

1993

# Environments for People with Dementia: Annotated Bibliography, Vol. II

Mylanda Barisas

*University of Wisconsin - Milwaukee*

Margaret Calkins

*University of Wisconsin - Milwaukee*

Habib Chaudhury

*University of Wisconsin - Milwaukee*

Dannette Johansen

*University of Wisconsin - Milwaukee*

Mark Proffitt

*University of Wisconsin - Milwaukee*

Follow this and additional works at: [https://dc.uwm.edu/caupr\\_mono](https://dc.uwm.edu/caupr_mono)

 Part of the [Architecture Commons](#)

---

## Recommended Citation

Barisas, Mylanda; Calkins, Margaret; Chaudhury, Habib; Johansen, Dannette; and Proffitt, Mark, "Environments for People with Dementia: Annotated Bibliography, Vol. II" (1993). *Center for Architecture and Urban Planning Research Books*. 11.  
[https://dc.uwm.edu/caupr\\_mono/11](https://dc.uwm.edu/caupr_mono/11)

This Book is brought to you for free and open access by UWM Digital Commons. It has been accepted for inclusion in Center for Architecture and Urban Planning Research Books by an authorized administrator of UWM Digital Commons. For more information, please contact [open-access@uwm.edu](mailto:open-access@uwm.edu).

---

**ENVIRONMENTS FOR PEOPLE  
WITH DEMENTIA:**

**ANNOTATED BIBLIOGRAPHY, VOL II**

**1993**

**Abstracts and Annotations by:**

**My linda Barisas  
Margaret Calkins  
Habib Chaudhury  
Dannette Johansen  
Mark Proffitt**

**A project sponsored by the  
Institute on Aging and Environment  
Funded by the Helen Bader Charitable Trusts**

**© Institute on Aging and Environment**

# **Environments for People with Dementia Annotated Bibliography, Vol. II**

Myllinda Barisas, Margaret Calkins, Habib Chaudhury, Dannette Johansen, Mark Proffitt

## **Abstract**

This monograph reviews current literature published since 1986 about people with dementia, therapeutic goals for this population, and the social , organizational and physical environments in which they live. This volume is a continuation of annotations of literature published prior to 1989 which follows the same conceptual framework.

**Pp 91**

## **Publications in Architecture and Urban Planning**

Center for Architecture and Urban Planning Research  
University of Wisconsin-Milwaukee  
P.O. Box 413  
Milwaukee, Wisconsin 53201-0413

Report R93-2

ISBN: 0-938744-82-8

Additional copies of this report are available for \$15 prepaid by writing to the above address.

## **Related Books and Monographs**

By Members of the Institute on Aging and  
Environment

---

**Environments for people with dementia: Annotated bibliography, Vol. 1.** (1987). Rand, J., Steiner, V., Toyne, R., Cohen, U., & Weisman, G. Washington, D.C. : Health Facilities Research Program, AIA/ACSA Council on Architectural Research.

**Environments for people with dementia: Case Studies.** (1988). Cohen, U., Weisman, G., Ray, K., Rand, J., & Toyne, R. Washington, D. C.: Health Facilities Research Program, AIA/ACSA Council on Architectural Research.

**Environments for people with dementia: Design Guide.** (1988). Cohen, U., Weisman, G., Ray, K., Rand, J., & Toyne, R. Washington, D. C.: Health Facilities Research Program, AIA/ACSA Council on Architectural Research.

**Environments for people with dementia: Regulatory Analysis.** (1988). Cohen, U., Weisman, G., Day, K., & Ray, K. Washington, D. C.: Health Facilities Research Program, AIA/ACSA Council on Architectural Research.

**Environments for people with dementia: Illustrative designs** (1990). Cohen, U., Weisman, G., Day, K., Robison, W., Dicker, J., & Meyer, G. Milwaukee, WI. Institute on Aging and Environment.

**Programming and design for dementia: Development of a 50 person residential environment.** (1990). Weisman, G., Cohen, U., & Day, K. Center for Architecture and Urban Planning Research: Monograph Series: Institute on Aging and Environment.

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

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

## Preface and Acknowledgments

---

This monograph is the second volume of *Environments for People with Dementia: Annotated Bibliography*. The First Bibliography was published in 1989. This volume covers literature which appeared between 1986 and 1993, with concentration on items published between 1988 and 1993. The first bibliography was one of several publications developed through the course of a research and development project titled Environments for People With Dementia.

The project was directed toward the development of guidelines for environmental design responsive to the needs of people with dementia and their care-givers. To meet this goal, a wide range of needs, behaviors, and user groups were considered. Similarly, a continuum of living arrangements — from independent residential settings to institutions — were examined.

The overall project was organized into four primary phases and related products:

- (1) an annotated bibliography;
- (2) case study analyses;
- (3) regulatory analyses;
- (4) design guide.

These four reports were published in 1989 by the American Institute of Architects/ Association of Collegiate Schools of Architecture, (AIA/ACSA) Health Facilities Research Program, Washington D.C.

The first volume presented the results of the initial phase — An annotated bibliography focused on the literature about people with dementia, therapeutic goals for this population, and the social, organizational and physical environments in which they live.

This second volume follows the same conceptual organization as the first volume. This volume was developed by members of the Institute on Aging and Environments, supported by a grant from the Helen Daniels-Bader Charitable trusts.

# Table of Contents

---

Fact Sheet on Alzheimer’s Disease.....1  
Conceptual Approach.....3  
Procedure.....6  
  
Index for Annotated Bibliography.....7  
Annotated Bibliography.....9  
Supplemental Bibliography.....94

# Fact Sheet on Alzheimer's Disease\*

---

## Definition and Scope

Alzheimer's disease is a progressive, irreversible neurological disorder that affects an estimated 2.5 million American adults. It is the most common form of dementing illness. Over 150,000 die of Alzheimer's disease annually, which makes it the fourth leading cause of death in adults, after heart disease, cancer and stroke.

The disease, first described by Alois Alzheimer in 1906, knows no social or economic boundaries and affects men and women equally. Most victims are over 65; however, Alzheimer's disease can strike in the 40s and 50s. Most Alzheimer's disease victims are cared for at home, although many persons in nursing homes have dementia. Alzheimer's disease is devastating for both victims and their families and has been called "the disease of the century".

## Symptoms

Symptoms of Alzheimer's disease include a gradual memory loss, decline in ability to perform routine tasks, impairment of judgment, disorientation, personality change, difficulty in hearing, and loss of language skills. There is variation in the rate of change from person to person. The disease eventually renders its victims totally incapable of caring for themselves.

## Causes and Research

The cause of Alzheimer's disease is not known and is currently receiving intensive scientific investigation. Suspected causes include a slow virus or other infectious agent, a genetic predisposition, environmental toxins such as aluminium, and immunologic changes. Other factors also are under investigation.

Scientists are applying the newest knowledge and research techniques in histology, virology, immunology, toxicology, neurology, psychiatry, pharmacology, biochemistry, molecular genetics, and epidemiology to find the cause, treatment, and cure for Alzheimer's disease and related dementias.

---

**Diagnosis**

There is no single clinical test to identify Alzheimer's disease. Before diagnosis of the disease is made, other conditions must be excluded. These include potentially reversible conditions such as depression, adverse drug reactions, metabolic changes, nutritional deficiencies, and head injuries.

Each person with possible Alzheimer's disease symptoms should have a thorough evaluation. Recommended tests include physical, neurological, psychological, and psychiatric examinations, and laboratory studies including blood studies, computerized tomography (CT scan), electroencephalography (EG), and occasionally, studies of the spinal fluid. While this evaluation may provide a clinical diagnosis, confirmation of Alzheimer's disease requires examination of brain tissue, which is usually performed at autopsy.

**Treatment**

Although no cure for Alzheimer's disease is available at present, good planning and medical and social management can ease the burdens on the patient and family. Appropriate medication can lessen agitation, anxiety, and unpredictable behavior, improve sleeping patterns and treat depression. Physical exercise and social activity are important, as are proper nutrition and health maintenance. A calm and well-structured environment may help the afflicted person to maintain as much comfort and dignity as possible.

**Economic Impact**

The course of this disease is usually over several years, sometime of which may require total care regarding daily activities such as eating, grooming, and toileting. It is estimated that more than \$40 billion is spent annually on the costs of caring for Alzheimer's disease victims, both in nursing homes and at home.

\* Adopted by permission from the Alzheimer's Disease and Related Disorders Association Inc. of South Eastern Wisconsin.



# Conceptual Approach

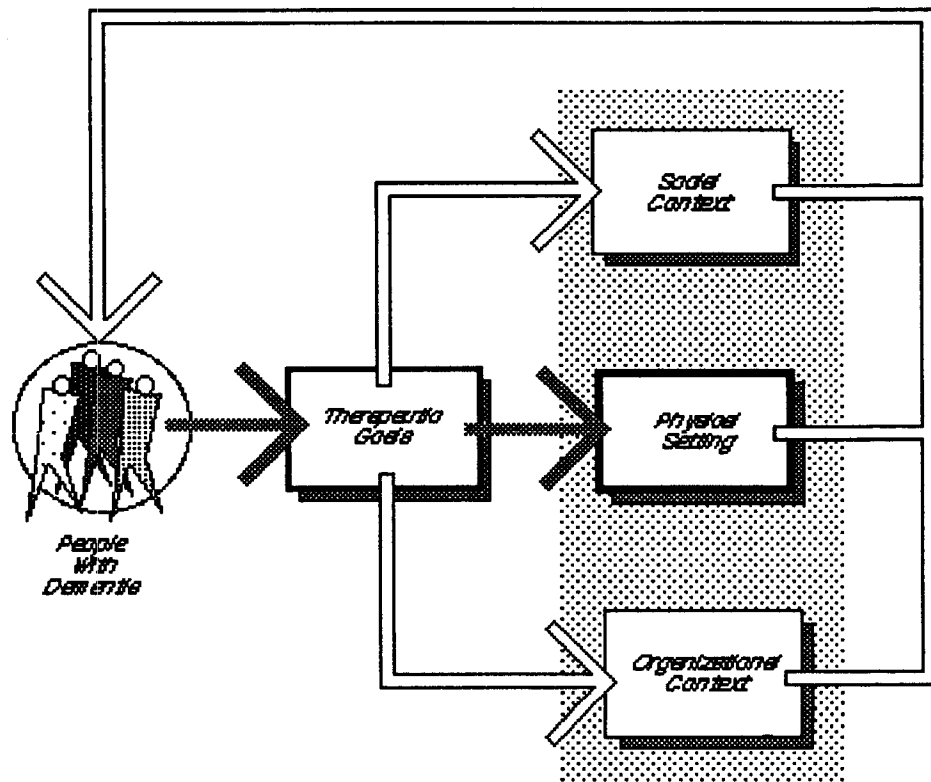
---

## The Conceptual Model

Literature relevant to dementia and design may be organized in terms of five areas of interest:

- (1) people with dementia;
- (2) The social environment in which they live (e.g., family and friends);
- (3) the organizational environment (e.g., policy and programs) of relevant institutions (e.g., home health services, state licensing agencies, nursing homes);
- (4) the physical environment in which people with dementia live, whether this be a single family home, group living situation, or institution; and
- (5) the therapeutic goals which shape social, organizational and physical environments to best meet the needs of people with dementia.

This model (as illustrated in the figure below) reflects the multiple ways in which the physical setting can serve a therapeutic role. In addition, the physical environment affects the social and organizational environments, and can contribute to the quality of life of people with dementia.



## Annotation Framework

**American Psychological Association. (1983). APA editorial style. Publications Manual of the American Psychological Association (3rd ed.).**

[1] Every annotation includes a citation (based upon the American Psychological Association format).

---

### **Description**

[2] A brief annotation characterizing the nature of the article (e.g., academic journal article based on empirical research or non-technical book for families and caregivers).

### **The Alzheimer's Patient**

[3] Information dealing with people with dementia. This includes discussion of the nature of these diseases as well as the needs and patterns of behavior of both patients and caregivers.

### **Environmental Context**

[4] Some selections, for example, reports of empirical research, will provide information on the environmental context in which the research was carried out. As defined in the conceptual approach, the environmental context may include social organization, and physical (e.g., buildings or neighborhood) components.

### **Therapeutic Goals**

[5] Therapeutic goals for the treatment of people with dementia are presented in many books and articles. Such goals might include "preservation of the dignity" or "maximum independence" of affected individuals. Such goals clearly have implications for the relationship between people with dementia and their social, organizational and physical environments; they typically provide the basis for operational policy, planning and design guidelines.

### **Research-Based Findings**

[6] Research-based findings are presented only for those selections which contain some form of empirical or "scientific" study of people with dementia and the environments in which they live.

### **Policy, Planning, and Design Implications or Guidelines**

[7] Implications or guidelines for policy, planning and design may relate to the social, organizational and/or physical environments (if the ideas have already been incorporated into the design, the heading will be Design Features). Such guidelines may emerge from either research based or non-technical treatments of people with dementia.

## **Conceptual Framework for Annotations**

Information judged to be most relevant to the understanding of the development and characteristics of Alzheimer's disease and other forms of dementia among the elderly was reviewed and annotated. The information includes the functional, physical, and emotional needs of these people, their families, and other caregivers with whom they interact. The conceptual approach is reflected directly in the framework employed for the annotation. As illustrated on the next page, this framework is in seven categories. Each annotation includes summary information relevant to one or more of these categories.

Scanning of annotations to determine which of these seven categories of information are included provide an initial, quick means to gauge the content and relevance of individual selections. One can determine, for example, what therapeutic goals are considered, whether guidelines are presented, and if so, whether they are research based.

## Procedure

---

A multi-pronged approach relevant for this monograph was employed to gather relevant literature. It included:

- computer searches focusing on Alzheimer's disease and environmental design
- review of standard references on dementia
- consultation with experts in the field

In all cases, our goal was to identify "cutting edge" items which provide useful background on Alzheimer's disease and/or provide guidance for environmental planning and design. Given our rather specialized focus and desire to cover the most recent literature, this bibliography is not meant to be and should not be viewed as exhaustive. The literature reviewed consists of publications which appeared primarily in the years 1988-1993.

The bibliography is divided into two sections:

The **annotated bibliography** includes fifty items selected for annotation, organized alphabetically, and listed in the index (pp. 7-8).

The **supplemental bibliography** includes a bibliographic list of additional sources which were not annotated at this time, but were considered relevant and of importance.

