

INFORMING HEALING SPACES THROUGH ENVIRONMENTAL DESIGN: THIRTEEN TIPS

Design isn't just an aesthetic luxury in health care; it's a core, health-related area. We're learning that when you use scientific evidence to drive the design of health care environments and processes, you impact a wide variety of factors, from medical errors and nosocomial infections to stress and staff turnover. Medical care cannot be separated from the buildings in which it is delivered.

C. Robert Horsburgh[1]

As noted in the “[Surroundings](#)” overview, numerous elements contribute to making a space a healing environment. Sensory inputs –what staff and patients see, hear, smell and feel all make an impact. Layout and architecture do too. Making good use of these elements is referred to as environmental design. This clinical tool focuses on key research findings that can inform how you, as a health care professional, can enhance hospital, clinic, and other patient care locations, but many of the tips are relevant to home or office spaces as well. Even making one small change can take people closer to Whole Health. What follows are thirteen tips, grouped into six categories.

GENERAL PRINCIPLES[2]

TIP #1. GIVE PEOPLE CHOICES.

A greater sense of control equals less stress. If people can control their surroundings, e.g. if they can adjust a thermostat, choose music or TV channels, decide where they want to sit, or control the timing and content of their meals, they will be better off. Being able to bring comforting items from home, if desired, can allow for a heightened sense of control and familiarity.[3]

Similarly, allowing staff to give input into artwork, room furnishings, and their overall work environment will enable them to function more effectively in their workspaces. One study found that nurses spend over a third of their time walking, so making items they need convenient to rooms will increase how much time they can spend with direct patient care.[4]

TIP #2. ENHANCE HUMAN CONNECTION.

Having family and friends present supports healing. If waiting rooms and lounges are comfortable, if hospital rooms and post-operative recovery areas have more space for visitors, and if there is space for loved ones to stay overnight, this makes a big difference. All that being said, patients experience globally better care in the hospital setting if they have private rooms (which also allow family to be present). Courtesy, on the part of every

single person in a facility, from the receptionist and housekeeping person, to the phlebotomist, nurse, and consulting team members, is of central importance.

TIP #3. REDUCE NEGATIVE SENSORY INPUTS.

The other 12 tips encourage adding favorable elements into healing environments, but it is also important to remove negative ones. Ensure that noise is minimal, including the noises of various medical instruments and overhead pages, not to mention roommates or people in neighboring rooms. Carpet reduces ambient noise, as does wrapping ducts, soundproofing walls, and ensuring that icemakers and pneumatic tube stations are not too bothersome. Remember that “hospital smells” can also be a negative input. Some people are not fond of the smell of alcohol hand cleaning gels, so it may be helpful let the alcohol evaporate prior to examining them.

Even remembering to humidify the oxygen flowing through the nasal cannula can make for a more comfortable experience. And need anyone mention the appearance/unwieldiness of patient gowns? For outpatient facilities, consider other elements, such as what the waiting room looks like, speculum temperature, and the choice of magazines people can read while they wait.

TIP #4. ENSURE PEOPLE CAN FIND THEIR WAY.

Starting off on the wrong foot because patients cannot find your facility, or because people cannot find their way around it once they arrive, is not conducive to an optimal healing environment experience.

ART

The purpose of art is washing the dust of daily life off our souls.

—Pablo Picasso

TIP #5. BRING ART INTO HEALING ENVIRONMENTS.

In 2006 a Department of Health Working Group on Arts and Health reported that the arts have “a clear contribution to make and offer major opportunities in the delivery of better health, wellbeing and improved experience for patients, service users and staff alike.”[5] Art can offer reassurance, calm, and a sense of normality that may not always be easy to come by in a medical setting.

A systematic review of over 600 papers from between 1985 and 2005 examined the link between design and environment and mental health care and concluded that environmental enhancements do indeed have a positive impact on health and well-being of staff and patients alike.[6,7] People exposed to art had less pain related to bronchoscopy.[8] Art can reduce anxiety and depression in specific patient groups. It can

also favorably influence clinical and behavioral outcomes,[9] enhance staff morale, reduce vandalism and aggression, and make an environment feel more uplifting. It also leads to more positive perceptions of the facility where it is located.[10]

Allow for programmable spaces—areas designated for the display of art—and consider how you might change the content on hospital television channels and what is shown on the TVs in waiting rooms.

