

# LIGHTING AND NOISE CHECKLIST SCORING

## LIGHTING:

**Lighting Levels:** Use a light meter equivalent to DVM 1300 from Velleman, capable of measuring 0 – 50,000 lux with an accuracy of 5%.

Take several readings from several rooms and times; then average.

If measuring in Foot Candles (FC) - Note: 1 foot candle = 10.76 lux.

**(Rating Scale: 3 - 4 – 5)**

**1. Ambient Lighting (Lounge, Bedroom, Bathroom: (taken at sitting eye level)**

Score 0 points if Ambient Lighting is < 320 lux.

- a. Score 3 points if Ambient Lighting is  $\geq$  320 lux.
- b. Score 4 points if Ambient Lighting is  $\geq$  550 lux.
- c. Score 5 points if Ambient Lighting is  $\geq$  1000 lux in an amenity: i.e. bright light therapy.

**2. Task Lighting: (Dining, Activity, Lounge and Bedroom Reading areas) Measure on surface of task)**

Score 0 points if task lighting is < 550 lux.

- a. Score 3 points if task lighting is  $\geq$  550 lux.
- b. Score 4 points if task lighting is  $\geq$  750 lux.
- c. Score 5 points if task lighting is  $\geq$  1100 lux.

**Lighting Issues: (rating range 2 - 3 – 4)**

**3. Colour: (Colour Rendering Index (CRI) is measure of closeness to daylight of source of light)**

You can check with fixture or light bulb manufacturer for CRI and Kelvin ratings.

Score 0 points if CRI < 70 in common areas.

- a. Score 2 points if CRI  $\geq$  70 in common areas.
- b. Score 3 points if CRI  $\geq$  70 in common areas and bedrooms.
- c. Score 4 points if CRI  $\geq$  70 in common areas and bedrooms and Colour Temperature is > 4000 Kelvin (white daylight) in common areas.

**Examples of Color Temperature and CRI**

Light Source	Color Temperature	Color Rendering Index
Candle	1700k	100 CRI
High Pressure Sodium	2100k	25 CRI
Incandescent	2700k	100 CRI
Tungsten Halogen	3200k	95 CRI
Cool White	4200k	62 CRI
Clear Metal Halide	5500k	60 CRI
Natural Sunlight	5000-6000k	100 CRI
Daylight Bulb	6400k	80 CRI

#### 4. Contrast

Score 0 points if there is no effort to use contrast between floors and walls.

- a. Score 2 points if there is at least 30% difference in contrast between floors and walls and around doors in common areas and corridors.
- b. Score 3 points if there is at least 30% difference in contrast between floors and walls and around doors in common areas and corridors and bedrooms and bathrooms.
- c. Score 4 points if in addition to (b) there is also good contrast generally between objects and ground such as door handles, grab bars, toilet seats, furniture, seating, plates, cups and utensils.

Contrast can be determined using a Grayscale available from Art supply store,

A standard Grayscale has 10 segments ranging from white to black, in 10% increments. Good contrast should have at least two segments between: i.e. 30% value difference – if one item has 20% value the other should have at least 50%.

See Youtube demonstration: <http://www.youtube.com/watch?v=CgMf16Mbke8>

Programs like Adobe Photoshop can convert colour photos to Grayscale image.

<http://www.workwithcolor.com/color-luminance-2233.htm>



#### 5. Natural Light

Score 0 points if there is poor access to natural light.

- a. Score 2 points if there is good use of windows to bring daylight into the facility.
- b. Score 3 points if there are added features such as extra windows, clerestories or skylights to bring increased daylight into facility.
- c. Score 4 points if in addition to (b), residents are encouraged to daily use a sunroom, conservatory or to make use of direct and easy access to an outdoor area at least 15 minutes daily.

## 6. Natural Views:

Score 0 points if there are limited natural views.

- a. Score 2 points if there are pleasant natural views accessible from several windows in the facility.
- b. Score 3 points if there are excellent natural views with adjacent seating near windows with appropriate sill heights 630 mm (25 inches) in the common areas.
- c. Score 4 points if in addition to (b), there are excellent natural views for many of the resident bedrooms with appropriate sill heights (630mm) to permit easy viewing from sitting or in bed.