## Index for Annotated Bibliography

Article	Alzheimer's Patient	Therapeutic Goals	Research Based Findings	Implications	Physical Environ.	Social and/or Organizational Environ.	Case Study	Page No.
Benson, D. M. et al. (1987)		•	•		•	•	•	10
Berg, L. , et al. (1991)	•	•	•	•	•			11
Calkins, M & Namazi, K. H. (1991)	•		•		•	•	•	15
Chafetz, P. K. (1990)	•		•		•			17
Chafetz, P. K. (1991)			•		•	•	•	18
Christenson, M. A. & Gieneart.D.(1990)		•		•	•			20
Cleary, T. A. et al. (1988)	•	•	•	•	•	•	•	22
Cluff, P. J. (1990)	•	•		•	•			24
Cohen, E. et al. (1991)	•	•	•	•				26
Cohen-Mansfield, J. et al. (1990)			•		•	•	•	28
Coons, D. (1988)	•	•		•	•			29
Coons, D. H. & Reichel, W. (1988).		•		•	•	•		31
Corcoran, M. & Gitlin, L. N. (1991)	•	•			•			32
Femie, G. & Femie, B. (1990).	•	•		•	•			34
Gold, D. T. et al. (1991)		•	•	•	•	•	•	35
Hall, G. et al. (1986).	•	•	•		•	•	•	37
Hepburn, L. et al. (1980)					•	•		39
Holmes, D. et al. (1990)			•		•	•	•	40
Hussain, R. & Brown, D. (1987)	•	•	•		•		•	41
Hyde, J. (1989).	•	•		•	•	•	•	42
Johnson, C. J. (1989).	•	•					•	45
Kenney, J. M. et al. (1987).			•	•	•	•	•	47
Kuhn, D. R. & Kallish, C. (1991)	•					•		49
Leon, J. et al. (1991)	•		•	•	•	•		51
Lovering, M. J. (1990)		•		•	•	•		53
Lyman, K. A. et al. (1993)	•		•		•	•	•	55
Mathew, L. et al. (1988)			•		•	•	•	56

Article	Alzheimer's Patient	Therapeutic Goals	Research Based Findings	Implications	Physical Environ.	Social and/or Organizational Environ.	Case Study	Page No.
Mayers, K & Block, C. (1990)			•	•	•	•		58
McCracken, A.N. & Fitzwater, E (1989).	•	•	•		•	•		60
McCracken, A. L. & Glister, S. (1991)		•	•	•	•	•		62
McGowder, L. R. & Bhatt, A. (1988).		•	•	•		•		63
Namazi, K. & Johnson, B. (1991a)	•	•	•	•	•		•	64
Namazi, K. & Johnson, B. (1991b)	•	•	•	•	•		•	65
Namazi, K. & Johnson, B. (1992a)	•	•	•	•	•	•	•	66
Namazi, K. & Johnson, B. (1992b)	•	•	•	•	•		•	67
Namazi, K. & Johnson, B. (1992c)	•	•	•	•	•		•	68
Namazi, K. et al. (1989)	•	•	•	•	•	•	•	69
Namazi, K. et al. (1991)	•	•	•	•	•		•	71
Negley, E. & Manley, J. (1990)	•	•	•	•	•		•	72
Ohta, R. & Ohta, B. (1988)	•		•		•	•		73
Randall, P. et al. (1990)		•	•	•	•	•		76
Sand, B. et al (1992)	•	•	•	•	•		•	78
Schiff, M. R. (1990)	•	•		•				79
Sloane, P. D. & Mathew, L. J. (1990)			•		•		•	81
Taft, L. B. et al. (1992).			•	•	•	•	•	83
Weiner, A. S. (1990).	•		•	•	•	•		85
Williams, J. K. & Stern, E. J. (1992).		•			•	•	•	87
Young, et al. (1988)	•	•	•	•	•		•	89
Zeisel, J. et al. (1992)		•		•	•	•		90
Zgola, J. (1990).		•		•	•	•		92

## Annotated Bibliography

---



**Benson, D. M., Cameron, D., Humbach, E., Servino, L., & Gambert, S. R. (1987).** Establishment and impact of a dementia unit within the nursing home. Journal of the American Geriatrics Society, 35, 319-323.

---

**Description**

A group of nursing home residents were admitted to a dementia unit and were assessed three times: prior to admission and at four and twelve months after admission. After they resided in the dementia unit, there was improvement in their mental and emotional status as well as activities of daily living. These results suggest that the dementia client benefits from a specialized care unit (SCU).

**Environmental Context**

A 46 bed dementia unit at the Ruth Taylor Geriatric and Rehabilitation Institute (RIT) was established within the teaching program of New York Medical College. Thirty-six women and ten men were taken from the RIT and screened by a multidisciplinary team for pre-established criteria including a diagnosis of dementia at least 6 months prior to admission. Patients who were assaultive were excluded from the study. Thirty-two subjects were studied and assessed by a detailed interview in which a rating scale was completed. The New York State Department of Health Long-Term Care Placement Form, Medical Assessment Abstract was also used as an assessment tool. Both of these assessments were used prior to admission and at four and six months in the SCU.

**Therapeutic Goals**

To enhance the quality of life of the dementia client by providing them with a unique environment to meet their needs.

**Research-Based Results**

Statistically significant scores showing improvement in both mental and emotional status as well as activities of daily living were given at four months and maintained through a twelve month period. There was no statistical significance in the New York State assessment scores.

**Design Implications**

- each corridor, nursing station, and day room has an orientation board
- the door of each patients room is color coded
- the patient's name and picture is displayed adjacent to each patient's door
- all doors to the unit were alarmed and a one staff member is assigned to each door at all times
- a double doorknob was installed to prevent exiting



**Berg, L. et al. (1991).** Special care units for persons with dementia. Journal of the American Geriatrics Society, 39(12), 1229-1236.

---

## **Description**

This article defines issues of special care and special care units (SCU) for Alzheimer's patients. Specifically, what are special care units, do they work? and what research methodologies complicate their evaluation?

## **The Alzheimer's Patient**

### **Needs**

Alzheimer's patients share the same basic needs of all humans which includes the need for physiological support, safety, belonging, esteem and self-expression. However, they require more help to meet these needs.

### **Desirable outcomes**

Presently, there is not a consensus on the appropriate outcome of special treatment of Alzheimers. Desirable outcomes depend upon the stage of the disease. In the early stages, socialization, the prevention of new disabilities and maintaining ambulation and continence are often considered priorities. During later stages, mobility in the wheelchair or bed and nutrition become primary goals. In the last phase, family support and maintaining comfort become most important.

## **Therapeutic Goals**

### **Current Approaches for SCU**

- evaluate potential residents for psychiatric and medical needs
- reevaluate the resident frequently to determine their needs and any evidence of excess disabilities, other illnesses or medication effects which affect the dementia
- establish a secure, dignified, stable, personalized environment without inappropriate barriers but with redundant cueing
- attend to the individual residents customary routines, valued rituals and quality of life
- de-emphasize the traditional medical thrust of nursing home care and promote activity and social work components
- integrate the environment with meaningful specialized programs to assist the cognitively impaired individual and to maximize their level of cognitive and physical functioning.
- encourage appropriate resident autonomy and social interaction with other residents, family and staff
- train, supervise, and support staff to provide a caring management that rewards acceptable behaviors and ignores unacceptable behaviors
- analyze problem behaviors of resident to find and correct probable causes whenever possible

- provide programs of staff development, goals, and awards to promote staff satisfaction and stability
- help the family initially by setting reasonable mutually acceptable expectations and defining the unit's goals and programs; thereafter by providing counseling and support groups
- maintain family involvement in care and decision making when appropriate

#### Unresolved Issues for SCUs

- There is considerable disagreement about the gains of clustering patients with dementia in one unit. Some consider this practice to further stigmatized demented patients and creates a lack of a role model for adaptive behavior
- There is also a disagreement about the use of stimulus reduction and stimulus enhancement as a positive therapy method
- Discharge policies are also a point of contention--should a resident remain in the unit until his or her death or be discharged from the unit once they are no longer benefiting from the program

### Research-Based Findings

#### SCU Management Modalities

##### Physical Environment

- Reduction of noxious stimuli
- Provision for safe wandering
- Access to outdoors
- Wayfinding cues
- Visual, tactile and auditory sensory stimulation

##### Staff Approaches to Care

- Individualized care planning and provision
- A team approach to care with consistent staffing
- Behavior modification
- Minimization of physical and pharmacology restraints
- Emphasis on patient dignity

##### Therapeutic Programs

- Approaches and activities appropriate for resident cognitive and functional status
- Focus on resident strengths and familiar activities such as religious, cultural and ethnic rituals
- Group occupational, physical, and activity therapy such as cooking, gardening, dancing, exercise and sensory stimulation
- One-on-one activities such as ball throwing, review of photo albums and hand massage

##### Involvement of Families

- Encouragement of family participation in activities and care
- Provision of information and support groups

## Summary of Relevant Research

There is a general lack of well designed research studies of nursing homes. This is also true of published research on SCUs. Research does indicate that although there is no standard model for a SCU there are consistent defining characteristics. Comparisons between SCU and traditional settings indicate that SCU patients are younger, not supported by medicaid, are able to walk independently and have slightly more behavior problems. Comparative data indicated that the quality of care was more favorable but no conclusive data could be derived concerning residents' function or outcome. A similar study comparing SCU residents and a traditional unit did not reveal any benefits or harmful effects on SCU patients. There needs to be more studies of SCU effectiveness, family satisfaction and staff satisfaction.

## Impediments to Research

Research of SCUs is difficult due to conceptual and methodological reasons. A clear definition of SCUs' residents, organizational goals, and physical environment is impossible due to great variability among programs. There is also considerable difficulty in selecting a unit for analysis (e.g. the resident, subgroup of residents, staff, the care unit, etc.). Statistical tests are difficult to conduct with the typical small sample size of SCU residents (average SCU has 30 beds). In addition, SCU research has the usual problems associated with aging research. (i.e. such as mortality, the progression of aging, etc)

## Policy Implications

### Regulatory Issues

There is considerable variation among the existing SCUs in the areas of physical design, management philosophy, and staffing activity programs. Some observers believe that special care in these units is only used as a marketing tool and a reason to charge higher prices. As a result there is a movement in several states to regulate special care units. Most people favor guidelines rather than regulations because there is disagreement about a model program and they believe experimentation with alternative methods of care should be encouraged.

### Fiscal Issues

Many SCU directors report that their units are not lucrative because of the difficulty of planning for additional care while keeping costs down, the problems with break-even strategies and developing appropriate fee structures and the costs of training programs. Currently, Medicaid reimbursement rates are not consistent with SCU rates which are considerably higher than traditional care. Unless SCUs are highly regulated, it is unlikely that Medicaid payments will increase for SCU residents. The economics of SCUs is affected by policy issues which need to develop specific terminology,

determine the advantages and limitations of SCUs and define the difference between it and special programs. Other issues include the need to understand the long-term fiscal viability and how they fit into the continuum of care for Alzheimers patients.

Calkins, M. P. & Namzi, K. H. (1991, January/February). Caregivers' perceptions of the effectiveness of home modifications for community living adults with dementia. The American Journal of Alzheimer's Care and Related Disorders & Research, 6(1), 25-28.

---

**Description**

A telephone survey of home caregivers for individuals with Alzheimer's disease is presented and discussed. Respondents were asked to report typical behavior problems, any modifications made to the residence due to the behavioral problems and the effectiveness of the modifications.

**Environmental Context**

Fifty-nine caregivers in northeastern Ohio were interviewed in a semi-structured format over the telephone. A modification was defined by the research team as "any change made for safety, security or comfort." Each of the 59 respondents had made at least one modification to the home.

**Research Based Results**

**Modifications to Manage Wandering**

Sixty-nine percent of the caregivers reported their family member wandered out of the house. Modifications to prevent wandering included altering the locks, hanging a curtain in front of the door, and moving a piece of furniture. Seventy-three percent of these modifications were successful while seven percent did not work well at all.

**Modifications to Manage Incontinence**

Sixty-eight percent of the caregivers reported incontinence as a problem. Modifications for incontinence included leaving the lights on, raising the toilet seat height, installing a portable toilet and adding signage. Forty-eight percent of these modifications worked well while twenty-one percent did not work at all.

**Modifications for Safety & Independence**

Modifications were made the most frequently in the bathroom and in the kitchen but were also made in the living room, bedroom and stairways.

**Bathroom**

Modifications included removing medicines from the bathroom, installing shower or tub chair, adding grab bars, adding a non-skid tub mat, installing a hand held shower nozzle. Ninety-one percent of these changes worked well and only three percent did not work well at all

**Kitchen**

Modifications included unplugging appliances, removing dangerous equipment, installing

separate power switch for stove, installing signage to point out hazards. Seventy-six percent worked well but ten percent did not work well at all.

**Living Room, Dining Room,  
Bedroom and Stairway**

Modifications included removing long cords, adding bedrails, and installing safety gates at the top of the stairs. Eight-five percent of the modifications to the living and dining rooms worked well; seventy-nine percent in the bedrooms worked well and seventy-eight percent of the stair modifications worked well.

**Modifications to Reduce Havoc & Confusion**

Typical modifications included limiting access to one or more rooms, removing clutter, dangerous objects and unnecessary furniture. These modifications worked well seventy-four percent of the time while eight percent did not work at all.

**Chafetz, P. K. (1990).** Two-dimensional grid is ineffective against demented patients' exiting through glass door. *Psychology and Aging*, 5(1), 146-147.

---

**Description**

A study of the effects of a two dimensional grid on the floor on controlling egress in a nursing home setting. It was hypothesized that the frequency of exiting attempts would be significantly lower when a taped grid was in place than in no grid periods. Results were intended to extend a previous study conducted in a state psychiatric hospital geriatric ward.

**Alzheimer's Patient**

**Geriatric Wandering**

Geriatric wandering is defined as ambulation that is independent of environmental cues. The most common form of geriatric wandering for demented individuals is trespassing.

**Perceived Barriers**

Demented individuals often perceive two-dimensional objects as three dimensional.

**Environmental Context**

The setting for the study is a special care unit for demented patients in a 300 bed, not for profit retirement and long term care facility. The special care unit was located on the ground floor with double glass doors leading to the outdoors. The thirty residents in the unit were studied to determine the effects on unauthorized exiting by placing eight strips of black tape parallel to the door on the floor. The number of unauthorized door openings and the number of instances a staff member distracted a resident from opening a door was recorded over a twenty-four hour period. These results were compared to frequencies of unauthorized exiting before and after the intervention of the tape. Results are given in a statistical analysis of the two conditions

**Research-Based Findings**

Results did not support the hypothesis that the tape grid would reduce unauthorized exiting or removing the grid would result in increased exiting behavior. It was believed that the enticing view visible through the glass doors distracted residents attention from the grid.

Chafetz, P. K. (1991). Behavioral and cognitive outcomes of SCU care. *Clinical Gerontologist*, 11(1), 19-38.

---

### **Description**

This study compared 12 residents of a dementia special care unit (SCU) and 8 residents of a segregated but not specialized dementia unit in another nursing home, to test the impact of specialized care on longitudinal (13-15 months) change in behavior and cognition. The longitudinal model included specialized elements in activities, staff selection and training, physical environment, and family involvement.

### **Environmental Context**

Development of the SCU environment emphasized three elements: creating an outdoor patio, securing exit doors, and securing closet doors and bureau drawers. The unit has exclusive, direct access to a large patio, newly constructed for the SCU. The 1500 square foot patio is surrounded by an unclimbable six-foot wooden fence. Many resident activities are held on the patio. The fence is functionally locked by a pair of spring-loaded latches.

### **Research-Based Findings**

Three methods were used to secure exit doors. The first was a tape grid. The second was a "cognitive lock", i.e. installing a second latch on each exit door. The third method uses magnetic locks which are opened by entering a four digit code on a digital keypad. In resident rooms, bypass closet doors and three out of four drawers per bureau were equipped with manual latches to deter rummaging by the residents.

Preliminary studies suggested that the units' staff/resident ratios were quite similar, and the SCU contained slightly more environmental amenities than the comparison unit, chief among them being the dedicated patio. Results of the longitudinal study indicate that the SCU had very little differential impact on the behavioral or cognitive course of the subjects' dementia. No results suggest any superiority of outcomes on the SCU over those on the segregated but not enriched comparison unit.

As the outcome measures were "wide band", it is possible that some unit differences did have significant effects on some behaviors, but were cancelled out, or otherwise undetected. Also, it is possible that cognition and overt behavior are not the most sensitive domains of response to SCU care. It may be more appropriate to compare the quality of life experienced by demented residents of SCUs and other units. According to anecdotal reports of the SCU staff and relatives, SCU resi-



dents were reported to be, on average, brighter and happier than demented residents in other units. Despite the methodological difficulties involved, it may be important to address quality of life as an outcome variable with SCU residents.

Christenson, M. A., & Gieneart, D. (1990). Redesigning the long-term care facility. Physical and Occupational Therapy in Geriatrics, 8 (3/4), 87-111.

---

**Description**

An overview of projected design changes in nursing home facilities including specific dementia unit designs are examined. These design changes stem from environmental conditions found in six Minnesota long term facilities during consultations. Design solutions for lighting, finishes, fixtures, furnishings, and wall and floor coverings are suggested.

**SDAT Patient**

**Sensory Losses**

The elderly lose senses as they age and therefore require further environmental modifications to facilitate optimal performance. The majority of dementia clients are elderly and suffer even greater functional deficits when the confusion is coupled with sensory losses. Therefore, it is essential that the environment is modified in order to provide compensation for the dementia client.

