

# Implications

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A Newsletter by Informedesign. A Web site for design and human behavior research.

## Elder-Friendly Design Interventions:

### Acute Care Hospitals Can Learn from Long-Term Care Residences

The interior environment not only affects healing, but should also compensate for physical and cognitive losses. Interior Designers who work in both acute care and long-term care facilities seek to ensure that all aspects of the interior environment contribute to the healing process. They also strive to include interventions that compensate for physical and cognitive losses.

The demographics of the baby boom have resulted in startling statistics: today, well over 15% of North America's population is over 65. In 2030, 25% of the population of the province of Ontario will be 65 or over, doubling the number of seniors. Today, a minimum of 20% of visits to Emergency Units are by seniors, and half of these results in admittance. If we apply the same logic of an increase in the senior population, by 2030, 40% of the visits to Emergency will be by seniors and half of them will be admitted as patients. Our current hospital facilities cannot accommodate these requirements in an optimal manner.

The challenge, an important one, is to learn how to develop, programme, and design our hospitals to meet the needs of our aging population. Other than behaving in a socially responsible way, it is extremely practical to take these matters into consideration as we design for the patients' overall health—and the hospital staff and budget.

Health care environments should be programmed and designed to functionally restore the independence of the individual. As the rapidly increasing number of senior patients are making new demands on our healthcare processes and on our facilities, our new long-term care homes are responding admirably; however, our acute care buildings are not, and must learn from these successes—sooner rather than later.

A quick overview of hospital elements that enable or defeat seniors include: walking surfaces (smooth with minimum level changes), light levels (high and even, not low and spotty), glare, atmosphere (social, not clinical), scale (smaller and residential, not large and confusing), clarity of design and layout, signs (well lit and legible to less able eyes), colour (use of contrast to help clarify the location of furniture, doors, and walls as well as clinics or other destinations).



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University Health Network, Princess Margaret Hospital, Pencer Clinic Reception Area

A profile of the senior we are designing for could include the following: today's senior takes six different medicines, has ten medical conditions, and on average is 79 years of age. One-third live alone. This is their status before entering the hospital.

After entering the hospital they may be sick and worried, disoriented in the unfamiliar surroundings, medicated, and so on. They may feel disoriented and wander, trying to find home, etc. Staff time is spent diverting the individual or trying to find them, increasing staff stress and the potential for liability that arises if the senior gets lost or falls out of bed.

Independence is likely reduced. Needy and frightened, they often turn to the staff for comfort and help. The hospitalized senior will suffer stress, reducing the effectiveness of the immune system, and is much more susceptible to other diseases. It takes longer to recover. These factors decrease staff time, availability, and patience for all patients.

A state of depression is easily developed, leaving the individual with fewer internal resources. The senior may become un-cooperative and resist medications. Additional staff time will be required for their care. Bed confinement leads to loss of mobility and a

decrease in overall health. With a longer stay there is the risk of secondary infection. There is also the challenge that the senior will spend most of the day lonely for social contact only to find it exactly when they want privacy in the bathroom or tub-room.

Added together, these situations impact staff work and stress load, as well as the hospital's operating budget. This results in more staff hours required from tight hospital operating budgets, the costs of the longer stays, more medication, staff stress, and overtime reflected in the hospital's cost of services. It quickly becomes a vicious cycle with more cost and less favourable results to patients, and this will increase if the environments are maintaining the status quo.

Of the many areas of a supportive "senior" facility, there are two significant items or areas of concern: the first item is prevention of falls; the second is reduction of confusion or cognitive loss.



University Health Network, Princess Margaret Hospital, Pencer Clinic Benefactor's Lounge

## Falls

Falls are the leading cause of accidental death in the elderly population. A 1987 article in the *New York Times* reported that more than 200,000 elderly suffer hip fractures in falls each year, resulting in death for over 1/3 and costing over seven billion dollars for

direct care. A recent article reports that just as many Caucasian women will die as a result of a hip fracture as will die from breast cancer. There are many causes that contribute to falls. They include physical weakness, frailty, lack of balance, arthritis and osteoporosis, or other diseases, loss of sensation in the feet, and decreased vision.

## Low Lighting/Glare

Seniors need three times as much light as a 20-30 year old. Abrupt changes in light can stop them cold as it takes up to seven minutes for the eye to adjust to the changed level of light. If they try to walk in that time, they can't tell where the floor is and they can easily fall and lose their balance. Glare of any type is also blinding. An especially excellent and inexpensive aid: nightlights placed about 12" above the finished floor just outside the bathroom door and illuminated switches for the bathroom lights. Falls in a dim bathroom at night are especially dangerous.

## Washrooms

Washrooms that feature support bars on either side of the toilet and enough space to accommodate a wheelchair or a walker are safe. Bars should be in a high contrast colour and have a non-slip grip. Floors should be non-slip material. The WC should have a seat height of 18". These interventions provide safety and can prevent falls.

