Interventions do belp make people with AD feel bappier and more self-confident, bave fewer behavioral problems, and sleep and eat better.

A THIEF IN THE NIGHT

(AD) and other dementias, progressive memory loss often is a quiet but cruel thief. It can take away their ability to function normally, interact with others, and enjoy interests and hobbies, and it steals their quality of life.

Fortunately, there are medications, products, programs, and activities that can help AD patients retain memory longer and even bring back brain activity thought to be lost. These interventions don't stop the progression of the disease, but they do help make people with AD feel happier and more selfconfident, have fewer behavioral problems, and sleep and eat better.

Memory is a domain of cognition, along with attention, language, executive function, and visual-spatial skills. It often is the first domain to be affected by AD. Researchers at the National Institute on Aging have suggested that memory loss may result when beta amyloid, a common protein in the brain, causes cell membranes to leak choline, thus reducing acetylcholine production in cells. Choline, a key ingredient in acetylcholine, is known to help store and retrieve memories.

Normal memory takes place in three stages: encoding, when a person takes the information in; consolidation, when the brain takes the data it encodes and processes it for storage in certain areas Alzheimer's has Stolen many People's Memories. Providers are Implementing Wide-ranging Programs to help Get them back.

JOANNE KALDY

of the brain; and retrieval, when a person recalls stored information in the brain. After age 50, people start to lose some short-term memory, although not all of this is related to AD. However, up to half of people over age 80 may have the beginnings of Alzheimer's, according to the "What's Your Brain Age" CBS News report.

Increasingly, long term care facilities are establishing memory care centers and even "brain gyms" to help seniors—especially those with AD—exercise their brains in an attempt to stave off memory loss or further decline in memory as much as possible.

Medications For Memory

It is important to note that no intervention or treatment in isolation is likely to have a major impact on memory in AD patients. However, a number of medications have proven useful and can be employed as part of an overall program to enhance memory.

Currently, there are five U.S. Food and Drug Administration (FDA)approved prescription medications to treat AD and memory loss. Four tacrine, donepezil, rivastigmine, and galantamine—are cholinesterase inhibitors, which are designed to enhance memory and other cognitive functions by maintaining levels of acetycholine in the brain and helping to compensate for the loss of functioning brain cells.

In clinical trials, donepezil, rivastigmine, and galantamine were associated with some improved performance on memory and thinking tests, FDA says.

While all of these drugs work similarly, dosing and side effects may influence drug choice in long term care. For example, "Titration to optimal dosage of tacrine is difficult because of side effects," says David Smith, MD, CMD, professor of family medicine, Texas A&M, and president of Geriatric Consultants. "Additionally, it requires four times daily dosing."

Donepezil "has a markedly better side effect profile and only requires once-daily dosing. At the same time, there are only two steps in titration," Smith notes. He adds that an extended-release version of galantamine has been introduced, so there currently are two drugs in this class with once-daily dosing.

Donepezil, rivastigmine, and galantamine are generally well tolerated. Gastrointestinal symptoms such as nausea, vomiting, loss of appetite, and increased bowl movement frequency may occur, according to the University of Pennsylvania Health System.

All three of these drugs have fewer drug interactions than tacrine, but patients taking any of them should be monitored if they have physical conditions—such as some heart conditions that may be worsened by cholinergic drugs. Dosages of all three drugs, as well as tacrine, should be reduced in patients who have hepatic or renal impairment.

Another FDA-approved drug to treat Alzheimer's disease and memory loss is memantine, an *N*-methyl-Daspartate antagonist that reduces nerve cell destruction, according to Medline Plus, a service of the National Institutes of Health. This is useful in

VIRTUAL MEMORY?

Several companies offer memory enhancement programs that are computer-based or utilize technology in some form. The best of these are extremely user friendly and fun, and they have the ability to self-adjust skill levels.

According to Andrew Carle, assistant professor and director of the Program in Assisted Living/Senior Housing Administration at George Mason University in Fairfax, Va., Dakim's [m]Power "is the most state of the art." This involves touch-screen technology and face recognition. The equipment has a built-in camera and recognizes users' faces. Dan Michel, the company's founder and chief executive, greets each user personally on the screen.