**Therapeutic Goals**

To minimize sensory problems of the elderly in nursing homes as well as the dementia population, through modification of the environment.

**Design Implications**

**Lighting**

Too much or too little light can hamper the safety and comfortability of the elderly. To prevent glare caused by too much light, shiny floor surfaces and direct lighting should be avoided. Using warm white fluorescent bulbs with minimal flickering and appropriate fixtures can significantly decrease the glare. Corridors should have 30 to 40 footcandles of lighting to provide safety for the elderly individual. A variety of window treatments allow for greater control of the outdoor lighting to eliminate glare including mylar film, shades, blinds, and draperies.

**Noise Levels**

- Acoustical ceiling tile specially designed to absorb sound in the frequency range where speech is most intelligible is recommended in corridors and other problem noise areas. When installing ceiling fans the noise factor must be considered and it is suggested to that the blades match the ceiling color; contrasting blades cause confusion.
- Solution-dyed carpet with a liquid barrier that is tightly woven is recommended to reduce glare, absorb sound, create a secure environment, and provide a homey atmosphere.

## **Landmarks**

Cues which assist an individual in orientation and wayfinding are recommended in a nursing home setting, especially with the demented population. In a multi-corridor or level facility, every corridor should have unique identity by using colors, distinctive objects, and shapes.

## **Furnishings and Fixtures**

Furniture must consider a number of things; it must suit ambulatory residents and be wheelchair accessible, it should be safe and comfortable and be homelike. All low tables should be removed to avoid safety problems with resident's visual and balance problems. Adjustable tables are recommended to accommodate both wheelchairs and ambulatory seating. The color of the seat cushion should contrast in color with the floor so it is distinguishable.

## **Specific Room Recommendations**

Resident rooms, lounges, dining areas, nurses stations, bathrooms, and activity rooms are all discussed in this paper specifically. These recommendations include noise reduction, lighting, color contrast, homey atmosphere, and landmark issues.

## **Dementia Unit Recommendations**

Many facilities design separate wings for dementia clients in order to cope with their wandering and disorientation. Two areas of concern are addressed in this article: safety and space. It suggests that the best way to deal with wandering effectively is to 'hide' the exits. Elevator buttons can be covered with pictures or signs, cloth panels can cover door knobs, and barriers (plants, gates, screens) can be placed to confine the residents to a particular area. Other safety considerations suggest bed rails are dangerous because residents get their feet caught in them, windows also must be secured so residents cannot climb out. Pacing areas are a must because of the wandering in this population, it suggests that by using a line on the floor wanderers tend to follow it.

Cleary, T. A., Clamon C., Price, M. & Shullaw, G. (1988). A reduced stimulation unit: Effect on patients with alzheimer's disease and related disorders. Geron-  
tologist, 28 (4), 511-514.

---

**Description**

An experimental Reduced Stimulation Unit (RSU) for the care of people with Alzheimer's disease or related disorders is described and evaluated.

**Alzheimer's Patient**

Levels of Stimulation

There is little empirical research to support increased or decreased levels of stimulation as being optimal for the dementia patient. However, due to the cognitive deficits and nature of Alzheimer's and related dementias, high levels of sensory stimulation is believed to cause agitation and catastrophic reactions.

**Environmental Context**

The RSU opened with 11 patients. It was located within an existing nursing facility, in an eight room, 16 bed area separated by doors at the end of a hallway. Areas for eating and small group activities were set up in four of the rooms. To reduce stimulation in the environment, staff and family behavior, as well as the physical environment were modified. Visual aspects of the unit were neutral in design and color, and there were no potential sources of stimulation from televisions, radios, or telephones (except one telephone for emergencies).

**Therapeutic Goals**

Regulation of Stimulation

The reduction of unnecessary stimulation is expected to alleviate problems such as wandering, agitation, and negative verbal feedback.

**Research-Based Findings**

Decreased Levels of Agitation

Agitation and mood swings were substantially reduced in the RSU. Agitation levels rated on a 4 point scale decreased from 1.7 to 8. Restraint use was significantly reduced among those patients needing it, and family members reported more calmness, serenity, and less agitation in their patients.

Positive Wandering

Wandering created much less concern as patients were free to wander safely anywhere on the unit and their doing so was not disruptive to anyone. The closed doors of the unit were clear boundaries and only occasionally did patients attempt to leave the unit.

**Increased Body Weight**

Weight loss was reversed using lower levels of stimulation in a small dining room. Before the patients were admitted to the RSU, all had been losing weight. After it opened, 8 of the 11 had reversed the downward trend, and 3 of those 8 needed to go on reduction diets.

**Increased Socialization**

An unanticipated effect of the new unit was an increase in socialization. More interaction occurred both between patients themselves, and between the staff and patients in the RSU.

**Design Features**

**Doors**

The doors at the entrance of the RSU were camouflaged in order to discourage patients from wandering out of the unit.

**Visual Aspects**

Pictures and wall coverings were neutral in design and color.

**Noise Levels**

There were no potential sources of stimulation from televisions, radios, and telephones (except one phone for emergencies).

**Size**

The number of residents was minimal—the unit opened with 11 residents (with the potential for 16). The size of the tables and rooms for group activities were small as well.

**Cluff, P. J. (1990).** Alzheimer's disease and the institution: Issues in environmental design. American Journal of Alzheimer's Care and Related Disorders and Research, 5 (3), 23-32.

---

**Description**

An architect looks at the design implications for long-term care facilities and chronic care hospitals which better meet the needs of their patients with Alzheimer's disease. Unit layout, the use of color and pattern, and furnishings are discussed in-depth.

**Therapeutic Goals**

The overall goal is to create an environment that will compensate for physical and cognitive losses associated with Alzheimer's disease, while supporting existing competencies

**Design Implication**

**General Guidelines**

- allow for changes and progressive decline of clients
- reinforce the competencies of the client
- provide both privacy and opportunities for socialization
- provide security and support through compensation
- provide appropriate environmental quality and building systems
- provide a homelike atmosphere which is the most normalizing
- provide a range of activity areas accessible to the client regardless of functional limitations
- provide reality orientation in a variety of forms

**Spatial Organization**

- resident rooms should be designed for no more than 2 people, with attached bathrooms that are wheelchair accessible
- Lounges, activity areas, and dining rooms should be designed to accommodate a variety of uses
- walking distances from the nursing station should be no longer than 110 feet from the furthest resident room
- appropriate lighting, heating, and ventilation as well as communication and safety systems should be suitable for the population

**Social Organization and Scale**

10 to 20 residents is the recommended size of a unit, with a significant number of single rooms available.

**Designs for Functional Competence**

The reinforcement of information by the supplementary information in the environment.

### **Color and Pattern Applications of Design**

- avoid blue colors because they are difficult to perceive due to normal aging of the eye; warm bright colors are ideal
- avoid white and glare-producing materials
- provide adequate lighting
- use visual contrast to indicate changes in floor grade

### **Other Interior Design Considerations**

- choose a carpet or floor coloring with a simple design and low glare
- provide a contrast between flooring and vertical wall finishes
- provide signage, but don't overdo it (picturegrams, simple words are useful)

### **Furnishings:**

- chairs should ergonomically fit the patients using them: seat height between 15 and 18 inches; seat depth between 20 and 22 inches; and provide an armrest
- recommended adaptations include: lumbar or neck support cushions, something added near head level to provide support, seat cushions which are raised in the front to serve as a passive restraint
- seating with adequate upholstery and space at the rear to allow crumbs to drop clear
- other adaptations include: seat belts, footrests, leg extensions, and clip on chair trays
- homelike design is most desirable, with fire and moisture resistive fabrics and detachable cushions

Cohen, E., Lyman, K. , & Pynoos, J. (1991, March/April). Adapting day care center settings for persons with Alzheimer's disease: Environmental design training for staff. The American Journal of Alzheimer's Care and Related Disorders & Research, 6(2), 25-32.

---

### **Description**

This study describes a two year project in which training materials for staff in adult day care centers were developed to increase awareness of the effect of the physical environment on persons with Alzheimer's disease and related disorders. In the past, there has been little attention given to the physical environment where care is provided for this population, the staff knowledge was limited in this area as well. This project had two objectives:

- to develop materials to increase staff awareness of design problems and potential modifications in adult day care settings through environmental assessment; and
- to provide an educational workshop to train "trainers" selected from the staff, who in turn would train the staff of 10 additional day care centers.

A needs assessment was done at the beginning of the project to:

- Identify areas in which training was needed;
- Obtain a comprehensive profile of adult day care centers in California; and
- Gain an understanding of current issues and concerns confronting center staff.

### **Physical Context**

The survey instrument was mailed to 99 adult day care centers in California comprising a representative sample of the three day care models - adult day health care, social day care and adult day care resource center. The survey had a 254 item questionnaire divided into 10 sections:

- General information
- Physical environment
- Services/activities
- Staff
- Participants
- Management of behaviors
- Funding
- Caregiver support
- Minority outreach
- Training needs.



## **Research-based Results**

Results relating to the physical environment indicated that only 16 percent of the facilities were built from scratch and designed specifically as adult day care centers; 43 percent were in settings that had originally been designed for other purposes and had been renovated; and 37 percent were housed in facilities with no major adaptations for frail elderly or those with Alzheimer's disease. Centers varied considerably in terms of physical features. For example, square footage ranged from 750 square feet to 6800 square feet. The ratio of square footage to participants was nearly equal for all types of centers, roughly 52 square feet per participant.

The survey examined 15 environmental characteristics and the respondents' satisfaction with these specific features. Environmental features that were reported to create problems in managing participants included the amount of space available, the location of bathrooms, and security systems to prevent wandering. Design features frequently rated as poor included:

- Security devices
- Storage
- Office space
- Amount of space
- Privacy
- Bathroom location

These findings were confirmed by observers' ratings and focus group discussions held in the day care centers.

## **Design Implications**

Simple inexpensive modification could have been helpful in many cases which include:

- The use of color, objects, and directional or pictorial signs in providing wayfinding cues to a restroom or outdoor area;
- Creating a variety of furniture arrangements that accommodate both intimate as well as large group settings;
- Removing clutter and re-arranging furniture in a room to provide easier access for people using aides or with mobility impairments.

Cohen-Mansfield, J., Werner, P., & Marx, M. S. (1990). The spatial distribution of agitation in agitated nursing home residents. Environment and Behavior, 22(3), 408-419.

---

### **Description**

Twenty-four highly agitated and cognitively impaired residents were observed for 3 months. The specific location and the agitated behaviors were recorded. Pacing was observed in the corridor, at the nursing station, and in other residents rooms. Verbally and physically aggressive behaviors were observed at the toilet and other areas in which the residents were in need of help.

### **Environmental Context**

Eight residents in the study were chosen from three units in the nursing home. The three units were similar in physical design and in characteristics of residents. These residents were chosen because they had the highest level of agitation in the nursing home as well as being significantly cognitively impaired. A researcher observed each resident and recorded the number of times and location of specific agitated behaviors. Each observation lasted for three consecutive minutes per hour for 24 hours of the day.

### **Research-Based Findings**

- the residents were observed most frequently in the activity room, the resident's own room, the dining room and the toilet
- agitation occurs most frequently in the corridor and toilet and least frequently in the dining room and the activity room
- residents manifested the highest total number of agitated behaviors at the locations where a high percentage of residents were observed (corridors)
- manifestations of verbal agitation were associated with locations which residents might need or want assistance

**Description**

This article discusses wandering and related behaviors of the dementia client. Each behavior is examined and specific solutions are offered for the management of wandering in a long term care facility.

**Alzheimers Patient**

Wandering: This article defines wandering as self initiated ambulation independent of environmental cues. The wanderer is a physically fit individual with a supply of unused energy. Because of the nature of the disease, however, he has poor judgement, spatial disorientation, and an inability to think abstractly.

**Therapeutic Goals**

The goal of caregivers is to provide a safe environment for dementia clients as well as a rich, supportive environment that will reduce the person's need to wander.

**Design Implications**

**Safe Exits**

Several environmental measures can be taken at exits to discourage residents from wandering out of the unit where they may become hurt or lost:

- Place chimes on doors
- Install an alarm system which is triggered by a bracelet or necklace worn by a patient when she tries to leave the facility or unit (alarm should be pleasant, not frightening)
- Use coded button locks
- Place full length mirrors on doors
- Paint doors the same color as the walls to hide them
- Place pictures over elevator buttons to prevent exiting through elevator doors

**Safe Wandering Areas**

There is a need for safe walking areas both indoors and out.

**Rich and Supportive Environment**

A rich and supportive environment can reduce residents' need to wander. This environment can be created by training staff to respond supportively to different causes of wandering, as well as by supportive design.

**Night Wandering/  
Evening Restlessness**

Staff should involve the patient in activities (having a snack, making cookies, tossing a ball). The design of the facility should include areas where such activities can take place.

<b>Reactions to Noise or Crowds</b>	<b>Staff should remove clients from agitating situations. Disturbing noise from alarms or intercoms should be avoided.</b>
<b>Searching for Someone</b>	<b>Staff should involve the client in activities such as those previously mentioned, or in looking at pictures of the missed person and discussing previous visits. Patient rooms should allow space for reminders of family and friends (such as photos).</b>
<b>Boredom</b>	<b>Staff should provide individuals with activities. The design of the facility should include a place for people-watching and socialization.</b>
<b>Disorientation</b>	<b>Wayfinding devices such as signs or different colored awnings on bathroom doors should be used. Resident rooms should be identified with the name and picture of the resident, and decorations symbolizing the resident's interests or vocation. Signs with arrows should be placed in the hallway to point the direction to the living room, dining room, and kitchen.</b>
<b>Searching for Things to Handle</b>	<b>Provide a box of possessions for clients to handle from home.</b>
<b>Need for Exercise</b>	<b>Safe walking spaces both indoors and out, and exercise classes should be provided.</b>

Coons, D. H., & W. Reichel. (1988). Improving the quality of life in nursing homes. American Family Physician, 37 (2), 241-248.

---

**Description**

This article discusses the role of the physician in a long term care facility as an advocate for its residents. It discusses interventions to meet the specific objectives in the long term care facility. It comments on the environment and therapeutic interventions involving the dementia client.

**Therapeutic Goals**

To provide a nursing home with a therapeutic environment where family physicians and nursing staff work together in order to create a living situation which meets the total needs of the residents.

**Design Implications\***

Maximum Autonomy

Avoid restraints; be flexible; and avoid a set wake up and bedtime hours for residents

Facilitate Normal Social Roles

Provide opportunities for residents to use homemaker skills, to do volunteer work, and to do facilitate family and peer roles

Help Residents Maintain Past Activities

Encourage residents to continue in past hobbies, interests, and routines. Provide reminiscence groups

Make Families Feel Welcome

Maintain unrestricted visiting hours. Offer educational programs and allow them to participate in the care of the resident. Send out newsletters and arrange open houses for family members

Provide Sensory and Social Stimulation

- Encourage residents to participate in activities of daily living.
- Provide spontaneous activities.
- Use visual aides and colors to offer visual stimulation.
- Use pets for stimulation

Home-like, Personal Environment

Allow residents to furnish rooms with personal belongings

Allow for privacy

- Provide single rooms if possible
- Use wooden dividers in multi-resident rooms.
- Provide maximum privacy in bathrooms.

\*Design Implications Summarized from Table 1 Improving the Quality of Life in Nursing Homes (Coons & Reichel; 1988)

Corcoran, M., & Gitlin, L. N. (1991). Environmental influences on behavior of the elderly with dementia: Principles for intervention in the home. Physical and Occupational Therapy in Geriatrics, 2(3/4), 5-22.

---

**Description**

In order to understand and modify transactions between people with dementia and their environments, an environmental model, developed by Barris and colleagues, is discussed and expanded. Twelve intervention principles are derived from the model, and a case study demonstrates their application in the home.

**Alzheimer's Patient**

People with dementia often experience heightened sensitivity to influences from the environment. Such influences may contribute to a range of behaviors which may be maladaptive and pose difficulty for the caregiver. Skillful environmental intervention can ease the burden on caregivers and improve the quality of life of the person with Alzheimer's.

