Introduction to Dementia

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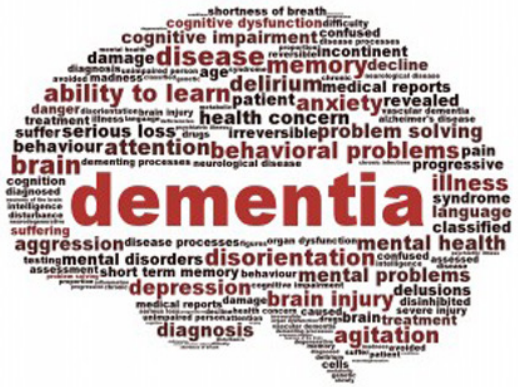
Financial Disclosures

- Dr. Sanford has no relevant financial disclosures

Objectives

- Gain awareness of the impact dementia has on the patient and caregiver
- Differentiate normal aging vs mild cognitive impairment vs dementia
- Discuss and identify the most common types of dementia
- Become familiar with the available screening tools for dementia

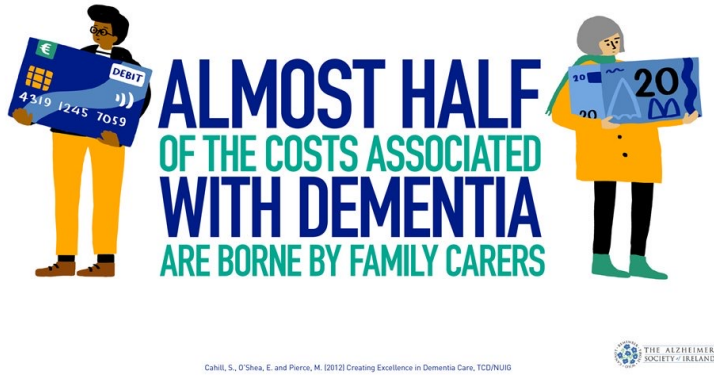


Background

- 1 in 3 older adults develop some form of dementia
- >6 million Americans are living with Alzheimer's dementia and this number is expected to rise to >13 million by the year 2050
- Between 2000-2019, deaths from heart disease have decreased by 7.3%, while deaths from dementia have increased by 145%
  - Dementia is the only cause of death among the top 10 causes of death in America that cannot be prevented, cured, or even slowed

https://www.alz.org/alzheimers-dementia/facts-figures; Accessed May 19, 2021.

Background



- **Economic Impact:**
  - 16.1 million Americans provide unpaid care for a loved one with dementia, providing 18.4 million hours of care valued at over $250 billion dollars!
  - In 2021, dementia will cost the nation $355 billion for healthcare and caregiving costs
  - Medicare, Medicaid and private insurances only partially cover costs; the greatest expense burden is covered by the family!
- **Emotional Impact:**
  - Nearly ½ of patients with dementia suffer from depression
  - Nearly ½ of caregivers also suffer from depression

Are there "normal" changes in memory with age?