## 7. Transitions:

Score 0 points if there is no effort to mitigate entrance light differences from outside to inside.

- a. Score 2 points if facility entrances have some shade covering such as a portico or awning.
- b. Score 3 points if entrances have shade covering plus increased inside electric light to aid in the transition from outside to inside during daytime.
- c. Score 4 points if in addition to (b), there is no area in the facility where the brightest light is any greater than three times brighter than the lowest light.

## 8. Day and Night Adjustments:

Score 0 points if corridor lighting is not dimmed at night.

- a. Score 2 points if corridors are dimmed at night.
- b. Score 3 points if corridors and common areas are dimmed at night.
- c. Score 4 points if in addition to (b), night lights and/or motion sensors are used to assist residents at night.

## 9. Even Distribution of Lighting:

Score 0 points if pooling of light is evident.

- a. Score 2 points if indirect lighting is used to evenly disperse lighting to walls and floors.
- b. Score 3 points if ceilings have an LRV  $\geq 80$ ; and walls  $> 60$ .
- c. Score 4 points if in addition to (a) and (b), sheer curtains are used to diffuse bright daylight.

## 10. Glare:

Score 0 points if glare is present.

- a. Score 2 points if light fixtures use shielded bulbs or indirect lighting.
- b. Score 3 points if in addition to (a), flooring has a low to medium LRV (30 to 40).
- c. Score 4 points if in addition to (b), outdoor surfaces such as concrete are stained to a medium colour value (LRV 30 to 40).

## **11. Individual Preferences:**

- Score 0 points if no provision is made for flexible individual preferences in lighting.
- a. Score 2 points if ambient light is adjustable with dimmers.
  - b. Score 3 points if ambient and task light are adjustable with dimmers.
  - c. Score 4 points if lighting controls for residents are within accessible reach - 1200mm (47").

## **12. Maintenance Standards and Schedule:**

- Score 0 points if there is no regular routine maintenance of fixtures and bulbs
- a. Score 2 points if there is a schedule to regularly audit lighting and clean fixtures.
  - b. Score 3 points if staff monitor and adjust lighting throughout the day to suit daylight changes.
  - c. Score 4 points if residents' glasses are actively monitored and cleaned.

## **NOISE:**

**Noise Levels:** Use a Type 2 Sound Meter equivalent to a Sound Level Pen (840018) from Sper Scientific (measuring 32 – 130 dB with an accuracy of 1.5 dB) Data to be collected while rooms unoccupied. Take several readings from several rooms and times: do not average, but rather, take the median: i.e. list the values from lowest to highest and take the middle one.

**(Rating Scale: 3 – 4 – 5)**

### **1. Ambient Noise Level Assessments – Bedrooms:**

- Score 0 points if Daytime Resident bedroom noise level > 40 dB
- Score 3 points if Daytime Resident bedroom noise level  $\leq$  40 dB
  - Score 4 points if Night time Resident bedroom noise level  $\leq$  35 dB
  - Score 5 points if Night time Resident bedroom noise level  $\leq$  32 dB

### **2. Ambient Noise Level Assessments – Common Areas:**

- Score 0 points if Daytime Common areas are > 45 dB
- Score 3 points if Daytime Common areas are  $\leq$  45 dB
  - Score 4 points if Daytime Common areas are  $\leq$  40 dB
  - Score 5 points if Daytime Common areas are  $\leq$  35 dB

**Noise Issues:** **(Rating Scale: 2 – 3 – 4)**

### **3. Layout:**

- Score 0 points if resident bedrooms flank noisy areas or access to House Units is through resident bedroom areas.
- Score 2 points if there is a privacy zone for resident bedrooms separate from noisier areas such as utility, laundry, activity, dining, server, nurses stations, entrances and public areas.
  - Score 3 points if in addition to (a), service traffic is minimized through the resident room areas: e.g. with a service corridor or service entrance for utilities, supplies, meals etc.
  - Score 4 points if in addition to (a) and (b), there is a quiet seating area in addition to noisier lounge areas such as TV rooms.

