

Lighting and Dementia – April 23, 2015
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Design & Dementia Community of Practice

- WHO: Group of professionals working across the dementia care continuum and country
- WHAT: Come together to create, share, promote and facilitate the integration of evidence-informed dementia friendly design recommendations to improve care for persons living with dementia and their care partners

Principles of Dementia-Friendly Design

- Improves quality of life and care for (PLWD), staff, volunteers and family
- Compensates for loss of abilities and focus on strengths
- Reduces cognitive misperceptions and responsive behaviours (e.g. anxiety, confusion)
- Incorporates universal design principles that benefit all age groups and abilities
- Promotes safety, security, independence, autonomy, and belonging

It's Important and It's Complex...

- There is a continual balance between many factors related to design considerations and implementation:
 - Individual needs of the PLWD
 - Compliance and legislated standards/codes (e.g., building and fire codes)
 - Constraints with established design of buildings
 - Time and resources

Design on its own is not enough

Needs of PLWD

While PLWD are not homogeneous, there are a number of common signs and symptoms that often need to be managed and accommodated for during the progression of a dementia:

- Progressive memory loss/confusion
- Deterioration of verbal and written communication
- Impaired or poor judgment/reasoning
- Difficulties with forward or abstract thinking
- Behaviours that appear inappropriate
- Disorientation to time, place and space
- Gait, motor, and balance problems

Environmental Design can Help

Dementia friendly design (physical, social, emotional) is key regardless of setting

- Home Adaptations
 - age related and dementia related
- Upgraded Lighting
- Doorways
- Noise
- Wayfinding and Signage
- Dementia Training for Informal and Formal Carers
- Organizational Culture of Care

Dementia-Friendly Design Resources

- Lighting
- Doorways
- Noise – Physical
- Noise – Social
- Wayfinding
- Coming Soon! Outdoor Environments

Why Lighting?

Lighting is an important design feature to the quality of life for PLWD because it can:

- Dissipate shadows
- Reduce mood disturbances and falls
- Positively affect eating and sleep
- Encourage well-being & quality of life
- Optimize communication opportunities
- Promote participation in daily activities (Illumination)

Lighting

- Light Intensity & Colour
- Task Lighting
- Natural Light
- Adapting to Transitions in Lighting
- Day and Night Lighting
- Avoiding Misperception
- Individual Preferences
- Maintenance Standards

Light Intensity & Colour

- **RECOMMENDATION:** Include lighting with a high colour rendering index providing 30-70 foot candles (1 foot candle = 10 lux) for indoor illumination in main areas (of LTC) including living rooms, resident rooms, bathroom, tub, and activity areas
- **Strategies include:**
 - Lighting that mimics natural sunlight such as incandescent or daylight mimicking LEDs
 - ~~fluorescent T8 lamps~~
 - Avoidance of only one source of lighting to achieve adequate illumination

Task Lighting

- **RECOMMENDATION:** Ensure task lighting (direct illumination) over work surfaces (i.e. tables, dining room, sinks) is at higher levels than ambient lighting, with an average of 700 lux
- **Strategies include:**
 - Utilize task lighting in areas of interest to draw people there
 - Provide alternating light levels across all rooms, differentiating between task and ambient lighting as appropriate

Natural Light

- **RECOMMENDATION:** Provide access to natural light (e.g., windows, outdoor activities, greenhouse activities) and windows overlooking outdoor areas to promote wellbeing
- **Strategies include:**
 - Access to windows which overlook a positive and stimulating focus (e.g., bird feeder or woods vs. parking lot which may promote exit seeking)
 - Position/place positive "centres of focus" (e.g., aquarium, mural) near any windows where views are deemed to be poorly located

Adapting to Transitions in Lighting

- RECOMMENDATION: Graduated lighting from indoors to outdoors and at all transition points
- *Strategies include:*
 - Use awnings and brighter interior lights in entrance ways
 - Wearing hats, sunglasses/transitional glasses

Day and Night Lighting

- RECOMMENDATION: Lighting which has the ability to be adjusted throughout the day is best – acts as a cue for day time and night time

Strategies include:

- Dimming of corridor lighting late evening or near bedtime
- Brightening of corridors or rooms in the morning (e.g., opening curtains in morning)
- Seasonal and weather considerations (e.g., sunny or overcast)
- Use of timers for automatic dimming of lighting with staff protocols for assessing daily for dimming and brightening
- Installation of light sensitive control technology

Advanced Technologies

- LEDs, photosensors, and occupancy sensors can help seniors in long-term care environments maintain independence and be more comfortable
- Daylight mimicking LEDs can ameliorate behavioural symptoms of AD and improve health outcomes e.g. agitation toward the end of the day, reverse day-night patterns, difficulty sleeping at night, & the need for mobility and wandering possibly due to disrupted circadian rhythms

Automated Lighting Design

- In care facilities automated lighting can assist residents to get in and out of bed at night safely to use the bathroom and give staff enough light for their rounds.
- Study: Amber-colored LEDs were mounted under each bed frame, around each bathroom door, and under the bathroom mirror and handrail & an occupancy sensor slowly turned on the lights when a resident got out of bed or a nurse walked into the room
- Results: No problems with sleep disturbance with LED lighting & staff able to conduct checks (reduction in falls?).

