



**The University of Sydney**

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**The Home Modification:  
Information Clearinghouse Project**

# **Designing Environments for Dementia An Annotated Bibliography**

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Adlam, T., Faulkner, R., Orpwood, R., Jones, K., Macijauskiene, J., & Budraitiene, A. (2004). The installation and support of internationally distributed equipment for people with dementia. *IEEE Transactions on Information Technology in Biomedicine*, 8(3), 253-257.

This paper describes lessons learned by engineers and researchers assisting people with dementia to evaluate devices designed to support people with dementia at home. Devices were evaluated by people with dementia in their own homes. Looks at installation of cooker monitor and night light.

**Bakker, R. (2003). Sensory loss, dementia, and environments. *Generations*, 27(1), 46-51.**

Bakker evaluates the relevance of good environment, like interesting sights, smells, sounds, tastes, and tactile sensations, in increasing functional abilities and comfort of people with dementia. She discusses the key environmental elements that encourage people interacting in healthy ways with objects and spaces. Her examination is based from her experience with her father who has Alzheimer's disease. The key environmental elements include familiar sights, depth perception, contrast sensitivity, stressing sounds, designs for bathing comfort and improving pleasant smells.

**Banks, G. (1994). *Options for the elderly and those who care for them*. Sydney, NSW: Hale and Iremonger.**

Helping older people maintain their independence when they are too old to care for themselves. What are the options when they need help? This book provides information for older people, caring families and helping professionals. Chapters are: Loss, grief and adjustment; Sorting out the options; Living alone; Living with family; Specialized accommodation; Aspects of ageing; Dementia; Ageing well; Aids for independent living; Recommended reading and useful contacts.

**Barrick, A. L., Rader, J., Hoeffler, B., & Sloane, P. D. (2002). *Bathing without a battle: Personal care of individuals with dementia*. New York: Springer.**

This book presents an individualized, problem solving approach to bathing and personal care of individuals with dementia. Based on extensive original research and clinical experience, the authors have developed strategies and techniques that work in both the institution and home settings. Their approach is also appropriate for care giving activities other than bathing. Readers will find practice guidelines, transfer techniques, lists of suppliers of bathing equipment, and the description of a complete training program for direct caregivers. Illustrations, charts, checklists, and relevant web sites are provided throughout. Includes behaviour rating and caregiver behaviour checklist. A valuable resource for carers.

**Brawley, E. C. (1997). *Designing for Alzheimer's disease: Strategies for creating better care environments*. New York: Wiley.**

This book examines essential design criteria in key areas such as lighting, colour, acoustics, safety, and wayfinding. Important considerations involving room size, shape, use, and arrangement are covered, along with specific information on materials and furnishings selection. Designing for Alzheimer's disease equips designers and care providers with the information they need to plan environments that can greatly enhance the lives of those with Alzheimer's. Explaining in concise, non-technical terms how the disease affects cognitive and functional skills, the book offers detailed guidance on a broad range of design issues that are central to the creation of therapeutic care settings. The book features specific therapeutic design suggestions, such as increasing mobility, reducing confusion, promoting safety, and maximizing functional abilities. Features 100 photos, including a 16-page colour insert.

**Brawley, E. C. (2002). Bathing environments: How to improve the bathing experience. *Alzheimer's Care Quarterly*, 3(1), 38-41.**

This article looks at current practices in bathroom design for people with dementia. Covers warmth,

and comfort, noise level, lighting, pleasing decor and convenient storage and seating options.

**Brawley, E. C. (2006). *Design innovations for aging and Alzheimer's: creating caring environments*. New Jersey: Wiley.**

This comprehensive book covers emerging building types of adult day care and hospice and the increased use of gardens and outdoor space in environments for the aging population. Offers design solutions that extend beyond assisted-living facilities and nursing homes as they can be easily adapted for residential use. Includes photographs, line drawings, and a 16-page color insert.

**Calkins, M. P. (2004). Articulating environmental press in environments for people with dementia. *Alzheimer's Care Quarterly*, 5(2), 165-172.**

Alzheimer's is a progressive disease that impairs the ability of the individual to function independently. In this article *Calkins*, focuses on environmental manipulation; physical and social environments that enhance or serve to maintain the ability of an individual with dementia to function as independently as possible. She reports on the development of a theoretical framework that specifically links physiologic changes that occur in the brains of individuals with dementia with aspects of the environment.

**Calkins, M. P. (2005). Environments for late stage dementia. *Alzheimer's Care Quarterly*, 6(1), 71-75.**

This article is dedicated to exploring the various ways the environment influences and impacts individuals with dementia and the settings they inhabit and experience.