The program itself uses a series of games, puzzles, and entertaining activities in a multi-media format to exercise the brain. As Michel says, "We have translated cognitive stimulation from tests conducted by researchers into something that feels like a TV game show."

Carle agrees: "The developers of this program under-



Dakim's program stimulates the brain but also entertains.

stand that it has to be fun to get people to use it. I was on it for about 40 minutes, and I have the attention span of a gnat. I had a blast."

patients who cannot tolerate cholinesterase inhibitors or those with some types of heart disease. This drug appears to have few side effects and drug interactions. It also can be used in combination with a cholinesterase inhibitor.

For example, Smith notes that at least one study has shown that combination therapy with donepezil and memantine resulted in better cognitive performance than donepezil alone.

Part D May Play Role

An individual patient's Medicare Part D Prescription Drug Plan (PDP) also may impact medication therapy. According to Smith, "I have heard that some PDPs have put up road blocks to combination therapy despite evidence of its benefit. I also have heard of some tiering or requirements for physicians to document repeat MMSE [Mini Mental Status Examination] results in order to continue drug therapy with these agents.

"Since we have drugs that sometimes cause improvement and almost always

VITAMIN E ALSO HAS BEEN STUDIED AND SHOWN TO HAVE SOME EFFECTIVENESS, ACCORDING TO A RESEARCH REVIEW.

slow progression, it's hard to understand these requirements," he says. "We know that untreated AD patients typically lose two MMSE points per year. If they improve, stay the same, or even only drop one point, we can be pretty certain of the drug's effectiveness. Even if they go down two points or more, we can't be sure that they wouldn't have lost more points without the drug therapy."

Some natural or alternative products also have proven to have some impact on memory.

"There is some evidence that ginkgo biloba is effective. However, the problem with herbal preparations is that they aren't FDA-monitored, so you don't really know what you're getting," says Smith. "The ginkgo shown to be useful in one [*Journal of the American Medical Association*] study was of German origin, so consumers may want to check the label to see where the product was made."

Vitamin E also has been studied and shown to have some effectiveness, according to a research review appearing in a December 2002 issue of *Health and Age*. However, again, Smith offers a caveat: "If you go to the store, you might find different strengths of vitamin E. The cheaper, lower strengths are virtually worthless. Consumers really need to take the stronger doses to have any effectiveness." Many physicians recommend 400 IU twice daily as a safe dose that will have the appropriate antioxidant effect on the brain.

Estrogen therapy, Smith observes, has not proven to have any impact on AD or memory. However, this area continues to be studied.

He adds, "The program knows your cognitive deficits. If it takes you too long to answer, it automatically makes questions easier. If you answer questions quickly, it makes them difficult."

Because the user's age is programmed in up front, the project uses icons and images—such as Laurel and Hardy—that the user is likely to know. The program has several levels of challenge and is appropriate for people with "normal" and "normal aging" brains, as well as for people with varying stages of dementia.

Program Benefits

Does the program work? Consider these success stories: ■ An 85-year-old long term care facility resident was demented and nonverbal. A caregiver started the program, and one exercise featured someone playing the piano. The resident turned to the caregiver, addressed her by name, and said, "I wish I'd learned to play the piano when I was younger."

• A retirement community resident with moderate dementia was using the system and began to cry. She said that she was thinking about something she and her hus-

band had done years before, a memory that she thought she had lost.

• One retirement community resident was part of a memory study, and her memory scores had remained steady for the year or so she'd been involved. After working with the [m]Power program, her scores actually improved.

The technology can be programmed to forward session results to a physician or family member. This enables caregivers to quickly detect any sudden change in ability that might suggest a stroke or other problem.

While he believes in the program's value, Michel cautions, "This is not a replacement for social interaction, activities, art or music therapy, or medications. It's meant as an enhancement to other interventions."

Other Programs Abound

Among other technology-based programs available are Posit Science (Brain Fitness Program 2.0) and MindFit (from CogniFit). These two programs are similar, says Carle, and involve software that is uploaded to a personal computer. These also self-adjust skill level. Smith stresses that none of the medications or preparations should be used in isolation. Instead, he says, "they should be used as part of a broader program designed to address the individual needs of the whole patient."

