

Environmental Design/Dementia Care

Many residents with dementia experience altered sensitivity to the environment due to an inability to understand sensory experiences, particularly those associated with noise and lighting - the two most common sources of external stimulation for all residents in the nursing home environment. When overlooked or ignored, either one can become disturbing sources of over-stimulation or under-stimulation. The following article is an extensive description on the current research on lighting and noise design in nursing homes, including a checklist and rating guide based on this research.

By William (Bill) Benbow, M.S.W., Development Consultant

Lighting and noise design in dementia care facilities

An evidence-based checklist

Noise and light are the two most obvious sources of sensory stimulation in the nursing home environment, and when ignored or mismanaged, they can become significant sources of under- or over-stimulation for the resident with dementia” (Dewing, 2009).

Many people with dementia have altered sensitivity to environmental conditions due to a reduction of the ability to understand sensory experiences. This is aggravated by age-related deterioration in vision and hearing (Van Hoof, 2010). Considerable research evidence and experience is now available to assist in the lighting and noise aspects of the design of dementia care facilities. This article will present a checklist and rating guide based on this evidence.

Lighting/Noise checklists

The Alzheimer Knowledge Exchange (AKE), “Design and Dementia Community of Practice,” has released several dementia-friendly design documents or checklists, including those on ‘Lighting’ and ‘Noise.’ The checklists discussed in this presentation reflect the recommenda-

tions of these AKE documents which are available at:

<http://www.akeresourcecentre.org/Design>.

Inadequate lighting for seniors

Two U.S. studies looked at 81 nursing homes and found that ambient light was 50% to 60% lower and task light was only 20% to 40% of recommended levels (Brawley and Noell-Waggoner, 2008).

A Belgian study of eight nursing homes came to a similar conclusion - that the amount of light in nursing homes was seldom sufficient to meet the visual needs of older people (Lepelleire, 2007).

Due to the thickening of the lens of the eye and the reduced size of the pupil, the light requirements for seniors can be as high as five times greater than for younger people (Brawley, 2001). Low lighting and poor visual acuity doubles the risk of falling (Torrington, 2007).

For persons with dementia, shadows and glare increase the difficulty of interpreting the environment and may lead to fear and agitation. Day-time bright lighting of approximately 1000 lux has been shown to improve symptoms of dementia in a

Netherlands study of 12 group care homes (Riemersma-van der Lek, 2008).

A 2012 study found that those with lower cognitive strength (acuity) may be less able to adapt to environmental stressors such as noise. Sound was definitely found to contribute to agitation; and there was a cumulative effect that may well be connected to sundowning (Joosse, 2012).

Most damaging stimuli

Of all stimuli, noise has the most damaging effect on people with dementia (Dewing, 2009). Noise generally exceeds recommended levels in nursing homes. The World Health Organization (WHO) recommends background noise in hospitals below 35 dB at daytime and below 30 dB at night (Berglund, 1999).

A U.S. study found noise levels in a nursing home were in the range of 55-70 dB, which is comparable with busy road traffic (Bharathan, 2007).

It is worth noting that loudness levels measured as dB (decibel) are based on a logarithmic scale so that to the human ear, a 10 dB increase is perceived as a doubling of loudness (Joseph, 2007).

People with dementia can lose the ability to interpret what they hear accurately. Excess noise can result in confusion, overstimulation, and difficulty communicating (Bakker, 2003).

Fagan addressed the issue of hearing loss as a risk factor for Alzheimer's disease and possibly an early marker of cognitive decline. Even mild cognitive impairment affects hearing function, and in particular, may exacerbate the ability of persons with disabilities (PWD) to process speech in environments that have high ambient noise such as dining rooms (Fagan, 2011).

The Checklist on page 10 is structured in two parts: **Lighting and Noise**

LIGHTING

• **Ambient Lighting:** Use a light meter to accurately evaluate light levels. General lighting should be between 30 and 70 foot candles (320 to 750 lux) for indoor illumination in most areas of a care facility including living rooms, resident rooms, activity areas.

Levels set by the Illuminating Engineering Society of North America are minimums: 30 foot candles for most areas, 50 for dining, kitchen, hairdressing (320 lux to 550 lux). Full spectrum lighting that mimics natural daylight is preferred (Brawley and Noell-Waggoner, 2008).

