Alzheimer's disease is an irreversible, progressive brain disorder that slowly destroys memory and thinking skills and eventually the ability to carry out the simplest tasks. It is the most common cause of dementia. In most people with Alzheimer's disease, symptoms first appear in their mid-60s. One in ten Americans age 65 and older has Alzheimer's disease.\[1\]

Scientists continue to unravel the complex brain changes involved in the onset and progression of Alzheimer's disease. It is thought that changes in the brain may begin a decade or more before memory and other cognitive problems appear. Abnormal deposits of proteins form amyloid plaques and tau tangles throughout the brain. Previously healthy neurons stop functioning, lose connections with other neurons, and die. The damage initially appears to take place in the hippocampus and cortex, the parts of the brain essential in forming memories. As more neurons die, additional parts of the brain are affected and begin to shrink. By the final stage of Alzheimer's, damage is widespread, and brain tissue has shrunk significantly.\[2\] See Figure 6.6 for an image of the changes occurring in the brain during Alzheimer's disease.

Figure 6.6 Brain and Neurons Affected by Alzheimer's Disease
Symptoms of Early Alzheimer’s Disease

There are ten symptoms of early Alzheimer’s disease:

- **Forgetting recently learned information that disrupts daily life.** This includes forgetting important dates or events, asking the same questions over and over, and increasingly needing to rely on memory aids (e.g., reminder notes or electronic devices) or family members for things they used to handle on their own. This is different than a typical age-related change of sometimes forgetting names or appointments, but remembering them later.

- **Challenges in planning or solving problems.** This includes changes in an individual’s ability to develop and follow a plan or work with numbers. For example, they may have trouble following a familiar recipe or keeping track of monthly bills. They may have difficulty concentrating and take much longer to do things than they did before. This is different from a typical age-related change of making occasional errors when managing finances or household bills.

- **Difficulty completing familiar tasks.** This includes trouble driving to a familiar location, organizing a grocery list, or remembering the rules of a favorite game. This symptom is different from a typical age-related change of occasionally needing help to use microwave settings or to record a TV show.

- **Confusion with time or place.** This includes losing track of dates, seasons, and the passage of time. Individuals may have trouble understanding something if it is not happening immediately. Sometimes they may forget where they are or how they got there. This symptom is different from a typical age-related change of forgetting the date or...
day of the week but figuring it out later.

- **Trouble understanding visual images and spatial relationships.** Vision problems that include difficulty judging distance, determining color or contrast, or causing issues with balance or driving can be symptoms of Alzheimer’s. This is different from a typical age-related change of blurred vision related to presbyopia or cataracts. (See the “Sensory Impairments” chapter for more information on common vision problems.)

- **New problems with words in speaking or writing.** Individuals with Alzheimer’s may have trouble following or joining a conversation. They may stop in the middle of a conversation and have no idea how to continue or they may repeat themselves. They may struggle with vocabulary, have trouble naming a familiar object, or use the wrong name (e.g., calling a “watch” a “hand-clock”). This is different from a typical age-related change of having trouble finding the right word.

- **Misplacing things and losing the ability to retrace steps.** A person with Alzheimer’s disease may put things in unusual places. They may lose things and be unable to go back over their steps to find them again. They may accuse others of stealing, especially as the disease progresses. This is different from a typical age-related change of misplacing things from time to time and retracing steps to find them.

- **Decreased or poor judgment.** Individuals with Alzheimer’s may experience changes in judgment or decision-making. For example, they may use poor judgment when dealing with money or pay less attention to grooming or keeping themselves clean. This is different from a typical age-related change of making a bad decision or mistake once in a while, like neglecting to change the oil in the car.

- **Withdrawal from work or social activities.** A person living with Alzheimer’s disease may experience changes in the ability to hold or follow a conversation. As a result, he or she may withdraw from hobbies, social activities, or other engagements. They may have trouble keeping up with a favorite team or activity. This is different from a typical age-related change of sometimes feeling uninterested in family or social obligations.

