### Alzheimer's Disease and Dementia

#### 8 HOUR RCFE, ARF AND SNF CEU/CE COURSE



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### Course Objective

The main topics that will be covered include, but are not limited to:

- Physiological aspects of Alzheimer's disease and dementia
- ► The disease process
- Reversible and irreversible dementias
- Caring for your Down syndrome resident with dementia
- DSS regulations in regard to dementia/Alzheimer's
- Caring for residents with dementia/Alzheimer's, including assistance with ADLs, behavioral issues, sundowning, etc.
- Activity choices for residents with dementia/ Alzheimer's
- Resources available for families and support

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#### Definitions

- RCFE = Residential Care Facility for the Elderly
- ARF = Adult Residential Facility
- SNF = Skilled Nursing Facility
- AD = Alzheimer's disease
- DSS = Department of Social Services
- DHS = Department of Health Services
- LPA = Licensing Program Analyst
- ADL = Activities of Daily Living
- Resident = anyone living in long-term care



#### Alzheimer's Disease

Nancy Reagan called Alzheimer's disease.....

the long goodbye



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Let's watch a video from the Alzheimer's Association that discusses the facts and statistics for 2023:

https://www.youtube.com/watch?v=a2j99vfkdgg&t=6s

\*Source: <u>https://www.alz.org/media/Documents/alzheimers-facts-and-figures-infographic.pdf</u>



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proximately 5-6% are under the age of 65

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- Alzheimer's and dementia deaths have increased by 16% during the COVID-19 pandemic.
- Alzheimer's is the sixth-leading cause of death and fifth leading cause of death in Americans age 65+ years
- 1 in 3 seniors dies with Alzheimer's or another dementia.
- By 2050, the number of people age 65+ with Alzheimer's dementia is projected to reach 12.7 million.



→ In 2023, Alzheimer's and other dementias will cost the nation \$345 billion.

 $\rightarrow$  By 2050, these costs could rise to more than \$1.1 trillion.

→ Over 11 million Americans provide unpaid care for people with Alzheimer's and other dementias.

→ Between 2000 and 2019, deaths from heart disease has decreased 7.3% while deaths from Alzheimer's disease have increased 145%.

\*According to the 2023 Alzheimer's Disease Facts and Figures produced by the Alzheimer's Association and the World Alzheimer Report, 2021



Let's see how much you know....

IT IS A NORMAL PART OF AGING TO LOSE YOUR ABILITY TO REMEMBER.

### True or False?



## False



### Let's see how much you know....

IT IS IMPORTANT TO BRING PEOPLE BACK TO REALITY, EVEN IF YOU HAVE TO ARGUE WITH THEM.

### True or False?



## False

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Let's see how much you know....

IT IS IMPORTANT TO PROVIDE A CALM, PREDICTABLE ENVIRONMENT FOR THE RESIDENT WITH MEMORY LOSS.

True or False?



## True

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Let's see how much you know....

People with Alzheimer's disease are better off in a nursing home.

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### True or False?



## False





Let's see how much you know....

Alcoholics have a higher chance of developing dementia.

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True or False?



## True





Let's see how much you know....

People with Alzheimer's disease often steal from other residents.

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#### True or False?



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## True



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# DEFINITIONS

## What is Dementia?

Per the Alzheimer's Association, it is a general term describing the loss of the ability to think, remember, reason and communicate.

Not a disease, but a group of symptoms or a syndrome that is caused by certain diseases, conditions or temporary illnesses.

#### What causes dementia?

Damage or changes to the brain, caused by\*:

- Strokes, tumors or head injuries
- Diseases, such as Parkinson's disease
- Underactive thyroid glands
- Vitamin B12 deficiencies
- Fluid buildup in the brain
- Over-medicating
- Substance abuse

\*Source: <u>https://www.webmd.com/alzheimers/types-</u> <u>dementia</u>

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### Dementias

#### There are two types of dementias:

#### Reversible and Irreversible

#### We will discuss these later in the class.

What is MCI\*?

- MCI = "Mild cognitive impairment"
- Different from both Alzheimer's disease and normal age-related memory change.
- People with MCI have ongoing memory problems but do not have other losses like confusion, attention problems and difficulty with language.
- Not everyone diagnosed with MCI goes on to develop Alzheimer's disease.