**Therapeutic Goals**

Intervention principles are derived from each of the model's four environmental layers: objects, tasks, social groups/organizations and culture.

**Object Layer**

**Availability**

- Objects must not only be available but visually apparent to be utilized. Unnecessary items should not be visually available.

**Complexity**

- The surroundings of a person with dementia need to be simple in order to offer accessible information for orientation and navigation.

**Flexibility**

- An object should be used in only one way in order to avoid confusion.

**Symbolic Meaning**

- Age appropriate materials and successful end products of a meaningful activity should be present to maintain individuality and identity.

**Task Layer**

**Complexity**

- Familiar, repetitive, gross motor activities should be emphasized to reduce task complexity. Simplified, concrete verbal instructions should be used and reinforced by non-verbal instructions.

**Temporal Boundaries**

- Orienting cues from concrete representations of time or season must be highlighted to facilitate competence.

Rules	<ul style="list-style-type: none"> <li>• A dependable routine should be established which includes frequent rest periods.</li> </ul>
Seriousness/Playfulness	<ul style="list-style-type: none"> <li>• Expectations of an individual with dementia must be clearly stated and made known in a variety of ways.</li> </ul>
Social Dimension	<ul style="list-style-type: none"> <li>• Provide individuals with simple tasks that lack negative consequences and will not produce anxiety.</li> <li>• Tasks should be primarily cooperative, not competitive, and the outcome should benefit oneself or a highly approving other to create an environment which reduces problem behaviors.</li> <li>• Vicarious involvement in events can assist the impaired person to remain part of the group.</li> </ul>
<b>Social Groups/Organizations Layer</b>	
Permeability	<ul style="list-style-type: none"> <li>• It must be determined if the needs of the family are being met, and how comfortable they are with whom and how these are met</li> <li>• The formal support worker must establish an atmosphere of collaboration by facilitating an open exchange of individual perspectives concerning problem identification and care strategies.</li> </ul>
Structural Complexity	<ul style="list-style-type: none"> <li>• One family member needs to be identified and trained as a care coordinator.</li> </ul>
Cultural Layer	<ul style="list-style-type: none"> <li>• There must be an understanding of unique family processes and caregiver styles as an important aspect of the environment because it effects caregiving and patients' behavior.</li> </ul>

**Fernie, G., & Fernie, B. (1990).** Technological innovations for individuals with alzheimer's disease. American Journal of Alzheimer's Care and Related Disorders and Research, 5(3), 9-14.

---

**Description**

This article discusses the importance of providing the Alzheimer's client with technological devices which will optimize function. Currently there is much attention on environmental controls for physical deficits with few helpful devices for the cognitively impaired. Specific devices are examined and general principles for future devices are given.

**Therapeutic Goals**

To provide optimal functioning through technological environmental control devices without causing stigmas, unfamiliarity, and obtrusiveness.

**Design Implications**

**Dignity**

- provide designs that have a large market size and therefore are affordable
- avoid stigmatization by designing for the disability
- provide a design which allows for maximum independence
- emergency response systems for early Alzheimer's clients may be helpful

**Ergonomics**

- Factors to consider in design: simplicity, familiarity, visibility of controls and labels, and the strength and dexterity required to use the product
- timer switches on the oven dial devices in order to prevent fires
- microwave ovens for the future demented population
- thermostatic controls which are preset at the comfortable and safe temperature ranges with a dial marked 'cooler' to 'warmer'

**Research and Product Development**

- development of technologies for the studies of environmental and programming behavior and abilities of the cognitively impaired
- development of new and better ways to facilitate the abilities of the Alzheimer's clients
- automated medication dispensing system
- television reminders
- development of ergonomic principles of devices for an environment which could provide a number of necessary functions for the individual with Alzheimer's disease in the home (turn on lights at night, displaying messages on television...)



Gold, D. T., Sloane, P. D., Mathew, L. J., Bledsoe, M. M., & Konanc, D. A. (1991). Special care units: A typology of care settings for memory-impaired older adults. *The Gerontologist*, 31(4), 467-475.

---

### **Description**

This study attempts to identify factors that contribute to the quality of care of dementia adults in nursing home settings. Traditional and Special Care Units (SCU's) are divided into eight categories based on environmental, administrative, and behavioral factors. The resulting distribution is then given, showing support for SCU's, as they are associated with more positive categories of units.

### **Environmental Context**

Sixty-three nursing homes from five of the 10 most populous states were randomly selected. The SCU's were selected by using stratified random sampling procedures and the comparison nursing homes were matched to homes with SCU's. Over a 16 month period, three investigators visited these nursing homes to observe the type and quality of care, the environment, and the personnel and patient populations. Most data was documented in unstructured narratives by the investigators. Then 55 of the nursing homes were rated into 8 typologies.

### **Therapeutic Goals**

#### **Positive Environment**

Favorable outcomes from placing the dementia client in SCU's include: decreased agitation, decreased wandering, use of fewer chemical and physical restraints, a decrease in socially unacceptable behaviors, weight gains, reduced depression, greater ability to sleep, and more socialization.

### **Research-Based Findings**

#### **Overall Quality of Care is Positive**

The distribution of the 55 (both SCU's and traditional) dementia care settings in eight categories, from a high quality of care to a very low quality of care, shows that as a whole, the quality of care is more positive than negative.

#### **SCU's are More Positive Environments**

SCU's were found to be associated with more positive categories of units.

## **Design Features**

### **Homelike Atmosphere**

The desirable units are bright and cheerful with both private and common areas that have a homey atmosphere. Each patient's room is decorated with personal belongings from home, and carpet is often used rather than slippery institutional flooring.

### **Private Areas**

The high quality units in this study give the patients a great deal of privacy, including the option for private rooms. Many patients have private bathrooms.

### **Size**

The size of the units are smaller in the high quality care units than in the less desirable units.

Hall, G., Kirschling, M. V., & Todd, S. (1986, May/June). Sheltered freedom: An Alzheimer's unit in an ICF *Geriatric Nursing*, 132-137.

---

**Description**

Twenty-four patients are studied to determine the effects of placing them in a special Alzheimer's unit. The effects of the unit design and the care plan were evaluated by comparing residents, behavior, weight loss, and needed doses of anti-psychotic and neuroleptic medications.

**The Alzheimer's Patient**

One theory concerning Alzheimer's disease is that brain cells deteriorate, which then impairs perceptual, processing and response abilities. These impairments reduce a person's coping capacity which reduces the threshold of stress. A low threshold for stress results in catastrophic reactions which are overreactions "precipitated by the brain-failed person's overwhelming anxiety in a situation of failure."

**Environmental Context**

The study was conducted in an 89 bed intermediate care facility in Iowa. Twenty percent of the patient population is diagnosed as having Alzheimer's disease.

**Low-Stimulus Unit**

A twelve semi-private room was designated as a low-stimulus unit. Twelve residents with Alzheimers were relocated to the unit as well as twelve residents whose activities were limited to the bed or a chair. The low stimulus unit had little staff and visitor traffic and was self contained by fire doors with curtains on the windows. Chairs were placed as environmental cues in the hallway to provide places for resting. Resident ate in groups of three and four at tables provided in every other room. Visual stimuli such as mirrors and traditional art was removed from the unit. In their place, pictures of simple geometric shapes created from carpet remnants were placed on the walls. Auditory stimuli was reduced by removing the public address system, all television sets and telephones. Residents are allowed radios and reading materials.

**Care-Giving Plan**

Use a concept of providing a low-stimulus environment which will compensate for losses. It will also decrease stressors and control fatigue. The nursing staff use few neuroleptic drugs in order to allow residents a maximum control of sensory, perceptual and motor functions. Care schedules are consistent providing residents with a routine. Tasks are simplified to avoid any catastrophic reactions. Two rest periods are provided to encourage residents to relax in an easy chair or recliner.

Activity therapy tasks are designed to maintain the residents' cognitive status and improve their manual dexterity. Reality orientation, reminiscence therapy, fantasy validation therapy and principles of the therapeutic milieu are also used on the unit.

#### **Family Member Involvement**

Family members select a regular visiting time which appears in the residents schedule.

#### **Staffing Considerations**

Staff are involved with in-service programs to encourage multi-disciplinary problem solving and understanding of issues and concerns. Staff are rotated every week to reduce burn-out stress.

#### **Therapeutic Goals**

Segregation will improve the quality of life by decreasing stressful interactions with the physically frail but alert residents.

#### **Research-Based Results**

- Residents would seek out one another for support and interaction
- Residents use the meal time to socialize and finish eating the food on their trays
- Weight loss decreased because residents were no longer wandering continuously but were using the provided seating cues.
- Five of the twelve residents have either reduced or eliminated the need for antipsychotic and neuroleptic medications. Residents sleep through the night without sedation.
- Agitation, wandering and combativeness have all been reduced.

**Hepburn, K., Severance, J. & Gates, C. (1989, September/October). institutional care of dementia patients: A state-wide survey of long-term care facilities and special care units. The American Journal of Alzheimer's Care and Related Disorders Research, 4 (2), 19-23.**

---

**Description**

Survey of 332 nursing homes in Minnesota in clinical and family caregiver journal.

**Environmental Context**

Approximately half of all long-term care residents have dementia. Seven percent of the facilities had an identifiable SCU, and another 7% indicated plans to open one within the next three years. Managing problem behaviors (wandering, aggression and noise) were identified by over half the nursing homes as their primary concern, followed by environmental concerns (design, amount of space, wandering space and security) which were identified by 37% of the facilities. Nursing homes are much more likely to use restrictive measures such as physical or chemical restraints (82-96%) versus less restrictive measures such as diversion (56-82%). Principle criteria for admission to an SCU were the absence of disturbing behaviors (22.7%) and the ability to ambulate (13.6%).

Holmes, D., Teresi, J., Weiner, A., Monaco, C., Ronch, J. & Vickers, R. (1990). Impacts associated with special care units in long-term care facilities. The Gerontologist, 30 (2), 178-183.

---

**Description**

Evaluative study published in an academic/research-based journal.

**The Environmental Context**

Research conducted in four long-term care facilities (health related facilities and skilled nursing facilities) in New York State which had both an SCU and demented residents in non-SCUs. The SCUs differed from the traditional units in the following ways: staffing (SCUs had higher staffing ratios and dementia specific training, and use inter-disciplinary teams), programming (greater emphasis on reality orientation and music programs, use of finger foods to promote independence in eating), physical environment (alarmed doors, furniture with rounded edges, more program/activity rooms, nursing stations located near elevators to monitor residents, and dining rooms set up for "optional feeding" of patients).

**Research-based findings**

Comparison between SCUs and non-SCUs suggest that residents in SCUs were more cognitive and functionally impaired (more disoriented and more "problem" behaviors), but less impaired in terms of ambulation and range of motion. Assessments repeated 6 months later indicated general decline in most areas of the assessment. However, placement on the SCU appeared to have virtually no effect on resident outcomes over living on a traditional unit. Staff on SCUs were less likely to view residents' behaviors as disruptive than their counterparts on traditional units.

**Hussian, R. & Brown, D. (1987).** Use of two-dimensions grid patterns to limit hazardous ambulation in demented patients. *Journal of Gerontology*, 42 (5), 558-560.

---

**Description**

Quasi-experimental study, in academic journal.

**The Alzheimer's Patient**

Visuo-perceptual problems in individuals with Alzheimer's disease may affect their ability to distinguish between two and three dimension objects.

**Environmental Context**

Mental hospital unit with exit doors at the ends of the corridors. Researchers installed a series of eight patterns of tape lines applied to the floor in front of the exit.

**Therapeutic Goals**

Reduce the incidence of unauthorized exiting from the unit, in a cost effective and non-confining manner (i.e., without restraints).

**Research-based Findings**

Series of eight strips of tape reduced the number of times residents got to the door by 64%. Most of the eight wanderers decreased some, but the tape was not effective for one patient.

Hyde, J. (1989). The physical environment and the care of alzheimer's patients: An experiential survey of Massachusetts' Alzheimer's units. American Journal of Alzheimer's Care and Related Disorders and Research, 4(3), 36- 44.

---

**Description**

Eight existing facilities were surveyed in order to provide information on optimal design implications and care for Alzheimer's clients in future units.

**Environmental Context**

Seven nursing homes and one day care center in Massachusetts were studied. They were not designed or extensively renovated specifically for the Alzheimer's population, but most had undergone minor modifications such as repainting. The researchers administered interviews, tours, and questionnaires in the facilities to gather information regarding organization of space, design details, and furnishings. Program design and demographic information was also collected.

**Therapeutic Goals**

The following underlying goals of the facilities were found by the authors:

- To provide an environment that will help compensate for cognitive and sensory deficits
- To provide an environment that will allow patients a sense of mastery in their environment and in activities of daily living
- To enhance the quality of life, including the use of leisure time and interpersonal relationships
- To reduce problem behaviors, agitation, and tension
- To maintain physical health and safety
- To create an environment which allows staff to work competently and to communicate effectively with each other, with patients, and with their families
- To meet state and federal life safety and other codes

**Design Implications**

Compensate for Cognitive and Sensory Deficits

- Use picture and word labels in units to aid memory
- Use wayfinding cues such as arrows or color coding
- Simplify environmental information through the use of contrast (ex: contrasting doorways and walls, table-tops and dishes)
- Color schemes must take into account visibility problems such as glare and the loss of ability to distinguish pale colors
- Unnecessary visual stimulation should be avoided



	(eg., patterns or stripes in flooring, glare on floor tile may be both perceived as obstacles)
	<ul style="list-style-type: none"> <li>• Use sound absorptive materials for walls, floors, ceilings, and other surfaces</li> </ul>
<b>Increase Sense of Mastery</b>	<ul style="list-style-type: none"> <li>• Arrange clients' possessions where they can locate them independently (open shelves instead of drawers, labeling items)</li> <li>• Encourage patients to bring in their own furniture and other items so they feel more ownership of their space</li> <li>• Toilets should be nearby and easy to use (eg., toilet stalls that swing closed but do not lock)</li> <li>• Mealtime should promote sociability, enjoyment, and mastery. Small tables of 5 or 6 people should be used, with one aid at each table modeling eating behavior and providing assistance. There should be plates with rims, easily manipulated silverware, and a high contrast between the utensils and table.</li> </ul>
<b>Enhance Quality of Life</b>	<ul style="list-style-type: none"> <li>• Provide clients with plenty of fresh air and walking space</li> <li>• Involve families and friends in the the life of the unit when they visit</li> </ul>
<b>Activity Areas</b>	<ul style="list-style-type: none"> <li>• Activity areas should be made up of several smaller rooms as opposed to one large one.</li> <li>• Furniture should be foldable and stackable to accomodate a variety of activities</li> <li>• Alcoves or side seating should be provided for passive participation in activities</li> </ul>
<b>Furnishings</b>	<ul style="list-style-type: none"> <li>• Furnishings should be particularly suited to this population (chairs that allow gentle rocking, or lap bars or trays which remind a non-ambulatory person to remain seated may be beneficial).</li> <li>• Furnishings should be unusually comfortable, as people with dementia have limited ability to express their wants or to complain.</li> </ul>
<b>Ordinary Life Activities</b>	<ul style="list-style-type: none"> <li>• Provide a kitchen for client use under supervision</li> <li>• Provide a greenhouse or planting area</li> <li>• Encourage client participation in routine tasks (eg., folding laundry)</li> </ul>
<b>Reduce Tension and Problem Behaviors</b>	<ul style="list-style-type: none"> <li>• Avoid extraneous or confusing visual or auditory stimuli</li> <li>• Provide adequate walking space</li> <li>• Provide adequate space for small numbers of patients in each room</li> <li>• Avoid noisy or crowded bathrooms, and the use of unfamiliar bathroom contraptions</li> <li>• Use Dutch doors on resident rooms to maintian the</li> </ul>

privacy of resting patients and protect them from wanderers

- Provide a “quiet room” with a window for agitated patients to calm down in and not upset other patients

#### Maintain Physical Health and Safety

- Plants and activity materials should be non-toxic
- Eliminate confusing clutter or furnishings that might cause tripping
- Tables should be heavy and non-tippable to bear a patient’s weight while getting out of a chair
- Air should be kept at the proper temperature and humidity, as older people lose some ability to maintain homeostasis
- Medications must be locked up at all times
- To prevent patients from wandering off the unit, doors should be either alarmed, painted to be as unobtrusive as possible, or obscured using screens, gates, or other partial barriers consistent with fire codes. Simply painting a line on the floor in front of the door will keep some patients from crossing.

