. E. (1973). Ecology and the aging process. In C. Eisdofer & M. P. Lawton (Eds.), *The Psychology of Adult Development and Aging* (pp. 619-674). Washington, DC: American Psychological Association.

June 2006; 2nd ed., November 2007; 3rd printing. May 2014
ISBN: 1 86487 850 9 Occasional paper Series ISBN: 1 86487 563 **www.homemods.info**

Leitsch, S. A., Zarit, S. H., Townsend, A., & Greene, R. (2001). Medical and Social Adult Day Service programs. *Research on Aging, 23*(4), 473-798.

Lyman, K. A., Pynoos, J., & Cohen, E. (1993). Occupational stress and the workplace design: Evaluating the physical environment of Alzheimer's day care. *Journal of Architectural and Planning Research, 10*(2), 130-145.

Marshall, M. (1998). How it helps to see dementia as a disability. *Journal of Dementia Care, Jan/Feb*, 15-17.

Marshall, M. (2003). The Iris Murdoch Building at Stirling. *Alzheimer's Care Quarterly, 4*(3), 167-171.

Martin, E. (1997). *Access to heritage buildings for people with disabilities.* Canberra, ACT: Cox Architects and Planners.

Mayer, R., & Darby, S. J. (1991). Does a mirror deter wandering in demented older people? *International Journal of Geriatric Psychiatry, 6*(8), 607-609.

Morgan, D. G., & Stewart, N. J. (1998). High versus low density special care units: Impact of the behaviour of elderly residents with dementia. *Canadian Journal on Aging, 17*(2), 143-165.

Nagy, J. (2002). Kitchens that help residents reestablish home. *Alzheimer's Care Quarterly, 3*(1), 74-77.

Namazi, K., & Johnson, B. D. (1991). Physical environment cues to reduce the problems of incontinence in Alzheimer's disease units. *American Journal of Alzheimer's Care and Related Disorders and Research, 6*, 22-29.

Namazi, K., & Johnson, B. D. (1992). Pertinent autonomy for residents with dementias: Modification of the physical environment to enhance independence. *The American Journal of Alzheimer's Care and Related Disorders & Research, January/February*, 16-21.

Namazi, K., Rosner, T., & Calkins, M. (1989). Visual barriers to prevent Alzheimer's patients from exiting through an emergency door. *The Gerontologist, 29*, 699-702.

Namazi, K., Rosner, T., & Rechlin, L. (1991). Long-term memory cuing to reduce visuo-spatial disorientation in Alzheimer's disease patients in a special care unit. *The American Journal of Alzheimer's Care and Related Disorders and Research, 6*, 10-15.

Price, J. D., Hermans, D. G., & Grimley Evans, J. (2006). Subjective barriers to prevent wandering of cognitively impaired people. *Cochrane Database of Systematic Reviews*(4), 15.

Singapore Ministry of Health. (2002). A guidebook on dementia day care centres. Retrieved 18th January, 2006, from http://www.google.com/search?q=cache:yHD3AXi33G0J:www.moh.gov.sg/cm

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aweb/attachments/publication/dementia_daycareguidebook.pdf+%22guidebook+on+dementia+day+care+centres%22&hl=en

Sloan, P. D., Mitchell, C. M., Preisser, J. S., Phillips, C., Commander, C., & Burker, E. (1998). Environmental correlates of resident agitation in Alzheimer's disease special care units. *Journal of American Geriatrics Society, 46*, 862-869.

Spinks, M. (2005). Opening an Alzheimer's day care center. *Nursing Homes, 54*(4), 48-55.

Standards Australia. (1992). *Design for access and mobility - Enhanced and additional requirements - Buildings and facilities (AS 1428.2-1992)*. Retrieved June 9 2006. From Standards Australia Online.

Standards Australia. (2001). *Design for access and mobility - General requirements for access - New building work (AS 1428.1-2001)*. Retrieved June 9 2006. From Standards Australia Online.

Thompson, P. (1996). Preventing falls in the elderly at home: A community-based program. *The Medical Journal of Australia, 164*(9), 530-532.

Thompson, S. (1997). *Dementia: A guide for health care professionals*. England: Ashgate Publishing.

Tyson, M. M. (2002). Treatment gardens: Naturally mapped environments and independence. *Alzheimer's Care Quarterly, 3*(1), 55-60.