### **4. Noise Mitigating Design Features: (Architect, Engineer, and/or Builder can confirm design specifications)**

- Score 0 points if no noise mitigating features are evident.
- Score 2 points if windows are double glazed and ceilings or walls are clad with sound absorbing material.
  - Score 3 points if in addition to (a), resident bedroom walls are soundproofed with a Sound Transmission Class rating of 45 with walls extending to the structural deck.

- c. Score 4 points if in addition to (a) and (b), HVAC equipment and ducting is designed and installed with a Noise Criterion (NC) of 25 in bedrooms and 35 in amenity areas.

#### **5. Noise Reducing Adaptations;**

Score 0 points if no noise reducing adaptations are evident.

- a. Score 2 points if an effort is made to use noisy equipment away from resident areas: e.g. pill crushers, dish washers, coffee grinders.
- b. Score 3 points if lined drapes, wall hangings and/or carpeting are used to soften sound.
- c. Score 4 points if in addition to (a) and (b), noise reducing measures are practiced such as rubber tips on chairs, bedside TV speakers, padded equipment, place mats, and closed doors.

#### **6. Schedule Intrusive Noise:**

Score 0 points if no effort is made to schedule intrusive noise.

- a. Score 2 points if floor and carpet cleaning is scheduled for times when areas are unoccupied by residents.
- b. Score 3 points if in addition to (a), servery and dining noise is minimized by prepping before residents arrive in area and cleaning up, dishwashing etc. after residents depart area; and keeping door to Servery closed.
- c. Score 4 points if in addition to (a) and (b), Quiet Times are regularly scheduled.

#### **7. Night Time Noise:**

Score 0 point if no measures are taken to reduce night-time nursing noise.

- a. Score 2 points if corridor lights are dimmed at night, and resident rooms have night lights to aid them in locating bathrooms and exits.
- b. Score 3 points if night time nursing care routines are conducted with minimal lighting and noise.
- c. Score 4 points if in addition to (a) and (b), supervision is facilitated with measures such as windows and blinds in resident bedroom doors, and/or motion sensor monitoring.

#### **8. Alarms and Pagers:**

Score 0 point if no effort is made to reduce overhead pagers and alarm noise.

- a. Score 2 points if overhead paging is limited to emergencies.
- b. Score 3 points if portable pagers and cellphones are muted by using vibrate.
- c. Score 4 points if an alarm use protocol has been arranged with local authorities to guide sound levels, drills and testing routines.

## **9. Staff Training:**

Score 0 points if noise reduction is not regularly included in staff training.

- a. Score 2 points if noise reduction is part of ongoing staff training.
- b. Score 3 points if in addition to (a), staff are encouraged to use softer voices, quieter footwear, and put cellphones on vibrate.
- c. Score 4 points if in addition to (a) and (b), staff regularly turn off equipment when not in use including amenity TVs and close doors to reduce the spread of noise.

## **10. Signage:**

Score 0 points if no noise related signs are evident.

- a. Score 2 points if signs are used to remind visitors and staff to speak softly.
- b. Score 3 points if signs request cell phones be put on vibrate.
- c. Score 4 points if signs notify everyone of designated Quiet Times.

## **11. Surveys:**

Score 0 points if no effort is made to solicit input from residents, families and staff re the impact of noise.

- a. Score 2 points if surveys are used to regularly gather feedback from residents, families and staff re noise problems and suggestions for remediation.
- b. Score 3 points if in addition to (a), staff informally engage residents and families to identify bothersome noises and discuss remedies.
- c. Score 4 points if successful interventions have resulted from such surveys.

## **12. Maintenance Schedule:**

Score 0 points if there is no regular routine maintenance of noise making equipment.

- a. Score 2 points if regular maintenance of noise generating equipment is scheduled.
- b. Score 3 points if staff monitor noisy equipment throughout the day and immediately address maintenance issues such as squeaky wheels, leaky faucets.
- c. Score 4 points if residents hearing aids are actively monitored for use and batteries replaced promptly.