• **Task Lighting:** Increased lighting needs to be directed towards visual tasks and should be 50 to 100 foot candles (550 lux to a 1100 lux) for fine tasks. Heightened

The Cole-Parmer Light Meter



contrast helps in distinguishing fine detail such as between printed type and paper (Torrington, 2007). Magnification also helps. Bakker gives the example of her mother being unable to adjust her air conditioner, not because of her dementia, but because of the small print on the controls (Bakker, 2003).

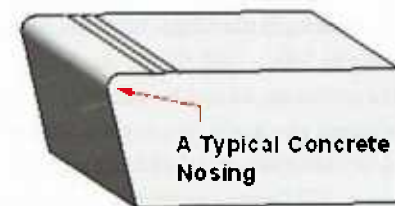
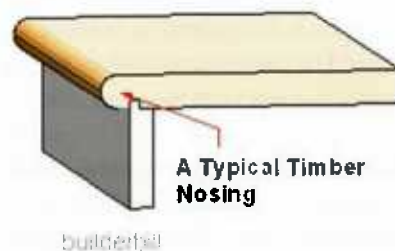
• **Colour: Colour Rendering Index (CRI), Colour Temperature:** CRI indicates how true colours will appear; the closer the rating is to 100, the truer the colours. Because of the yellowing of the lens of the eye in seniors, it is important to use a light source with a high CRI.

Colour temperature is measured in degrees Kelvin (K) and range from warm to cool, with lower numbers for warmer light, and higher numbers for cooler.

A candle flame is 2000 K while daylight is 7,500 K. Cooler light has a greater effect on the circadian cycle with sky blue the most effective (Noell-Waggoner, 2002).

• **Contrast:** Contrast is measured as Colour Value. Seniors frequently develop diminished sensitivity to contrast. This, combined with problems with depth perception, make it difficult to identify objects set against a background of similar colour (Bakker, 2003).

Increased Contrast Value is helpful for



Nosing is the piece of wood sticking out on the front of a step and extending beyond the riser

seniors to distinguish elements such as where flooring meets walls and around doors, through the use of contrasting trim, molding, skirting, and on level changes such as nosing on stairs and curbs. Nosing is that part of the stair projecting beyond the riser. (See diagram below).

Handrails and handles should contrast with walls and doors; seating material on chairs should contrast with with flooring; furniture with walls, toilet seats with the toilet and floor, grab bars with shower walls, table edges, place mats, cups, plates and utensils with backgrounds.

White plates make food easier to see. However, value contrast should be avoided at thresholds and in patterns on flooring as this can appear as barriers and irregular levels. A gray scale chart (above) is a valuable tool for evaluating colour contrast and is available at art supply stores.

• **Natural Light:** Daylight can be as high as 10,000 footcandles (FC). Typical interior lighting rarely exceeds 100 F (Noell-Waggoner, 2004). Natural light has been shown to enhance well-being and improve the natural rhythms of the body such as the circadian cycle which effects sleep. Seasonal affective disorder (SAD) is found predominantly in people living in latitudes distant from the equator (Torrington, 2007).

Bright daylight is essential for Vitamin D in order to maintain healthy bones. Vitamin D deficiency has been linked to an increased risk of falls among seniors. A Japanese study reported that 15 minutes per day of sunlight exposure reduced hip fractures by 84%. However, studies have shown that natural light exposure diminishes greatly once individuals move to a nursing home (Brawley and Noell-Waggoner, 2008). Available daylight can be increased with skylights, clerestories and sunrooms.

• **Natural Views:** Torrington stresses the importance of the provision of a natural external view, both in terms of a therapeutic effect and the reduction of discomfort. He cites several studies that demonstrate the benefits of natural views such as a



In transitioning from outdoors, interior lighting should be brighter. Awnings can ease this transition.

lower incidence in post-operative depression in rooms with windows, and more social interactions in care homes where residents congregate around view windows (Torrington and Tregenza, 2007).

Window sill heights need to accommodate residents' positions while sitting, in wheel chairs, or lying in bed.

- **Transitions:** Older eyes adjust much more slowly to changes in light levels, especially from bright to dim light. The Illuminating Engineering Society of North America recommends that the brightest light in an area be no greater than three times brighter than the lowest light in the same area (Noell-Waggoner, 2004). This is especially important in transitioning from outdoors. Awnings/Porticos can ease the transition, with brighter interior lighting in entrance ways during daylight.

