Introduction

Alzheimer's disease and other types of dementia are on the rise in our country in line with the aging population. Among the baby boomer generation, of those who reach the age of 85, one-half will get Alzheimer's disease. As dementia has become more prevalent in our community, the needs of people and their families caring for loved ones with dementia at home have grown. The role of the home care aide is to assist a patient with dementia in doing everyday activities, maintaining functional skills that would otherwise be lost early in this disease. This module will introduce the home care aide to information about brain changes, behaviors associated with the disease, and ways of helping a patient with dementia maximize remaining skills.

Objectives

At the end of the module, the nurse aide will be able to:

- 1. Discriminate among the terms, dementia, Alzheimer's disease, forgetfulness, delirium, and depression.
- 2. Describe symptoms that commonly occur with Alzheimer's disease/dementia based on brain damage.
- 3. Recognize behaviors that are indicative of dementia.
- 4. Differentiate among 5 levels of ability and loss in people with dementia based on observable behaviors, language, and actions.
- 5. Demonstrate key components of a positive physical approach when working with a patient with dementia.
- 6. Demonstrate a combination of cues, visual, verbal, and tactile, to assist a patient with dementia.

Instructional Resource Materials

- Power Point for Module 17 Alzheimer's Disease and Other Types of Dementia
- Handout/Activities

Additional Resources

- Lewy Body Dementia Association Web site, https://www.lbda.org/
- Alzheimer's Association Web site, https://www.alz.org/
- Alzheimer's Foundation of America Web site, https://alzfdn.org/
- Suggested video: Accepting the Challenge
- Suggested video: Grace (you can see excerpts on YouTube before purchasing)
- Suggested Activity Take a field trip to a local adult day care program. Students could volunteer during mealtime and/or activities.
- Optional: Training video Dementia Care for America's Heroes

Slides	Instructor's Script	Notes
Slide 1 Title Slide	 Script Module 17 – Alzheimer's Disease and Other Types of Dementia 	
Slide 2	 Script Objectives - At the end of the module, the nurse aide will be able to: Discriminate among the terms: dementia, Alzheimer's disease, forgetfulness, delirium, and depression Describe symptoms that commonly occur with Alzheimer's disease/dementia based on brain damage. Recognize behaviors that are indicative of dementia. Differentiate among 5 levels of ability and loss in people with dementia based on observable behaviors, language, and actions. 	
Slide 3 Objectives continued	 Script Objectives - At the end of the module, the nurse aide will be able to: 5. Demonstrate key components of a positive physical approach when working with a patient with dementia. 6. Demonstrate a combination of cues, visual, verbal, and tactile, to assist a patient with dementia. 	
Slide 4	 Script Many people get the diseases dementia and Alzheimer's disease confused saying, "Does he have dementia or Alzheimer's disease?" Alzheimer's disease?" Alzheimer's disease is one type of dementia: So, what is dementia? Our knowledge has changed dramatically in the past 20 years. We know that dementia is not a part of normal aging. It is a disease process. The risk of developing many types of dementia increases with age. Alzheimer's affects all aspects of function: memory, reasoning, talking, understanding, social behavior, emotional control, coordination, vision, impulse control, and the ability to swallow, move, and control reflexes. Progression of the disease is predictable and follows a pattern. It is a terminal disease and will eventually result in death due to loss of brain function and related problems. It is estimated that as many as 5.1 million Americans may have Alzheimer's disease now, and that number is expected to more than double in the next thirty years. 	