TIP #6. ALLOW ART TO BE A DIVERSION.

The presence of artwork also affords an opportunity to focus, at least momentarily, on something other than one's symptoms or concerns. Heart surgery patients in ICU's had less anxiety, less stress, and less need for pain medications when they had views of art portraying landscape scenes. However, abstract art has the opposite effect. Videos, fireplaces, and aquariums are also helpful.

COLOR

I found I could say things with color and shapes that I couldn't say any other way – things I had no words for.

—Georgia O'Keefe

TIP #7. COLOR MAKES A DIFFERENCE – MODIFY IT BASED ON YOUR INTENTIONS FOR A SPACE.

Little as we know about the way in which we are affected by form, by color and light, we do know this, they have an actual physical effect. Variety of forms and brilliance of color in the objects presented to patients are an actual means of recovery.

—Florence Nightingale

Warm colors activate the autonomic nervous system; cool tones calm it down. Here are some general tips from an expert in interior design for using color in different health care settings.[11]

- Patient rooms should have a uniform field of view. Ceilings are tinted just like walls, given that people tend to be looking from their beds during a lot of their hospital stay. Walls and floors should be soft and not overly reflective. People prefer soft tinges of reds, blues, and greens. Coral, colonial green, peach, rose, and pale gold are good options. Cooler colors are better for chronic patients.
- Blue and green tones can combat glare and enhance visual contrast. This aids the acuity of surgeon's eyes because it complements the red tones of blood and tissue.

- Waiting rooms and imaging areas can be cool tones to relax patients under high stress.
- Pearl gray is a good for supporting color discrimination, so it can be useful in labs.

LIGHT

Give light, and the darkness will disappear of itself.

—Desiderius Erasmus

TIP #8. HELP PEOPLE GET SUFFICIENT LIGHT EXPOSURE.

We know that photon levels influence serotonin and melatonin pathways, affecting both energy level and mood. Those with seasonal affective disorder are particularly vulnerable. People in hospitals[12] and nursing homes[13] have better sleep at night with better daytime light exposure. Multiple benefits of light have been found in the research,[14] and a 2005 study of post-operative spinal surgery patients found that those housed on the “bright” (more sunlight) versus dim side of the hospital had less pain medication needs and costs as well as lower overall levels of stress.[15]

SOUND

One good thing about music, when it hits you, you feel no pain.

—Bob Marley

TIP #9. BE MINDFUL OF SOUND.

Sound has significant health effects.[16] When someone is startled by a noise, they may still show elevations in blood pressure and heart rate for hours thereafter. Noise can increase patients’ perception of pain and the use of pain medications, may contribute to patient confusion, and certainly impairs sleep. There is some evidence that noise may even increase the length of hospital stay. Correlations have been made between noise and burnout symptoms, as well as headaches for coronary care unit nurses. In noisy settings, people become less engaged, less reflective, and less caring; they also tend to seek simple solutions and are more likely to give up on complex tasks they find distressing.[16]

TIP #10. PLAY VARIED, RELAXING MUSIC.

Many health care settings, particularly outpatient locations, have begun to play peaceful music in waiting rooms and other locations (not including exam rooms). Music is known to have a number of health benefits, such as decreasing anxiety levels and reducing heart and respiratory rates.[17] A recent Cochrane review found that, out of all aspects of

environmental design, music was the area with the best research to support its use.[18] Music seems to reduce emergency department “noise stress.”[19] Some hospitals have introduced television stations for patients that play calming music intended to drown out other hospital noises. Varying auditory input is superior to quiet in terms of how well patients rest.[3] Even the simple act of changing pagers and phones over to vibrate can make a huge difference.

NATURE

Just living is not enough...one must have sunshine, freedom, and a little flower.

—Hans Christian Andersen

TIP #11. ENHANCE CONNECTION TO NATURE.

Psychological and physiological indicators suggested faster and more complete recovery from stress when people were exposed to natural settings versus other environments.[20] Even three to five minutes of time in nature can decrease stress, reduce anger, and ease unpleasant emotions. Views to the outside, interior gardens, and nature-themed artwork and aquariums can help, as can the simple addition of plants into a space.