- **Changes in mood and personality.** Individuals living with Alzheimer’s may experience mood and personality changes. They can become confused, suspicious, depressed, fearful, or anxious. They may be easily upset at home, with friends, or when out of their comfort zone. This is different from a typical age-related change of developing very specific ways of doing things and becoming irritable when a routine is disrupted.\(^5\)

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### Three Stages of Dementia

There are three stages of dementia: early, moderate, and advanced. Early stages of dementia include the ten symptoms previously discussed. Patients with moderate dementia require additional assistance with reminders to eat, wash, and use the restroom. They may not recognize family and friends. Behavioral symptoms such as wandering, getting lost, hallucinations, delusions, and repetitive behavior may occur. Patients living at home may engage in risky behavior, such as leaving the house in clothing inappropriate for weather conditions or leaving on the stove burners. Patients with advanced dementia require full assistance in washing, dressing, eating, and toileting. They often have urinary and bowel incontinence. Their gait becomes shuffled or unsteady. There may be increased aggressive behavior, disinhibition, or inappropriate laughing. Eventually they have difficulty eating, swallowing, and speaking, and seizures may develop.\(^6\)

See Figure 6.7— of a patient with dementia requiring assistance with dressing.
There is no single diagnostic test that can determine if a person has Alzheimer’s disease. Health care providers use a patient’s medical history, mental status tests, physical and neurological exams, and diagnostic tests to diagnose Alzheimer’s disease and other types of dementia. During the neurological exam, reflexes, coordination, muscle tone and strength, eye movement, speech, and sensation are tested.

Mental status testing evaluates memory, thinking, and simple problem-solving abilities. Some tests are brief, whereas others can be more time-intensive and complex. These tests give an overall sense of whether a person is aware of their symptoms; knows the date, time, and place where they are; can remember a short list of words; and if they can follow instructions and do simple calculations. The Mini Mental Status Examination (MMSE) and Mini-Cog test are two commonly used assessments.

During the MMSE, a health professional asks a patient a series of questions designed to test a range of everyday mental skills. The maximum MMSE score is 30 points. A score of 20 to 24 suggests mild dementia, 13 to 20 suggests moderate dementia, and less than 12 indicates severe dementia. On average, the MMSE score of a person with Alzheimer’s declines about two to four points each year.

Note
Visit the Oxford Medical Education website to view a Mini Mental Status Exam.

During the Mini-Cog, a person is asked to complete two tasks: remember and then later repeat the names of three common objects and draw a face of a clock showing all 12 numbers in the right places with the time indicated as specified by the examiner. The results of this brief test determine if further evaluation is needed. In addition to assessing mental status, the health care provider evaluates a person’s sense of well-being to detect depression or other mood disorders that can cause memory problems, loss of interest in life, and other symptoms that can overlap with dementia.

Note
Visit the Mini-Cog website to read more information about this instrument.

Diagnostic testing for Alzheimer’s disease may include structural imaging with magnetic resonance imaging (MRI) or...
computed tomography (CT). These tests are primarily used to rule out other conditions that can cause symptoms similar to Alzheimer’s but require different treatment. For example, structural imaging can reveal brain tumors, evidence of strokes, damage from head trauma, or a buildup of fluid in the brain.\[8\]

Treatments

While there is no cure for Alzheimer’s disease, there are medications to help lessen symptoms of memory loss and confusion and interventions to manage common symptomatic behaviors.

Medications

The U.S. Food and Drug Administration (FDA) has approved two types of medications, cholinesterase inhibitors and memantine, to treat the cognitive symptoms of Alzheimer’s disease (memory loss, confusion, and problems with thinking and reasoning). As Alzheimer’s progresses, brain cells die and connections among cells are lost, causing cognitive symptoms to worsen. While current medications cannot stop the damage Alzheimer’s causes to brain cells, they may help lessen or stabilize symptoms for a limited time by affecting certain chemicals involved in carrying messages among the brain’s nerve cells. Sometimes both types of medications are prescribed together.