Slide 5	Script	
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	Handout #1 – Brain Images These brain images come from the University of Alebama	
	These brain images come from the University of Alabama. This is a minture of Alabama Disease.	
	This is a picture of Alzheimer's Disease. The brain on your	
	right has had AD for about 10 years.	
	• Size – This disease will take 2/3 of the brain mass	
	Shape – The brain on the right looks shriveled, spaces are	
	deep and wide. That is indicative of brain cells that are sick	
	and dying. Brain cells fall off the organ when they die.	
	Color – The brain on your right is darker. That dark color	
	represents all the sick cells before they are dead. This color	
	difference explains why a patient with dementia can do a task	
	one minute and forget how or what they are doing the next	
	minute. Sick brain cells are unreliable. A sick cell will fire one	
	minute and fail the next. It is like a remote control with a dying	
	battery. Sometimes the signal will work and other times, you	
	are pointing the remote, pressing the button and nothing	
	happens. You get the signal pointed directly at the sensor and	
	it works again. Eventually, the signal will be dead for good.	
Slide 6	Script	
Slide 6	Script	
	Dementia is a category of diseases. There are many times of dementia all undements that a series	
	There are many types of dementia all underneath the same	
	umbrella.	
	Alzheimer's disease is one type under the umbrella, but there	
	are more than 70 types of dementia.	
	Alzheimer's disease is the most common type of dementia.	
	There are 2 major forms of Alzheimer's disease:	
	• Early onset – occurring before the age of 60, genetically	
	linked, faster progression, expected lifespan after	
	diagnosis is 2-5 years.	
	 Normal onset – the most typical form of Alzheimer's and the most common type of demontin everall. Occurs most 	
	the most common type of dementia overall. Occurs most	
	often in those over the age of 65 and increases	
	dramatically until the age 85. The average length of time	
	someone with Alzheimer's will live after diagnosis is 8-12	
	 years. Vascular Dementia 	
	 I ne second most common type is depatable. Some literature reports vascular dementia is the second most 	
	common type, while other reports argue Lewy Body	
	Dementia holds the second place.	
	 Vascular dementia is different than Alzheimer's disease, 	
	but both are types of dementia. Vascular dementia is a	
	circulation issue in which the patient's brain does not	
	receive the oxygen-rich blood it needs to live, creating a	
	problem with the pump (heart) or the vessels that carry the	
	blood.	

	 In this case, the brain cells are healthy, but the blood supply is damaged. You can think of this like a plumbing problem. Without the oxygen-rich blood, small strokes happen in the brain with no warning, no predictable order. Because the brain cells do not get nourishment, they die. Several chronic illnesses may be responsible for this condition: heart disease, history of stroke, and diabetes. The pattern of Vascular Dementia is a stair step pattern. The patient exhibits a change with every stroke. After every stroke, there is a plateau and eventually another stroke. Every patient with vascular dementia can progress differently because the location of a stroke determines the remaining skills and abilities. The length of time between their strokes determines the progression of their stair step pattern.
Slide 7	Script
	 Lewy Body Dementia – This disease was named by Dr. Frederich H. Lewy, the neurologist who discovered the tiny malformations on brain slides he examined under the microscope in the 1920's. He noticed these malformations were different than the shapes that Dr. Alois Alzheimer had recently named plaques and tangles. Those tiny malformations, named after their discoverer, are called Lewy Bodies. This disease begins like Parkinson's disease because the malformations are present in the motor center. The patient will have difficulty moving, starting to move, or stopping movement. The disease progresses to the sleep/wake center. The patient will have difficulty regulating sleep and wake. It means that the patient may get stuck on wake. The patient may get stuck on sleep. The patient may experience a state in between sleep and wake and exhibit dream-like hallucinations. The patient may see something that you do not see, talk about something or someone who is not there. It can be more frustrating for the patient and the caregiver if you try to convince the patient what is real. Remember, their brain is changing. Before we continue, let's do an activity so that we can demonstrate how important the sleep/wake cycle is.
Slide 8	 Script Activity #1 – 24 Hour Care Discussion This activity will produce dialogue among the students about the need to consider special problems of the patient and the family when the sleep/wake cycle is malfunctioning.

