Dementia-*Friendly* Design Recommendations

Noise & Dementia: What's all the buzz about?

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Alzheimer Knowledge Exchange

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Dementia-*Friendly* Design Considerations

- series of 'Knowledge to Practice Recommendations'
- important physical and social design elements to facilitate persons with dementia and their caregivers to make sense of their environment and improve well-being
- living or dynamic documents (continually edited and updated) by the AKE Design and Dementia Community of Practice
- emerging quality evidence and the integration of both practice-based and experiential knowledge of those caring for persons with dementia

It's Important and It's Complex…

- There is a continual balance between many factors related to design considerations and implementation:
  - Individual needs for the resident
  - Compliance and legislated standards
  - Time and resources
  - Established design of buildings

Why Noise?

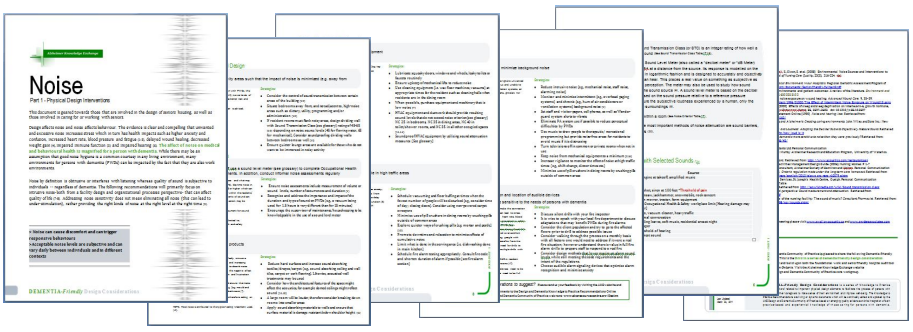
- Acceptable noise levels are subjective and can vary daily between individuals and in different contexts
- Excessive noise increases stress, which in turn can:
  - Increase anxiety and confusion
  - Increase heart rates, blood pressure and fatigue
  - Delay wound healing
  - Decrease weight gain
  - Impair immune function
  - Impair hearing
- These effects are magnified for a person with dementia
- Environments for persons with dementia are often impacted by the fact that they are also work environments

http://www.youtube.com/watch?v=O3ekO4QdKXU

"Supporting Derek"

Dementia-*Friendly* PHYSICAL Design Recommendations

1. Dementia Unit Layout & Design
2. Noise Level Assessments
3. Reduce Noise Echoes
4. Noise Production Equipment
5. Scheduling of Intrusive Noise
6. Background Noise
7. Fire Alarms



Decibel Levels Associated with Select Sounds

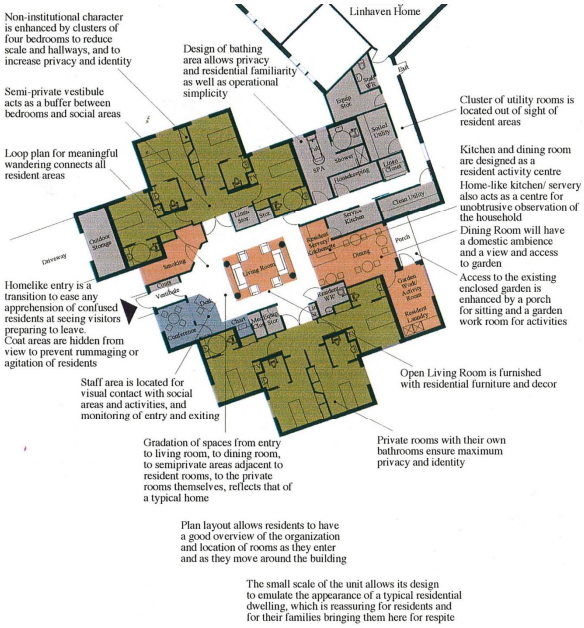
Decibel (dB)	Source
130-150	Jet engine at takeoff, amplified music * Direct damage can occur
120-140	Gunshot, siren at 100 feet *Threshold of pain
110-120	Chainsaw, jackhammer, snowmobile, rock concert
90-100	Lawn mower, tractor, farm equipment
90	USA Occupational Health & Safety workplace limit * Hearing damage may occur
75-85	Radio, vacuum cleaner, heavy traffic
60	Normal conversation
40-50	Rustling leaves, soft music, residential area at night
30	Whisper
15	Threshold of hearing
0	Weakest sound