**Calkins, M. P., & Namazi, K. H. (1991). Caregiver perceptions of the effectiveness of home modifications for community living adults with dementia. *Journal of Alzheimer's Care and Related Disorders Research*, 6(1), p. 25-29.**

This study identifies a variety of modifications made mostly by caregivers of the homes of people with Alzheimer's related dementia, and examines the impact of each modification on the lives of the confused person and the caregiver.

**Cash, M. (2004). At home with at (assistive technology): An evaluation of the practical and ethical implications of assistive technology and devices to support people with dementia and their carers. Retrieved 30th March, 2005, from [http://www.dementia-voice.org.uk/Projects/At\\_Home\\_with\\_A\\_T\\_main.pdf](http://www.dementia-voice.org.uk/Projects/At_Home_with_A_T_main.pdf)**

Final report of a project that aims to explore the potential of existing low-key devices that can be used to support people with dementia and their carers in their own homes. It investigates all aspects of choosing, installing, using and maintaining equipment that is currently available.

**Charness, N., & Holley, P. (2001). Human factors and environmental support in Alzheimer's disease. *Aging and Mental Health*, 5(Supplement 1), S65-S73.**

In this article, the authors take a human factors perspective to identify ways of improving the lives of people affected by dementia by using human factors techniques to develop safe, effective designs. They examine environmental support for cognitive functions and designing facilities for people with Alzheimer's disease. The authors suggest design and training techniques, and attempt to provide a framework for considering the needs of stakeholders and for promoting public policy.

**Cohen, U., & Day, K. (1993). *Contemporary environments for people with dementia*. Baltimore: Johns Hopkins University Press.**

This book analyzes and evaluates 20 facilities, existing and planned, using architectural plans, photographs, and explanatory texts. The authors demonstrate the relationship between design and care for people with dementia by providing information based on actual case studies - "real life" facilities that have implemented and

experienced many of the design concepts and innovations promoted by design guides, researchers and professional consultants. *Contemporary environments for people with dementia* will be of interest to care providers, family caregivers, design professionals and others interested in the creation of supportive and healthy environments for people with dementia.

**Cohen, U., & Weisman, G. D. (1991). *Holding on to home: Designing environments for people with dementia*. Baltimore: Johns Hopkins University Press.**

People with dementia live in environments ranging from their own homes to community-based group homes and long-term care facilities. *Holding On to Home* addresses key issues for the planning and modification of all these settings. The book is thoroughly illustrated. The authors set forth a program of practical design principles linked to specific therapeutic goals. A useful reference for caregivers, architects and interior designers.

**Gilliard, J. (2004). *Enabling technologies for people with dementia*. Retrieved 30th March, 2005, from <http://www.dementiavoice.org.uk/Projects/EnableFinalProject.pdf>**

Final report of a project that explores the feasibility of enabling technology for people with dementia, and its evaluation.

**Gitlin, L. N., Corcoran, M., Winter, L., Boyce, A. A., & Hauck, W. (2001). A randomized, controlled trial of a home environmental intervention: Effect on efficacy and upset in caregivers and on daily function of persons with dementia. *The Gerontologist*, 41(1), 4-14.**

The authors determined short-term effects of a home environmental intervention on self-efficacy and upset in caregivers and daily function of dementia patients. They also determined if treatment effect varied by caregiver gender, race, and relationship to patient. In this study evaluates an innovative intervention approach involving occupational therapist home visits targeted at helping caregivers modify their living space to

address daily care giving challenges. The intervention provided caregivers with a set of skills and strategies that lowered the threshold or press of the social and physical environment for the person with dementia. That is, the intervention was designed to help caregivers develop an environment supportive of reduced competencies such that the person with dementia would exhibit fewer disruptive behaviours and experience a slower rate of decline in instrumental and basic activities of daily living (IADLs and ADLs). The study mentions the need for further research of home interventions on caregiver well being.

**Gitlin, L. N., Liebman, J., & Winter, L. (2003). *Are environmental interventions effective in the management of Alzheimer's disease and related disorders? A synthesis of the evidence. *Alzheimer's Care quarterly*, 4(2), 85-107.***

This article presents a qualitative synthesis of research findings regarding effects of environmental interventions on well-being in persons with dementia residing in different settings. It highlights a range of environmental strategies that have been systematically evaluated. 90% of the 63 studies reviewed reported positive outcomes, most studies were methodologically flawed, involved small samples, and were conducted in nursing homes. The authors suggested that future research should focus on rigorous testing of the most promising environmental strategies to enhance quality of care for persons with dementia across different living contexts.