Back To School: Montessori And Memory

When Maria Montessori first developed and refined her unique approach to education and learning in the early 1900s, little did she know that the socalled Montessori Method would be adapted and used to help AD patients and other seniors retain memory and cognitive function.

Montessori believed that "children could rise to their highest potential when provided the freedom to work on tasks at their own speed," says Karen Love, Consumer Consortium on Assisted Living founder. "In working with Alzheimer's disease patients, Montessori helps us rebalance how we think about individuals in our care. We flip the equation and look at their strengths instead of the limitations of their disease," she adds. Love has had great success using Montessori-based activities (MBAs) with patients. "This is a simple, inexpensive system to implement and use. It is therapeutic, promotes health and fitness, and enables participants to function at their highest possible level," she notes.

MBAs, according to Love, involve eight key principles:

• Observe the participants to understand their interests, capabilities, preferences, strengths, and needs.

■ Keep verbal instructions simple, pleasant, and clear.

• Assume that there are many "right" ways of doing an activity.

• Cue participants but do not do the activity for them.

• Provide participants with immediate and frequent verbal encouragement.

■ Build on participants' skills and capabilities, progressing from simple to more complex and concrete to abstract.

■ Use repetition of an activity

to promote success and positive engagement.

• Use activities that build and help retain skills and capabilities.

"We used to say that once you lose brain capacity, it doesn't come back. Now we know that new learning or retrieval of old information is possible," Love says. After using MBAs with adult day care clients, she adds, it's not uncommon for an aide to say, "I didn't know they could do this or remember that." Love says. "It's very empowering for everyone involved."

Activities That Help

"Find the Money" is an example of an MBA. It involves burying plastic coins in a clear plastic container full of unpopped corn kernels, unsugared Cheerios cereal, or dry kidney beans. The caregiver or facilitator asks the participant to find the money, then take the coins out and place them on the table. Once the individual finds all the coins, the facilitator asks him or her how many coins were found. The participant then is directed to bury the

The Brain Fitness Program "brings brain training out of the lab and into the real world to help real people. From that perspective, we have core technology and training programs to change the way the brain works,"

says Posit Science Vice President for Research and Outcomes Henry Mahncke. The program suggests a training regimen (for example, 40 hours in three months).

"One study showed a 10-year improvement in memory skills at the end of training," says Carle. This program, he suggests, "is best for people who are very competitive and goal driven or residents of facilities whose activity directors are willing to take on a 'personal trainer' role."

MindFit recommends a training regimen of 20 minutes daily, three times a week. "This system is very straightforward and easy to install," says Marc Agronin, MD, director of mental health services at the Miami Jewish Home and Hospital for the Aged.

WE SAW SOME PROMISING RESULTS, AND FAMILY MEMBERS STARTED TO FEEL A REAL SENSE OF HOPE.

"Caregivers are able to install it easily, and residents enjoy using it. Early in the process, we looked at outcomes. We saw some promising results, and family members started to feel a real sense of hope."

Carle adds that the company has conducted studies showing an 18 percent improvement in short-term memory and a 12.5 percent improvement in reaction time.

"It's Never 2 Late" is another computer-based program that uses activities such as driving and flight simulation to promote memory enhancement. Based on a picture-based touch screen, the program is multi-media. A unique aspect of this initiative is that

communities or facilities can customize it to meet the needs of their individual residents.

For example, Mather Lifeways creates personal home pages for residents that include photos and stories from their past and pictures and information that address their hobbies and interests. coins for the next person. The activity utilizes manual dexterity for finding and burying the coins.

"The great thing about these activities is that once a person masters a task, caregivers can increase its complexity to enhance its therapeutic value," Love observes. For example, in the Find the Money activity, the caregiver can ask a series of questions after the participant has counted all the coins. These might include:

• What would you spend the money on?

• How much/many could you buy with this money?

Do you prefer to spend money or save it?

These questions require participants to "mentally move from the concrete the coins—to abstract concepts such as spending money and preferences," says Love.

These activities can trigger memory even in individuals with severe impairments. Love offers the example of a woman with advanced AD. To help develop strength and movement in her hands, she was given an empty ice cube tray, a set of colorful jacks, and a pair of tongs.

