Use of Nonpharmacologic Interventions Among Nursing Home Residents With Dementia

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The authors describe domains of nonpharmacologic interventions for residents with dementia who are receiving long-term care. Special emphasis is placed on interventions involving the domains of inappropriate behavior, restraint reduction, and cognition. Illustrations of the salubrious effects of these interventions are presented. For each domain, a review of the available information about nonpharmacologic interventions is provided, and areas in which additional information is needed are discussed. The authors conclude with a summary that emphasizes linkages and similarities among interventions across domains. The authors' major point is that effective nonpharmacologic interventions are available for a variety of behavioral problems that are commonly observed in long-term care settings. (*Psychiatric Services* 53:1397–1401, 2002)

The focus of this article is on nonpharmacological interventions for persons with dementia, with an emphasis on residents of long-term-care facilities. The article is divided into sections corresponding to the topics of interventions for inappropriate behavior, restraint reduction, and cognition. Within each section, discussion is organized according to what we currently know and what we still need to know. The concluding section discusses some obvious and not-so-obvious connections among these topics.

Inappropriate behaviors

What we know

Heterogeneity in the manifestations of dementia stems from three sources: predisposing characteristics, life events, and the person's current condition. Each of these sources occurs in several domains: a genetic-biological-medical domain, a psychosocial domain, and an environmental domain (1). Such factors affect how dementia is manifested functionally in many areas, such as self-maintenance, affect, cognition, and behavior. Correlational studies have proved useful in illuminating common causes for different subtypes of inappropriate behaviors observed in persons with dementia (2–5). These subtypes are aggressive behaviors, such as hitting, kicking, cursing; physically nonaggressive behaviors, such as pacing, handling things inappropriately, general restlessness, and repetitious mannerisms; and verbal and vocal agitated behaviors, such as complaining and constantly requesting attention.

Agitated behaviors among elderly persons with dementia are conceptualized as resulting from an interaction among lifelong habits and personality, current physical and mental conditions, and environmental factors, both physical and psychological (6). Because of incongruence among interplaying factors in the course of these interactions, the person's needs are not met. Thus most agitated behaviors are manifestations of unmet needs. The effects of dementia leave the resident unable to fulfill these needs because of a combination of perceptual problems, communication difficulties, and an inability to manipulate the environment through appropriate channels. The goals of treatment should then be to uncover and address the person's unmet needs.

The most common of these needs are for social and physical stimulation, both of which are lacking because of a combination of the effects of dementia, sensory deficits, and the monotony of the nursing home environment. However, other needs are common too, especially those pertaining to relief of discomfort and pain.

A wide range of nonpharmacologi-

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cal interventions has been described in the research literature and summarized in two recent reviews (7,8). These interventions can be organized according to the needs they address, most of which are for social contact, engaging activity, and relief from discomfort. Many interventions address more than one of these. For example, meaningful social contact addresses both loneliness and boredom.

Providing social support and contact. At the most basic level, providing social support and contact involves talking, even if the person who is conducting the treatment carries on most of the conversation. At times, touch is used as a form of communication. Two major difficulties in providing social contact are the preference of many persons to interact with a loved one with whom they already have a relationship and the cost involved in having a staff member provide one-on-one social activities.

Two interventions that have addressed both of these issues are videotapes of family members talking to the person (9,10) and simulated presence therapy (11), in which the family caregiver audiotapes his or her side of a telephone conversation, which is then played repeatedly to the older person. Interventions that address the issue of cost include training staff members to increase social contact when they are around the resident (including during activities of daily living) and providing contact with pets.

Providing engaging activities. Engaging persons with dementia can be accomplished by providing them with stimulation (passive engagement), providing activities (active engagement), and allowing them to pursue the self-stimulation involved in their inappropriate behaviors by accommodating those behaviors. Providing stimulation includes the use of music, which needs to be tailored to the person's preferences (12), and other sensory stimulation, such as aromatherapy or touch therapy. More active engagement is usually offered with structured activities. Activity programs can include matching activities to past roles, such as folding towels and kneading dough, or programs that include exercise. Examples of the range of possible activities can be found in Bowlby (13), Buettner (14), Hellen (15), Zgola (16), Teri and Logsdon (17), and Russen-Rondinone and DesRoberts (18). A more extensive discussion of the use of Montessori-based activities for persons with dementia and their effects on engagement is presented below.