(Brawley, 2006; McClaugherty & Gibson, 1998)

DEMENTIA UNIT LAYOUT & DESIGN

- **RECOMMENDATION:** Locate resident rooms and activity areas such that the impact of noise is minimized (e.g. away from utility rooms, railway tracks)

NOISE Knowledge to Practice Recommendations



DEMENTIA UNIT LAYOUT & DESIGN

- ***Strategies include*:**

  Consider the control of sound transmission between certain areas of the building

  Situate bedrooms away from, and not adjacent to, high-noise areas such as dietary, utility, programming and/or administration

  If resident rooms must flank noisy areas, design dividing wall with Sound Transmission Class rating of 45-65 depending on noise source levels (45 for flowing water, 65 for mechanical). Consider soundproofing dividing walls between bedrooms as well

  Ensure quieter lounge areas are available for those who do not want to be immersed in noisy activity

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NOISE LEVEL ASSESSMENTS

- **RECOMMENDATION**: Ensure that knowledgeable staff use a sound level meter to complete Occupational Health and Safety noise level assessments. In addition, conduct informal noise assessments regularly

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NOISE LEVEL ASSESSMENTS

- ***Strategies include*:**
  - Ensure noise assessments include measurement of volume or sound levels, number of occurrences and duration
  - Recognize and address the importance and impact of the duration and type of sound on PWDs (e.g., a vacuum being used for 1.5 hours is very different than for 15 minutes)
  - Encourage the supervisor of maintenance/housekeeping to be knowledgeable in the use of a sound level meter

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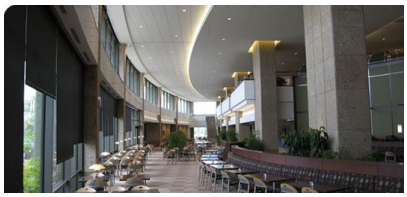
REDUCE NOISE ECHOES

- **RECOMMENDATION**: Use acoustical ceiling and wall products



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REDUCE NOISE ECHOES

- ***Strategies include*:**
  - Reduce hard surfaces and increase sound absorbing textiles/drapes/carpet (e.g., sound absorbing ceiling and wall tiles, carpet or cork flooring). Likewise, acoustical wall treatments may be used
  - Consider how the architectural features of the space might affect the acoustics, for example domed ceilings might reflect sound
  - A large room will be louder, therefore consider breaking down rooms into smaller areas
  - Apply sound absorbing materials to walls and ensure that surface material is damage resistant below shoulder height

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NOISE PRODUCTION EQUIPMENT

- **RECOMMENDATION**: Regularly maintain noise-producing equipment

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NOISE PRODUCTION EQUIPMENT

- ***Strategies include*:**
  - Lubricate squeaky doors, windows and wheels, leaky toilets or faucets routinely
  - Ensure upkeep of mechanical lifts to reduce noise
  - Use cleaning equipment (i.e. wax floor machines, vacuums) at appropriate times for the resident such as cleaning halls when residents are in the dining room
  - When possible, purchase equipment and machinery that is low noise
  - HVAC equipment and ductwork should provide resulting sound levels that do not exceed noise criterion(see glossary) NC 25 in bedrooms, NC 35 in dining areas, NC 40 in toilet/shower rooms, and NC 35 in all other occupied spaces
  - Soundproof HVAC equipment by utilizing sound attenuation measures