At first, she would just spread the jacks out. Over time, she started to pick up the tongs and put the jacks in the ice cube tray. "It blew everyone away. They had no idea she could do this," Love recalls.

Not only do these activities trigger abilities that appear to have been forgotten, they also give participants tremendous satisfaction and help reduce behavioral problems or tension that affects others.

For instance, Love remembers a situation with a high-energy dementia patient who would sit and tap his hand on the table. His nervous energy created a mounting tension in those around him. So staff gave him a box with different-colored poker chips mixed together. They asked him to help them by sorting out the chips.

Instead of sorting the chips, howev-

er, he made "this incredible fort with them," Love notes. "It didn't matter that he didn't follow the instructions. What he did was very creative, it engaged him, and it eased the tension in the room."



WE EMPHASIZE THAT YOU NEED THREE THINGS FOR A HEALTHY BRAIN—SLEEP, NUTRITION, AND MENTAL EXERCISE.

Family members also benefit when a loved one's memory and cognitive function are sharpened. "They see that mom is more alert and that she's sleeping and eating better. It creates a positive domino effect," Love says.

Jogging Memories

MemAerobics is not an exercise program, but it began that way, says program founder Roger Anunsen. "It has evolved into an education initiative about how the aging brain works and what the aging person can do to protect it," he says. "Participants get a crash course in brain wellness that they can embrace and elements they can put into their own lives in terms of behavior, habit, and lifestyle changes," he says.

The 11-session program lasts about six weeks. It not only educates participants about memory and how the brain works, it also gives people neuroprotective strategies they can incorporate into daily life.

Anunsen offers, "This can be as simple as taking deep breaths several times daily and taking in more antioxidants. We emphasize that you need three things for a healthy brain—sleep, nutrition, and mental exercise—and we teach them how to get all three."

The program involves a combination of lecture, discussions, games, and other activities. The most popular exercise is Animal Congregations, a card game based on an old English parlor game.

"It asks participants to retrieve something they may have coded a decade ago. It also teaches them something new," says Anunsen. "Most people know that a group of lions is called a pride; not many people know about a leap of leopards. It's a way of working the brain that is fun."

Anunsen lets participants decide what exercises they like and uses more of their favorites.

Benefits To Participants

Anunsen gives participants homework—exercises, puzzles, and other assignments to work on between classes—and encourages them to watch for articles about brain function even after the course ends.

"If you give people the right teachings on how their brains work and how they can keep the rust out, they will work at it. When they understand that they can learn something new, code it, store it, and bring it back, it empowers them to use their brains and their memories more efficiently," he says.

"We've seen positive changes in residents' personalities after they participated in MemAerobics," says Julie Ouilette, marketing director at Spring Ridge at Charboneau, a senior community in Wilsonville, Ore.

"As people's memories slip, they start to feel bad about themselves and withdraw," she says.

"When they learn tools to exercise their minds and work on retaining and retrieving information, their entire demeanor improves." She refers to one resident who always walked with his head down. "Now he smiles all the time and is happy. He's a different person," she says.

The program not only has benefited residents, Ouilette says. It also helps staff and the facility.

"People are happier, complain less, and have fewer behavioral problems, and the program requires little staff involvement. At the same time, we've received positive outside attention about our efforts to improve brain health. It shows that we care about our residents and all aspects of their health," she says.

Of course, it is important to have studies to back such interventions, and one such report on MemAerobics appeared in a recent issue of the *Journal of Mental Health & Aging*. In it, authors concluded that participants in the program "experienced an increase in memory ability as well as a decrease in depressive symptoms."

Drinking Up Memory

Erin Bonitto, MS, ADC, and her Life Enrichment Program take a lounge approach to memory enhancement, and the consultant and author is "experiencing 'ah-ha' moments over and over again with it."

Bonitto saw "a huge gulf between what researchers know about memory and what we do with our seniors to maximize memory and make life pleasurable." She sought to bridge that gap, and the Life Enrichment initiative resulted.

Bonitto's program involves several modules and types of activities. Among these is a lounge program for people who have dementia. This involves stations "that tap into all of the things that are healthy in the person's brain."