- **Day and Night Adjustments:** Bright corridor lighting at night can cause confusion for persons with dementia and sleep disturbance. Dimmable lighting provides cues for evening and night time routines. Daylight and views connect people living in care homes to the daily cycle of light and dark when combined with a period of darkness. All light fixtures should be able to be dimmed to uniformly lower the ambient lighting at night (Noell-Waggoner, 2004). Night lights and motion detectors can resolve safety issues.

- **Even Distribution of Lighting:** Lighting should be uniform on walls and floors; pools of light should be avoided. Sheer draperies can diffuse bright daylight. Indirect lighting conceals the bright source of

light and directs it to the ceiling and walls using pendant or surface fixtures, cove lights and wall-mounted valences that direct light to the ceiling. This requires surfaces with a high light reflectance value (LRV). Ceilings should have a LRV of >80, walls >60, and floors of 30 to 40. Paint manufacturers usually list LRV on their products (Noell-Waggoner, 2004).

- **Glare:** Seniors often experience increased sensitivity to glare. Glare can be from a direct light source, such as unshielded bulbs or daylight, or reflected such as when it bounces off a high light value surface. Its intensity can range from discomfort to disability; i.e., temporary blindness. Chandeliers with exposed lights and other high mounted down lights produce mostly glare.

Indirect lighting is the best solution, and works better with 9 foot or 10 foot ceilings. Flooring in particular needs to be of a low to medium LRV to alleviate glare. Surfaces, such as concrete in outdoor areas, should be stained to a medium colour value (Brawley and Noell-Waggoner, 2008).

- **Individual Preferences:** Desk lamps and dimmers can provide flexibility to accommodate individual needs. Ambient light could be 550 lux with dimming to 320; task light could be 1100 lux with dimming to 550.

Light switches should be accessible on fixtures and on walls; i.e., they should be below the reach threshold of frail residents; i.e., 1200 mm (47 inches) from the floor. Controls for task lights should be within easy reach. Windows should have adjustable coverings.

- **Maintenance Standards:** Staff need to be sensitive and skilled in adjusting lighting throughout the day to meet residents' needs. It's important to develop a maintenance schedule to audit lighting and regularly clean lamp tubes and bulbs and replace them when they dim or flicker. Dirty fixtures will absorb light and reduce the amount reflected into the room.

NOISE

- **Ambient Noise Level - Bedrooms:** Invest in a noise meter to accurately measure noise levels. Use knowledgeable staff such as OT, Health and Safety, as well as Maintenance/Housekeeping to regularly monitor noise throughout resident areas to uncover and address issues. Note volume, frequency and duration.

Objectively quantifying noise is a major step in addressing noise issues. The WHO guideline for background noise in resident bedrooms is 35 dB in the day, and 30 dB at night, with night time peaks not to exceed 40 dB (Berglund, 1999).

The word 'noise' is derived from the word in Latin for 'nausea' (disgust, loathing, repugnant).

Noise Meter (or as shown below) the Cole-Parmer Sound Meter)



- **Ambient Noise Level - Common Areas:** The WHO suggests background noise level should not exceed 35 dB in most rooms in which patients are being treated or observed. The Environmental Protection Agency in the U.S. recommends noise levels below 45 dB for hospitals and

nursing homes during daytime and 35 at night (Bharathan, 2007).

- **Layout:** The size and layout of rooms can impact noise reverberation. Layout should separate noisy areas from quiet activities; e.g., resident rooms should not flank noisier areas such as utility, laundry, kitchen, dining, activity, TV and administration areas. Resident rooms should be in a zone of their own with the exception of Bathing which should have soundproofing. Amenities should include a "Quiet" lounge or sitting area.

- **Noise mitigating design features:** Use acoustical ceiling and wall products to soften hard surfaces and reduce echoes. Osborne recommends small rooms for group activities, partitions between activity areas and double glazed windows (Osborne, 2000).

Resident room walls need to be sound proofed with a Sound Transmission Class rating of 45. Walls should extend to the structural deck in order to reduce sound travel in the space over lowered ceilings. Ventilation and heating systems should be designed and installed with sound attenuation measures so as not to exceed Noise Criterion (NC) of 25 in bedrooms and 35 in amenity areas.

- **Noise reducing adaptations:** Some useful interventions for noise reduction are lined drapes (below), wall hung quilts, place mats on dining tables, upholstered furniture, and carpeting (Bakker, 2003).

If the kitchen or servery is adjacent to the dining room, there are a number of



ways to reduce noise; adapt chair legs with rubber tips or sliders to dampen movement noise. Other noise-reducing interventions include padding in chart holders, and distancing noisy equipment, such as pill crushers, grinders, etc. from resident areas.