Accommodating interventions include outdoor walks and the use of outdoor areas for persons who pace or wander. To accommodate those who manifest other physically nonaggressive behaviors, such as handling things inappropriately, appropriate materials must be provided, such as books and pamphlets for handling (19) and activity aprons—aprons with buttons, zippers, and other articles sewn on—so that persons can occupy themselves with these rather than with their own clothing or with harmful materials.

Providing relief from discomfort. Interventions that address discomfort include those for pain, hearing and vision problems, positioning problems, difficulties adjusting to activities of daily living, and unaddressed needs related to activities of daily living. Also included are treatments to improve sleep and the removal of physical restraints. Once the need has been identified, many of these interventions call for straightforward medical or nursing interventions. Others require more complex approaches, such as pain assessment. Many articles have described the difficulties in assessing pain in this population, and some recent reports suggest strategies to approach these complexities (20).

One small study found that pain medication reduced difficult behaviors and allowed discontinuation of psychotropic medications (21). A number of approaches have been used to improve sleep and thereby decrease agitation, including bright light therapy, melatonin, increased exercise, and decreased nighttime interruptions. Improvement in eating or drinking as a result of the use of enhanced light during meals has been linked to a decrease in inappropriate behaviors (22). Hearing aids have been shown to significantly decrease inappropriate behaviors (23,24).

Changes in the methods and environment for providing activities of daily living have also been associated with a reduction in inappropriate behaviors. Tape recordings and pictures of birds, flowing water, and small animals in baths, as well as offering food during bathing, have been associated with a decrease of such behaviors (25). Similarly, changing the locations of meals (26) was effective in reducing assaults.

Individualization of treatment. Two studies highlight the importance of matching treatment to the individual's needs and preferences. Individualized music has been shown to be more effective than nonindividualized music in reducing inappropriate behaviors (12). People show maximal benefits from different interventions—for example, a videotape of family members as opposed to one-on-one interaction (9). Many factors, including cognitive ability, level of mobility, and sensory deficits, dictate which intervention is feasible and which is most likely to be effective.

What we need to know

Future research needs to clarify the effectiveness of different types of treatment, develop and test methods of individualizing treatments, test alternative methods for providing basic care, develop methods to train staff to deliver such treatments and care, and clarify system variables that impede or enhance the implementation of such treatment and care. The current literature generally includes small studies with multiple methodological problems. Larger, more robust studies are needed. Specific questions pertaining to these areas include the following: Which interventions are the most effective in reducing or preventing inappropriate behaviors? How is individualization best accomplished? Which interventions work for which needs for which persons manifesting which behaviors under what conditions? What are the best ways to provide activities of daily living care, sleep care, mobility care, and the like? Such methods need to maximize resident input and minimize resident and staff discomfort.

Restraint reduction

What we know

Physical restraints are devices, material, and equipment that restrict the ability to move freely (27). Examples

include vest, chest, ankle, mitt, belt, and wrist restraints as well as "gerichairs" (chairs with fixed tray tables), "lap buddies," wheelchair bars, and bed belts. Despite a lack of scientific data, restraints have been justified on the basis of perceived benefits in managing the risk of falls, interference with treatment, or dementia-related behavioral symptoms such as agitation and wandering, although the opposite may be true (27).

As with physical restraints, the use of side rails is based on a belief that they prevent falls and injury (28). Side rails are most often used for cognitively impaired residents (29). The anticipated effect of side rails is to "remind" residents to stay in bed or to seek assistance when getting out of bed. Unfortunately, many memory-impaired residents view side rails as barriers to be overcome rather than as reminders (30). This can increase the likelihood of an injurious fall, because the side rail can increase the height of the fall by two feet. Climbing out of bed with the rails raised can also lead to entrapment injuries and even death (31).