#### Support Staff in Their Work

- Provide a room behind the nurses station with a Dutch door. This will allow contact with patients, yet privacy for administrative tasks and informal meetings
- Provide access to an office off the unit for conferences, meetings with families, or to discuss problems away from the unit
- Provide staff with locked storage space for personal belongings
- Provide more space than is usually allotted for recreational materials
- Provide space for patient charts and inter-staff communication in an area of patient rooms that is not accessible to the patients
- Provide low intensity lights that can be flipped on at the door which would not disturb resting patients
- Provide places where the staff can watch activity areas and be visible from the nurse’s station.
- Prevent patients from emptying dirty clothes hampers and wastebaskets by key locks on laundry and utility doors. A single key for all such locks is recommended so staff do not have to carry heavy keychains

**Johnson, C. J.** (1989, March/April). Sociological intervention through developing low stimulus Alzheimer's wings in nursing homes. American Journal of Alzheimer's Care and Related Disorders and Research, 4 (2), 33-41.

---

**Description**

This paper describes a "low stimulus Alzheimer's disease (AD) wing" in a nursing home designed by the author of the article. A sociological, theoretical perspective to outline this model is used in this paper. The nursing home wings for AD residents are designed to maximize daily function and independence of the AD residents. This model discusses the development of staff, the admission procedures and selection of residents as well as the sociological importance of the interaction of staff and family with the AD residents.

**SDAT Patient**

AD and related dementia clients define their own worlds by the verbal and non-verbal uses of symbols and language; therefore, a meaningless life can become meaningful through a process of social interaction. This can be accomplished through appropriate dialogue and environment between staff and client.

**Therapeutic Goals**

**Low stimulus unit**

- to provide both staff and families the extra counseling and education necessary
- to work with residents' remaining assets and facilitate safe behaviors and environment
- to develop a specific care plan for each dementia client, therefore recognizing their strengths and deficits
- to select a staff who can meet the demands of the dementia client
- to integrate the community into the facility through planning and activities
- to develop a small segregated unit for dementia clients (no more than 15 beds per wing)
- locate the common nursing station outside the unit and eliminate the intercom system
- use large doors to close off wing and avoid excessive noise
- avoid long halls
- use an inoffensive alarm system at the exits
- place chairs in the pacing areas to cue sitting
- give the client drawers or areas to rummage through
- color code doors and hallways in order to orient residents

- provide a little bulletin board with a short bibliography of the resident and a large picture on the door of the residents room
- use familiar symbols in order to orient confused residents
- walls should be painted in light off-pink, yellow or warm pastel colors
- materials should be highly textured and sound absorbent
- high glare materials should be avoided (high wax floors, fluorescent lighting)
- busy patterns should be avoided
- provide a home-like atmosphere

**Kenney, J. M., Stephens, M. A. P., & Brockmann A. M.** (1987, November). Personal and environmental correlates of territoriality and use of space. Environment and Behavior, 19(6), 722-737.

---

### **Description**

This study examines the territorial and spatial behaviors of the elderly, mentally impaired and independent in congregate housing. The researchers recorded information on possessive behaviors, control and defense, and patterns of daily activities in private, semiprivate, and public spaces. It was shown that personal competence had an effect on the behavior of the client in different levels of space. The hypothesis supported the theory that at different levels of competency one would vary in responses of territorial behaviors, in both private and public spaces.

### **Environmental Context**

A congregate facility offering services to a variety of elderly residents from total nursing care to independent living was the data collection site. Fifty residents, of the facility were randomly selected from those identified by the staff as able to participate in the research. The sample included 35 independent residents and 15 functionally impaired individuals. Of these fifty residents 8 displayed cognitive deficits. The residents were assessed by the Residential Environment Assessment Survey and the Residential Environment Activity Checklist in order to look at territorial and spatial behaviors in each level of space.

### **Research-Based Findings**

#### **Territorial behavior**

- All respondents reported a significantly greater territoriality toward private spaces than semi-private or public spaces.
- Independent residents demonstrated a significantly greater territoriality than the impaired residents
- Independent residents had significantly higher territoriality scores in the private space than the impaired residents, but no differences in semi-private or public territories
- The cognitively impaired residents reported greater territoriality than the assisted residents
- Cognitively impaired residents were more territorial in the public space than the assisted residents; but no differences were found in the semi-private or private territories

## Spatial Behavior

- The greatest difference in activity patterns occurred in the semi-public space rather than the public or private space
- both the assisted and cognitively impaired residents tended to engage in more physically inactive behaviors than the independent residents
- in the private spaces, all residents engaged in activities in which privacy is preferred, and in the public spaces, they engaged in less private behaviors

**Kuhn D. R. & Kallish C. (1991, July/August). An in-home respite program for Alzheimer families, The American Journal of Alzheimer's Care and Related Disorders & Research, 6(4), 29-34.**

---

**Description**

This article describes the Chicago Area Chapter of the Alzheimer's Association's "Alzheimer's Respite Training and Registry" program which is addressing the respite care needs of caregivers. Issues discussed include the programs' philosophy, administration, training program, linkage with caregivers and directions for the future.

**The Alzheimers Patient**

**Definition of Respite Care**

"A service or a group of services that provides caregivers with temporary periods of relief and rest away from the chronically ill person.

**Barriers to Using Respite Care**

Despite the need for respite care, it is often an under utilized resource:

- Lack of knowledge about services
- Inability to arrange services
- A perceived moral obligation to be the sole provider of care
- Over-protectiveness and the realistic belief that no one can provide adequate substitute care
- Past negative experiences with formal providers of care
- Prohibitive cost

**"Alzheimer's Respite Training and Registry" program**

**Program Philosophy**

Chicago area's need for an Alzheimer's Respite Aide Training And Registry program which would be initiated by and for caregivers. The goal of the program is to provide quality respite care through a centralized registry, which would list specially trained individuals who would match the needs of the family.

**Administration**

The program is administered by two part-time individuals. A part-time social worker provides assistance, as well as other professionals who are involved in the training program. The program has been funded by local foundations and additional contributions made by caregivers have established an assistance program to subsidize those who cannot afford the programs' fees.

**Training Program**

Potential aids are recruited by notices and classified advertisements as well as word of mouth. Recruited aids are informed that training is provided for free and

the fee for the service is \$6.00 an hour plus transportation cost. Potential aids are screened and have their references checked. Training involves videotapes, hands-on experience, lectures and discussion. The twenty-two hour course is comprised of seven sessions which include:

- Normal aging and dementia
- Understanding the Alzheimer's Individual
- Safety, First Aid and Emergency Procedures
- Site Visit to the Alzheimer's Family Care Center
- Understanding the Family
- Activities with a purpose
- Course Review, Ethical conduct and the Registry

#### Linkage with Caregivers

Caregivers who wish to use the service are sent an information packet which includes an application for service. Using the information from the application, a registry is consulted and a list of suitable available aides is compiled. The caregiver then selects an aide from the list based upon a telephone or personal interview. Follow-up surveys are mailed after a few months to review the quality and value of the services.

#### Directions for the Future

The program has been very successful but there is a challenge to locate new aides, especially in the surrounding suburban areas. A formal research study is planned to evaluate the registry and training course.



**Leon, J., Potter, D. E. B. , & Cunningham, P. J.** (1991, January/February). Availability of special nursing home programs for Alzheimer's disease patients. The American Journal of Alzheimer's Care and Related Disorders & Research, 6 (1), 2-11.

---

**Description**

A 1987 survey of 759 facilities, weighted to represent all nursing facilities, is presented and discussed. Examined are the number of facilities with Alzheimer's programs, their patient capacities, their characteristics, their future plans for expansion, the availability of training received by the staff and the availability of respite care these programs offer.

**Research Based Findings**

Number of Alzheimer's Programs

Of the 22,064 nursing homes, only, 1668 had Alzheimer's programs

Patient Capacities

Of the 1,645,661 nursing home beds 53,798 had Alzheimers unit beds.

Characteristics

The majority of the facilities with specialized programs were for-profit organizations with skilled nursing facility certification and over 100 beds. These facilities offer higher levels of services which include physical, occupational and speech therapy.

Future Plans for Expansion

At the end of 1991, if expansion plans and development plans materialize, there will be 3,100 facilities with special care programs with a projected patient capacity of 100,000, providing an additional 45,900 beds. Of the additional 45,900 beds, 27,902 will result from the development of new units and 17,991 beds will result from expanded units.

Availability of Staff Training

Of the 22,064 facilities surveyed in 1987 only 5% had specialized training for the care of Alzheimer's patients. Among the 1,668 facilities with special care units or programs, only 74% offered some type of special training in the form of special courses, in-service training or a training seminar. Special training occurred more frequently in the larger nonprofit and public facilities with SNF certification.

Availability of Respite Care

Among the 1,668 facilities with special care, 20.1% offered respite care in 1987.

**Policy Guidelines**

Demand for More Special Care Units

The demand for special services for the the victims of Alzheimer's disease still greatly exceeds present capacities. Public policies which encourage the develop-

ment of special care units appear to be warranted once the efficiency and effectiveness of special care units is understood.

#### Training Programs

Given the number of demented patients in facilities, more training programs should be included as part of in-service training. The lack of national standards for advertising a special care program should also be questioned considering the number of facilities which did not report a special training programs for its staff but contained a special care program.

#### Respite Care

The availability of respite care should increase considering the growing numbers in the elderly community with severe dementia and the trend towards specialized nursing home care. Present respite bed capacities would need to expand by some 670% to meet the potential demand.

Lovering, M. J. (1990, May/June). Alzheimer's disease and outdoor space: Issues in environmental design. American Journal of Alzheimer's Care and Related Disorders and Research, 5(3), 33-40.

---

**Description**

A landscape architect discusses the implications for the design of outdoor spaces for people with dementia.

**Therapeutic Goals**

Safety  
Visual and Auditory Acuity  
Physical Mobility  
Wayfinding  
Social Interaction and Privacy

Meeting these five goals makes possible the overall goal—to provide an outdoor environment which is as easy as possible to enjoy.

**Design Implications**

Opportunities to Observe Activity

The availability of such opportunities (for example, to observe visitor arrival areas, exercise or recreation facilities, and the change of seasons) is one of the greatest factors motivating people to use the space

Enclosure Without Confinement

A well-planned space allows for wandering while insuring that the person is safe; gates and locks should be camouflaged to minimize attention by the residents

Appropriate Plantings

Avoid hazardous plants—toxic, low hanging, and those which could create hazardous situations by dropping fruit on or near walkways

Adequate Lighting

Higher light levels are needed by older people. Glare should be minimized by providing shaded areas (such as trees or awnings), and by using nonreflective surfaces

Color Contrasts

Provide strong color contrast for easy viewing, avoid contrasts on floor where they can be perceived as depth changes

Facilitate Communication

Plan activity locations so that background noise (for example, from traffic or playgrounds) does not compete with areas for socializing, use baffling materials to dampen noise, and provide close or flexible seating arrangements which allow for ease of communication.

Compensate for Physical Deficits

Provide automatic doors, adequate space to manoeuvre and store aids, frequent rest stops, minimal grade changes, non-slip walkways, and handrails

**Simple Layout**

A wide, continuous route which begins and ends in the same place with distinctive landmarks and an absence of hidden spaces minimizes the fear of getting lost, and allows for supervision

**Small Social Spaces**

Provide a number of small social spaces, with several choices of group size; seating should be angled at less than 180 degrees for comfortable interaction

Lyman, K. A., Pynoos, J., & Cohen, E. (1993). Occupational stress and workplace design: evaluating the physical environment of Alzheimer's day care. Journal of Architectural and Planning Research, 10(2), 130-145.

---

### **Description**

The study examines the relationship between stress for service providers and the design of Alzheimer's care facilities. Previous research on occupational stress in helping professions have neglected the impact of the physical environment. Even when stressors are recognized, most often the interest has been in the coping resources of individuals rather than in facility design modifications. Lyman et al. describes the development of an evaluation instrument and training intervention.

Twelve adult day care centers were identified by the California Department of Aging for inclusion in an initial survey describing their servicess, staffing, participants, facilities and identifiable problems.

### **Environmental Context**

There were two phases of the project: the on-site evaluation of day care facilities, and the training intervention. An evaluation checklist was developed to assess the physical features of Alzheimer's day care centers. The Dementia Environmental Checklist (DEC) consists of ninety-nine physical features of Alzheimer's caregiving. The list included features that affect : safe supervision and surveillance, wayfinding, accessibility, autonomy, privacy, and other aspects of the physical design that minimize the intellectual, sensory and physical losses of patients. The initial survey indicated that the physical environment is often taken for granted and not viewed as an important training need. The on-site evaluation noted observations of facility design features that were problematic in Alzheimer care.

### **Research-Based Finding**

Ratings of design features in the initial survey, confirmed by observer ratings and staff interviews in the twelve Alzheimer's day care facilities , identified four aspects of the workplace environment that contribute to occupational stress in Alzheimer's care: inadequate space and spatial arrangements; security and surveillance features; bathrooms and personal care facilities, and staff space and privacy.

At the end of the training workshop, a post-test was administered to workshop participants. The data suggest that after the training intervention, participants reported more self-perceived information about the effect of the designed environment on Alzheimer's care and were more likely to correctly identify the effects of design features on persons with dementia.

Mathew, L., Sloan, P., Kilby, M., & Flood, R. (1988, March/April). What's different about a special care unit for dementia patients. The American Journal of Alzheimer's Care and Related Disorders & Research, 3(2), 16-23.

---

### **Description**

This article discusses a comparative study between residents of a dementia special care unit (SCU) and two comparison groups diagnosed with dementia located in two separate traditional nursing home units.

### **Environmental Context**

Data was collected in two North Carolina Nursing homes; one with a special care unit for dementia and one with only a traditional unit. The study group was comprised of thirteen residents located in the SCU. One comparison group was eighteen residents with some form of dementia, from the same nursing home which had the SCU. The second comparison group was 16 residents which had some form of dementia from a separate nursing home. There were five principle comparative methods. First, participants' cognitive abilities were assessed using the Mini-Mental Status Questionnaire. Second, participants functional abilities were measured using Moore's Functional Dementia Scale. Third, behavioral problems were assessed using the Haycox Dementia Behavior Scale. Fourth, family members' satisfactions were measured with Likkert scale response questions. Finally, resident records were reviewed for demographics, source of payment, degree of support from family members, use of psychotropic medications and physical restrains, the number of hospitalizations, number of new decubiti, weight loss and sleep problems.

### **Research Based Findings**

#### **Demographic Characteristics of SCU and Comparison Group Patients**

The only statistically significant characteristic was that SCU group had a higher percentage of private payment than the other groups.

#### **Diagnostic, Functional and Outcome Measures of SCU and Comparison Patients**

Statistically significant characteristics occurred with a higher percent of SCU patients specifically diagnosed with Alzheimer's disease. The SCU residents were more likely to be administered psychotropic drugs and less likely to be physically restrained. There were no differences for cognitive abilities, functional abilities, behavioral characteristics, the number of hospitalizations, the number of new decubiti, weight loss or sleep problems.

### Family Satisfaction with Care

Family members of residents in the SCU strongly agreed with their satisfaction with the physical environment, medical and nursing care and a feeling that the patient was better cared for in the nursing home than at home. However, a non-significant trend indicated family members were not more relaxed with the idea of their demented relative being placed in a nursing home.