U.S. Congress, Office of Technology Assessment,. (1992). *Special Care Units for People With Alzheimer's and Other Dementias: Consumer Education, Research, Regulatory, and Reimbursement Issues*. Retrieved 22 March 2006. from http://www.wws.princeton.edu/ota/disk1/1992/9234_n.html.

Warner, M. (1999a). Alarms: Precautions for wandering. Retrieved 6th April, 2005, from http://www.ec-online.net/Knowledge/Articles/wandering2.html

Warner, M. (1999b). Locks and wandering. Retrieved 6th April, 2005, from http://www.ec-online.net/Knowledge/Articles/wandering1.html

World Health Organisation. (2001). Mental and neurological disorders. Fact sheet no. 265. from http://www.who.int/mediacentre/factsheets/fs265/en/print.html

World Health Organization. (1992). *Tenth Revision of the International Classification of Diseases and Related Health Problems (ICD-10)*. Geneva: World Health Organization.

Zeisel, J. (2001). Universal design to support the brain and its development. In W. F. E. Preiser & E. Ostroff (Eds.), *Universal Design Handbook.* (pp. 8.1-8.14). New York: McGraw-Hill.

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Appendix A

Matrix of references from which principles were based

Article	Country	Principle								Methodology							
		1	2	3	4	5	6	7	8	Sys Review	RCT	Quasi-Exp	Explore Descr.	Ob-serve	Case Study	Lit Review	Expert
Alzheimer's Disease International, 1999	England	X	X	X	X	X	X		X								X
Bakker, 2003	USA			X	X	X		X	X								X
Brawley, 2002	USA	X	X		X			X	X								X
Brawley, 2001	USA	X	X			X	X		X								X
Cahill, Drury, Lawlor, O'Connor, O'Connell, 2003	Ireland	X	X				X	X	X				X				
Calkins, 2005	USA	X		X	X	X											X

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Article	Country	Principle								Methodology				
Calkins, 2004	USA	X		X	X	X								X
Calkins, 2002	USA				X									X
Calkins, 2001	USA				X				X				X	
Day, Carreon & Stump, 2000	USA		X	X		X		X	X	X				
Day & Cohen, 2000	USA	X	X	X							X			
Diaz Moore, 2005	USA	X	X	X		X		X						X
Diaz Moore, 2002	USA	X			X	X						X		
Gitlin, Liebman & Winter, 2003	USA			X	X	X	X	X		X				
Gori, Vespa, Magherini & Ubezio, 1998	Italy			X	X			X			X			

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Article	Country	Principle									Methodology							
		1	2	3	4	5	6	7	8	9	Sys Review	RCT	Quasi-Exp	Explo Descr	Observe	Case Study	Lit Review	Expert
Lai & Arthur, 2003	China								X								X	
Lyman, Pynoos & Cohen, 1993	USA	X			X	X	X	X	X	X			X					
Marshall, 2003	Scotland	X	X		X	X		X								X		
Marshall, 1998	England	X	X	X	X	X		X	X	X								X
Ministry of Health, Singapore, 2002	Singapore	X	X	X	X	X	X	X	X	X								X
Price, Hermans & Grimley, 2006	UK								X		X							
Spinks, 2005	USA	X				X				X						X		
Tyson, 2002	USA	X	X	X	X			X	X	X								X

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Appendix B

Figure 5. Outdoor area with seating and cover enhances activity options and brings enjoyment to clients and staff.

Figure 6. Entry door: Blinds to obscure view to street if needed.

Figure 7. The large group room where more than one activity can be run simultaneously.

Broughton House

Broughton House was opened in February 1992 as a result of an initiative between the NSW Department of Health and the Home and Community Care program (HACC).

The objectives for the facility were to provide the community with a referral, socialisation and educational centre for people with dementia and their families. Today the original intentions of the centre have been expanded upon to include a dementia advisory service, which provides regular carer meetings and a drop-in centre for people with dementia and their families.

Over the years Broughton House has been enlarged to cater for the increasing demand for people with dementia to have opportunities to socialise and modifications have been made over time in order to improve amenities. One such modification is a new shaded outdoor seating area (see Figure 5**Error! eference source not found.**) which is appreciated by staff and clients alike.