A U.S. study found that closing doors was the most effective measure for reducing noise (average reduction of up to 10.4 dB). This reduction improved to 13.5 dB when combined with sound-absorbing panels hung on walls, and to 14 dB with resident TV speakers (Connell, 2004).

- **Scheduling of intrusive noise:** Limit use of electronic equipment, such as radios and TV and cleaning equipment such as floor cleaners, vacuuming and dish washers - especially during meal times. Consider using non-powered carpet sweepers. Crush pills outside of amenity areas and away from residents. Limit what is done in the serving area; e.g., return dishes to kitchen for washing. One facility schedules Quiet Times in the daytime and evening (Boehm, 2009).

- **Fire alarms and paging systems:** Alarms and overhead paging systems in dementia units should only be used for emergencies (Bakker, 2003). Discuss with appropriate authorities a reduced use of alarms; decreased loudness, less frequent drills and even silent drills. Fire alarm levels should not exceed 65 dB in resident rooms and hallways. Set staff and visitors pagers and cell phones, as well as system alerts for wandering, to vibrate.

- **Mitigate disruptive night-time noise:** In three studies that reviewed 18 nursing homes at night, hall lights were dimmed at only two of the 18 facilities; there were no significant reductions in noise levels at any of the homes until 0100h; nursing care routines were always accompanied by overhead lights and increased noise levels (above 70 dB).

Decreasing noise levels at night helps improve sleep and lessens agitation in residents (Alessi and Schnelle, 2000). Consider resident room doors with built in window blinds, or motion sensor monitoring.

- **Staff training:** Loud voices have been

perceived as the most bothersome by residents and staff, followed by carts, foot traffic, pagers and alarms.

Reductions in noise levels can be attained through staff education; i.e., lower speaking voices, more quiet footwear; alarms, ringers and pagers turned down; closing residents' doors, and generally being sensitized to noise in the resident areas (Overman-Dube, 2008).

Nursing staff need to increase their awareness of how the sounds they create can lead to agitation (Joosse, 2012). Group discussions should be conducted in enclosed rooms, and equipment, including TVs, should be turned off when not in use.

- **Signage:** Post 'Quiet' signs as reminders, such as "Please keep voices soft," "Please speak softly, slowly, and clearly," "Please turn off cell phones." This kind of signage has led to significantly reduced noise in hospitals (Overman-Dube, 2008).

- **Surveys:** Regularly conducted resident, family and staff surveys can help identify noises, raise awareness and stimulate suggestions for noise control interventions.

- **Maintenance:** Schedule regular maintenance and replacement of noisy equipment (Dewing, 2009). Purchase low-noise equipment. Wheeled equipment can be designed, modified and maintained for more quiet operation. Paper towel dispensers can be quieter. Persistent intermittent noise can be addressed such as leaky toilets and faucets, squeaky doors, etc.

Conclusion

These twenty-four 'Lighting and Noise' elements make up the *Lighting and Noise Evidence-Based Checklist and Rating Scale* which is provided overleaf for field use and trials. Support documentation for assistance with scoring the checklist is available from the author.

As Jan Dewing has said, "Assessment of noise and light levels in the environment is the first step to providing a more person-centred and dementia-friendly environment" (Dewing, 2009). ■

References

- AKE - Alzheimer Knowledge Exchange.

"Lighting Dementia-Friendly Design Considerations." AKE: January, 2010; <www.akeresourcecentre.org/Design>.

• AKE - Alzheimer Knowledge Exchange, "Noise, Dementia-Friendly Design Considerations." AKE: July, 2011; <www.akeresourcecentre.org/Design>.

• AKE - Alzheimer Knowledge Exchange, "Why is Lighting Important to Older Adults, Literature Review." *Dementia Friendly Design Considerations*; AKE: 2010; <www.akeresourcecentre.org/files/Design/DD%20CoP_Lighting_Literature_Review.pdf>.

• Alessi, Cathy, and Schnelle, John. Approach to sleep disorders in the nursing home setting, *Sleep Medicine Reviews*; 4(1); p. 45-56; 2000.

• Bakker, Rosemary, Sensory Loss, Dementia, and Environments, *Generations: Journal of the American Society on Aging*; 27(1); p.46-51; Spring, 2003.

• Berglund, B., et al., *Guidelines for Community Noise*, WHO, Geneva, 1999.