**Gitlin, L. N., Schinfeld, S., Winter, L., Corcoran, M., Boyce, A. A., & Hauck, W. (2002). *Evaluating home environments of persons with dementia: Interrater reliability and validity of the home environmental assessment protocol (heap). *Disability and Rehabilitation*, 24(1-3), 59-71.***

Home Environment Assessment Protocol (HEAP), was developed to examine dimensions of the physical environment of homes of persons with dementia. It consists of 192 items that are summed up into separate groups representing the number of hazards, adaptations, and level of clutter and comfort in eight areas of the home.

This paper reports on the interrater reliability and validity of HEAP. 22 dementia households were observed. The raters used in this study were 2 occupational therapists, considered to be environmental experts and 2 social science interviewers, considered to be non-environmental experts. Findings show that both expert and non-expert raters use the HEAP consistently.

**Hurley, A. C., Gauthier, M. A., Horvath, K. J., Harvey, R., Smith-Sally, J., Trudeau, S., et al. (2004). Promoting safer home environments for persons with Alzheimer's disease: The home safety/injury model /injury model. *Journal of gerontological nursing*, 30(6), 43-51.**

Describes the Home Safety/Injury Model that promotes safer home environments for persons with Alzheimer's disease and other forms of dementia. The model, derived from Bandura's (1986) social cognitive theory, has 3 components: the safety platform, the person with dementia, and risky behaviours. The person with dementia is in the centre, located on the safety platform composed of the physical environment and caregiver competence. The interaction between the underlying dementia and indicators of frailty can lead to the person with dementia performing risky behaviours that can overcome the safety platform's resources and lead to an accident or injury, resulting in negative consequences. Through education and research, the model guides proactive actions to prevent risky behaviours of people with dementia by promoting safer home environments and increased caregiver competence.

**Judd, S., Marshall, M., & Phippen, P. (Eds.). (1998). *Design for dementia*. London: Hawker Publications.**

This book arises from an increased awareness that the built environment can have a fundamental effect on a person with dementia. It includes 20 case histories of buildings designed for people with dementia drawn from 7 North European countries and Australia. 3 chapters describe modern principles of designing buildings for people with dementia. Includes coloured pictures and building plans drawn to scale. This book is intended for professionals committed to improving

the built environment for people with dementia, either in new buildings or existing premises.

**Lai, C. K. Y., & Arthur, D. G. (2003). Wandering behaviour in people with dementia. *Journal of Advanced Nursing*, 44(2), 173-182.**

Wandering has been described as one of the most challenging behaviours to manage in people with Dementia. This paper reviews the current literature on wandering. It looks at the extent of the problem, the profile of those who wander, and the intervention strategies being employed. The authors concluded that knowledge generated through research remains insufficient to explain fully why and when wandering occurs and suggested that future research should incorporate a clearer definition of wandering; a specific target population; focused intervention, and better control conditions.

**Mace, N. L., & Rabins, P. V. (1999). *The 36-hour day: A family guide to caring for persons with Alzheimer disease related dementing illnesses, and memory loss in later life*. Baltimore: Johns Hopkins University Press.**

36-Hour Day, now its 3rd edition has been thoroughly updated to include new information on the latest research, several drugs that hold promise, and genetic aspects of Alzheimer's. This guide focuses on helping families cope with this progressive and irreversible disease. Besides tips on how to care for people with dementia related illnesses during the various stages of the disease, like placing a picture of a toilet on the bathroom door, the text discusses the different kinds of help available and how to seek it. Financial and legal issues are also covered.

**Mendez, M. F., & Cherrier, M. M. (1996). Depth perception in Alzheimer's disease. *Perceptual and Motor skills*, 83, 987-995.**

This study confirms that depth perception is significantly disturbed among patients with Alzheimer's disease. The abnormal depth perception, in turn, contributes to the difficulties reported by those with Alzheimer's disease in



getting around in their environments, driving an automobile, orienting themselves in space, or recognizing visual objects. The authors suggest that clarification disturbances of depth perception could help in designing strategies for the care and management of these patients, such as optic interventions for depth enhancement.

**Moore, K. D. (2005). Design guidelines for adult day services. Retrieved January 18, 2006, from [http://www.aia.org/SiteObjects/files/Diaz\\_Moore\\_color.pdf](http://www.aia.org/SiteObjects/files/Diaz_Moore_color.pdf)**

Adult day services promote keeping an elderly in the community fabric but have flown under the radar within architectural inquiry. This research attempts to rectify this oversight in regard to this intriguing and rapidly growing model of care.

**Nolan, B. A. D., Mathews, M. R., Truesdell-Todd, G., & VanDorp, A. (2002). Evaluation of the effect of orientation cues on wayfinding in persons with dementia. *Alzheimer's Care Quarterly*, 3(1), 46-49.**

The authors of the article conducted a behavioural assessment on 40 residents in a nursing home to identify which residents had difficulty locating their room. They conducted an experiment with six residents to evaluate the impact of placing a portrait like photograph and personal memorabilia in a display case outside the participant's room. Mean room finding increased by 45%, suggesting that the intervention increased room finding.