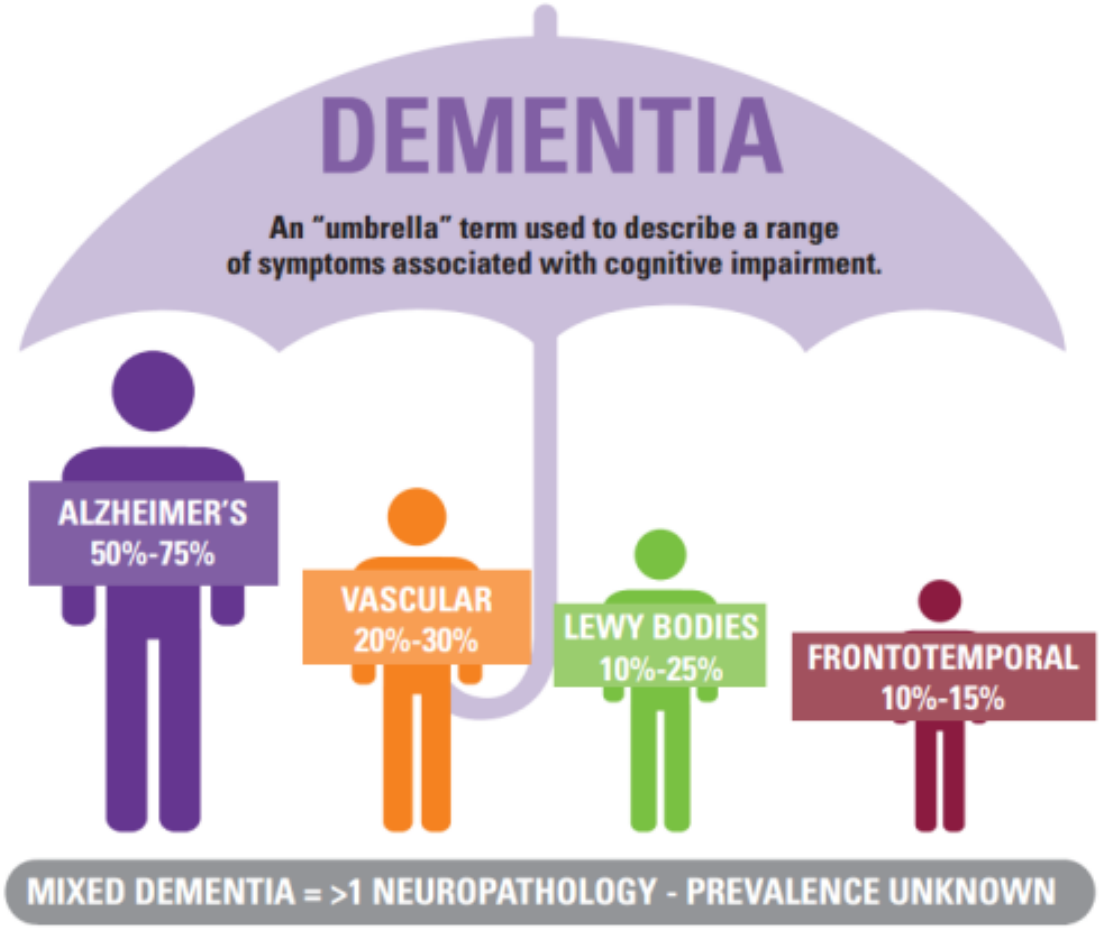
- **Yes!!**
  - Slower recall of information, such as names
  - Increased effort needed to learn new tasks
  - Greater difficulty multi-tasking
  - Easier distractibility
  - Slower processing
- **But, dementia is NOT NORMAL in the older adult**