Slide 9	Script
	Let's look inside the brain to see various parts of the brain that
	are changing
	Memory/Hippocampus – Memories are divided in the brain
	and organized in categories. Some types of memories are lost
	early while other types of memory are preserved longer.
	Short term memory is lost early in the progression of all types
	of dementia.
	Other types of memory
	 Immediate recall – what happened in the past few seconds
	 Situational memories – what were the events that led up to
	the current situation, e.g., how did I get here?
	 Motor memories – what were automatic movements that
	are remembered and repeated. It is like riding a bike.
	 Long term memories – what happened a long time ago
	including people and places that were relevant long ago
	A special type of memory: Emotional Memory
	 Separate from the facts
	 Related to the feelings that help the patient understand
	what is happening
	 We have phrases in our culture to describe the emotional
	memories in the hippocampus, for example the vibe, 6 th
	sense, first impression, or the way something <i>feels</i> or
	seems
	What do the following phrases mean? What are the feelings
	that these phrases describe?
	 "You could cut the tension in there with a knife."
	 "He just didn't make a good impression on me."
	 "I can't put my finger on it, but something was off."
	 "They're not shooting me straight."
	 "I'm going to get to the bottom of this."
	 "He thinks I was born yesterday."
	 "He's got another thing coming."
	 How do you know when someone is lying to you/talking to
	you like they think you are stupid, or they are trying to rush
	you? In contrast, how do you know when someone talks to
	you with respect, appreciation, and sincerity?
	 It is not in what they say but how they say it. Emotional memory picks up on the feeling, tong, hedy
	 Emotional memory picks up on the feeling, tone, body
	language, and pace of your actions.
	How you do things will make a difference in your success with poople when they are using emotional memories to
	people when they are using emotional memories to understand the situation.
	On a la standa. A many an avitte dans antis manda many times to
	 Speak slowly. A person with dementia needs more time to process your message.
	Line a law with A law on with the second world have an order of
	 Use a low pitch. A lower pitch is heard well by an older person. This is true for older people with NO dementia, as
	it is difficult for an older person to detect high pitch sounds.
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Slide 10	Script
Slide 10	 Language is also affected by this disease. The language center is divided into categories just like the memory center. Some language categories are lost early, and others are spared. This is different from hearing, but we know that many people have trouble hearing, also. Speaking clearly and having appropriate hearing aids, if needed, will help. Understanding language: This is the part of your brain that you are using to understand language. You know English and you comprehend sentences. Formal language is lost first – the facts, objects, names,
	 places, and instructions. At the beginning, patients miss 1 out of 4 words. Later, patients miss 1 out of 2 words. The longer you speak, the less they will comprehend. Toward the end, almost no words will be understood.
	 Covering – looking like they "get it" Social language is understood longer Patient will respond automatically when you say, "Good morning. How are you?" Social chit-chat is an effective way of making a positive emotional connection with the patient before you start to do something together. Motto: Greet before you treat. Other rhythmic language is also spared longer than formal language such as music, poems, prayers, and chants. What other parts of the brain are working when a patient hears an old familiar song? (Long-term memory, emotional memory, rhythmic motor memories, rhythmic language). How could you use rhythm to help a patient participate in an activity? (Old, favorite music may boost the patient's mood, a chant may help the patient start to move or move with coordination, a rhythmic phrase may help a patient finish the activity.)
	 How does that change your job when the patient cannot understand your instructions? How do you communicate with people who do not speak English? You use more visual cues. Visual cues are helpful when showing someone what to do.
Slide 11	 Script Forming language/speaking This is the part of the brain where you make your words A patient with Alzheimer's will lose language skills

	 Formal language goes first. So, patients cannot give you the information they would like to tell you. They may have trouble finding the word or make up a word. The patient's language will get vague, dropping out many of the formal language words. How does it change your job when the patient you are helping cannot speak your language? (Pay attention to their visual signs, notice their facial expressions, and learn their preferences.) The patient may be silent more often. The patient may repeat words, sounds, babble, hum, or sing. The patient may repeat words, sounds, babble, hum, or sing. The patient may vell out and repeat words. The order of cues to give information to a patient with dementia is visual, short verbal, and touch. The patient with dementia and his/her caregiver should use more visual cues because of the changes in language comprehension and production. What language files are preserved? Social language including music, poem, prayer, and/or chants Expletives: swearing, sexual terms, impulsive speech, or racial slurs Question: When did you learn your first curse word? Most people learned a bad word when they were 2 or 3 years old while making their language files in their own brain. What happened when you used that word in front of your parent or teacher? Most adults teach kids that those words are bad words. Did you forget all those bad words? No, your impulse control kicks in and you was an expletive, your impulse control kicks in and you was a replacement word, e.g. darn, shoot, fudge, goodness gracious, etc.
Slide 12	
Slide 12	 Script Impulse Control/Temper/Mood This is the frontal lobe located just behind the forehead. A patient with frontal lobe deficits will not restrict bad words. They do not have the impulse control or the replacement words. It is normal for people to say things they never would have said before the disease. The patient can have extreme mood swings. The patient may have trouble regaining control after an emotional outburst. If the patient thinks it, the patient may say or do it.