**Mayers, K., & Block, C.** (1990, July/August). Specialized services for demented residents in Washington State nursing homes: Report of a survey. *American Journal of Alzheimer's Care and Related Disorders and Research*, 5(4), 17-21.

---

### **Description**

This paper examines the results of a survey sent to Washington State nursing homes on the specialized services and units for dementia clients. The set up of these specialized units, the use of environmental stimulation, strategies to deal with behavioral problems, and the use of therapeutic interventions in activity groups are discussed.

### **Environmental Context**

Three hundred and five surveys were sent out to Washington State nursing homes at the intermediate and skilled levels of care; 154 surveys were completed and returned. The first part of the survey consisted of questions on whether or not the facility had a special care unit and if a security system was used for wandering. The second part of the survey asked what techniques were used for behavior management with the demented population, the use of environmental stimulation, and the availability of activity oriented groups.

### **Research-Based Results**

#### **Specialized Units**

Thirty-nine of the 154 nursing homes provided a specialized dementia unit which was secure. Most of the 154 respondents provided some programs for the dementia clients.

#### **Behavior Management**

Of the 154 respondents 72 used individual staff attention in order to deal with behavioral problems such as combativeness, agitation and resistiveness. Quiet areas, distraction through objects, and PRN medication were shown as strategies used by at least 46 of the 154 respondents. Activities and food were the least used strategies to deal with behavioral problems.

#### **Use of Objects as Stimulation**

Eighteen of the objects that proved to be most helpful to the demented clients in the 154 nursing homes surveyed were respectively: pets (119), books (107), balls (103), teddy bears (91), dolls (89), textured fabric (86), flowers (83), musical instruments (80), pieces of fur and cloth (74), balls of yarn (70), aquariums (64), busy boxes and activity centers (55), purses (51), toys (50), afghans (34), doilies/towels/napkins (33), junk mail (31), rattles (12), and briefcases (7).



## Activity Group Therapy

Activities which appeared to be most helpful to demented residents according to the respondents included: music therapy (110), sing alongs (70), reality orientation groups (55), outings (43), socialization groups (37), television (21), and gardening therapy (21).

## Design Implications

- provide security systems to prevent wandering out of the building or a designated outside environment of the facility
- build four to seven foot fences surrounded by shrubbery in order to provide boundaries
- special bracelets and vests can be used to identify wanderers or set off an alarm if they attempt to leave the unit
- put the nurses station near the exit in order to “catch” wanderers leaving and redirect them
- use double doors or non-obvious doors (paint the same color as the walls)
- disguise doors with posters of grocery shelves
- provide areas in which small activity groups can be held

**Description**

The article is concerned with the question : how do you decide whether a patient admitted with Alzheimer's disease needs an open ended or closed unit? The study developed a Dementia Behavior Scale which would measure the dementia level an this scale is used for patients in both closed and open units.

**Environmental Context**

To deal with the dilemma of deciding appropriate placement for Alzheimer's patients, nurses, social workers, dietary and admissions staff. Health care administrators and therapists from Maple Knoll Village Teaching Nursing home in Cincinnati met with nursing faculty from the University of Cincinnati. The research team visited a number of closed units in the area. The staff on these units reported that their patients with progressive dementia seemed to fare better than those placed in the open units.

A Dementia-Behavior Scale was developed to evaluate behavioral deficits in eight specific categories. A person who has no behavioral deficits would score 0, while a totally impaired person would score 48. At Maple Knoll, patients who scored between 20 and 40 on the dementia Scale were are placed in the closed unit. Those who scored lower (the more capable patients) are placed in the open areas until their disease progresses to a point where they can no longer negotiate the open unit. Patients scoring higher than 40 are placed in skilled nursing areas where staff can meet their more intensive needs.

**Research-Based Results**

The nursing home's social worker interviews the resident and family first, either at the patient's home or at the nursing home, just prior to the resident's admission to the Progressive Dementia Unit. The resident's preliminary score on the Dementia Behavior Scale becomes part of the initial assessment data. Thereafter, the clinical nurse specialist administers the scale monthly and combines the results with data collected from interviews and observation. After the scale was in use for a year, the initial and follow-up assessment scores of 11 patients admitted to the closed dementia unit were compared. In general, 8 of the residents had improved function.

On admission to an Alzheimer's unit, most people appear oblivious to grooming, yet can dress either with assistance or with instruction. After a year, six

patients remained about the same, three deteriorated, and three improved. The greater supervision and interaction with staff on the smaller, less stressful segregated unit most likely contributed to the minimal deterioration in this area of behavior. Improvements in social interaction, attention, awareness, spatial orientation and language/ conversation may be related to the closed unit. Overall, nutritional status improved; residents finished meals more often, and as result of the extra snacks and fluids they had been provided, their weights remained stable.

The study points out that the stress involved in negotiating the highly stimulating environment of intermediate-care and skilled nursing facilities can easily overwhelm the cognitively impaired patient. Also, Alzheimer's patients have little sense of territorial boundaries, which is a factor leading to conflict in open units.

McCracken, A. L., & Glistler, S. (1991, January/February). Developing a viable residence for persons with Alzheimer's Disease. American Journal of Alzheimer's Care and Related Disorders and Research, 6(1), 39-43.

---

### **Description**

Alois Alzheimer Center in Cincinnati, Ohio is considered the first free-standing facility in the United States devoted exclusively to the care of Alzheimer's clients. This article examines the knowledge this center accumulated from professionals who have visited this facility. Specialized programs, an educated and compassionate staff and a supportive environment are the necessary components to a residential program for demented clients. This article specifically discusses how to develop the essential components listed above in order to provide an appropriate residential facility for dementia clients.

### **Therapeutic Goals**

#### **Environmental Interactions**

It is suggested that a special care unit should create an environment which reduces stressful stimulation yet enhances positive stimulation. It suggests that a segregated unit provides a better environment than a mixed one because of the lower levels of stimulation. The interaction between cognitively impaired and intact individuals appears to increase the stress of the demented client which results in decreased ability.

#### **Security Considerations**

- the environment must be secure
- available space should be small enough to facilitate comprehension yet minimize monotony
- provide higher staff to client ratios and provide an alarm system
- educate staff

#### **Programming**

- resident programs are necessary in order to provide the safety, belonging, self esteem, and self-actualization
- programming to meet family need is also important for their education and care plans.
- stress reduction techniques and bereavement programs are necessary for staff.

**McGrowder, L. R., & Bhatt, A (1988).** A wanderer's lounge program for nursing home residents with Alzheimer's disease. The Gerontologist, 28, 607-609.

---

**Description**

A wanderer's lounge program was developed in a 200 bed nursing home in order to provide respite to the alert residents and staff as well as to benefit the demented client.

**Environmental Context**

The lounge began with 8 highly agitated dementia clients all suffering from disorientation. Everything in the lounge could be explored. There were scheduled activities providing sensory stimulation and orientation as well as objects in the room. It was run by a recreation therapist and a nursing assistant from 3:00 PM to 4:30 PM each day.

**Therapeutic Goals**

To improve cognitive functioning of the demented residents and provide respite for alert residents and staff.

**Research-Based Findings**

Improvements were noted by three staff members of the 8 original residents of the wanderers' lounge 48 months after opening. The improvements included ability to remain continent, ability to sleep through the night, increased mobility, increased activity levels and the ability to participate in activities of daily living.

**Design Implications**

Wanderers Lounge

- provide a large table on which articles are placed, such as playing cards, arts and craft supplies (safe), pictures, various textured material, musical instruments, and toys
- provide a book rack with large print books
- provide a piano, wall decorations, and soft music

Namazi, K. & Johnson, B. (1991a, November/December). Environmental effects on incontinence problems in Alzheimer's disease patients. American Journal of Alzheimer's Care and Related Disorders and Research, 6(6), 16-21.

---

**Description**

Quasi-experimental research reported in clinical and family caregiving journal.

**Environmental Context**

Research conducted in a 24-bed assisted living center specifically constructed for research. The center includes two identical 12-bed open-plan units, all private rooms, with centrally located kitchen and dining room. The toilet area within each bedroom is located on the outside wall, with a privacy curtain between the toilet and the rest of the room.

**Therapeutic Goals**

Disorientation to place is a common manifestation of dementia. This study explored the impact of direct visual access to the toilets versus no direct visual access to toilets (drawn curtain) on toilet usage.

**Research-based Results**

Toilet usage varied considerably under the two conditions. When the toilet was directly visible, there were 285 instances of use over 45 hours of observation. When the toilet was behind the drawn curtain, there were only 37 incidents of use.

**Policy, Planning and Design Implications or Guidelines**

This study suggests that direct visibility is an effective orientation cue for people with dementia. While this study focused particularly on bathrooms, there is no evidence to suggest that this design concept is not transferable to other areas of the environment.

Namazi, K. & Johnson, B. (1991b, November/December). Physical environmental cues to reduce the problems of incontinence in Alzheimer's disease units. American Journal of Alzheimer's Care and Related Disorders and Research, 6(6), 22-28.

---

**Description**

Quasi-experimental research reported in clinical and family caregiving journal.

**Environmental Context**

Research conducted in a 24-bed assisted living center specifically constructed for research. The center includes two identical 12-bed open-plan units, all private rooms, with centrally located kitchen and dining room. The public toilets are located in the central core, behind the kitchen area. They are only partially visible from the central areas of the unit, although they are located directly off a main wandering path.

**Therapeutic Goals**

Disorientation to place is a common manifestation of dementia. This study explored the effectiveness of four different types of directional signs to help the residents locate the public restrooms. The signs were brightly colored (yellow on blue or blue on yellow) and placed to be highly visible throughout the unit. The signs read "RESTROOM", "TOILET", and had a graphic of a toilet. In the fourth condition, arrows and the word "TOILET" were placed on the corridor floor, leading to the bathroom.

**Research-based Results**

The arrows and word "TOILET" placed directly on the floor were most effective. With the "RESTROOM" sign, 100 residents entered the bathroom, while 108 and 90 residents entered the bathroom with the "TOILET" and graphic of a toilet signs respectively. However, 133 residents entered the bathroom when the arrows were on the floor.

**Policy, Planning and Design Implications or Guidelines**

Because of the short duration of each signage condition (2 weeks), it is difficult to know whether it was the novelty of having arrows on the floor that caused this type of cue to be most effective, or whether these arrows would cease to be an effective cue over time. The results, however, suggest that non-traditional approaches need to be tried, as they may be more effective than traditional forms of cueing.

**Namazi, K. & Johnson, B. (1992a, January/February).** The effects of environmental barriers on the attention span of Alzheimer's patients. American Journal of Alzheimer's Care and Related Disorders and Research, 7(1), 9-15.

---

**Description**

Quasi-experimental research reported in clinical and family caregiving journal.

**Environmental Context**

Research conducted in a 24-bed assisted living center specifically constructed for research. The center includes two identical 12-bed open-plan units, all private rooms, with centrally located kitchen and dining room. For this study, two sets of fabric partitions were created (54" and 72" high) to subdivide the central dining area. These barriers only screened visual stimuli, not acoustic stimuli.

**Therapeutic Goals**

People with dementia are easily distracted, making it difficult to run programs and activities. An environment which regulates stimulation in systematic ways may enhance residents functioning and participation in activities.

**Research-based Results**

Residents experienced fewer distractions when there was a fabric barrier (regardless of the height of the barrier), and spent more time working on the structured activity.

**Policy, Planning and Design Implications or Guidelines**

This study suggests that even modest reduction in stimulation (visual stimulation) can result in less distractibility. While not tested, this has implication for planning settings with multiple, single use rooms as opposed to multi-purpose activity rooms in which several different activities occur simultaneously.



**Namazi, K. & Johnson, B. (1992b, January/February).** Pertinent autonomy for residents with dementia: Modification of the physical environment to enhance independence. American Journal of Alzheimer's Care and Related Disorders and Research, 7(1), 16-21.

---

**Description**

Quasi-experimental research reported in clinical and family caregiving journal.

**Environmental Context**

Research conducted in a 24-bed assisted living center specifically constructed for research. The center includes two identical 12-bed open-plan units, all private rooms, with centrally located kitchen and dining room. There are three exit doors which lead directly to a two-acre enclosed therapeutic park. These doors can be electronically secured, or unlocked to allow free access to the outdoors. Behaviors of residents were monitored for 30 minutes before and after they approached any exit doors, with particular attention focused on expression of agitation.

**Therapeutic Goals**

Freedom and perception of choice have been shown to be important to the physical and psychological health of elderly, and therefore specialized units should strive to minimize restrictions on residents to the greatest extent possible.

**Research-based Results**

When the doors were unlocked, agitated behaviors were reduced to one-fifth of those behaviors seen under the secured door condition. Wandering was reduced by one-sixth, and physical aggressiveness decreased by one-half.

**Policy, Planning and Design Implications or Guidelines**

Although it is necessary to provide a secure environment, people with dementia appear to be aware of and upset by being restricted by locked doors. Whenever possible, create settings in which residents have the freedom and autonomy to go outside if they want to. This same principle could be applied to other restrictions in the setting.

**Namazi, K. & Johnson, B.** (1992c, January/February). Dressing independently: A closet modification model for Alzheimer's disease patients. American Journal of Alzheimer's Care and Related Disorders and Research, 7(1), 22-29.

---

**Description**

Quasi-experimental research reported in clinical and family caregiving journal.

**Environmental Context**

Research conducted in a 24-bed assisted living center specifically constructed for research. The center includes two identical 12-bed open-plan units, all private rooms, with centrally located kitchen and dining room. Closets in each bedroom were modified to present a single set of clothes to be worn, arranged in the order in which they are put on.

**Therapeutic Goals**

Many individuals with dementia find it increasingly difficult to dress independently, in part because of the numerous choices which need to be made. Minimizing decisions, and creating an environment which supports independence in dressing can serve to maximize au

**Research-based Results**

The closet modification was most effective for residents who did not need physical assistance in dressing, but instead relied on verbal prompts by staff. The modification decreased the need for verbal prompts by 15%.

**Policy, Planning and Design Implications or Guidelines**

The physical environment can be designed to support autonomy and independence of residents, and appears to be most effective when it is tailored to the specific needs and abilities of the residents. Closets which breakdown the dressing task into simple steps and which minimize the need to make decisions can enhance residents' independent functioning.

**Namazi, K., Rosner, T., and Calkins, M. (1989).** Visual barriers to prevent ambulatory alzheimer's patients from exiting through an emergency door. The Gerontologist, 29, 699-702.

---

**Description**

Seven conditions of providing visual barriers to Alzheimer's clients are tested in order to find out which is most effective in preventing unsafe exits. The findings of the study indicate that exiting was prevented under two conditions, and that visual agnosia, the inability to interpret what the eye sees, may be used to manage unsafe wandering of the Alzheimer's client.

**Environmental Context**

The study was conducted in a 30 bed dementia unit of a multilevel care facility. Of the 14 ambulatory clients on the unit, 11 of them exited through the fire door at least once.

**Alzheimers Patient**

**Wandering**

The wandering of dementia clients is defined by this study as: seemingly aimless or disoriented movement that involves exiting to the outside from a protected Alzheimer's unit. This behavior was often controlled by both physical and pharmacological restraints in the past. Restraint use is currently undesirable for the wanderer because it violates their rights to move about freely and has also been shown to increase the amount of falls in dementia clients. Therefore, new ways to both protect and allow for patient mobility must be looked at.

**Therapeutic Goals**

**Provide Safe Wandering**

Dementia clients often display wandering behavior which can result in serious injury or death. Exit doors to stairs in multilevel facilities as well as exits into the outdoors can cause serious threats. It is a challenge for a facility to protect these clients and at the same time ensure their rights to move about freely.

**Research Based Findings**

**Exits With No Barrier**

Trial 1: During a two week period, seven of the nine residents exited from 0 to 9 times on any given day.  
Trial 2: During a second two week period the same residents exited 22 times.

Exiting occurred at all times during the day, but was more likely to occur in the two hours after a meal.