## Areas of Rest

Travelling a long corridor can be a true hardship. It dissuades people from walking. However, a chair or bench along the way makes it possible to get out and about. This encourages them to keep moving and if they keep moving their health stays better.

## Flooring

The ideal hospital corridor has higher foot-candles than an office corridor and the lighting is even and consistent. The floor will be matte, not shiny,

whether it is carpet or resilient. This is the simplest of all interventions. With a matte floor like this, people know where the floor is and feel more comfortable venturing forth, and they will stay mobile. Also, there are few changes to flooring types, no thresholds, and no changes from carpet to resilient floors. For people using walkers, going from a higher coefficient of friction to smooth floors there is the chance that the walker wheels run away from them causing a fall.

## Furniture

Sturdy frames that give a sense of security should be used. Four-legged chairs are better than sled bases. Table edges should permit wheelchair access and be stable enough to aid a senior in pulling themselves up to stand or in to the table. Bedside and over-bed tables should not have casters.



University Health Network, Princess Margaret Hospital, Pencer Clinic Therapy Room

## Confusion and Cognitive Deficits

A supportive facility needs to address such impairments as short-term memory loss, confusion arising from stress and unfamiliar situations, and very early stages of dementia. The interventions that an environment can provide include:

## Interior Layout/Clarity

The building should be logical and easy to under-

stand. By providing clear sight lines to destinations we aid independent travel. The entry point should have a reception desk, staffed by volunteers who will guide a patient to a clinic. Clinics should be near the entry point, and grouped with comfortable waiting areas. Washrooms should be visible. The elevators are visible from the desk. Wheelchairs are available right beside the entry door.

## Signs/Wayfinding

Signs have to be rigorously controlled and updated to be current. It's a good test to have an articulate senior walk through and give feedback on just how effective the signs are. Signs, of course, are well lit, well positioned to be seen by wheelchair users, and meet seniors' guidelines for legibility.

## Human Scale

Wherever possible, introducing small easy-to-understand spaces with controlled noise levels helps maintain a sense of control and familiarity. Ideally, seniors being admitted in Emergency would be interviewed in a quiet private room, away from the possibly alarming bustle that is typical. Thus, we can avoid confusion arising from stress and unfamiliar situations. Also, their waiting area would be segregated from the general public for the same reasons.

## Flooring

Keeping it simple is the best approach. Any pattern used should be low in contrast. For those who don't have good depth perception, dark areas of flooring can be perceived as dangerous holes.

## Furniture

Furniture arrangements can encourage socialization and feelings of inclusion and normalcy, again fostering independence.

## Colour and Colour Contrast

People with varying vision and possibly poor depth perception need to locate themselves in their surroundings. The use of contrasting colour for furniture against floor and wall colours makes it easier for seniors to see objects. Differentiating colour on walls and floors visually separates the floor from the walls.

## Conclusion

In summary, interior environments can be designed to aid seniors, keep them mobile and safe and ultimately to promote a longer happier, healthier life. The costs of such interventions are often dismissed as exorbitant. Evans and Cohen state that "Compliance with the Americans with Disabilities Act (ADA) accessibility standards in large scale projects adds less than 1% to the cost of new construction." One percent is surely an insignificant figure compared to the ballooning demand for elder friendly facilities we face today.

After all, as Eric Tangalos, Head of the Geriatric Division at the Mayo Clinic, notes, "The resident [senior] can't change to fit the environment, so we have to fit the environment to the resident."

## References:

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- IESNA. (2001). *Lighting and the Visual Environment for Senior Living*.
- Leibrock, C. (2000). *Design Details for Health: Making the Most of Interior Design's Healing Potential*. New York: Wiley.

## About the Authors:

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**Joseph Pettipas**, Director of Interior Design and Leader of the Retail Focus Group, HOK Canada, has a deep understanding of the challenges faced today within the healthcare, corporate, hospitality, retail, and marketing areas. Mr. Pettipas has served as the President of ARIDO, is an active member of the Interior Designers of Canada, International Interior Design Association, the Foundation for Interior Design Education Research, the International Facility Managers Association, and



the Design Exchange. He has also taught at Ryerson University's School of Interior Design for many years.

## Related Research Summaries

InformeDesign has many Research Summaries about healthcare design and the elderly. This knowledge will be valuable to you as you consider your next design solution and worth sharing with your clients and collaborators.

“Patient and Family Perspectives on Healthcare Facilities”

—*Journal of Architectural and Planning Research*

“Age Influences Effects of Turning Quickly”

—*Journal of Gerontology: Medical Sciences*

“Aesthetics for the Elderly is More than Beauty”

—*Human Relations*

“Private Rooms Improve Outcomes for Dementia Patients”—*Environment and Behavior*

“Age and Visual Stimuli Influence Information Recall”

—*Journal of Gerontology: Psychological Sciences*

## Photos Courtesy of:

David Whittaker

(Photo p. 1: University Health Network, Toronto General Campus, Clinical Service Building Atrium Courtyard)



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