Slide 14	Script	
	 Script Sensory Processing and Motor Control – Sensory input comes through all the senses of the body. Motor control goes out through the muscles of the body. In other words, you understand the world through senses and act on the world by moving. Basic senses: sight, sound, taste, touch. Other senses: balance (vestibular sense) is collected in the inner ear. Balance is what keeps you from falling out of the chair or tipping over in standing. Other senses: Position in space (proprioception) is collected at every joint of your body. This is the sense that tells you where your body is in space. When all the sensory processing and motor control pathways are changed, a patient could experience: Gradual loss of ability to do complicated tasks Inability to use tools Inability to use tools Inability to use thensils Inability to use hands and fingers effectively Inability to swallow and eat and drink Difficulty interpreting sensation and sensory information FOUR sensory areas preserved the longest: Lips, tongue, mouth Fingers and palms of the hand Soles of the feet Genital area This results in some typical behaviors that you may find distressing and embarrassing. It is not deliberate or controllable by the patient with dementia. Patients with dementia are doing the best they can do to try to stimulate their brains and deal with the world around them. The patient is not trying to make your life difficult. He/she is not being lazy or stubborn. The patient is not trying to lie to you. You can control your behavior, and you can change your behavior to change the outcome for success.	
Slide 13	 The patient cannot weigh consequences or prevent bad outcomes. It is more likely that the patient will act first and be sorry afterwards. The home care aide's role – reduce the risk for impulses occurring that result in problems. What is preserved- Need to be respected Belief that they are RIGHT Remember, we can control our behavior, but the disease is controlling the patient. 	

	 When approaching a patient, especially a patient with Alzheimer's or other dementia, physical approach is especially important. Keep these techniques in mind: Approach from the front – Avoid automatic reactions Fight Flight Fright Approach slowly – Give the patient time to process that you are coming. Step to the side – Avoid confrontational stance. Reduce the risk of defensive or negative reactions to being too close. Also, protect yourself if the patient is distressed or frightened. Offer your hand – This lets the patient know what you are doing and gets the attention up toward your face. Use visual cues that are understood (e.g., wave, handshake). Rotate to hand-under-hand – It feels better to hold onto the patient in this position. It is a safe position for both people. If a patient clamps and grasps your hand, this person may not have the motor control to release right away. You do not want to get stuck in a handshake position when the older patient squeezes! The home care aide may need to hold the patient tightly. If you grasp tightly onto any other part of the body, you may hurt the patient and you will leave a purple handprint. Lower your body if the patient's body is low – make eye contact, maintain personal space, be supportive for your interaction. It may help the patient get connected emotionally with you before you ask them to do something with you. Call patients by familiar names – it respects who they think and feel they are and helps to get their attention. It also helps a patient to realize who you are talking to/interacting with.
Slide 15	 Script Activity #2 – Physical Approach Skills It is important to be thoughtful about and plan the way you approach a patient. Start the good habit now because the approach will get more important as the patient progresses in the disease. Always greet the patient and establish your emotional connection before you try to do something with the patient.
Slide 16	 Script Previously, we learned about symptoms that occur when specific areas of the brain change. Now, let us put the brain back together again and see how a patient changes over time with dementia.

	 Remember, the type of dementia predicts the pattern of change for each patient. A patient with Alzheimer's disease will follow the steps in order while a patient with Vascular Dementia will present a combination of skills at various levels. You might say Vascular Dementia is a mixed bag of skills and abilities. Depending on where and when the strokes happen, each patient with Vascular Dementia progresses differently. We want to recognize changes that indicate the patient is progressing so that we can adjust our level of assistance. As
	 We want to highlight typical safety concerns and strategies for continued care in the home. We want to help the patient continue to have meaningful days at home.
Slide 17	 Script Every type of dementia will progress. There is no cure, so change is guaranteed. As the disease progresses, the patient's abilities, interests, and skills will change as damage to the brain spreads. By recognizing these changes and offering matching support, the patient will maintain function if possible. If we help families get to the doctor early, a comprehensive brain assessment can rule out many conditions that look like dementia but are not. If the condition is something else, there may be an effective treatment or cure. If the condition is dementia, families need support ASAP.
Slide 18	 Script There are many systems that describe the progression of disease. Early, Middle, Late - this is the system that many people hear about. It happens to be too simple and not helpful when you are the one trying to provide assistance daily. Global Deterioration Scale – a 7-point scale based on loss of ability to do some key functional activities such as managing money and feeding oneself. One key missing piece with this system is that it does not help the caregiver identify what the patient can still do and what types of assistance might be beneficial.
Slide 19	 Script A scale commonly used is based on the Allen Cognitive Assessment, and it is called the Cognitive Disabilities Scale.