A facility can set up several of these stations in a room. They feature such elements as reminiscence cards with pictures on the front and stories on the back, colorful squares of fabric that require sorting, jewelry to be organized, ribbons to be wound, or socks to be folded.

Residents sit at stations that appeal to them, and a facilitator cues them to elicit memories and thoughts. For example, Bonitto describes one resident who had late-stage dementia and



Life Enrichment's props, such as wedding gowns and flowers, help residents find memories.

was fascinated by the reminiscence cards. The facilitator asked what he was looking at, and "he lit up and said, 'I was thinking about my first haircut. I

nurse assistants every day. She just refused to sit down, spoke gibberish, and created a real headache for staff. One day, we brought her to the 'nursery.' She picked up one of the

was so cold, I was

a big development,

she stresses, noting,

"Previously, he was

disinterested, bored,

and restless."

Success Stories

Another success

skill station, in

which the facility sets up a mock baby

nursery in a small

housekeepers and

was shadowing

corner. "One woman

story involves a life

life-like baby dolls and sat in the rockshivering." This was ing chair with it. She talked to the doll coherently in full sentences," Bonitto recalls, adding, "Staff were flabbergasted."

Bonitto also employs therapeutic small groups to help address memory. "At one facility, we brought some women with dementia together and asked them about their weddings. They didn't respond, even when we brought out their wedding pictures," she says. However, when Bonitto brought out "props" such as a bouquet of flowers, a wedding gown bodice, and other items that the residents could examine, touch, and smell, the result was very different. The women shared specific details about their weddings, and they smiled and connected with others.

"The staff thought these people didn't remember because they were going through the language centers of their brain and the physical center. When these individuals touch something, their hands have memories, and you can unlock them," she says.

The materials for these activities are fairly simple and inexpensive. They mostly are items and materials that staff can get from dollar stores, thrift shops, yard sales, and donations. However, these programs do require staff training and involvement.

To minimize staff burden, Bonitto employs an interdisciplinary approach where people from different areassuch as nursing and housekeepingshare responsibility for the program. "We recruit people and ask for volunteers. They go through intensive, hands-on coaching, and they take turns working with the residents," she says.

High-Touch Activities

Not all memory enhancement interventions require formal programs or medications. Some just require common sense, compassion, and a little knowledge. Dementia expert, author, and speaker Jolene Brackey observes, "To maintain memory, it is important to surround residents with things that remind them of who they are. If possible, arrange the room or apartment similar to their place of comfort in their home. This will make it easier for them to adjust and create less confusion." She stresses that little efforts can mean a lot.

For example, she says, "An old chair may look like an eyesore to you, but it may bring great comfort and trigger good memories for an AD patient."

"We have found that when working with people with memory loss, structure seems to be best and most important for all activities," says Joanne Malletta, LSW, director of memory support at Mather Lifeways in Illinois.

"It's generally useful to have more activities for shorter periods of time. It also is useful to have residents do things that are natural for them—like watering plants or arranging flowers," she notes, adding, "Exercise also is important. It can relieve some anxiety, and it takes the pressure off them if they have word-finding problems."

Trying Out New Ideas

When staff members are encouraged to be creative, says Malletta, they can devise some wonderfully innovative ideas. "One man had some deficits and wasn't interested in large groups," she says. "He had been a physiology professor, so someone brought in a physiology book. We made copies of several pages and put them in a notebook."

The resident, she says, would spend all day looking at the notebook, and it clearly made him happy and brought back memories of his work and his knowledge of the field.

Mill Creek Alzheimer's Special Care Center in Springfield, Ill., triggers memory by letting residents relive activities from their past. For example, the facility brought in an Elvis Presley impersonator to perform. "The ladies got all giggly and bubbly like young girls," says Jason Murphy, Mill Creek program director. "Afterwards, they reminisced about listening to Elvis' music and other events from their youth. For awhile, they felt young again."

One resident at Mill Creek had been a hairdresser, recalls Amada Drennan, LPN, health services director. One day the elderly woman was very upset and agitated, so Drennan took her to the onsite beauty shop and let her put her hair up.

"It calmed her right down, and she shared some of her experiences from her working days," Drennan says.