### Times of Exiting

#### Optical illusion:

- brown tape on floor—increased the total exits per day
- masking tape on floor—increased the total exits per day
- black tape on floor & door base—increased the total exits per day

### Exiting at Each Condition

#### Visual Agnosia:

- beige cloth hiding knob—no exiting occurred
- patterned cloth hiding knob—no exiting occurred
- beige painted knob—exiting decreased to about 1/4 of first baseline
- restrictive knob cover—exiting decreased to about 1/8 of first baseline

### Design Implications/Guidelines

#### Concealment of Knob

The concealment of the knob appears in this study to eliminate unwanted exiting.

#### Knob Cover

A knob cover decreases the number of exits occurring, however it does not eliminate it. Because of the dangerous consequences of leaving a protected unit the concealment of the knob is a better design feature.

#### Painted Doorknob

The painting of the doorknob the same color as the door decreases the number of exits as well but does not eliminate it.

**Namazi, K., Rosner, T., & Rechlin, L.** (1991, November/December). Long-term memory cueing to reduce visuo-spatial disorientation in Alzheimer's disease patients in a special care unit. American Journal of Alzheimer's Care and Related Disorders and Research, 6(6), 10-15.

---

**Description**

Quasi-experimental research reported in clinical and family caregiving journal.

**Environmental Context**

Research conducted in a 24-bed assisted living center specifically constructed for research. The center includes two identical 12-bed open-plan units, all private rooms, with centrally located kitchen and dining room. Each bedroom has a glass-enclosed display case at the entrance, measuring 52" x 18" x 5.5" with three adjustable glass shelves.

**Therapeutic Goals**

Disorientation to place is a common manifestation of dementia. This study explored the efficacy of personalized memorabilia as orientation cues (over non-personally significant items).

**Research-based Results**

Several of the residents were more successful at independently locating their room with personalized cues than with non-personally significant cues. The effect was greatest for residents with a clinical dementia rating of 2.

**Policy, Planning and Design Implications or Guidelines**

The presence of personally significant cues at the bedroom entrance appears to enhance some residents ability to locate their rooms independently. The study does not assess the relative effectiveness of two-dimensional versus three dimensional cues.

Negley, E. & Manley, J. (1990). Environmental interventions in assaultive behavior. Journal of Gerontological Nursing. 16 (3), 29-32.

---

<b>Description</b>	Clinical/academic journal. Quasi-experimental study in 1 SCU (47 beds).
<b>The Alzheimer's Patient</b>	Patient with Alzheimer's disease exhibit assaultive behavior when forced to invade others' personal space in confined surroundings, such as an elevator.
<b>Environmental Context</b>	Pre-existing condition was a dining room located on another floor of the facility, accessed by an elevator. Treatment consisted of having residents eat in the day rooms on the unit instead of going off the unit to the dining room.
<b>Therapeutic Goals</b>	To reduce patient aggression and assaultive behaviors
<b>Research-based Findings</b>	Eating meals on the unit decreased total incidence of assaultive behaviors by 42%, and decreased patient-to-patient assaults by 47%. Individual analysis indicated assaults decreased for six of the nine most assaultive patients, although there were modest increases for three of the nine.
<b>Policy, Planning and Design Implications or Guidelines</b>	Minimize necessity for residents to travel in crowded conditions, such as in elevators, particularly on a regular basis.

Ohta, R., and Ohta, B. (1988). Special care units for Alzheimer's disease patients: A critical look. The Gerontologist, 28(6), 803-808.

---

**Description**

This paper examines special care units for Alzheimers clients in nursing homes. Using data from published and unpublished reports, policy manuals, and personal observations, the critical ways these units can differ are identified, beginning to provide framework for the conceptualization of special care units.

**Alzheimer's Patient**

The Alzheimer's client has special needs, and the long-term care environment in which the patient lives should meet these needs as fully as possible. Special care units are becoming increasingly popular in nursing homes, but further examination (such as is begun in this paper) needs to be done to determine any actual benefits these units offer the person with Alzheimer's disease.

**Research-Based Findings**

Philosophy

Units vary tremendously in terms of their guiding philosophies, which involve such issues as "*what defines the unit as special?*", "*who primarily benefits from the unit?*", and "*what is the role of the special unit in caring for the Alzheimer's patient?*" "

Definition of "Special"

No standard definition of the SCU exists. Minimal changes made in environmental or therapeutic features relative to the facility in which the units exist is often the basis for the label "special".

Primary Beneficiary

The primary beneficiary of the SCU is sometimes, but not always, the Alzheimer's patient. Some units identify the non-demented clients in the nursing home as benefiting most from the presence of the SCU.

Focus of Patient Care

Units may vary from one extreme of focusing to the other: one merely tending to the patient's basic physical needs, the other on quality of life—the dignity, self-esteem, respect, privacy, and possibilities of growth for the person with Alzheimer's disease.

Environmental Design

The design of the units varied considerably. Compared in this study were unit sizes, room types, unique environmental features, and wandering spaces.

Size of Unit	The sizes of the SCU's examined ranged from 10 to 49 patients. The 10 patient units examined allowed for interaction of small, constant groups of patients daily. The size of this unit appeared to promote socialization and friendships. However, in the 49 patient SCU the large number of patients and amount of social stimuli made the feeling of intimacy difficult to achieve.
Type of Room	Most SCUs use shared rooms of two or three patients per room. Rarely did patients have private rooms. Room type seemed to be determined mainly by the pre-existing space available. However, two units gave opposing reasons in their choice of room type. The unit providing private rooms felt strongly that all humans have a need for their own private space, and the unit providing shared rooms felt that private rooms increased isolation and withdrawal, and saw a roommate as a positive source of stimulation.
Unique Environmental Features	There was much diversity in the extent to which an SCU made changes for its Alzheimer's population. One unit resembled any other long term care facility except that it provided an alarm system at the exits to deter patients from wandering off. At the other extreme, another unit was highly sensitive to the needs of its patients. It used pastel colors, marked each patient's room with the name and photograph of the resident, filled each patient's room with his or her own furniture and mementos, provided a garden view to each room, a patio, and an aquarium to further enhance the homelike atmosphere.
Wandering Space	Wandering is often recognized as a classic behavior of SDAT patients. SCUs vary as to how they deal with this problem. Some attempt to restrict this behavior, for example, by lining their hallways with chairs to cue patients to sit down. Most allow wandering, although often space for this activity is often limited. One unit actually invites wandering by providing an extensive wandering space complete with an inner corridor, patio, and garden.
Therapeutic Approach	Variation in therapeutic approach among units occurs in amount, consistency, and training of staff, unique therapies for Alzheimer's patients, and criteria for admitting and discharging patients.
Staff-to-Patient Ratio	Ratios ranged from a high of 1:3 to a low of 1:12 (which became 1:25 at night). A higher ratio resulted in a reduced quality of care of the patients, and increased stress of the staff.
Consistency of Staffing	In some units, the same staff provided care to patients day after day. In others, typically those with a low staff-



to-patient ratio, staff stress necessitated the rotation of the staff.

**Staff Training**

Staff training varied as well. Some units required little or no training, while others required prior, on-the-job, and continuing education.

**Unique Therapeutic Features**

Three basic types of units emerged in this study. The first concentrates on basic physical needs and behavior management, which may include the use of drugs and physical restraints. The second emphasizes independent functioning and creates individualized care plans for each patient. The third type adds a humanizing factor in which each patient is assumed to retain some capacity to think, to feel, and to socialize.

**Patient Admission and Discharge  
Criteria**

Admission and discharge criteria may serve to maintain a homogeneous population of Alzheimer's patients. Other units may accept patients at any stage of the disease and retain them as the disease progresses. In this case, the nature of the unit changes over time as its population does.

**Randall, P., Burkhardt, S. J. J., & Kutcher, J. (1990, July/August).** Exterior space for patients with Alzheimer's disease and related disorders. American Journal of Alzheimer's Care and Related Disorders and Research, 5(4), 31-37.

---

**Description**

This is a study which examines outdoor spaces for the dementia client who resides in a day care facility, a special unit or a nursing home. The design schemes outlined in this paper for garden space and outdoor activity areas consider the cognitive and behavioral aspects of dementia. The exterior environments discussed in this paper are designed for not only the Alzheimer's client, but are acceptable to both visitors and staff.

**Therapeutic Goals**

To provide an appropriate and safe environment and to allow the Alzheimer's client maximum independence in an outdoor setting. Concurrently providing an area which staff and visitors can utilize as well.

**Research-Based Findings**

**Memory Loss**

- because the demented client cannot learn how to use a space or remember it, a designer must accommodate this by providing a loop pattern for pathways in order to eliminate decision points in the layout
- seating and landmarks along the path provide cueing for rest and a feeling of familiarity

**Apraxia**

- due to the imbalance and coordination problems found in dementia clients, a path must be level, including exits and porches, to provide safety

**Agnosia**

- because of visual cliffing, demented clients tend to remain on a path that is the same color; contrasting colors should be avoided on pathways

**Frailty**

- the siting of the outdoor setting must consider changes in temperature, wind, and exposure to the sun for optimal use
- furniture needs to be sturdy and movable, and flooring should be impact absorbing to make falling less hazardous

**Wandering**

- provide easy access to an enclosed area for walking with benches designed to accommodate two people for seating

- Disorientation
  - use guided paths and clear views to a central location to help the client orient himself
  - provide continuous handrails to lead the client back to the starting point
- Plant Ingestion
  - all plants must be non-toxic
- Sundowning
  - shadow reduction on patios, gardens, and entrances may reduce agitation as well as provide adequate lighting
- Delusions
  - frightening shadows or statues in the outdoor setting must be considered and avoided when possible

### **Other Design Implications**

- Site factors (Northeast U.S.)
  - the garden should have a southeastern exposure which minimizes sundowning and alleviates problems with shadows. It will also provide the clients with gentle morning sun although appropriate levels of exposure must be considered. The southeast exposure would also block cold winds from the north and west.
- Views
  - avoid views into the parking lot to minimize thoughts of leaving the facility.
- Construction of a Porch
  - the porch is a transition from the interior space to the garden and is necessary for providing a seating area, observing the garden and providing a sheltered area.

Sand, B., Yeaworth, R. & McCabe, B. (1992). Alzheimer's disease: Special care units in long-term care facilities. Journal of Gerontological Nursing, 18 (3), 28-34.

---

<b>Description</b>	Exploratory study of Nebraska long-term care facilities, published in a clinical/ academic journal.
<b>Alzheimer's Patient</b>	Age is the greatest risk factor for developing Alzheimer's disease. There is a 47% incidence rate for people over the age of 85.
<b>Environmental Context</b>	The sample included 12 facilities with SCUs and 103 facilities without SCUs.
<b>Therapeutic Goals</b>	Suggests the purpose of SCUs is to provide "protective, low-stimulus environment where demented individuals can interact with others who have similar problems" and to provide a safe environment.
<b>Results</b>	Facilities with SCUs were much more likely to identify wandering as a problem behavior (3% vs. 8%). SCUs had higher staffing ratios, more activity staff, and special staff training. All SCUs reported some changes to the physical environment: outside area (92%), separate dining area (75%), soft colors (67%), muted and calm environment (53%) and locked doors (50%). SCUs were more likely to use distraction and reminiscence, while traditional units relied on reality orientation. Staff from SCUs reported decreased incidence of agitation, wandering and reduced need for restraints.
<b>Policy, Planning and Design Guidelines</b>	Mandated state licensing may be required to prevent marketing abuses.

**Schiff, M. R.** (1990). Designing environments for individuals with Alzheimer's disease: Some general principles. American Journal of Alzheimer's Care and Related Disorders and Research, 5 (3), 4-8.

---

**Description**

This article proposes that the environment should be viewed as an element in the care program of individuals with Alzheimer's disease, and five basic design principles are offered. The environment should: 1) be simple and structured, 2) be stable and familiar, 3) provide cueing for behavior, 4) provide cueing for memory, and 5) facilitate reality orientation.

**Therapeutic Goals**

To facilitate the highest possible level of functional abilities of the dementia patient through the use of environmental design.

**Design Implications**

**Clear & Well Structured Environment**

- minimize excess stimuli
- design to avoid distraction in any given area and facilitate tasks (ex, design the dining room as a series of smaller spaces rather than as one large space)
- four to eight people is the ideal institutional group size, and if at all possible, a group should never consist of more than twenty people

**Stable & Familiar Environment**

- focus on a daily routine, which includes well learned, repetitive activities that allow success (eg., folding, dusting)
- the living environment should be homelike and familiar
- changes in the environment should be avoided unless clear advantages can be gained from them

**The Environment as a Cue to Behavior**

- appearance and structure of the environment can cue behavior (eg., an individual may remember to wash his hands if the soap and towel are visible)
- rooms should be consistently used (eg., dining room should be used for only food-related activities such as meals and birthday parties)

**The Environment as a Cue to Memory**

- wayfinding systems can be used to help patients find their own and other significant rooms
- signs and pictures can help people remember where things are kept (eg., place a picture of dishes on the cupboard in which they are kept)
- objects and decorations from the past, family photos, and familiar furnishings can stimulate long-term memory

**The Environment Should Support  
Reality Orientation**

- reality orientation board should be placed in the unit giving date and season
- calendars should be used where individual days are crossed off as they have passed
- clocks should be used which keep consistent time
- seasonal pictures should be kept up-to-date to avoid confusion
- real plants and flowers rather than plastic ones confirm a patient's sense of what these objects are really like

Sloane, P. D., & Mathew, L. J. (1990). The therapeutic environment screening scale. American Journal of Alzheimer's Care and Related Disorders and Research, 5(6), 22-26.

---

**Description**

This paper reports on the use of an observational screening checklist designed to evaluate the appropriateness of a nursing home unit for residents with Alzheimer's disease and related disorders.

**Environmental Context**

Care Units

Thirty-one SCUs and 32 traditional care units in five states were compared using 12 items from the Therapeutic Environmental Screening Scale (TESS).

Procedure

The overall therapeutic principle that the authors sought to evaluate was "sensory stimulation without stress". This was further broken down into the following key functions of a therapeutic environment for the cognitively impaired:

- Facilitate concentration and minimize agitation
- Enhance mood and self image
- Promote safety
- Accomodate a range of social activities
- Provide access to outdoors

From these emerged the following 12 item checklist with which each care setting was evaluated. Each unit received a rating of 0-2 for each item.

- Freedom from glare
- Absence of noise
- Absence of odor of cleaning solutions
- Absence of odor of bodily excretions
- Television not routinely on in public areas
- Personal items in rooms
- Home-like furnishings in public areas
- Absence of shiny or slippery floor surfaces

**Research-Based Findings**

Results from the use of the TESS showed that:

- Specialized dementia units scored significantly higher on the scale than did comparison units, especially in the areas of:
  - cleaning fluid odor
  - presence of personal items in rooms
  - home-like furnishings in public areas
  - direct accessibility to an outdoor area
  - areas for small group interaction

- availability of a kitchen
  - routine use of television in the largest common area
- 
- Within the dementia units, those that had been especially constructed as specialized units had somewhat higher scores than those that were not specially constructed.
  - The demonstration of a wide variation in scores, and statistical differentiation between specialized and non-specialized units suggest that the TESS may provide useful information for the comparison of units.



**Taft, L. B., Seman, D., Stansell, J., & Farran, C. J.** (1992, September/October). Behavioral dimensions of dementia: a comparison of three program groups in adult day care. The American Journal of Alzheimer's Care and Related Disorders & Research, 7(5), 32-38.

---

### **Description**

The purpose of this study was to explore dimensions of the behavioral domain and to study the relationship between behavioral and cognitive characteristics among three client groups at the Alzheimer's Family Care Center (AFCC). In this retrospective descriptive study, differences among the clients in the three program groups were measured by comparing mental status, agitation, and social accessibility. Mental status has been most frequently used as a marker for the progressive stages in Alzheimer's disease, although there is controversy as to the validity and usefulness of such models for staging dementia. Agitation describes the range of behaviors commonly referred to as behavioral disturbance. The study designed to explore behavioral and cognitive differences among the three program groups at AFCC addressed the following questions:

- What is the relationship between mental status and client group?
- What is the relationship between agitated behavior and client group?
- What is the relationship between social accessibility and client group?