	It is a series of the structure of the s
	 It recognizes 5 levels of progression of the disease. Function levels range from slightly impaired (level 5) to end-of-life (level 1).
Slide 20	 Script Level 5 - Indicates a loss of high-level reasoning and problem-solving skills. This is a very subtle change. It is often not noticed by families. Consider when you have locked your keys in the car, lost your car in the parking lot, or forgotten an appointment. If the routine is predictable, the patient at level 5 can still do most things, so noticing the change is difficult for families and even the patient with the first symptoms. The patient can still do routine tasks if there are no surprises or new learning required. People at this stage like things to stay the way they have always been. They make errors and get easily frustrated when the routine is changed. Medication changes or new recommendations are often ignored or completed incorrectly. The patient will begin to repeat himself/herself and may blame mistakes on other people. Typical topics of interest: driving, medication management, MD appointments, and money management. The best support at this stage is a regular routine. The patient will need reminders but keep the tone friendly. Remember, a bossy tone will be heard, remembered, and make doing things together more difficult.
Slide 21	 Script Level 4 – Marks the beginning of loss of abilities to complete patient care activities and familiar tasks. At first, the problems will arise only occasionally, but as the disease progresses, more errors will occur. At this stage, the familiar routine is not enough anymore. Even though the clothes are set out where they have always been, and the patient has always dressed the same way, at level 4 he may put underwear on the outside of the pants. It's a classic mistake at level 4 because he just wanted to dress as usual but since the clothes were stacked with the underwear on the bottom, he saw those last, put them on last, and didn't realize the mistake. The patient will engage in tasks when the visual cues are present and forget to do them when the cues are missing (e.g., repeatedly shaving because he sees the razor and shaving cream, but having a toileting accident because the bathroom door was closed and the toilet can't be seen.) A common mistake of caregivers at this stage is to try to take over and do everything for the patient at level 4. The patient may not think he needs any help and will become angry and

resentful if offered help to do simple tasks that he has been	
doing since he was a child.	
 A common phrase used by people at level 4 is, "I don't need your help." This can be frustrating to caregivers. 	
 The type of support that is most helpful at level 4 is called a 	
• The type of support that is most helpful at level 4 is called a "good caddy." This is a golf analogy. The caddy is the person	
who sets up every step for the golfer. The caddy is the person	
of the land. The caddy knows what is coming next and is	
always one step ahead to keep the golfer moving through the	
activity smoothly. The caddy has all the tools needed to do the	
job (all the clubs in the bag). The caddy stays for every step	
even though the caddy never actually completes the task (the	
golfer always takes the swing).	
• This is a good analogy because the patient at level 4 can still	
do many tasks, if the caregiver:	
 Sets up every step of the activity 	
 Has all the items necessary to do the task 	
• Avoids saying anything about help by saying, "Here's your	
shirt, your pants, etc."	
 Presents items to be used at the right time and in the right order 	
 Caregiver does not have to give many verbal cues 	
 Realizes that visual cues are step-by-step 	
• Never leaves the patient before the task is finished; if the	
caregiver steps away, the activity falls apart at level 4.	
 Gives simple choices when possible so the patient feels in control 	
• Keeps conversation friendly, but limits chatter because the	
patient needs a quiet environment to concentrate	
• Typical topics of interest: lost things, missing things, driving,	
wearing same clothes, refusing baths, refusing medications,	
hiding or giving away money, heirlooms, refusing to see the	
doctor, rude behaviors, swearing, refusing your help, frequent	
calls to the police, looking for kids, eloping to go do something.	
 At level 4 it is important to have a variety of activities that the national perform throughout the day. Figure out what is still 	
patient can perform throughout the day. Figure out what is still	
possible in the kitchen, garage, bathroom, and plan to do	
something yourself while they do the selected task (be present but not pushy)	
 At level 4, if you do not support the patient in doing structured 	
 At level 4, if you do not support the patient in doing structured activities, they may become increasingly frustrated throughout 	
the day.	
• Entrances and exits will need to be secured. The patient may	
decide to do something but does not have adequate judgment.	
• At level 4, it is no longer safe for the patient to go out alone	
since spatial disorientation and time disorientation can occur at	
any moment and the patient may not be able to find his/her	
way back.	
• There should be an emergency plan in case the patient is ever	
missing. An emergency kit includes	