A 2003 study revealed, not surprisingly, that patients prefer natural lighting and a window in their hospital rooms.[21,22] Having those windows improves satisfaction with inpatient nursing care, decreases delirium rates, and it is known to improve student and worker performance as well as job satisfaction.[3]

Other research has shown that hospitalized patients exposed to nature scenes, through a window or in the form of a painted landscape, had less anxiety, fewer pain medication requests, and a quicker post-operative recovery than controls.[23] A small study of 23 patients[21] found that post-cholecystectomy patients had shorter post-operative stays and better rapport with nurses. They also used fewer pain medications. Soundless video displays of nature as opposed to a blank screen increased pain threshold and tolerance in healthy volunteers.[24]

TIP #12. INCORPORATE PLANTS INTO HEALING SPACES.

Ornamental plants have been found to enhance recovery from surgery.[25] They ease stress in waiting rooms.[26] They not only enhance patients overall perceptions of their surroundings, but they also reduce muscle tension and lower blood pressure. They have been found to support “recovery from stress” within four to six minutes.[27]

TIP #13. PROVIDE FRESH AIR.

“Get some fresh air.” It is an age-old suggestion, and one worth following. Unfortunately, indoor air tends to contain more pollutants, at higher concentrations, than outside air.

Green design parameters attempt to remedy this. Getting fresh air is one of many benefits of spending more time in natural surroundings.

CONCLUSION

Increasing numbers of research studies are finding that environmental design matters. Use these thirteen tips to create an environment that is not only more aesthetically pleasing, but healthier as well. Environmental Design is an invaluable part of creating optimal healing environments for your patients, your colleagues, and yourself.

RESOURCES

- “[Surroundings](https://www.va.gov/WHOLEHEALTHLIBRARY/self-care/surroundings.asp)”: <https://www.va.gov/WHOLEHEALTHLIBRARY/self-care/surroundings.asp>

The following were key reviews used to inform the tips offered in this tool.

- Devlin A, Arneill AB. Health care environments and patient outcomes - a review of the literature. *Environ Behav.* 2003;35(5):665-694.
- Kirklin D, Richardson R, eds. *The Healing Environment: Without and Within*. London: Royal College of Physicians, 2003.
- Marberry S. *Improving Healthcare with Better Building Design*. Chicago, IL: Health Management Press; 2006
- Schweitzer M1, Gilpin L, Frampton S. Healing spaces: elements of environmental design that make an impact on health. *J Altern Complement Med.* 2004;10 Suppl 1:S71-83.
- Sternberg EM. *Healing Spaces: The Science of Place and Well-Being*. Boston, MA: Belknap Press; 2009.
- Ulrich R, Zimring C, Quan X, Joseph A, Choudhary R. The Role of the Physical Environment in the Hospital of the 21st Century. Report sponsored by The Robert Wood Johnson Foundation and The Center for Health Design. 2004.
- Zborowsky T and Kreitzer MJ. Creating optimal healing environments in a health care setting. *Minn Med.* 2009;91(3):35-8.

AUTHOR(S)

“Informing Healing Spaces Through Environmental Design: Thirteen Tips” was written by [J. Adam Rindfleisch](#), MPhil, MD (2014, updated 2018).

This Whole Health tool was made possible through a collaborative effort between the University of Wisconsin Integrative Health Program, VA Office of Patient Centered Care and Cultural Transformation, and Pacific Institute for Research and Evaluation.