Cholinesterase inhibitors are prescribed to treat early to moderate symptoms of Alzheimer’s disease related to memory, thinking, language, judgment, and other thought processes. Cholinesterase inhibitors prevent the breakdown of acetylcholine, a neurotransmitter that is vital for learning and memory. It supports communication among nerve cells by keeping acetylcholine high and delays or slows the worsening of symptoms. Effectiveness varies from person to person, and the medications are generally well-tolerated. If side effects occur, they commonly include nausea, vomiting, loss of appetite, and increased frequency of bowel movements. These three cholinesterase inhibitors are commonly prescribed:

- Donepezil (Aricept), approved to treat all stages of Alzheimer’s disease
- Galantamine (Razadyne), approved for mild-to-moderate stages
- Rivastigmine (Exelon), approved for mild-to-moderate stages

Memantine (Namenda) and a combination of memantine and donepezil (Namzaric) are approved by the FDA for treatment of moderate to severe Alzheimer’s. Memantine is prescribed to improve memory, attention, reasoning, language, and the ability to perform simple tasks. Memantine regulates the activity of glutamate, a chemical involved in information processing, storage, and retrieval. It improves mental function and the ability to perform daily activities for some people, but it can cause side effects, including headache, constipation, confusion, and dizziness.

Other medications may be prescribed to treat specific symptoms of depression, anxiety, or psychosis. However, the decision to use an antipsychotic drug must be considered with extreme caution. Research has shown that these drugs are associated with an increased risk of stroke and death in older adults with dementia. The FDA has ordered manufacturers to label such drugs with a “Black Box” warning about their risks and a reminder that they are not approved to treat dementia symptoms. Individuals with dementia should use antipsychotic medications only under one of the following conditions:

- Behavioral symptoms are due to mania or psychosis.
• The symptoms present a danger to the person or others.
• The person is experiencing inconsolable or persistent distress, a significant decline in function, or substantial difficulty receiving needed care.

Antipsychotic medications should not be used to sedate or restrain persons with dementia. The minimum dosage should be used for the minimum amount of time possible, and nurses should carefully monitor for adverse side effects and report them to the health care provider. [9]

Interventions for Symptomatic Behavior

Many people find the behavioral changes caused by Alzheimer’s disease to be the most challenging and distressing effect of the disease. The chief cause of behavioral symptoms is the progressive deterioration of brain cells. However, medication, environmental influences, and some medical conditions can also cause symptoms or make them worse.

In the early stages of Alzheimer’s disease, people may experience behavior and personality changes, such as irritability, anxiety, and depression. In later stages, other symptoms may occur, including the following:

• Aggression and anger
• Anxiety and agitation
• General emotional distress
• Physical or verbal outbursts
• Restlessness, pacing, or shredding paper or tissues
• Hallucinations (seeing, hearing, or feeling things that are not really there)
• Delusions (firmly held beliefs in things that are not true)
• Sleep issues and sundowning

Sundowning is restlessness, agitation, irritability, or confusion that typically begins or worsens as daylight begins to fade and can continue into the night, making it hard for patients with Alzheimer’s to sleep. Being too tired can increase late-afternoon and early-evening restlessness. Tips to manage sundowning are as follows:[10]

• Take them outside or expose them to bright light in the morning to reset their circadian rhythm.
• Do not plan too many activities during the day. A full schedule can be over tiring.
• Make early evening a quiet time of day. Play soothing music or ask a family member or friend to call during this time.
• Close the curtains or blinds at dusk to minimize shadows and the confusion they may cause.
• Reduce noise, clutter, or the number of people in the room.
• Do not serve coffee, cola, or other drinks with caffeine late in the day.

Aggressive Behaviors

Aggressive behaviors may be verbal or physical. They can occur suddenly, with no apparent reason, or result from a frustrating situation. While aggression can be hard to cope with, understanding this is a symptom of Alzheimer’s disease...
and the person with Alzheimer’s or dementia is not acting this way on purpose can help. See Figure 6.8— for an image of a resident with dementia demonstrating aggressive verbal behavior.

![Figure 6.8 Aggressive Verbal Behavior](image)

Aggression can be caused by many factors including physical discomfort, environmental factors, and poor communication. If the person with Alzheimer’s is aggressive, consider what might be contributing to the change in behavior.

**Physical Discomfort**

- Is the person able to let you know that he or she is experiencing physical pain? It is not uncommon for persons with Alzheimer’s or other dementias to have urinary tract or other infections. Due to their loss of cognitive function, they are unable to articulate or identify the cause of physical discomfort and, therefore, may express it through physical aggression.
- Is the person tired because of inadequate rest or sleep?
- Is the person hungry or thirsty?
- Are medications causing side effects? Side effects are especially likely to occur when individuals are taking multiple medications for several health conditions.