Simply removing restraints or side rails without attention to the residents' underlying problems may result in more falls and injuries. Several studies conducted in nursing homes have demonstrated that restraints can be removed without adverse consequences (32–35). Similarly, reductions in the use of side rails in nursing homes have not been associated with significant increases in bed-related falls or injuries (36). Reducing or eliminating physical restraints and use of restrictive side rails is best achieved within a framework of a "resident-centered" or "individualized care" philosophy (37), in which alternative interventions are tailored to the resident's particular needs. The process usually involves an active restorative-rehabilitative approach to care—including recreational activities and activities of daily living—and use of environmental interventions that promote comfort and mobility (37).

Restorative-rehabilitative therapies are often underused, however, because of the assumption that of persons with dementia are unable to learn because of their memory impairments (32). Cognitively impaired residents will not succeed if the approach focuses on memory of a specific therapy session and does not allow use of external devices outside therapy sessions until competency is demonstrated. Newer theoretical models of memory have begun to differentiate between explicit memory—the "what" of knowledge—and implicit or procedural memory—the "how to" of knowledge (32).

Explicit memory refers to specific event memory—for example, memory of a therapy session—and may be less important for sustaining mobility than previously thought. Procedural memory refers to skills, especially motor skills, such as using tools or assistive devices (32). It is more important for older adults with dementia to remember how to use devices (frequently referred to as carryover) than to describe a specific technique. To promote procedural memory, repetition and consistency in use of a device or technique will encourage carryover and enhance safety. This requires around-the-clock use of assistive devices rather than episodic use during prescribed therapy sessions (32). It is assumed that a 24-hour approach will address the unmet needs that produced the behaviors that led to the initial use of restraints.

Environmental interventions must meet both the comfort and the mobility needs of residents. There are numerous types of chairs on the market that can fulfill a variety of resident needs. For example, glider or rocking chairs are used with residents who like to "rock" and who thus have a tendency to fall forward out of a wheelchair or a stationary chair (37). Various products, educational manuals, and videotapes are available to assist staff in adapting wheelchairs to the individual resident's seating needs with devices such as wedge or pressure-relieving cushions (37). A recliner can be a comfortable alternative to a chair; however, recliners often require additional cushions to promote correct and comfortable positioning. No matter how comfortable the chair, residents need to get up periodically.

Similarly, bed-related falls are associated with a variety of factors, including overuse of hypnotics, inadequate treatment of pain, and lack of appropriate environmental intervention. The correct bed height is essential for safe transfers into and out of bed, yet the lowest height of many nursing home beds is too high (more than 120 percent of lower leg length) (29,30).

The residents who have the highest risk of bed-related injuries are those with moderate to severe cognitive impairment who demonstrate poor judgment and are unable to walk without assistance. They are also the most likely to attempt to get out of bed despite raised side rails. A very low bed (seven to 13 inches above the floor) is recommended for residents who are unable to stand safely but who may accidentally roll out of or otherwise attempt to get out of bed in an unsafe manner (29,30). Reduced bed height is expected to diminish the likelihood of serious fall-related injuries. Alternatives that could remind the resident of the bed's boundaries without adding height to the fall include concave mattresses, full body pillows, or rolled blankets under the mattress edge (29,30). Environmental interventions are meant to reduce barriers for residents with dementia and to promote their highest level of functioning.

What we need to know

The development of functional, psychological, and cost outcomes of a comprehensive restorative-rehabilitative approach for cognitively impaired residents of nursing homes, using valid and reliable measures, is needed to guide future research and practice. Similarly, development and testing of environmental interventions for cognitively impaired residents is needed, because implementation will depend on demonstrating that the interventions improve care and are cost-effective.

Research is needed on the implicit and procedural memory capacity of persons with neurodegenerative disorders. Validation of implicit and procedural memory abilities in association with Alzheimer's disease and related disorders is needed to guide future intervention studies and practice. Empirical support demonstrating the ability to learn implicit and procedural information, such as how to use a walker, have important implications for rehabilitation modalities in cases of neurodegenerative disorders (32).