The large group room (see Figure 7) with lots of windows illustrates Principle 1 (Services that afford independence, autonomy and control by being adaptable to users). It allows clients to see what is beyond the room, while also providing staff with the opportunity to observe clients in the outdoors area who want their own space.

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Figure 8. Raised garden beds enable gardening without bending.

Figure 9. The toilet door has a large picture and large occupied indicator.

The outdoor areas include raised gardens (see Figure 8), a shed, a seat, a designated smoking area and a partially shaded outdoor area with seats and direct visual access to the gardens and into the activities room.

The toilet has plenty of space for carer assistance and is clearly identified by a picture. Provision of additional pictorial cues is consonant with Principle 4 (spaces, entry points, pathways and services that use appropriate modes for presentation of essential information to assist appropriate task completion). It also has a large occupied sign operated from the inside (see Figure 9).

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Figure 10. The outdoor activity area provides access to raised garden beds.

Figure 11. The barn door on the staff office prevents inappropriate wandering but enables visual supervision of the main activity area.

Figure 12. The hatch between the kitchen and dining area helps reduce carrying of hot materials and enables oversight between both areas.

Appendix C

Chantal Day and Respite Centre

The original development proposal for the Chantal Day and Respite Centre was to establish a multi-resource facility, specifically focused on community aged care services in relation to direct care for older people with dementia. The building that was to become the Centre was purpose built as a children's home and then used primarily as accommodation for homeless families on an emergency and short-term basis until 2002. The need for a dementia specific Day Care Centre was noted and an Advisory Committee established. In early 2003 a development application was submitted to Hornsby Shire Council calling for a total refurbishment of the building to ensure the In renovating the centre for dementia day care and overnight respite usage the designers and auspice body sought to keep a homelike atmosphere while ensuring the maximum variety of activity spaces. As can be seen in Figure 10, the renovations included ramped access to an outdoor area and raised garden beds. The provision of raised garden beds is an illustration of Principle 7 (spaces, entry points, pathways and services that afford approach, reach, manipulation and use regardless of the user's limitations). The provision of outside activity spaces, e.g., clothes line and lawn area is an illustration of Principle 2 (Spaces and equipment that afford meaningful and culturally appropriate activity).

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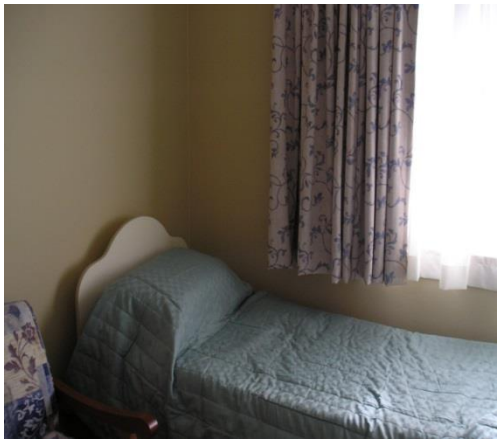

Figure 13. The bedroom enables frailer clients to rest and is consist with the homelike atmosphere.

Figure 14. The sidelights allow in natural light and the cupboards provide additional lockable storage.

Figure 15. The quiet/sensory room is used to calm agitated clients and features items designed to sooth different senses.

Colours and furnishings were chosen to appeal to the client base aesthetically and also from a frail aged perspective in regard to bench heights and type of chairs. Bright and airy activity rooms were designed, with a comfortable lounge area looking out over a pleasant garden. The doors to both the kitchen and main office are stable doors (see Figure 11). The provision of staff rooms illustrates Principle 9 (spaces, entry points, pathways and services that meet the needs of staff).

A large kitchen servery was established so clients would always remain a part of life in the centre even when clients' functional levels are such that food preparation and meal service are primarily staff directed (see Figure 12). The provision of staff and kitchen areas that allow staff to view clients with ease is consonant with Principle 1 (Services that afford independence, autonomy and control by being adaptable to users).

The Centre has three bedrooms (see Figure 13) which provide overnight respite but are also important during the day when clients are ill or sleepy. Provision of a sleeping or resting space is also consonant with the homelike feel of the place. The beds and their layout are consistent with Principle 3 (interior and exterior detailing that is familiar and non-threatening).

Figure14 illustrates the positioning of staff operated security controls and the addition of more light and much needed activity storage space. Figure 13 also illustrates Principle 5 (spaces, entry points, pathways and services that reduce unnecessary complexity and extraneous stimuli) in this case absence of visual clutter and Principle 8 (spaces, entry points, pathways and services that are tolerant of user related error) with lockable storage and locks on entrance door etc.