**Environmental Factors**

- Is the person overstimulated by loud noises, an overactive environment, or physical clutter? Large crowds or being surrounded by unfamiliar people — even within one’s own home — can be overstimulating for a person with dementia.
- Does the person feel lost?
- What time of day is the person most alert? Most people function better during a certain time of day; typically mornings are best. Consider the time of day when making appointments or scheduling activities. Choose a time when you know the person is most alert and best able to process new information or surroundings.

**Poor Communication**

- Are your instructions simple and easy to understand?
• Are you asking too many questions or making too many statements at once?
• Is the person picking up on your own stress or irritability?

Techniques for Response

There are many therapeutic methods for a nurse or caregiver to respond to aggressive behaviors displayed by a person with dementia. The following are some methods that can be used with aggressive behavior:

• **Begin by trying to identify the immediate cause of the behavior.** Think about what happened right before the reaction that may have triggered the behavior. Rule out pain as the cause of the behavior. Pain can trigger aggressive behavior for a person with dementia.

• **Focus on the person’s feelings, not the facts.** Look for the feelings behind the specific words or actions.

• **Don’t get upset.** Be positive and reassuring and speak slowly in a soft tone.

• **Limit distractions.** Examine the person’s surroundings, and adapt them to avoid future triggers.

• **Implement a relaxing activity.** Try music, massage, or exercise to help soothe the person.

• **Shift the focus to another activity.** The immediate situation or activity may have unintentionally caused the aggressive response, so try a different approach.

• **Take a break if needed.** If the person is in a safe environment and you are able, walk away and take a moment for emotions to cool.

• **Ensure safety!** Make sure you and the person are safe. If these interventions do not successfully calm down the person, seek assistance from others. If it is an emergency situation, call 911 and be sure to tell the responders the person has dementia that causes them to act aggressively.

When educating caregivers about responding to aggressive behaviors, encourage them to share their experience with others, such as face-to-face support groups, where they can share response strategies they have tried and also get more ideas from other caregivers.

Anxiety and Agitation

A person with Alzheimer’s may feel anxious or agitated. They may become restless, causing a need to move around or pace or become upset in certain places or when focused on specific details. See Figure 6.9 for an illustration of an older adult feeling the need to move around. Anxiety and agitation can be caused by several medical conditions, medication interactions, or by any circumstances that worsen the person’s ability to think. Ultimately, the person with dementia is biologically experiencing a profound loss of their ability to negotiate new information and stimuli. It is a direct result of the disease. Situations that may lead to agitation can include moving to a new residence or nursing home; changes in environment, such as travel, hospitalization, or the presence of houseguests; changes in caregiver arrangements; misperceived threats; or fear and fatigue resulting from trying to make sense out of a confusing world.
Interventions to prevent and treat agitation include the following:

- **Create a calm environment and remove stressors.** This may involve moving the person to a safer or quieter place or offering a security object, rest, or privacy. Providing soothing rituals and limiting caffeine use are also helpful.

- **Avoid environmental triggers.** Noise, glare, and background distraction (such as having the television on) can act as triggers.

- **Monitor personal comfort.** Check for pain, hunger, thirst, constipation, full bladder, fatigue, infections, and skin irritation. Make sure the room is at a comfortable temperature. Be sensitive to the person's fears, misperceived threats, and frustration with expressing what is wanted.

- **Simplify tasks and routines.**

- **Find outlets for the person's energy.** The person may be looking for something to do. Provide an opportunity for exercise such as going for a walk or putting on music and dancing.

**Techniques for Response**

If a patient with dementia becomes anxious or agitated, consider these potential interventions:

- **Back off and ask permission before performing care tasks.** Use calm, positive statements, slow down, add lighting, and provide reassurance. Offer guided choices between two options when possible. Focus on pleasant events and try to limit stimulation.

- **Use effective language.** When speaking, try phrases such as, "May I help you? Do you have time to help me? You're safe here. Everything is under control. I apologize. I'm sorry that you are upset. I know it's hard. I will stay with you until you feel better."

- **Listen to the person's frustration.** Find out what may be causing the agitation, and try to understand.

- **Check yourself.** Do not raise your voice, show alarm or offense, or corner, crowd, restrain, criticize, ignore, or argue with the person. Take care not to make sudden movements out of the person's view.