Background

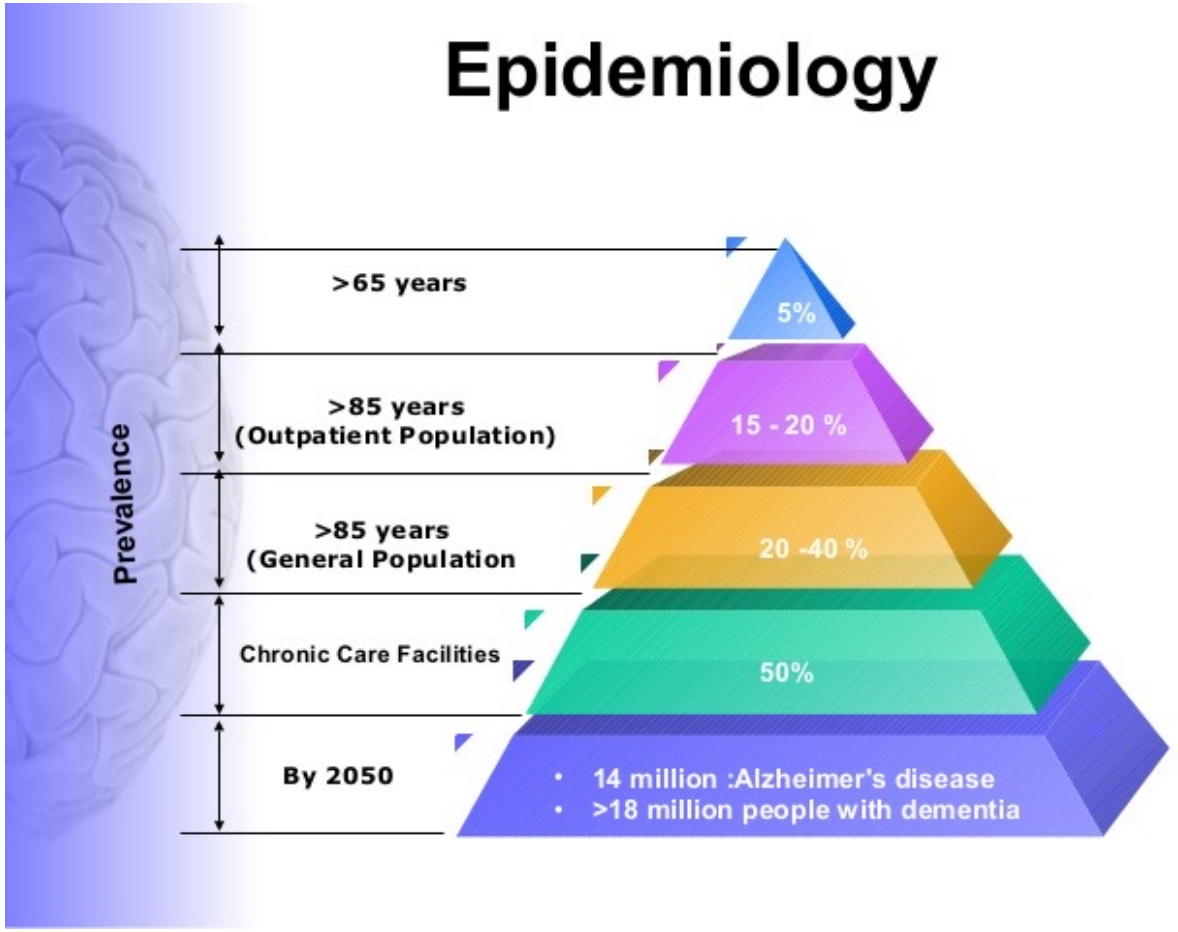
- **How do we define dementia?**
  - **Memory impairment plus a decline in one or more cognitive domains**—learning ability, social function, visuo-spatial function, language, complex attention, executive functioning
  - **Significant decline from previous abilities**
  - **+Impairment in daily functioning**
  - **Decline is progressive, disabling**
  - Caused by damage to the brain

Background

- **Dementia: Many types**
  - Alzheimer's Disease
  - Vascular Dementia
  - Lewy Body Dementia
  - Frontotemporal Dementia
  - Parkinson's Disease with dementia