• Brawley, E.C., Environmental design for Alzheimer's disease: a quality of life issue, *Aging & Mental Health*; 5(Supplement 1); p.79-83; 2001.

• Brawley, E.C. and Noell-Waggoner, E., Lighting: Partner in Quality Care Environments." 2008. <www.pioneerwork.net/Data/Documents/BrawleyNoell-WaggonerLightingPaper.pdf>.

• Bharathan, T., et al., What do patterns of noise in a teaching hospital and nursing home suggest? *Noise and Health*; 9(35); p.31-34; April, 2007.

• Boehm, Heidi and Morast, Stacey. Quiet Time, *American Journal of Nursing*; 109(11), Supplement); p.29-32; Nov., 2009. <www.nursingcenter.com/Inc/journalarticle?Article_ID=940560>.

• Connell, B. et al., Effect of Environmental Interventions on Noise in Nursing Homes, *The Gerontologist*; 44(1); p.77; October, 2004.

• Dewing, Jan, Caring for people with dementia: noise and light, *Nursing Older People*; 21(5); p.101-109; June, 2009.

• Fagan, F., Hearing loss - Is it a risk factor for Alzheimer's disease, or an early marker of cognitive decline - or both? *Canadian Nursing Home*; 22(4); p.4-11; December, 2011.

• Joosse, Laura. Do Sound Levels and Space Contribute to Agitation in Nursing Home Residents with Dementia? *Research in Gerontological Nursing*; 5(3); p.174-184; 2012.

• Joseph, A. and Ulrich, R., Sound Control for Improved Outcomes in Health Care Settings, *Centre for Health Design*; Issue #4; Jan., 2007.

• Lepeleire, Jan De, et al., Insufficient Lighting in Nursing Homes, *Journal of American Medical Directors Association*; p.314-317; June, 2007.

• Noell-Waggoner, E., Lighting Solutions for Contemporary Problems of Older Adults, *Journal of Psychosocial Nursing*; 42(7); p.14; 2004.

• Osborn, Richard, et al, Effects of Background Noise on the Perception of Speech by Sighted Older Adults and Older Adults with Severe Low Vision, *Journal of Visual Impairment and Blindness*; 94(10); October, 2000.

• Overman-Dube, J., et al., Environmental Noise Sources and Interventions to Minimize Them, A Tale of 2 Hospitals, *Journal of Nursing Care Quality*; 23(3); p.216-224; July-September, 2008.

• Riemersma-van der Lek, R.F., Effect of Bright Light and Melatonin on Cognitive and Noncognitive Function in Elderly Residents of Group Care Facilities, *The Journal of the American Medical Association*; 299(22); June, 2008; summarized in *Canadian Nursing Home*; 19(3); p.25; October, 2008.

• Torrington, J.M., Tregenza, P.R., Lighting for

people with dementia, *Lighting Research and Technology*; 39(1); p.81-97; 2007.

• Van Hoof, J., et al, The indoor environment and the integrated design of homes for older people with dementia, *Building and Environment*; 45; p.1244-1261; 2010.

Links:

• Auditory Assistance: Strategies to reduce hospital noise problems; *HFM magazine*, 2010; <http://www.hfmmagazine.com/hfmmagazine/jsp/articledisplay.jsp?dcrpath=HFMMAGAZINE/Article/data/01JAN2010/1001HFM_FEA_Design>.

• Conducting a Noise Study on Your Dementia Unit: <<http://www.nursetogether.com/Career/Career-Article/itemid/2640.aspx#.UWB-35J0sh8E>>.

About the author

Bill Benbow is a Health Planner and Consultant on seniors health care and housing projects. He assists in coordinating with health authorities to ensure quality, value, efficiency, and compliance with regulations and guidelines. Recently he was the Development Consultant for a combined complex care and assisted living facility on Vancouver Island.

Mr. Benbow has extensive experience as a Project Manager of Capital Projects and as a Capital Treasury Board Analyst with the B.C. Provincial Government; he also chaired the Multilevel Care Design Guidelines Review Committee in B.C.

Bill is particularly interested in the development and implementation of functional design guidelines in the fields of seniors' housing and long-term care facilities.

Why noise can be a major source of agitation in Alzheimer's

In the book, "*Victorian Soundscapes*" author John Picker found it necessary to discuss noise. "The words noise and annoyance have similar origins: noise, after all annoys. That may even be a good definition. Noise annoys because it doesn't fit: it jars, disrupts, upsets. And it upsets because it can't be understood. There is no way to place noise in a pre-existing sonic order, no way to relate it to other sounds that have meaning and sense. Harmony joins sounds; noise merely accumulates them" (Picker, 2003).