Cognition

What we know

Cognitive interventions for residents of long-term-care settings who have dementia are effective and can be implemented by existing staff within existing organizational routines and structures. Interventions are available that can enable caregivers to reach a wide variety of goals for persons with dementia (38–42). Such interventions have been implemented by a wide range of caregivers, including nursing, rehabilitation, and activities staff (41–44), family members (40,45), and volunteers (38). We emphasize two different lines of cognitive intervention research: the use of spaced retrieval and the use of Montessori-based activities programming as interventions in long-term care settings.

Spaced retrieval. Spaced retrieval refers to the correct recall of information over systematically increasing intervals of time—for example, immediate recall, recall after ten seconds, then after 20 seconds, 40 seconds, 60 seconds, two minutes, four minutes, and so on. Spaced retrieval has been used to treat persons with a variety of dementia illnesses (41,46,47) as well as cerebrovascular accidents (41). Spaced retrieval uses shaping techniques from behavioral psychology applied to cognition, and evidence exists that spaced retrieval uses procedural memory as the basis for its effects in cases of dementia (47).

We are currently working on a project to develop spaced retrieval as a best-practices procedure for rehabilitation. It is to be a therapeutic tool that will be used on a large scale. We are therefore developing spaced retrieval as an intervention that is both effective and billable, to be used as a part of a therapist's normal delivery of services (48).

Montessori-based activities. We have discussed the use of activities to reduce inappropriate behaviors among persons with dementia. Here we discuss activities as a cognitive intervention by describing the use of Montessori-based activities that have been adapted for geriatric populations.

Maria Montessori's original approach to educating children was based on rehabilitation techniques (39,49,50). These include task breakdown; extensive use of external cueing; guided repetition; guided sequencing; progression from simple to complex and from abstract to concrete; use of real-world, everyday materials; focus on productive, personally meaningful activity; immediate feedback; high levels of initial success; use of existing capabilities; and use of adaptive or supportive environments and assistive devices.

Primary results for residents of long-term care facilities who have dementia include substantial increases in positive engagement with their environment, decreases in passive behaviors, and increases in positive affect (39). We are now developing models for incorporating this intervention into restorative nursing programs in long-term-care settings.

What we need to know

The discussion of restraint reduction research touched on the need to validate and expand our knowledge of the use of implicit and procedural memory as the basis for interventions. Most of the research involving cognitive intervention rests on the assumption that this memory system will form the basis for most successful interventions for persons with dementia. We know little about the effects that pharmacological interventions for dementia—those in use and those in development—have on implicit and procedural memory.

Conclusions

A number of linkages are to be found among the themes we have presented, because uncovering and addressing unmet needs of persons with dementia should be the central focus of nonpharmacological treatment. Reducing physical restraints and providing engaging activities and environmental supports can reduce inappropriate behaviors, because these interventions either reduce unmet needs or prevent them from worsening.

Agitation and the perceived need for restraint can be driven by a lack of appropriate stimulation, both social and environmental. This lack may be remedied by providing information that is accessible to persons with dementia or by providing engaging activities. Repetitive questions, for example, can represent either information seeking or the need for reassurance. Determining and addressing the need underlying the behavior leads to very different interventions.

In summary, nonpharmacological interventions generally provide personalized care to persons with dementia, addressing their needs and thereby preventing or treating many inappropriate behaviors. Inappropriate behaviors can thus be reduced by improving medical and nursing care, training staff to improve care, providing social contact, providing stimulation and activities, reducing stressful stimuli, reducing restraints, and promoting relaxation during care activities. Additional research is needed to define the parameters of such care and how best to tailor it to individuals. ♦

Acknowledgments

This study was partly supported by grant MH-57851 from the National Institute of Mental Health and grant AG-17908 from the National Institute on Aging to Dr. Camp, grant MH-59617 from the National Institute of Mental Health to Dr. Cohen-Mansfield, and a grant from the Robert W. Woodruff Health Sciences Center of Emory University to Dr. Capezuti.

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