	 Recent picture of the patient Scent sample such as pair of dirty socks stored in zip-lock bag in the freezer. Note: If you remove the patient's socks from the bag, wear gloves to avoid your scent mixing with the patient's scent. Call 911 within 10 minutes of the patient missing - DO NOT SEARCH ALONE.
Slide 22	Script
	 Level 3- Marks the loss of sensory processing and motor control. The patient spends most of the time hunting for things, touching, manipulating, and handling objects, rummaging, and hiding things and eventually tasting or mouthing objects and food items. Gradually losing the ability to use tools and utensils. Difficulty initiating or completing any specific task. May appear to be playing with his/her food. May become silent, repeat phrases or sounds, hum, sing, chatter. Will have upset sleep/wake cycle. Strategies: The plate of food may look too busy, so the patient needs less to see and handle to eat Give the patient one finger food to hold at a time Give the patient a demonstration, 1-2-word cues, and hand-under-hand assistance Give short, specific activities Let a patient sleep when and where they are comfortable Make comfortable resting areas throughout the house Typical topics of interest: clothing, bathing, rummaging, wake/sleep, stuffing toilets, throwing things out, hiding things, incontinence, hygiene, nasty comments, giving things away, handling other people's things, leaving to go home even if they are already home
	 Entrances and exits should be secured. All chemicals, dangerous objects, medicines, etc., should be stored in locked areas.
Slide 23	 Script- Level 2-Marked by repetitive big movements These people can look like they are stuck on go or stuck on stop. The patient is gradually losing the ability to control his/her body with coordinated movements. The patient may interact with you only minimally. You may be ignored unless you are in the way or, on the other hand, the patient may follow you constantly and closely.

	 They will not greet you quickly, but with a little extra time, they will still acknowledge you. Do not forget the positive physical approach. The patient may spend most time lapping an area or roaming. They may still carry objects but will not manipulate them in their hands as much. They may tend to touch their genitalia/private areas. This is an awkward thing for families and other caregivers to cope with, but it may help to realize that these behaviors are related to the disease. They cannot use the tools to feed themselves, so eating with their fingers is easier. Hand-under-hand guidance is helpful. May still sing but verbal skills are extremely limited. Will have trouble moving their body in familiar patterns. A better transfer technique is to swing wide, approaching the chair from the side and giving a strong visual cue for the patient to reach for the arm of the chair, pivot and sit. It is much more difficult for the patient to stand in front of the chair, turn 180, and sit down. Typical topics of interest: eating, not eating, eating all the time, private behavior in public areas, leaving the area, roaming away, not sleeping or sleeping all the time, not able to use 	
	words to communicate need.	
Slide 24	Script	
	 Level-1 Marks the end-of-life stage of dementia The end of the disease is drawing near. The patient's communication may sound like mumbling or muttering. The patient will become bed bound or chair bound. The patient will have difficulty chewing and swallowing. You will notice reflexes such as a grasp reflex that is also present in a baby's hand, rooting reflex, sucking reflex, startle reflex. The patient's body is becoming stiff as contractures are developing. Getting enough to eat and drink is becoming a problem for the patient, resulting in frequent dehydration and urinary tract infections. The patient may not feel hungry or thirsty as he/she once did. Remember, that sensation is controlled by the central nervous system that is failing. Families qualify for hospice care to decrease caregiver burden. Patient's body is tight in flexion and such aggressive range of motion can break bones. Patient is at high risk for aspiration pneumonia, falls, and repeated infections. 	

	 We can minimize those risks, but eventually those conditions will mean the end of life for the patient with dementia. Central nervous system shrinks, and other systems of the body fail, and that is the way the patient dies.
Slide 25	 Script This module is designed to help you understand why the patient with dementia behaves how he/she behaves, how you can help, and how the disease affects the patient and his/her caregivers. Remember, the patient is doing the best they can with a brain that is changing. As a home care aide, you can provide the best care for the patient throughout the disease with new knowledge and techniques that work!