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A feature of Chantal Day and Respite centre is a small separate room for relaxation. This was deemed desirable in order to cater for clients who exhibited agitated or aggressive behaviours (see figure 13). This room was designed based on the principles of Snoezelen, which has become fashionable in dementia care[17]. Colours in this room were different to those used in the rest of the building and were selected to create a comfortable, soothing and non-threatening environment and is consistent with Principle 3 (interior and exterior detailing that is familiar and non-threatening). The room was then filled with items to stimulate the many senses including optic-fibre lights, pleasant tactile items such as soft-toys and calming aromatherapy scents. The staff refers to this room as “a little haven” and stated that they sometimes use it for complementary therapies such as massage. The same room is also used to just look at magazines and for the sharing of personally meaningful objects such as photos and memorabilia on a one to one basis with staff.

[17] Chung, J., & Lai, C. (2006). Snoezelen for dementia. *The Cochrane Database of Systematic Reviews, 2.*

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Appendix D

Checklist for Dementia Design Guidelines

Services that afford independence, autonomy & control by being adaptable to users

- More than one room to accommodate activities within a centre or space divided within one room so that different activities may be chosen.
- Spaces arranged in a “flexible manner” so that more than one activity can be conducted within the space depending on the current needs (e.g., a quiet time room can double as a small social room by allowing for reconfiguration of the furniture, etc.).
- Configuration of the centre to encourage the clients to join in and move from activity area to activity area by providing visual access to the wandering path (see Glossary) from each activity area.
- Space that facilitates the presence of large-scale activity options such as a piano, dancing, etc. by providing appropriate space.
- Outside areas facilitate choice for the clients by providing more than one activity option at the one time.
- Staff area/kitchen that allows staff to view client activities with ease.
- Small quiet room/area for one on one activities for clients exhibiting agitation/anxiety.

Spaces and Equipment that afford meaningful and culturally appropriate activity

- Spaces (and equipment if applicable) that allow activities to take place that are meaningful and culturally appropriate to the client population (e.g., religious observances).
- Spaces (and equipment if applicable) that allow activities to take place that are meaningful and culturally appropriate to the clients as individuals (e.g., if baking bread, space required would be a kitchen and equipment required would be an oven). Note that the type of activity that is meaningful depends on the client’s background and experiences.
  - Indoor activity spaces where activities meaningful to the clients can be carried out, e.g., a kitchen, laundry, etc.
  - Outside activity spaces where activities meaningful to the clients can be carried out, e.g., raised garden beds with plants, watering can/hose, tools, water feature area with seating, outdoor loo, shed with tools, washing line, etc.

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Interior and exterior detailing that is familiar and non-threatening

Non-institutional design relevant to building spaces:

- Size of building to accommodate no more than 8-14 clients at any one time.
- Features such as grabrails and handrails have a welcoming and cheerful appearance rather than purely utilitarian appearance.
- Activity rooms should be able to accommodate small group configurations. Larger activity room areas should be dividable to create usable spaces not exceeding those typically found in residential habitable space standards. i.e. living/dining rooms should be 13 sq. m18 with a minimum width of 3.600 mm19.
- Ceiling heights of activity rooms should also be residential in scale. The Building Code of Australia[20] suggests a habitable room should have a minimum ceiling height of 2.400 m but that a public hall should have one of 2.700 m; NB, a floating ceiling may need to be considered in converted church halls, etc.

Non-institutional design to fit-out of building:

- Use of colour and pictures of familiar scenes or genres from when clients were younger adults (approx. 30-40 years prior).
- Use of furniture and décor that was common when the users were young adults (approx. 30-40 years prior).
- Taps, etc., that were applicable to when the clients were young adults (approx. 30-40 years prior).
- Familiar sensory experiences: sound (e.g., older style music, etc.), smell (e.g., brewing coffee, bread baking, etc.), tactile (e.g., soil when gardening, sunlight, etc.), taste (e.g., sugar cane, Christmas cake, etc.).
- Opportunities to bring and observe fillings, fixtures and furnishings that are familiar to the user by providing space for a photograph wall, display area or hanging space.