\*Source: https://www.nia.nih.gov/health/what-mildcognitive-impairment

# What is Alzheimer's disease?

Extreme Shrinkage of Cerebral Cortex

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#### According to the Alzheimer's Association:

- A slow, progressive disease, starting with mild memory problems and ending with severe brain damage.
- The course the disease takes and how fast changes occur vary from person to person.

On average, patients with Alzheimer's disease live from 4 to 8 years after they are diagnosed, though the disease can last for as many as 20 years.\*

#### Extreme

\*Source: https://www.alz.org/alzheimers-dementia/what-isalzheimers#:~:text=Alzheimer's%20worsens%20over%20time.&text=On%20average %2C%20a%20person%20with,years%2C%20depending%20on%20other%20factors.



#### What is Alzheimer's disease?

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Every day scientists learn more, but right now the causes of Alzheimer's disease are still unknown, and there is no cure.



## THE SIGNS

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The 10 Warning Signs of AD The Alzheimer's Association publishes this list of 10 warning signs\*:

- Memory changes that disrupt daily life.
- 2. Challenges in planning or solving problems.

\*Source: https://www.alz.org/alzheimersdementia/10\_signs The 10 Warning Signs of AD

- 3. Difficulty completing familiar tasks at home, at work or at leisure.
- 4. Confusion with time or place.
- 5. Trouble understanding visual images and spatial relationships.
- 6. New problems with words in speaking or writing.
- 7. Misplacing things and losing the ability to retrace steps.

The 10 Warning Signs of AD

- 8. Decreased or poor judgment.
- 9. Withdrawal from work or social activities.
- 10. Changes in mood and personality.

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### The 10 Warning Signs of AD

Every individual may experience one or more of these signs in different degrees. Memory loss that disrupts daily life is not a typical part of aging.


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# ADAND THE BRAIN

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#### The history of Alzheimer's disease

Alzheimer's disease is named after Dr. Alois Alzheimer, a German doctor. In 1906, Dr. Alzheimer noticed changes in the brain tissue of a woman who had died of an unusual mental illness. He found abnormal clumps (now called amyloid plaques) and tangled bundles of fibers (now called neurofibrillary tangles). Today, these plaques and tangles in the brain are considered hallmarks of Alzheimer's disease.

\*Source: https://www.nia.nih.gov/health/alzheimersdisease-fact-sheet 38



#### Neurons

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A neuron is a nerve cell.

The adult brain contains about 100 billion neurons with branches that connect at more than 100 trillion points.

This network is called a "neuron forest."



#### Neurons

Signals traveling through the "neuron forest" form the basis of thoughts, memories and feelings.

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Neurons are the main type of **cell destroyed by Alzheimer's** disease.

#### Alzheimer's disease and the brain

The two major findings in the Alzheimer's brain are amyloid plaques and neurofibrillary tangles. Amyloid plaques are found outside the neurons, neurofibrillary plaques are found inside the neurons\*.

Plaques and tangles are found in the brains of people without Alzheimer's. It is the gross amounts of them that are significant in Alzheimer's disease.

Source: https://www.verywellhealth.com/thealzheimers-brain-97675#:~:text=The%20two%20major%20findings%20in, brains%20of%20people%20without%20Alzheimer's. The picture on the left is a normal brain; the picture on the right is a brain damaged by Alzheimer's disease.

#### Healthy Severe Brain Alzheimer's





## The "AD" brain

Alzheimer's disease leads to nerve cell death and tissue loss throughout the brain.

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Over time, the brain shrinks dramatically, affecting nearly all its functions.



## The "AD" brain

- The cortex shrivels up, damaging areas involved in thinking, planning and remembering.
- Shrinkage is especially severe in the hippocampus, the area of the cortex that plays a key role in formation of new memories.
- Ventricles (fluid-filled spaces within the brain) grow larger.

## POSSIBLE CAUSES

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#### Possible Causes of AD\*

#### Genes?

2. Viral or bacterial infections?

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- 3. Nutrition?
- 4. Cardiovascular problems?
- 5. Head trauma?
- 6. Educational levels?
- 7. Environment?
- 8. Age?

\*Source: https://www.mayoclinic.org/diseasesconditions/alzheimers-disease/symptomscauses/syc-20350447



#### Possible causes - genetics

No test can predict whether you will or will not get AD.