The above definition is strongly suggestive of why noise can be a significant source of agitation to the Alzheimer's victim. Everyone agrees that noise has a negative impact on Alzheimer's and other dementias. "In spite of the universal agreement that negative noise stimulation has an adverse effect on Alzheimer's patients, there is an apparent disconnect. There is a disconnect with the application of this information to the nursing home facilities that specialize in care of Alzheimer's and other dementia residents. The reasons for this disconnect are varied: cost, convenience, expediency, ignorance, apathy are all at work . . ." (Berg, 2013).

Maybe not the reality today, but those facilities in the not too distant past who ignored noise for whatever reason (the disconnect), bring to mind the English Royal Mental Hospital in London known as 'Bedlam.' When it comes to noise, many facilities could have come close to being places of 'bedlam.' The term 'Bedlam' has come to be associated with unreasonably loud noise. A history of the institution tells us that "visitors were permitted to bring long sticks with which to poke and enrage the inmates. . .".

"When I think of the number of Alzheimer's victims that were most probably and inappropriately a part of the residents at this institution, my mind is engulfed in sadness. . . One has to wonder about the number of drugs that could be eliminated and a better life provided if we would just provide a calm, quiet and soothing atmosphere that does not provoke agitation, fear or anxiety" (Berg, 2013). ■

• Berg, S.O., "*A journey through Alzheimer's*," 2013. See: <http://junebergalzheimers.com/index.php?option=com_content&view=article&id=15&Itemid=45>.

• Picker, John, "*Victorian Soundscapes*," Oxford University Press; 2003.

Lighting & Noise Evidence-Based Checklist and Rating (LNCR) Benbow, 2013

FACILITY: _____ **UNIT/ROOM** _____ **RATER:** _____ **DATE:** _____

LIGHTING	Design Feature	Minimal	Average	Superior	Score	
Lighting Levels (Max. 10 pts.)	Score each item as 0, 3, 4 or 5	3	4	5		Support documentation for scoring is available from: <billbenbow@shaw.ca>.
	1. Ambient Lighting	320 lux	550 lux	1000 lux		lounge, bedroom, bathroom
	2. Task Lighting	550 lux	750 lux	1100 lux		reading, activity, dining
Lighting Issues (Max. 40 pts.)	Score each item as 0, 2, 3, or 4	2	3	4		
	3. Colour					CRI*>80; close to daylight
	4. Contrast					High colour value for object/ground visibility
	5. Natural Light					Windows, clearstories, skylights
	6. Natural Views					Opportunity for outdoor access
	7. Transitions					Awnings, portico, interior entrance lights
	8. Day and Night adjustments					Ability to cue evening and night time
	9. Even distribution of lighting					No pooling, shadows or excessive contrast
	10. Glare					Use matt surfaces, shades, shears, screens
	11. Individual Preferences					Task lamps, dimmers, for built in flexibility
	12. Maintenance Schedule					Clean windows, residents glasses, fixtures
Lighting Sub-total						* (CRI = Colour Rendering Index)
NOISE	Design Feature	Minimal	Average	Superior	Score	NOTES
Noise Levels (Max. 10 pts.)	Score each item as 0, 3, 4 or 5	3	4	5		
	1. Ambient noise level: Bedrooms	<40dB	<35dB	<32dB		Use Noise Meter: Bedroom
	2. Ambient noise level: Common	<45dB	<40dB	<35dB		Dining, lounge, activity areas
Noise Issues (Max. 40 pts.)	Score each item as 0, 2, 3 or 4	2	3	4		
	3. Layout					Quiet/privacy zone for resident rooms
	4. Noise Mitigating Design Features					Sound proof walls, acoustical tiles, partitions
	5. Noise Reducing Adaptations					Note adaptive efforts to dampen noise
	6. Schedule Intrusive Noise: Avoid					Vacuuming, floor cleaning, washing
	7. Night Time Noise					Dim lights and reduce noise at night
	8. Alarms and Pagers					Eliminate overhead paging; reduce alarms
	9. Staff Training					Schedule regular inservice sessions on noise
	10. Signage					Alert visitors and remind staff with signs
	11. Surveys					Schedule regular feedback: family, staff, residents
	12. Maintenance Schedule					Regular schedule to address noise issues
Noise Sub-total						
Total Score						