Residential Lighting Automation

- Occupancy sensors automatically light a room, a pathway, a stairway
- Photocells turn on/off lights gradually in response to natural light levels
- Automated drapes, blinds
- Programmable light controls

Avoiding Misperception

- RECOMMENDATIONS: Lighting is evenly distributed throughout an area to avoid glare, pooled lighting, and shadows with the exception of task lighting in designated activity areas
- *Strategies include:*
 - Use multiple lighting sources and avoid shining lighting from below
 - Appropriate adjustment of height and angle of the light for all
 - Consider using frosted versions of light bulbs or lamp shades to screen or reflect the light
 - Use fitted sheers on windows or blinds to filter natural day light
 - Avoid patterned curtains (such as lace curtains) that can cast a shadow and then be mistaken for perceived threats like insects or holes

Individual Preferences

- RECOMMENDATION: Individual preferences for lighting are respected and balanced with safety – no single standard
- *Strategies include:*
 - Individual choice and vision requirements
 - Regular assessment of vision
 - Discussions and observations to address individual preferences
 - Ensure light switches are easy to access and identify in bedrooms and bathrooms (e.g. a backlit switch)
 - Accommodate individual needs with desk lamps, night lights, and/or dimmers for built in flexibility



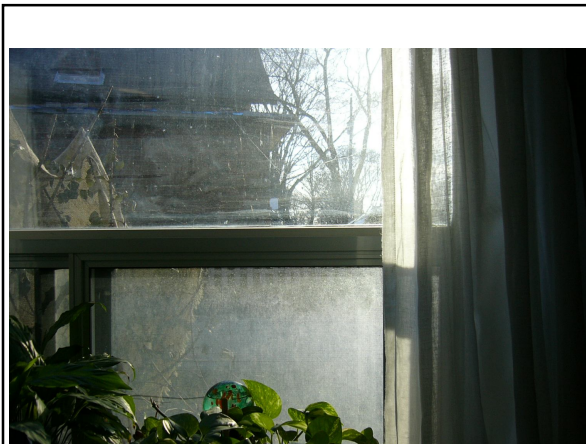
Maintenance Standards

- RECOMMENDATION: Lighting protocols and practices in all places of residence, which include or enhance lighting policies and maintenance standards currently in place
- *Strategies include:*
 - Signage beside lights to remind staff of lighting protocols
 - Signs with directional and wayfinding cues are well lit
 - Residents glasses are regularly inspected and cleaned
 - Bedroom shades are pulled down at bedtime and/or dim corridor lights



Maintenance Standards con't

- RECOMMENDATION: Lighting protocols and practices in all places of residence, which include or enhance lighting policies and maintenance standards currently in place
- *Strategies Continued:*
 - Areas are well lit during wakeful times to avoid shadows and risk for falls
 - Burnt out lights are immediately replaced and not turned off in high traffic areas
 - Windows are kept clean and bushes around windows are trimmed back to minimize shadows and increase light



Thank You
&
Discussion



References/Resources

- Adapting Your Home to Living with Dementia: <http://www.cmhc-schl.gc.ca/odpub/pdf/66495.pdf>
- At home with dementia: A manual for people with dementia and their carers: http://www.adhc.nsw.gov.au/_data/assets/file/0011/228746/at_home_with_dementia_web.pdf
- BrainXchange *Design and Dementia Community of Practice Recommendation Tools*: <http://brainxchange.ca/Public/Resource-Centre-Topics-A-to-Z/Design-and-dementia.aspx>
- Canada Mortgage and Housing Corporation Housing Options for Persons With Dementia: <http://www.cmhc-schl.gc.ca/odpub/pdf/60967.pdf?lang=en>

References/Resources

- Access to nature
<http://www.accesstonature.org/index.asp>
- Benbow, Bill <http://wabenbow.com/>
- Canadian Mortgage and Housing Corporation
<http://www.schl.ca/en/index.cfm>
- Caspi, Eilon <http://eiloncaspi.com/>
- Dementia Design Info.com
<https://www4.uwm.edu/dementiadesigninfo/>
- Dementia Enabling Environments
<http://www.enablingenvironments.com.au/>

Helpful Resources

The Greenhouse Project Toolkit: http://thegreenhouseproject.org/wp-content/uploads/2011/04/The-Green-House-Project--Consumer-Toolkit_rev3.pdf

Marquardt, G., Johnston, D., Black, B. S., Morrison, A., Rosenblatt, A., Lyketsos, C. G., & Samus, Q. M. (2011). Association of the spatial layout of the home and ADL abilities among older adults with dementia. *American Journal Of Alzheimer's Disease And Other Dementias*, 26(1), 51 -7.

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Social Care Institute for Excellence www.Scie.org.uk

Stirling University http://dementia.stir.ac.uk/design_welcome