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There IS a blood test that can tell you whether you have a certain form of a cholesterol-carrying protein associated with a higher incidence of AD, but that's all it can tell you – 50% of the people with this risk factor do not get AD.\*

\*Source: https://www.nia.nih.gov/health/alzheimersdisease-genetics-fact-sheet

## Possible causes genetics

- The A2M gene or alpha 2macroglobulin is the "trash collector" in the brain.
- Its job is to pick up potentially toxic peptides and carry them out of the brain to an area of the body where they're degraded and excreted.
- When these genes are mutated, they are no longer able to perform their trash collecting chores effectively, allowing dangerous deposits of amyloid protein to build up in the brain...perhaps leading to AD\*

\*Source: Alzheimer's for Dummies; by Patricia B Smith and Mary M. Kenan



A family history of Alzheimer's does not mean for sure that you'll have it. But, it may mean you are more likely to develop it.



Source: https://www.nia.nih.gov/health/alzheimersdisease-genetics-fact-sheet

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Possible causes - family history



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#### Possible causes – viruses or bacteria

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- Some researchers are looking into whether a viral or bacterial infection triggers the onset of AD.
- Chlamydia pneumoniae, a common bacteria that causes pneumonia or bronchitis, has recently been identified as an underlying causative factor in hardening of the arteries.\*

\*Source: Alzheimer's for Dummies; by Patricia B Smith and Mary M. Kenan



#### Possible causes nutrition

Research into lower risk of developing AD with this diet:

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- high in essential fatty acids
- low in saturated fats and trans fatty acids
- rich in naturally occurring antioxidants like vitamins E and C

#### Possible causes – nutrition (cont'd)

Some research has shown that high-dose vitamin E might delay the progression of Alzheimer's disease in people who have been diagnosed with mild to moderate Alzheimer's disease.\*

→ The effect was from dietary consumption and not from vitamin E supplements.

\*Source: <u>https://www.mayoclinic.org/dru</u> <u>gs-supplements-vitamin-e/art-</u> 20364144

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Possible causes – cardiovascular disease

 Research is underway to study whether cardiovascular disease increases the risk of developing AD.

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 High levels of the amino acid homocysteine\* increase the risk for cardiovascular disease by increasing inflammation in the heart and arteries.

Does high levels of homocysteine increase the risk of developing AD?

\*Source:

https://my.clevelandclinic.org/health/articles/21527homocysteine

#### Possible causes – cardiovascular disease(cont'd)

<u>High blood pressure and</u> <u>cholesterol</u> levels - studies are showing that what's good for the heart - keeping cholesterol and blood pressure in check - may also be good for the brain.\* \*Source: https://www.alz.org/alzheimersdementia/what-is-alzheimers/causesand-risk-factors

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#### Possible causes – head trauma

A number of studies have found a link between traumatic brain injuries that resulted in a loss of consciousness with an increased incidence of AD.



Possible causes – education levels

Some studies have shown that the more years of education one has, the less likely they will develop AD – so less education equals higher risk of developing AD.

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The theory is that the additional years of study force the brain to develop denser synapses, making the brain less susceptible to AD because there is a cognitive reserve of brain cells to draw upon to compensate for any damage caused by early AD.

## Possible causes environment

According to the Alzheimer's Association, research is finding that:

people with a large number of siblings have a higher risk factor

people who were raised in the suburbs have a lower risk factor 57

## Lifestyle Factors

<u>Age</u> - The greatest known risk factor for Alzheimer's is increasing age. Most individuals with the disease are 65 or older. The likelihood of developing Alzheimer's doubles about every five years after age 65. After age 85, the risk reaches nearly 50%!\*

\*Source: https://www.alz.org/alzheimersdementia/what-is-alzheimers/causes-andrisk-

factors#:~:text=Most%20individuals%20with %20the%20disease,risk%20reaches%20near ly%20one%2Dthird.



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# DEMENTIA

## The 2 Types of Dementia

There are two types of dementia –

#### **REVERSIBLE and IRREVERSIBLE**

We will discuss these later in class

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### What are the signs of dementia?

Dementia causes many problems for the person who has it and for the person's family. Many of the problems are caused by memory loss.

We will discuss some common signs of dementia, the "**red** flags." Note that not everyone who has dementia will have all of these signs.

\*Source: https://alzheimer.ca/en/aboutdementia/do-i-have-dementia/10-warning-signsdementia

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#### Recent memory loss.

All of us forget things for a while and then remember them later. People with dementia often forget things, but they never remember them. They might ask you the same question over and over, each time forgetting that you've already given them the answer. They won't even remember that they already asked the question.