Domestic style showering facilities:

- Room is warm (e.g., heat lamps).
- Moisture-resistant acoustical ceiling tiles.
- Vinyl wall covering (tiles can be used where needed for direct splash protection.
- Frosted or etched glass window.
- Skylight.

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[18] Waltham Forests Residential Design Guidelines (1996) Available online at www.lbwf.gov.uk/env-spg1.pdf

[19] Qld Housing's Residential Design Manual (2002). Available online at www.housing.qld.gov.au/design/rdm/requirements/seniors/5/seniors_56.htm

[20] Australian Building Codes Board (2007) BCA 2007: Housing Provisions (Vol 2). Available online at http://www.abcb.gov.au/go/home

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- Wall colours soothing and calm (e.g., soft shades of pale green, rose or peach).

Spaces, entry points, pathways & services that use appropriate modes (light, colour, pictorial, verbal, tactile) for presentation of essential information to assist appropriate task completion (i.e. cueing stimuli)

- A luminance contrast factor with the wall of not less than 0.3 (30 percent) between floors and walls under both natural and artificial lighting conditions.
- A luminance contrast factor with the wall of not less than 0.3 (30 percent) between step and edge of step under both natural and artificial lighting conditions.
- A luminance contrast factor with the wall of not less than 0.3 (30 percent) between any switches to be used and wall under both natural and artificial lighting conditions.
- A luminance contrast factor with the wall of not less than 0.3 (30 percent) between toilets and the surrounding floor and walls under both natural and artificial lighting conditions.
- A luminance contrast factor with the wall of not less than 0.3 (30 percent) between the sink and wall under both natural and artificial lighting conditions.
- A luminance contrast factor with the wall of not less than 0.3 (30 percent) between the table surface and plate under both natural and artificial lighting conditions.

Indirect cueing:

- Multiple modes of signage indicating the location of the toilet (e.g., picture of toilet and the word as well).
- Multiple modes of signage indicating the location of the dining room (e.g., picture of knife and fork and the word as well).
- Multiple modes of signage indicating the location of the activities along the wandering path (e.g., picture of a tool shed/aviary/fountain/etc. and the word as well).
- Signs placed at appropriate level (downcast gaze).

Spaces, entry points, pathways & services that reduce unnecessary complexity and extraneous sensory stimuli;

Reduced glare:

- Adjustable blinds on direct sunlight exposed windows.
- All lamps shaded and angled so that direct light does not shine into faces.

Appropriate non-reflective interior floor material:

- glare from electrical lighting cannot exceed 25 kcd/m^2 for angles at and above 70° from the downward vertical axis through the luminare as installed (See AS/NZS 1680.0, C9.1).
- tables, bench tops, artwork, signage and floors should not have high-gloss, dark-coloured surfaces (See AS/NZ 1680.1, C5.5(c)).

Appropriate non-reflective exterior floor material:

- glare conducive pavers should not be used (e.g., white, high-polished finish).

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- glare from electrical lighting cannot exceed 25 kcd/m^2 for angles at and above 70° from the downward vertical axis through the luminare as installed (See AS/NZS 1680.0, Cl 9.1).
- Light to dark transition spaces well lit (e.g., foyer inside).

Reduced noise:

- Absence of loud startling alarms notifying when a person has opened an entrance/exit door (Note: this does not pertain to burglar alarms and smoke alarms that are required by standards and/or regulations).
- Absence of a loud or distracting entry bell.
- Absence of telephones ringing.
- Absence of loud staff pagers or loud speakers.
- If one room is divided into more than one area, the areas are separated by dividers that prevent those with dementia from being over-stimulated by excessive noise from the other area.
- Absence of excessive noise from the kitchen in activity or quiet areas.
- Small rubbers fixed to chair legs in rooms without carpet to reduce auditory hallucinations.

Reduce over-stimulation:

- Visual barriers between activity areas.
- Visual barriers between 'busy' areas (i.e. the entrance foyer) and activity areas.
- Absence of visual clutter (although allowing for the presence of landmarks (see Glossary)).
- Reduce incidences of shadow by providing uniform lighting and being selective about the proximity to the wall and light where large objects are placed.
- Absence of coloured borders, checks or stripes on carpet as those experiencing problems with depth perception may interpret them to be steps or holes, etc.
- Doors that should not be accessed by clients painted the same colour as the surrounding walls.
- Switches that should not be used by clients painted the same colour as the surrounding walls.
- Door knobs on doors to the outside should be camouflaged (e.g., recessed, covered with a flap, etc.).
- Design facilitates small groups, especially during meal time and other times of high stimulation.
- Deliveries received in non-client space.