**Price, J. D., Hermans, D. G., & Grimley Evans, J. (2005). Subjective barriers to prevent wandering of cognitively impaired people. *Cochrane Database of Systematic Reviews*, (4), 15.**

People with dementia often wander, at times putting themselves at risk and presenting challenges to care givers. This has led to trials of visual and other selective barriers (such as mirrors, camouflage, grids/stripes of tape) that may reduce wandering. This review assesses the effect of subjective exit modifications on the wandering behaviour of cognitively impaired people. The participants are people with dementia

or cognitive impairment who wander in any care environment - hospital, institution or their own home. The types of interventions used in this review include, patterns on floor or door (for example, grid, lines or bars), mirrors on doors, camouflage of door or doorknob, concealment of view through doors and windows. The review found no evidence that subjective barriers prevent wandering of cognitively impaired people. The study also states that subjective barriers may cause fear and anxiety in some patients.

**Schwarz, B., & Brent, R. (Eds.). (1999). *Aging, autonomy, and architecture: Advances in assisted living*. Baltimore: Johns Hopkins University Press.**

With the aging population, an increasing number of people need some type of assistance to maintain their independence. One of the fastest growing options for long-term care is assisted living. The editors of this book bring together many of the leading researchers and practitioners in the field to examine various aspects of the design and function of the assisted living facility. Covers issues that include health care, the special needs of assisted living for people with Alzheimer's disease and related dementias and the design of culturally sensitive facilities. Includes black & white photographs of various facilities and some floor plans. A valuable resource for researchers, designers and policy makers.

**Sheldon, M. M., & Teaford, M. H. (2002). Caregivers of people with Alzheimer's dementia: An analysis of their compliance with recommended home modifications. *Alzheimer's Care Quarterly*, 3(1), 78-84.**

This study investigated caregivers of Alzheimer's patients to determine what factors encourage or discourage compliance with home modification recommendations and the relationship, if any, between implementation and caregiver stress and coping skills. Two case studies are presented that typify the issues commonly addressed by the therapist.

**Steinfeld, E. (2002). My father's room. *Alzheimer's Care Quarterly*, 3(1), 1-6.**

This article is based on the author's observations of his father who was diagnosed with Alzheimer's disease at age 91. He looks at the provisions in his father's room at a multi-level geriatric care campus in Buffalo. He describes in detail how his room both supported and hindered his independence. The design of the room followed many of the principles found in the literature. Barriers to independence included heater and air conditioner, radio and television, call system and the shower seat. Excellent article for caregivers and designers.

**Warner, M., & Warner, E. (1999). Solutions for Living with Alzheimer's: The Caregiver's Guide to Home Modification. Retrieved 29 March, 2005, from <http://www.agelessdesign.com/art-solutions2living.htm>**

This article provides information on modifying the home to care for a person with Alzheimer's. It is intended to make it easier for families and caregivers to create a safer and more sensitive home environment. The authors describe the steps to take and products that are available to modify your home and tackle the difficulties caregivers may encounter along the way.

**Warner, M. L. (1999). Locks and wandering. Retrieved April 6, 2005, from <http://www.ec-online.net/Knowledge/Articles/wandering1.html>**

This article is in 3 parts. The first part is about locks, on doors, sliding doors opening into balconies, windows and garage doors, to help caregivers manage loved ones prone to

wandering. Discusses different types of locks and where and how to place them. The second part focuses on alarms- important devices for alerting loved ones wandering into dangerous areas or leaving the home. Looks at different kinds of alarms, motion detectors and chimes, distance trackers and monitors. Lists a selective of products available in the market. The third part discusses some of the more unconventional ways to prevent loved ones from leaving home. Covers visual cues like illusions, visual cliffing, deterrents, messages, signs, pictures and diversions. Some useful products are also listed.

**Warner, M. L. (2000). *The complete guide to Alzheimer's-proofing your home*. West Lafayette, Indiana: Purdue University Press.**

Written by a practicing architect and gerontologist, this highly acclaimed book shows you how to create a home environment that will help cope with the many difficulties associated with Alzheimer's. Covers interior and exterior spaces individually, providing information on how to ensure that the Alzheimer's patient will be safe and secure. Topics covered include planning for a care giving future, minimizing accidents and injuries, grab bar basics, access denial issues, and activities of daily living and communication difficulties. Includes home safety checklist, a glossary of terms. and an invaluable listing of products that you will need to use in Alzheimer's-proofing your home.