#### Difficulty performing familiar tasks.

People who have dementia might cook a meal but forget to serve it. They might even forget that they cooked it.



#### <u>Time and place</u> <u>disorientation</u>.

People who have dementia may get lost on their own street. They may forget how they got to a certain place and how to get back home.

#### Problems with language.

People who have dementia may forget simple words or use the wrong words. This makes it hard to understand what they want.





#### Misplacing things.

People who have dementia may put things in the wrong places. They might put an iron in the freezer or a wristwatch in the sugar bowl. Then they can't find these things later.

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#### Poor judgment.

Even a person who doesn't have dementia might get distracted. But people who have dementia can forget simple things, like forgetting to put on a coat before going out in cold weather.

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#### Problems with abstract thinking.

Anybody might have trouble balancing a checkbook, but people who have dementia may forget what the numbers are and what has to be done with them.



#### Personality changes.

People who have dementia may have drastic changes in personality. They might become irritable, suspicious or fearful.

#### Changes in mood.

Everyone is moody at times, but people with dementia may have fast mood swings, going from calm to tears to anger in a few minutes.





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#### Loss of initiative.

People who have dementia may become passive. They might not want to go places or see other people.



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Remember, not everyone who has dementia will have all of these signs. If your resident has memory loss that is getting worse, have them see their doctor. It may be nothing to worry about, but if it is dementia, treatment may help.

We will discuss treatment options later.


# Alzheimer's Disease

# The 7 Stages of **Alzheimer's** Disease



#### Alzheimer's Disease

Symptoms of AD seem to progress in a recognizable pattern, and these stages provide a framework for understanding the disease.

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It is important to remember that they are not uniform in every patient and the stages may often overlap.

# The Stages of AD, per the Alzheimer's Association

Stage 1	No impairment, normal function
+	
Stage 2	Very mild decline, may be normal aging or early AD
Stage 3	Mild cognitive decline
Stage 4	Moderate cognitive decline (mild or early-stage AD)
Stage 5	Moderately severe cognitive decline (moderate or mid-stage AD)
Stage 6	Severe cognitive decline (moderately severe or mid-stage AD)
Stage 7	Very severe cognitive decline (severe or late-stage Alzheimer's disease)

 Individuals experience no memory problems and none are evident to a health care professional during a medical interview.







Individuals may feel as if they have memory lapses, especially in forgetting familiar words or names or the location of keys, the remote control or other everyday objects.

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But these problems are not evident during a medical examination or apparent to family members, friends, or co-workers.



Family, friends or co-workers begin to notice problems. Common difficulties include:

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✓Recent memory loss begins to affect job performance.

✓What was he or she just told to do?

Confusion about places – gets lost on the way to work.

#### Examples of the Stage 3 Signs:

Forgets what bills are paid.

Cannott remember phone numbers.

Loses things.

Cannot remember grocery list.

Arrives at wrong time or place.

"Mother's not the same – she's withdrawn and disinterested."

She spent all day making dinner and forgot to serve several courses.



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At this stage, a careful medical interview detects clear-cut deficiencies in the following areas:

- Decreased knowledge of recent occasions or current events
- Impaired ability to perform challenging mental arithmeticfor example, to count backward
- Decreased capacity to perform complex tasks, such as paying bills and managing finances
- Reduced memory of personal history



Major gaps in memory and deficits in cognitive function become apparent.

Patients may need some assistance with activities of daily living.



#### Examples of the Stage 5 Signs:

- Inability to recall important life details, such as their address or phone number during a medical interview.
- Need help choosing proper clothing for the season or the occasion, but may not require assistance with toileting or eating yet.
- Confusion about the date, where they are, the day of the week or the season, but they know their name and the name of their spouse and children.



Memory difficulties continue to worsen, their personality may change and the patient may need help with all activities of daily living.

# Symptoms of Stage 6

Increasing memory loss and confusion Assisted Living Educatio

- Shorter attention span
- Problems recognizing close friends and/or family
- Repetitive statements and/or movements
- Restless, especially in late afternoon and at night
- Increasing urinary and fecal incontinence

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# Symptoms (cont'd)

Perceptual motor problems

Difficulty organizing thoughts, thinking logically

Can't find the right words - makes up stories to fill in blanks

Problems with reading, writing and numbers

May be suspicious, irritable, fidgety, teary or silly

Loss of impulse control

Sloppy, won't bathe or afraid to bathe, trouble dressing

Gains and then loses weight

May see or hear things that aren't there

Needs full-time supervision



# Examples of Stage 6

 Cannot remember visits immediately after you leave.