REFERENCES

1. Horsburgh CR, Jr. Healing by design. *N Engl J Med.* 1995;333(11):735-740.
2. Sternberg EM. *Healing Spaces: The Science of Place and Well-Being.* Belknap Press of Harvard University Press, Boston; 2009.
3. Schweitzer M, Gilpin L, Frampton S. Healing spaces: elements of environmental design that make an impact on health. *J Altern Complement Med.* 2004;10(1):71-83.
4. Zborowsky T, Kreitzer MJ. Creating optimal healing environments in a health care setting. *Minn Med.* 2008;91(3):35-38.
5. Lankston L, Cusack P, Fremantle C, Isles C. Visual art in hospitals: case studies and review of the evidence. *J R Soc Med.* 2010;103(12):490-499.
6. Daykin N, Byrne E, Soteriou T, O'Connor S. The impact of art, design and environment in mental healthcare: a systematic review of the literature. *J R Soc Promot Health.* 2008;128(2):85-94.
7. Kirklin D, Richardson R. *The healing environment: without and within.* 2003.
8. Diette GB, Lechtzin N, Haponik E, Devrotes A, Rubin HR. Distraction therapy with nature sights and sounds reduces pain during flexible bronchoscopy: a complementary approach to routine analgesia. *Chest.* 2003;123(3):941-948.
9. Staricoff RL, Duncan JP, Wright M, Loppert S, Scott J. *A study of the effects of visual and performing arts in health care.* Chelsea and Westminster Hospital London; 2002.
10. Francis D, Kaiser D, Deaver SP. Representations of attachment security in the bird's nest drawings of clients with substance abuse disorders. *Art Therapy.* 2003;20(3):125-137.
11. Baughan-Young K. Healing power of color as cheap as coat of paint. *Manag Care.* 2001;10(11):40-41.
12. Wakamura T, Tokura H. Influence of bright light during daytime on sleep parameters in hospitalized elderly patients. *J Physiol Anthropol Appl Human Sci.* 2001;20(6):345-351.
13. Shochat T, Martin J, Marler M, Ancoli-Israel S. Illumination levels in nursing home patients: effects on sleep and activity rhythms. *J Sleep Res.* 2000;9(4):373-379.
14. Joseph A. *The impact of light on outcomes in healthcare settings.* Center for Health Design; 2006.
15. Walch JM, Rabin BS, Day R, Williams JN, Choi K, Kang JD. The effect of sunlight on postoperative analgesic medication use: a prospective study of patients undergoing spinal surgery. *Psychosom Med.* 2005;67(1):156-163.
16. Grumet GW. Pandemonium in the modern hospital. *N Engl J Med.* 1993;328(6):433-437.
17. Devlin AS, Arneill AB. Health care environments and patient outcomes a review of the literature. *Environ Behav.* 2003;35(5):665-694.
18. Drahota A, Ward D, Mackenzie H, et al. Sensory environment on health-related outcomes of hospital patients. *Cochrane Database Syst Rev.* 2012;3:Cd005315.
19. Short AE, Ahern N, Holdgate A, Morris J, Sidhu B. Using music to reduce noise stress for patients in the emergency department a pilot study. *Music Med.* 2010;2(4):201-207.

20. Ulrich RS, Simons RF, Losito BD, Fiorito E, Miles MA, Zelson M. Stress recovery during exposure to natural and urban environments. *J Environ Psychol.* 1991;11(3):201-230.
21. Ulrich RS. View through a window may influence recovery from surgery. *Science.* 1984;224(4647):420-421.
22. Ulrich RS, Lundén O, Eltinge J. Effects of exposure to nature and abstract pictures on patients recovering from heart surgery. Paper presented at: Thirty-Third Meeting of the Society for Psychophysiological Research, Rottach-Egern, Germany. Abstract in *Psychophysiology* 1993.
23. Lawson B, Phiri M, Wells-Thorpe J. *The Architectural Healthcare Environment and Its Effects on Patient Health Outcomes: A Report on a NHS Estates Funded Project.* TSO; 2002.
24. Tse MM, Ng JK, Chung JW, Wong TK. The effect of visual stimuli on pain threshold and tolerance. *J Clin Nurs.* 2002;11(4):462-469.
25. Park SH, Mattson RH. Ornamental indoor plants in hospital rooms enhanced health outcomes of patients recovering from surgery. *J Altern Complement Med.* 2009;15(9):975-980.
26. Beukeboom CJ, Langeveld D, Tanja-Dijkstra K. Stress-reducing effects of real and artificial nature in a hospital waiting room. *J Altern Complement Med.* 2012;18(4):329-333.
27. Gilhooley MJ, Rice C. Grow with it. The role of plants in health care facilities. *MGMA Connex.* 2002;2(7):17-18.