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Spaces, entry points, pathways & services that reduce agitation & opportunities for wandering

- Secure outdoor area by enclosing with a fence.
- No visual access from where the clients reside to the area outside the entrance (i.e., view of people leaving, getting in their cars, etc.).
- No window in the entrance and exit door.
- Good visual access from inside to the secure outdoor area.
- Access points to outdoor area unlocked.

A wandering path:

- A path that provides direct visual access into many different activity areas.
- A path that travels through many aesthetically different spaces.
- A path that does not have an end point.
- A path that can be unobtrusively visually accessed by staff.
- Visually accessible toilets provided along the path.
- Places to sit provided along the path.
- Both sun exposed and shaded areas along the path.
- Spaces, entry points, pathways & services that afford approach, reach, manipulation and use regardless of user's limitations (i.e. highly negotiable)
- One landmark present in all rooms.
- One landmark present in all sub-sections of outdoor area.
- View from the room to outside to assist in orientation.
- Rocker action, toggle or push-pad switches with a width of 35mm.
- User-friendly settings (i.e., "ON/OFF").

Toilet room size:

- large enough to allow staff to assist client.
- at least one large enough to accommodate a wheelchair user and an attendant (See AS1428.2 Cl. 15).
- Multiple toilets (at least 2 for client use).
- Access area for vehicles to drop off clients.

Direct cueing:

- Toilet is visible to the adjacent room when the door is open.
- An entry/exit point visible in every space.
- All entry/exit points directly visible from the wandering path.

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Spaces, entry points, pathways & services that are tolerant of user related error (i.e. safe and secure)

- Secure outdoor area by enclosing with a fence *(* This point is also discussed in P6, so if checking all principles DON'T count twice).*

Locks on entrance/exit door:

  - More than one type of lock to ensure that a client doesn't easily open the door (e.g., a chain-latch and a bolt lock).
  - Locks out of common line of sight, rather, placed at the top of the door, etc.

- Alarm signalling when a client has opened a door (As noted in P5, the alarm should be unobtrusive).
- Windows that open should have the provision to restrict the degree of opening. Window opening mechanisms should be selected to avoid people with dementia climbing in and out of windows (e.g., window winders should be avoided).
- All open window areas have flyscreens.
- Storage room doors lockable.
- Kitchen door lockable.
- Staff only areas lockable.
- Non-slip floors (See AS/NZ 3661.1.1.1993, Cl. 5).
  - All horizontal surfaces should have a coefficient of friction (CoF) of no less than 0.4 in both wet and dry conditions.
  - All sloped surfaces should increase to 0.5 CoF or greater.

All carpeting in areas used by clients (See AS1428.2-1992, Cl. 9):

  - Is securely attached.
  - Has any exposed edges fastened to the floor surface and have trim along the entire length of any exposed edge.
  - Should have no edge trim that creates a ridge on the floor surface higher than 3mm.
  - Should have a pile height no higher than 6mm.
  - Should have a waterproof backing.

- Temperature control (thermostatic mixing valve) on all taps used by clients.

All areas well lit to avoid falls (See AS 1428.2 Cl.19):

- Passages and walkways (150 lx).
- Stairs (150 lx).
- Ramps (150 lx).
- Toilet and locker room (200 lx).
- Counter tops (250 lx).
- General displays (200-300 lx).

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Kitchen used by clients:

- Lockable utensil draw.
- Any cooker should have a main switch which can be controlled by staff in an emergency/keyed stove.
- Lockable electric switches.
- Burner covers.
- Hotplates should provide clear visual cues when on or only operate when in contact with cooking vessels in order to reduce the risk of accidental burn injuries (Induction hotplates preferred).
- Pots and pans small enough to be lifted easily.
- Surface and storage areas designed to keep lifting and carrying to a minimum.

Spaces, entry points, pathways & services that meet the needs of staff

- Staff room present (with colour and handle camouflaged door).
- Staff toilet present off staff room.
- Staff change room/locker room.
- Room that can be used as a staff quiet room/counselling room.
- Environment affords control for staff to manipulate.
- Outdoor area that can also be enjoyed by the staff.

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