If the person's anxiety or agitation does not improve using these techniques, notify the provider to rule out physiological causes or medication-related side effects.
Hallucinations

When a person with dementia experiences hallucinations, they may see, hear, smell, taste, or feel something that isn’t there. Some hallucinations may be frightening, while others may involve ordinary visions of people, situations, or objects from the past. Alzheimer’s and other dementias are not the only cause of hallucinations. Other causes of hallucinations include schizophrenia; physical problems, such as kidney or bladder infections, dehydration, or intense pain; alcohol or drug abuse; eyesight or hearing problems; and medications. See Figure 6.10[13] for an illustration of hallucinations experienced by a person with dementia.

If a person with dementia begins hallucinating, notify the health care provider to rule out other possible causes and to determine if medication is needed. It may also help to have the person’s eyesight or hearing checked. If these strategies fail and symptoms are severe, medication may be prescribed. While antipsychotic medications can be effective in some situations, they are associated with an increased risk of stroke and death in older adults with dementia and must be used carefully.

Techniques for Response

When responding to a patient with dementia experiencing hallucinations, be cautious. First, assess the situation and determine whether the hallucination is a problem for the person or for you. Is the hallucination upsetting? Is it leading the
person to do something dangerous? Is the sight of an unfamiliar face causing the person to become frightened? If so, react calmly and quickly with reassuring words and a comforting touch. Do not argue with the person about what he or she sees or hears. If the behavior is not dangerous, there may not be a need to intervene.

- **Offer reassurance.** Respond in a calm, supportive manner. You may want to respond with, “Don’t worry. I’m here. I’ll protect you. I’ll take care of you.” Gentle patting may turn the person’s attention toward you and reduce the hallucination.

- **Acknowledge the feelings behind the hallucination and try to find out what the hallucination means to the individual.** You might want to say, “It sounds as if you’re worried” or “This must be frightening for you.”

- **Use distractions.** Suggest a walk or move to another room. Frightening hallucinations often subside in well-lit areas where other people are present. Try to turn the person’s attention to music, conversation, or activities they enjoy.

- **Respond honestly.** If the person asks you about a hallucination or delusion, be honest. For example, if he or she asks, “Do you see the spider on the wall?,” you can respond, “I know you see something, but I don’t see it.” This way you’re not denying what the person sees or hears and avoiding escalating their agitation.

- **Modify the environment.** Check for sounds that might be misinterpreted, such as noise from a television or an air conditioner. Look for lighting that casts shadows, reflections, or distortions on the surfaces of floors, walls, and furniture. Turn on lights to reduce shadows. Cover mirrors with a cloth or remove them if the person thinks that he or she is looking at a stranger.

### Sundowning

Sundowning is increased confusion, anxiety, agitation, pacing, and disorientation in patients with dementia that typically begins at dusk and continues throughout the night. Although the exact cause of sundowning and sleep disorders in people with Alzheimer’s disease is unknown, these changes result from the disease’s impact on the brain. There are several factors that may contribute to sleep disturbances and sundowning:

- Mental and physical exhaustion from a full day trying to keep up with an unfamiliar or confusing environment.
- An upset in the “internal body clock,” causing a biological mix-up between day and night.
- Reduced lighting causing shadows and misinterpretation is seen, causing agitation.
- Nonverbal behaviors of others, especially if stress or frustration is present.
- Disorientation due to the inability to separate dreams from reality when sleeping.
- Decreased need for sleep, a common condition among older adults.

There are several interventions that nurses and caregivers can implement to help manage sleep issues and sundowning:

- Promote plenty of rest.
- Encourage a regular routine of waking up, eating meals, and going to bed.
- When possible and appropriate, include walks or time outside in the sunlight.
- Make notes about what happens before sundowning events and try to identify triggers.
- Reduce stimulation during the evening hours (e.g., TV, doing chores, loud music, etc.). These distractions may add to the person’s confusion.
• Offer a larger meal at lunch and keep the evening meal lighter.
• Keep the home environment well-lit in the evening. Adequate lighting may reduce the person’s confusion.
• Do not physically restrain the person; it can make agitation worse.
• Try to identify activities that are soothing to the person, such as listening to calming music, looking at photographs, or watching a favorite movie.
• Take a walk with the person to help reduce his or her restlessness.
• Consider the best times of day for administering medication; consult with the prescribing provider or pharmacist as needed.
• Limit daytime naps if the person has trouble sleeping at night.
• Reduce or avoid alcohol, caffeine, and nicotine that can affect the ability to sleep.
• Discuss the situation with the provider when behavioral interventions and environmental changes do not work. Additional medications may be prescribed.