- Repetitive movements or statements.
- Sleeps often; awakens frequently at night and may get up and wander.
- Perceptual motor problems

   difficulty getting into a chair, setting the table for a meal.
- o Cannot find the right words

# Examples (cont'd)

Problems with reading, numbers – cannot follow written signs, write name, add or subtract.

Suspicious – may accuse spouse of hiding things, infidelity; may act childish.

Loss of impulse control – sloppier table manners. May undress at inappropriate times or in the wrong place.

Huge appetite for junk food and other people's food; forgets when last meal was eaten, and then gradually loses interest in food.



### Stage 7, the Final Stage

In this stage, the patient has severe memory loss and confusion. They experience difficulty functioning on a daily basis and may have extreme changes in mood and temper. The patient may also hallucinate and wander.

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Ultimately, the patient loses the ability to respond to their environment, the ability to speak and the ability to control movement.

# Symptoms of the Final Stage

- Cannot recognize family or image of self in mirror.
- Loses weight even with a good diet.
- Little capacity for self-care.
- Cannot communicate with words.
- May put everything in mouth or touch everything.
- Cannot control bladder or bowels.





### More Symptoms

- Extreme changes in mood and temper (anger, excitable, paranoid).
- Severely disoriented as to time and spatial relationships – day vs. night, left vs. right, etc.
- May have seizures, experience difficulty in swallowing, skin infections.



#### Examples of the Final Stage

- Looks in the mirror and talks to own image.
- Needs help with all activities of daily living.
- May groan, scream or make grunting sounds.
- May try to suck on everything.
- o Sleeps more.
- Unable to walk or hold head up.

# DETECTING DEMENTIA AND AD

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# Detecting Dementia and AD

Today, the only definite way to diagnose Alzheimer's disease is to find out whether there are plaques and tangles in brain tissue.

To look at brain tissue, doctors must wait until they do an autopsy, which is an examination of the body done after a person dies.

# Detecting Dementia and AD (cont'd)

Therefore, doctors must make a diagnosis of "possible" or "probable" Alzheimer's disease.

At specialized centers, doctors can diagnose Alzheimer's disease correctly up to 90% of the time.\*

\*Source:

https://emedmultispecialtygroup.com/2018/03/20/alzhei mers-disease-symptoms-care/

# Tools to diagnose "probable" AD

- a complete medical history, including information about the person's general health, past medical problems, and any difficulties the person has carrying out daily activities;
- medical and neuropsychological tests; and/or
- brain scans allow the doctor to look at a picture of the brain to see if anything does not look normal.



# Physical Exam\*

 Test for muscle tone and strength = reflexes may become sluggish or nonexistent, loss of muscle tone and body strength.

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 Evaluating coordination and eye movements = decrease in moving objects with their eyes, tracking items, difficulty walking

\*Source: https://www.alz.org/alzheimersdementia/diagnosis/medical\_tests



# Physical Exam (cont'd)

 Performing routine tasks, like brushing the hair = AD patients have difficulty in these functions

- Checking speech = speech involves the brain coordinating the movement of lips, tongue, teeth and vocal cords to produce intelligible sounds.
- 5. Understanding language = taking directions



### Physical Exam (cont'd)

- Checking sensory abilities = can you see this and explain what it is?
- 7. Ruling out stroke, Parkinson's, or any other diseases

# CAT Scans\*

Computer Axial Tomography: A series of X-rays that show the human body in slices.

The X-ray mechanism, which surrounds the body, "inches" its way along the area being examined, taking multiple tomograms (slices). The computer is used to turn the tomograms into pictures.

These scans can offer physicians the opportunity to differentiate, for example, between Alzheimer's disease and multi-infarct dementia.

\*Source: https://www.webmd.com/cancer/what-isa-ct-scan



## MRI's

Magnetic resonance imaging (MRI) is the newest, and perhaps most versatile, medical imaging technology available.

Doctors can get highly refined images of the body's interior without surgery, using MRI.

### PET Scans

Positron emission tomography (PET) is a highly specialized imaging technique using short-lived radiolabeled substances to produce powerful images of the body's biological function.

This has become the technique of **choice for investigating Alzheimer's** disease.

## PET Scans

#### Normal brain activity



#### Mild Alzheimer's disease



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