Some facilities use memory boxes—shoe or storage boxes filled with personal mementoes from the resident's past that they can peruse from time to time. Working with a caregiver who cues them with questions, these residents can be encour-



One of Life Enrichment's skill stations is a mock nursery with life-like dolls to induce memories.

aged to remember who they were and recapture elements of their personality and past they may have forgotten.

Nutrition Plays A Role

Nutrition and diet cannot be ignored in efforts to preserve or enhance memory. Keeping patients adequately hydrated helps prevent delirium or other problems that can interfere with memory.

However, some studies actually have suggested that drinking caffeine has special benefits. Most recently, a study involving 7,000 women aged 65 and older showed that those who drank more than three cups of coffee daily showed less decline in memory tests over a four-year period, according to study author Karen Ritchie of the French National Institute for Health and Medical Research. While the study, which was recently published in

HAVE A COFFEE OR BREAD-MAKING MACHINE GOING. THE SMELL OF FRESH-BAKED PIES ALSO IS A GOOD CUE.

Neurology, showed that caffeine consumers did not have lower rates of dementia, the authors urged further study to determine if caffeine could slow the dementia process.

It's not just what residents eat or drink but how they do it that counts. says Janelle Asai, RD, LD, a Portland, Ore.-based consultant. "Many programs find behavior and memory problems associated with traditional

food service. The body rhythms of dementia patients often are off. It's helpful to be flexible with dining services with these individuals," she says.

Asai suggests that AD patients may need cues to remind them to eat and to increase their appetite. "Have a coffee or bread-making machine going. The smell of fresh-baked pies or cookies also is a good cue," she notes. She also says that some actually may "remember" how to feed themselves if they see others eating, so she recommends seating residents with more impairments with higher-functioning ones in the dining room.

"Often, the impaired residents will mimic the others by putting food in their mouths and lifting a cup to their lips," she says.

Adding Aromatherapy

Aromatherapy is gaining increased attention as playing a role in memory enhancement. Mary Jo Hannasch, LSW, social services director at Bethany Homes, a senior living community in Fargo, N.D., utilizes this technique on a regular basis. "We start the morning with grapefruit essential oil. It's uplifting and smells like the kitchen. It triggers memories of mornings at home and cues residents that it's time to wake up and eat breakfast."

Bonitto uses aromatherapy as part of her "Soft Sensory" activities with latestage AD patients.

"We combine aromatherapy with therapeutic music, touch, and other activities. We combine these to increase alertness, and we add simple affirmations," she says.

In the future, such "new age" interventions will be a common component of memory care, predicts Bonitto. "We'll see greater use of rhythm and drumming exercises, as well as aromatherapy." She notes that she already has tried some drumming and rhythm activities with some success. "Patients with advanced dementia, many of whom were nonresponsive and nonverbal, became visibly alert. One woman

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who staff didn't think could speak anymore said, 'Thank you for letting me come.'"

Increasingly, all types of long term care facilities are establishing memory care programs, and more consumers are expecting this as a component of AD care. In fact, Henry Mahncke, vice president for research and outcomes at Posit Science, predicts, "In the next five years, every leading retirement community in the country will have brain fitness training facilities. Eventually, it could be criminal not to have them."

In the meantime, there are many questions about memory enhancement that research needs to answer. "As more research is done, we will have a better understand of how physical activity, diet and nutrition, drugs, and other elements have on memory," Mahncke says.

Peter Reed, senior director of programs at the Alzheimer's Association, adds, "Research needs to explore all of these areas, as well as the various products and programs out there. Many facilities are interested in implementing evidence-based practice, and they're waiting for this data."

One thing is beyond debate, Smith says, "there is no magic bullet for memory enhancement or brain health." Nonetheless, facilities and their staff need to try promising ideas, copy the successes of others, and persevere with patience and compassion.

"Dementia and Alzheimer's disease destroy language centers and shortterm memory. But the person is still in there," says Bonitto.

"Excellent long term care providers realize that the disease is just a detour and not a dead end. The use of effective techniques and therapies will enable us to go around these detours and get to the personality and memories beyond them." ■

Joanne Kaldy is a medical writer and communications consultant based in Hagerstown, Md.

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