Caregiver Role Strain

Eighty-three percent of the help provided to people living with dementia in their homes in the United States comes from family members, friends, or other unpaid caregivers. Approximately one quarter of dementia caregivers are also “sandwich generation” caregivers — meaning that they care not only for an aging parent, but also for children under age 18. Dementia can take a devastating toll on caregivers. Compared with caregivers of people without dementia, twice as many caregivers of people with dementia indicate substantial emotional, financial, and physical difficulties. See Figure 6.11 of an image of a caregiver daughter caring for her mother with dementia.

The caregivers of patients with dementia frequently report experiencing high levels of stress that often eventually impact their health and well-being. Nurses should monitor caregivers for these symptoms of stress:

• Denial about the disease and its effect on the person who has been diagnosed. For example, the caregiver might say, “I know Mom is going to get better.”
• Anger at the person with Alzheimer’s or frustration that he or she can’t do the things they used to be able to do. For
example, the caregiver might say, “He knows how to get dressed — he’s just being stubborn.”

- Social withdrawal from friends and activities. For example, the caregiver may say, “I don’t care about visiting with my friends anymore.”
- Anxiety about the future and facing another day. For example, the caregiver might say, “What happens when he needs more care than I can provide?”
- Depression or decreased ability to cope. For example, the caregiver might say, “I just don’t care anymore.”
- Exhaustration that makes it difficult for them to complete necessary daily tasks. For example, the caregiver might say, “I’m too tired to prepare meals.”
- Sleeplessness caused by concerns. For example, the caregiver might say, “What if she wanders out of the house or falls and hurts herself?”
- Irritability, moodiness, or negative responses.
- Lack of concentration that makes it difficult to perform familiar tasks. For example, the caregiver might say, “I was so busy; I forgot my appointment.”
- Health problems that begin to take a mental and physical toll. For example, the caregiver might say, “I can’t remember the last time I felt good.”

Nurses should monitor for these signs of caregiver stress and provide information about community resources. (See additional information about community resources below.) Caregivers should be encouraged to take good care of themselves by visiting their health care provider, eating well, exercising, and getting plenty of rest. It is helpful to remind them that “taking care of yourself and being healthy can help you be a better caregiver.” It is helpful to teach them relaxation techniques, such as relaxation breathing, progressive muscle relaxation, visualization, and meditation.

Caregivers should also be educated about additional care options, such as adult day care, respite care, residential facilities, or hospice care. **Adult day centers** offer people with dementia and other chronic illnesses the opportunity to be social and to participate in activities in a safe environment, while also giving their caregivers the opportunity to work, run errands, or take a break. **Respite care** can be provided at home (by a volunteer or paid service) or in a care setting, such as adult day care or residential facility, to provide the caregiver a much-needed break. If the person with Alzheimer’s or other dementia prefers a communal living environment or requires more care than can be safely provided at home, a residential facility may be the best option for providing care. Different types of facilities provide different levels of care, depending on the person’s needs. **Hospice care** focuses on providing comfort and dignity at the end of life; it involves care and support services that can be of great benefit to people in the final stages of dementia and their families.

**Note**

Read about alternative care options and caregiver support at the Alzheimer Association webpage.

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**Community Resources**

Local Alzheimer’s Association chapters can connect families and caregivers with the resources they need to cope with the challenges of caring for individuals with Alzheimer’s.

- Find a chapter in your community by visiting the [Find Your Local Chapter web page](#).
- The Alzheimer’s Association 24/7 Helpline (800.272.3900) is available around the clock, 365 days a year. Through
this free service, specialists and master’s-level clinicians offer confidential support and information to people living with dementia, caregivers, families, and the public.

- The Alzheimer’s Association has a free [virtual library web page](https://www.alz.org/) devoted to resources that increase knowledge about Alzheimer’s and other dementias. —

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