NOISE Knowledge to Practice Recommendations

SCHEDULING OF INTRUSIVE NOISE

- **RECOMMENDATION**: Implement sound management schedule in high traffic areas

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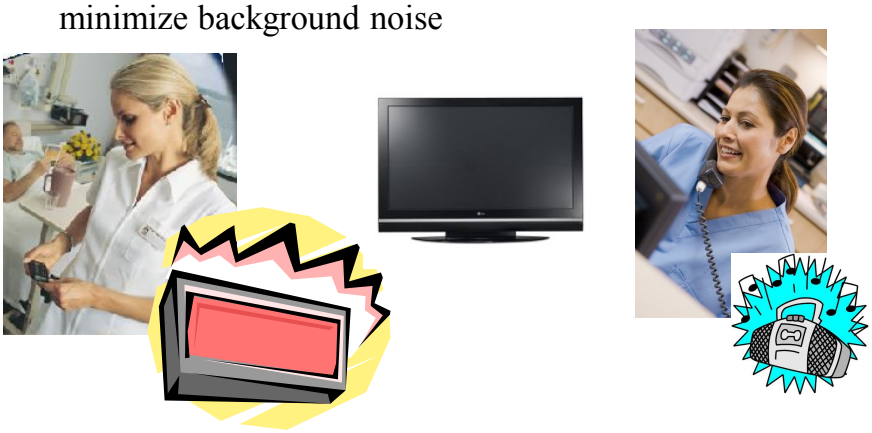
SCHEDULING OF INTRUSIVE NOISE

- ***Strategies include*:**
  - Schedule vacuuming and floor buffing at times when the fewest number of people will be disturbed (e.g., consider time of day; closing doors). Consider using non-powered carpet sweepers
  - Minimize use of pill crushers in dining rooms by crushing pills outside of common areas
  - Explore quieter ways of crushing pills (e.g. mortar and pestle)
  - Promote downtime and relaxation to minimize effects of cumulative noise
  - Limit what is done in the serving area (i.e. dishwashing done in main kitchen)
  - Schedule fire alarm testing appropriately. Consult fire code and shorten duration of alarm if possible (see fire alarm section)

NOISE Knowledge to Practice Recommendations

BACKGROUND NOISE

- **RECOMMENDATIONS**: Regularly assess, monitor and minimize background noise



NOISE Knowledge to Practice Recommendations

BACKGROUND NOISE

- ***Strategies include*:**
  - Reduce intrusive noise (e.g., mechanical noise, staff noise, alarming noise)
  - Monitor and minimize intermittent (e.g., overhead paging systems) and chronic (e.g., hum of air conditioners or ventilation systems) background noise
  - Set staff and visitor pagers, cell phones, as well as Wander-guard system alerts to vibrate
  - Eliminate PA system use if possible to reduce perceptual difficulties by PWDs
  - Use music to draw people to therapeutic/ recreational programming but provide noise-free areas for residents to avoid music if it is distressing
  - Turn televisions off in common or private rooms when not in use
  - Keep noise from mechanical equipment to a minimum
  - Increase vigilance to monitor the effect of noise at high traffic times (e.g., shift change, dinner times etc.)
  - Minimize use of pill crushers in dining rooms by crushing pills outside of common areas

NOISE Knowledge to Practice Recommendations

FIRE ALARMS

- **RECOMMENDATION:** Consider choice, distribution and location of audible devices. Plan fire alarm testing to be sensitive to the needs of persons with dementia

NOISE Knowledge to Practice Recommendations

FIRE ALARMS

- ***Strategies include*:**
  - Discuss silent drills with your fire inspector
  - It is wise to speak with your local fire department to discuss adaptations that may benefit PWDs during fire alarms
  - Consider the client population and try to go to the affected floors prior to drill to address possible issues
  - Consider walking through the process on a monthly basis with all factors one would need to address if it were a real fire situation; however understand there is value in full fire alarm drills to prepare staff to respond to a real fire
  - Consider design methods that lower maximum alarm sound levels while still meeting the code requirements and the intent of the regulations
  - Choose audible alarm signaling devices that optimize alarm recognition and minimize anxiety

NOISE Knowledge to Practice Recommendations

Review

- While some design strategies may seem obvious, they are not always addressed
- Measuring noise is an art form and requires training- whether this is someone from occupational Health and Safety or a Personal Support Worker assessing the impact of noise on residents
- Managing noise is a balancing act between code and quality of life

Call to Action!

- Walk through your facility with the physical design recommendations- think about where you might be able to improve design and focus on a strategy to make November your “noise” month.

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