### **Research-based findings**

The therapeutic programs provided for the three client groups at the AFCC were designed by the staff to meet the needs and support the strength of clients in diverse needs. About 50 percent of the clients participated in the main study group. Despite memory impairments and other deficits in cognitive functioning, clients in the main group were able to participate in structured activities. About 25 percent of the clients participated in the walking group. Clients in this group were best characterized by their need to walk and maintain physical activity. The remaining 25 percent of the clients participated in the sensory group. Clients in the sensory group had profound impairments in cognitive ability and limited attention span.

The Folstein Mini-Mental State Exam (MMSE) was used to measure the progressive cognitive decline associated with dementia. This instrument measures organic impairment, provides a score of global cognitive deficits, and taps a range of cognitive tasks, including orientation, verbal reasoning, visual perceptual, skills, language and memory. Scores range from zero to 30 with a score of 21 or less being implicative of dementia.

<b>Mental Status</b>	The mean score in the main group was significantly higher than the mean scores in the walking group or the sensory group. The scores in the lower functioning groups were not significantly different and, in fact, 43 percent of the clients in the walking group and 50 percent of the clients in the sensory group scored zero on the MMSE. These findings support the assertion that this scale poorly discriminates among lower functioning dementia clients.
<b>Agitated behavior</b>	The walking group was significantly more agitated than either the main group or sensory group on overall agitation as well as on the subscales of aggressive behavior and non-aggressive physically agitated behavior. Scores on verbal agitation were somewhat higher in the walking group, but statistical analysis failed to support a significant difference among three groups in verbal agitation.
<b>Social Accessibility</b>	Differences in the scores on the social accessibility scale approached statistical significance, indicating a trend toward decreasing sociability from the main group to the walking group and to the sensory group.
<b>Two-dimensional behavior analysis</b>	The two behavioral dimensions of agitation and social accessibility were examined by plotting the scores on a grid with overall agitation on one axis and social accessibility on the other axis. When the grid was divided into four quadrants, the groups were clearly differentiated into three of the four quadrants. For 80 percent of the clients in the main group, the scores were located in the quadrant representing high social accessibility and low agitation.
<b>Policy Implications</b>	Future understanding of the behavioral dimension of dementia could be expanded through qualitative and methodological research. Qualitative research can better describe the antecedents of behavioral symptoms and the impact of the individual's social and physical environment on their behavioral responses. Qualitative methods can also assist us in identifying and describing behaviors that serve an adaptive function in clients with dementia. Methodological research is needed to further develop instruments to measure social accessibility and other behaviors that serve an adaptive function.

Weiner, A. S. (1990, November/December). Correlates of caring for a relative with dementia - a review of the literature. The American Journal of Alzheimer's Care and Related Disorders & Research, 5(6), 4-13.

---

## Description

Literature review was done using "Alzheimer's disease or dementia" and "caregiving" as key words within the basic health services files: nursing and allied health; medline, health planning and administration; psych alert; mental health abstracts; and psych information. Studies reviewed were organized in four sections:

- study design/methodology (funding, sample size and type, strategy, research design);
- theory and definitions;
- findings (physical health, mental health, social participation, activities and impact of patient functioning);
- practice implications.

## Research-Based Findings

Operational definitions and measurement of dementia and burden vary across studies, and are essential aspects of cross study analyses.

### Physical health

Some of the studies compared personal health ratings of caregivers to normal or control populations. Caregivers rated their overall health as poorer than control. Also, caregivers had significant decrements in activities with friends, current or planned vacations and church attendance.

### Mental health

Mental health is represented by depression and is analyzed by discrete variables. In all studies there was a clear relationship between caregiving and a depressive symptomatology. Caregivers' level of affect, balance, and life satisfaction were also considerably lower than in the comparison group.

### Activities, social and informal supports

Some research studies highlight the relationship between caregiving and the pursuit of social activities. One study indicated that 20 percent of the caregivers indicated their greatest problem is confinement to home and isolation from friends and outdoor activities.. For 60 percent, their relative's illness is noted to have affected their relationship with others - i.e. friends no longer visit, and jobs, volunteer work, and leisure activities were given up. Also, it was reported that decreases in social and leisure activities is inversely related to the spouses level of cognitive function.

## **Implications**

The authors suggest that design professionals should be encouraged to develop services which are preventive and responsive to the various dimensions of burden. The suggestions included:

- interventions to increase informal supports and to work with the family network beyond the primary caregiver.
- education programs and peer support that stress pragmatic methods of coping with asocial and difficult behaviors, emphasizing that these are not directed at the caregiver.
- program that instills a realistic sense of the future in caregivers.

Williams, J. K., & Stern, E. J. (1992, May/June). Pathways: serving the two victims of Alzheimer's disease. The American Journal of Alzheimer's Care and Related Disorders & Research, 7(3), 32-38.

---

### **Description**

Pathways is a public-private partnership in Florida which was developed to test models of housing and support services for Alzheimer clients and their spouses, as well as to provide care in the home-like setting for those seeking a residential placement. The belief underlying the Pathways concept is that many Alzheimer victims could remain with their spouses in residential settings or be served at a lower level of care if such care existed. Design of a less costly, less medically oriented environment with fewer institutional design requirements, aimed at accommodating a range of individual and family needs, could result in significant savings.

### **Environmental Context**

Pathways intends to revise the design and programming of residential environments, and to create a continuum of community and residential services for both the AD victim and the informal caregiver. Pathways is designed as a continuum of residential environments and services for victims of Alzheimer's disease and their caregivers. The project is being planned and will be built in the greater Miami-Fort Lauderdale area of Florida. The variety of residential types and services will allow caregivers to remain in a home setting with their spouse, or individuals with Alzheimer's disease to live in a residential care atmosphere that emphasizes home rather than nursing home. The project is aimed at maximizing the AD victim's function and at supporting the caregiver in their role for as long as possible.

In keeping with a village atmosphere, four residential components will be built on a small scale. They will include: the villas, the mews, the courtyards and the lakeside.

### **The Villas**

The villas will accommodate the AD victim and primary caregiver who is functionally independent and can maintain the AD victim in an independent setting with the aid of day care and minimal personal care. The informal caregiver will give most of the care, but will receive training, psychological support, and support of other caregivers through sharing tasks.

### **The Mews**

The Mews will provide assisted living for the caregiver and also the AD victim, but its residents will be more frail and in need of more support services. The Mews will be small apartment buildings of one or two stories.

## **The Courtyards**

The courtyards will provide round-the-clock supervision and care for the AD victim who has no caregiver or whose caregiver is no longer able to continue in the primary role. The facility is less medically intensive than a nursing home, and concentrates on maintaining function through therapeutic activities.

A hospice project will care for those in a terminal stage of the disease. The caregiver will receive support services and will be encouraged to remain involved in the individual's care.

## **Policy Implications**

The research programs of the Pathways project will ask and attempt to answer several basic policy questions concerning appropriate environments and services for AD victims and caregivers. There will be an attempt to examine a comprehensive coordinated approach to care and the entire continuum of residential settings, from a detached home in the community to assisted living and comprehensive care in the Pathways. Among the research goals that would influence the policy formulation in the future are:

- studying the relationships between environments and therapeutic interventions when these consist of direct services by trained staff and informal caregivers;
- determining the necessary assistance to the primary caregiver at all stages
- evaluating the costs of care of various types and the burden it imposes on the caregiver and the state, with the objective of identifying the least costly means of providing high quality services.

Young, Muir-Nash & Ninos (1988). Managing nocturnal wandering behavior. Journal of Gerontological Nursing, 14 (5), 7-11.

---

**Description**

Research article in clinical/academic journal.

**The Alzheimer's Patient**

Nocturnal wandering is a common behavior manifested by people with dementia, and is identified by caregivers as one of the least manageable behaviors.

**The Environmental Context**

"Modified white noise" (a slow surf sound) was introduced into a gerontological inpatient hospital unit at night.

**Therapeutic Goals**

To minimize nocturnal wandering by promoting sound sleep patterns.

**Research-based findings**

Although the results were not significant for the group of 11 Alzheimer's disease patients, two of the 11 were less restless and agitated during the white noise condition.

**Zeisel, J., Hyde, J., & Levkoff, S. (1992). Facility design review criteria for Alzheimer's special care units: an environment-behavior model. Unpublished manuscript.**

---

### **Description**

The paper applies the approach of Lawton in establishing review criteria for design features of SCUs. First, the paper reviews the state of the field to describe what variables, concepts and physical design elements others have examined, classifying these into three areas: (1) measurable therapeutic goals and outcomes of design features (e.g. reduced agitation), (2) design performance criteria (e.g. residents able to wander easily) and (3) design features, that is, characteristics, spaces, and objects in the physical environments of SCUs (e.g., looping corridors). Second these three items are organized in terms of the design criteria each specific design feature is intended to achieve and the category of the physical environment in which it is included. Third, on the basis of this analysis, combined with observational data from visits the authors have made to SCUs, the authors develop a model and related set of design guidelines for the interactive effects of these three areas of concern.

### **Therapeutic Goals**

The authors use several therapeutic goals approaches proposed earlier by researchers. Weisman and Cohen (1990) proposed that the environment be "conceptualized in terms of ... therapeutic goals". Snyder and colleagues (1990) suggest the outcomes for SCUs:

- resident emotional status
- resident physical status
- resident mental status
- resident behavior
- family emotional status
- staff responses
- community feedback

Also cited are Mace's (1991) outcomes of special care such as:

- decreased restlessness and agitation
- diminished hallucinations
- decrease in socially inappropriate behaviors
- reduced use of psychotropic medication
- improved orientation
- maintenance or increase of weight
- regained sense of humor
- decreased symptoms of anxiety
- increased awareness of self in relation to others.



## Design performance criteria

Specific design features create and enable certain behavioral and perceptual opportunities. Performance criteria can be grouped into categories such as privacy, security and so on.

Zeisel et al. chose the following environmental classes to classify the physical environment in special care units:

- unit boundaries
- circulation
- common spaces
- private spaces
- outdoor spaces
- decor and furnishings
- scale
- ambient conditions

## Framework for a new model

The first five relate to space configuration, one to details and the last two to qualities of a space. They develop a model of eight concepts based on the classification system:

- exit control
- wandering paths
- common space structure
- individual away spaces
- outdoor freedom
- residential character
- autonomy support
- noise comprehension

Each concept links a design feature to performance criteria and together they form a system in which each part supports the functioning of the others. The performance criteria are in turn linked to therapeutic outcomes for both residents and staff, which could be measured to test their effectiveness.

Zgola, J. (1990). Alzheimer's disease and the home: Issues in environmental design. American Journal of Alzheimer's Care and Related Disorders and Research, 5 (3), 15-22.

---

**Description**

This paper reviews some of the most common home adaptations that can make life for both the person with Alzheimer's and the caregiver less stressful.

**Therapeutic Goals**

Four goals to be met by the home environment are discussed: preserving function (by supporting retained abilities, accomodating deficits, and providing outlets for individual needs), safety, emotional well being, and meeting the needs of the caregiver.

**Design Implications**

**Support Retained Abilities**

- objects in the environment should provoke long-standing patterns of behavior (eg., provide a dial phone instead of a touch-tone, an analog instead of a digital clock, or a sink of soapy water rather than a dishwasher)
- avoid innovative or modern objects as they can diminish skills

**Accomodate Deficits**

- simplify the environment and remove confusing articles (eg., toilet with lid up and no competing stimuli such as a nearby wastebasket sends a clear message)

**Provide Outlets for Special Needs**

- a stationary bicycle, a treadmill, or a rocking chair can help meet the person's need to move about
- provide positive emotional outlets: (punching bags, pounding dough, gardening)
- rich textures should be accessible to meet the person's need for tactile stimulation

**Safety**

- when a door must be locked or an object made inaccessible, it should also be disguised, and an interesting alternative offered to avoid frustration of the person with Alzheimer's
- a monitoring device such as a bell, intercom system, or complex door locks which merely slow the exit can alert the caregiver to the actions of the person with Alzheimer's without actually interfering with them
- use appliances with built in safety devices (eg., smoke detectors, electric kettles and steam irons with automatic shut-offs)
- fit safety modifications into the person's habits (eg., place grab bars where unsafe hand-holds were)

- remove hazards such as slippery rugs or low tables which can cause falls

#### Emotional Well Being

- provide a special place in the home for the impaired person's work or leisure activities (eg., an "accident-proof" sewing room or workshop)
- provide more lighting in places where the person is expected to concentrate
- provide color contrasts for depth changes (eg., mark edges of stairs, edge of bathtub with contrasting tape)
- label doors and objects with words and instructions for people in the early stages of Alzheimer's
- leave doors to important rooms, closets, or cupboards open
- use home-based respite to free the caregiver to resume usual home activities, this will provide essential sights, smells, and sounds that promote awareness and orientation
- avoid shiny and reflective surfaces, glare, and shadows which may distort perception
- avoid background noise and multiple stimuli which may interfere with hearing
- bring in comforting items from the past (photos, keepsakes) as dangerous items are removed

#### Needs of the Caregiver

- provide a private place for the caregiver
- install locks on private rooms to protect the caregivers private times and personal belongings

## Supplemental Bibliography

---



- (1) Benjamin, L. C., & Spector, J. (1990). Environments for the dementing. International Journal of Geriatric Nursing, 5(1), 15-24.
- (2) Beyersdodorf, P. S., & Birkenhauer, D. M. (1990). Therapeutic use of pets on an Alzheimer's unit. American Journal of Alzheimer's Care and Related Disorders and Research, 5(1), 13-17.
- (3) Burgener, S. C. et al. (1992). Caregiver and environmental variables related to difficult behaviors in institutionalized, demented elderly persons. Journals of Gerontology, 47(4), 242-249.
- (4) Burns, J. (1992). Special units aim at dementia. Modern Healthcare, 22(46), 26-28.
- (5) Carley, M. M. (1992). Alzheimer's units: The next frontier for regulators. Contemporary Long Term Care, 15(3), 72-74.
- (6) Chafetz, P. K. (1991). Behavioral and cognitive outcomes of SCU care. Clinical Gerontologist, 11(1), 19-38.
- (7) Coleman, E. A., Barbaccia, J. C., & Croughan-Minihane, M. S. (1990). Hospitalization rates in nursing home residents with dementia: A pilot study of the impact of a special care unit. Journal of the American Geriatrics Society, 38(2), 108-112.
- (8) Fulner, C., Hyde, J., & Zeisel, J. (1992). Assisted living Alzheimer's units provide specialized services. Provider, 18(9), 67.
- (10) Holmes, D., Teresi, J., & Monaco, C. (1992). Special care units in nursing homes: Prevalence in five states. Gerontologist, 32(2), 191-196.
- (12) Peppard, N. R. (1991). Special needs dementia units: Design, development, and operations. New York: Springer Publishing Co.
- (13) Rajecki, R. (1992). Tasking the right track: regulation of Alzheimer's units at a crossroads. Contemporary Long Term Care, 15(10), 47-48, 95, 97.
- (14) Riter, R. N., & Fries, B. E. (1992). Predictors of the placement of cognitively impaired residents on special care units. Gerontologist, 32(2), 184-190.
- (15) Rovner, B. W. et al. (1990). Stability over one year in patients to a nursing home dementia unit. International Journal of Geriatric Nursing, 5(1), 77-82.

(16) **White, B. J., & Kwon, O. J.** (1991). Physical aspects of Alzheimer/dementia units: A national survey. Journal of Long-Term Care Administration, 19(1), 26-30.

(17) **Williams, M. et al.** (1991). Alzheimer's unit by design. Geriatric Nursing, 12(1): 34-36.

(18) **Zarit, S. H., Zarit, J. M., & Rosenburg-Thompson, S.** (1990). Special treatment unit for Alzheimer's disease: Medical, behavioral and environmental features. In T. L. Brink et al. (Eds.), Mental health in the nursing home. Binghamton, NY: The Haworth Press.