TAKEAWAYS

Designing for Age-Related

COGNITIVE CHANGES

An Executive Summary on the Impact of Aging Populations on Healthcare Environments

INSIDE YOU WILL LEARN ABOUT:

Cognitive changes that occur with normal aging.

The definition and stages of Alzheimer's disease.

Design interventions that can reduce negative behaviors characteristic of Alzheimer's disease.

The Impact of Aging toolbox is made available through a partnership with

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March 2015

Based on the Residential Healthcare Facilities Issue Briefs funded by the Rothschild Foundation and published in 2012.

Designing for Age-Related Cognitive Changes

Cognitive Skills

According to the Emory University Dementia Research Center, some cognitive (thinking) skills decline with normal aging, while others remain stable:

Skills That Remain Stable	Skills That Decline
Crystalized intelligence—accumulated over time through education and experience	Fluid intelligence—ability to understand and process new complex information
Remote memory	Recent memory
Simple or focused attention	Divided attention
Language—verbal abilities and vocabulary	Language—work retrieval
Reasoning and problem solving—traditional ways of finding solutions	Reasoning and problem solving—unfamiliar problems take longer to solve
	Processing speed—both cognitive and motor processing abilities decline

While some cognitive skills generally remain stable throughout the aging process, others decline, including recent memory and processing speed.

Other factors can contribute to cognitive changes:

- Certain medications can dull thinking;
- Sensory changes (e.g., loss of hearing) interfere with information processing;
- Chronic pain affects concentration and attention;
- Depression and anxiety decrease motivation to learn new things;
- Stress; and
- Lack of mental stimulation.

Alzheimer's Disease

Alzheimer's disease is the most common form of dementia and is not part of normal aging. Symptoms worsen over time due to irreversible damage to nerve cells in the brain.

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There are seven stages associated with Alzheimer's disease (Alzheimer's Association, 2015):

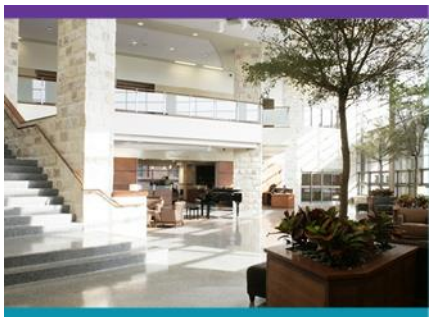
- Symptoms in the very early stages of the disease (Stages 1 and 2) are often very similar to cognitive changes that occur with normal aging, making it very difficult to diagnose.
- As the disease progresses to Stage 3, family and friends begin to notice cognitive changes such as difficulty performing tasks with a series of steps, retrieving words, losing objects, and remembering information just learned or read.
- Memory loss, difficulty processing new information, and struggles performing complex tasks grow more pronounced in Stages 4 and 5, but activities of daily living (eating, toileting, bathing, dressing) can typically be accomplished independently.
- Stage 6 is characterized by severe memory decline, personality changes, and the need for extensive help with daily activities.
- Individuals with late-stage Alzheimer's disease (Stage 7) lose the ability to respond to the environment and need constant care as they have difficulty speaking, swallowing, and walking.

The Environment and Alzheimer's Behaviors

A number of behaviors are characteristic of Alzheimer's disease, including aggression, agitation, disturbed sleep, confusion, sundowning, and wandering. Growing research evidence suggests interventions in the built environment can reduce these behaviors for many people (Calkins, 2001; Joseph, 2006; Ulrich et al., 2008).

Common Alzheimer's Behaviors	Potential Design Strategies
Aggression	
Verbal or physical acting out. Overstimulation from the environment can be a contributing factor.	1) Limit sources of overstimulation (e.g., loud music, TV, physical clutter, glare)
Agitation	
Restless or anxious behavior (e.g., pacing).	1) Exposure to bright light 2) White noise (e.g., soft background music) 3) Spaces for art, music, and other activities
Disturbed Sleep	
Changes in sleep patterns, including switching day/night rhythms and increased restlessness at night.	1) Maximize safety and comfort in the sleeping environment: ○ Private rooms ○ Door and window locks ○ Night lights ○ Ambient temperature control
Confusion/Memory Loss	
Difficulty recalling recent events or, in later stages, inability to recognize family and friends	1) Provide space for photos and other valued items to help trigger memories

Common Alzheimer's Behaviors	Potential Design Strategies
Sundowning	
Increased restlessness or behavioral problems occurring at the end of the day.	1) Increase lighting levels and reduce shadows during evening hours to minimize visual misinterpretation of the environment
Wandering/Exit Seeking	
Desire to walk to an unknown destination. Six in 10 people with Alzheimer's disease wander.	1) Access to secure, observable outdoor spaces 2) Indoor and outdoor walking paths with seating for rest and relaxation 3) Disguise exit doors to unsecured areas (e.g., cloth panels, wall murals, blinds) 4) 2D grid patterns on floor (perceived as 3D barriers) to prevent unsafe exiting



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Helpful References

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