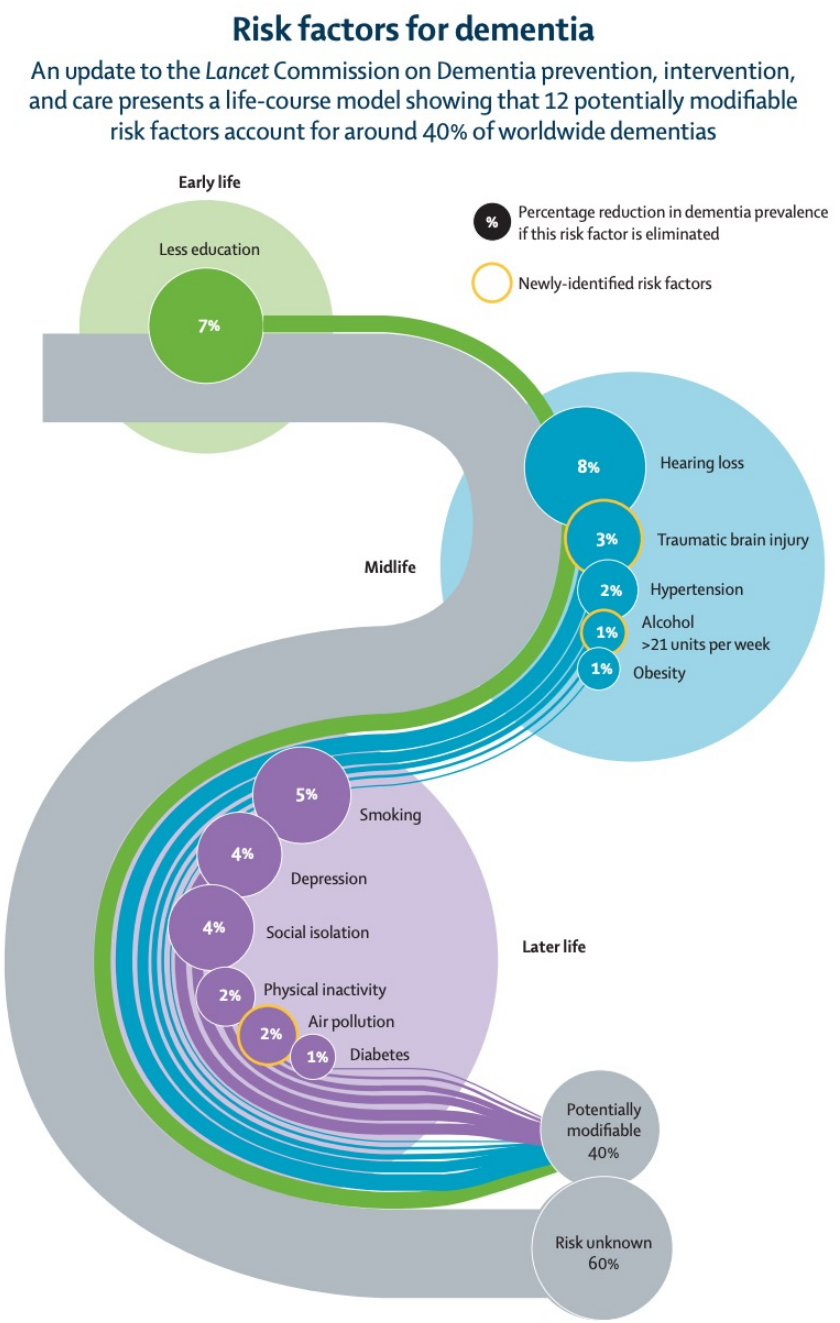
Epidemiology



- 5-8% of people >65 y/o have dementia
- >40% of those >90 have dementia
- Prevalence increases by 5% every 5 years over age 65

Epidemiology

- **Risk Factors for Dementia:**
  - **Definite:**
    - Age
    - Down Syndrome
    - Family Hx
    - APOE4 allele
  - **Possible:**
    - Head injuries
    - Lower educational level
    - Late onset of major depression
    - Cardiovascular risk factors



Livingston G, Huntley J, Sommerlad A, et al. Dementia prevention, intervention, and care: 2020 report of the *Lancet* Commission. *The Lancet* 2020.

What are the implications for health care providers?

- **Dementia dx changes in our approach with the patient:**
  - Do caregivers need to be present during office visits or called to be updated after visits?
  - Should written and verbal instructions be provided?
  - Is there a pattern to repeat hospitalizations, ER visits, etc, that may need to be addressed → is the pt receiving enough oversight at home?
  - Are there signs of caregiver burnout that we can assist with?
  - What is the overall life expectancy and how does seeing the "big" picture change our management?

Mild Cognitive Impairment (MCI)

- **Memory impairment significant enough to be noticeable to family and/or individual, but not significar enough to interfere with daily activities**
- Occurs in 10-20% of adults >65
- Established risk factor for the development of Alzheimer's Disease
  - 30% of those w/ MCI progress to Alzheimer's each year (**70% of people with MCI don't progress**)

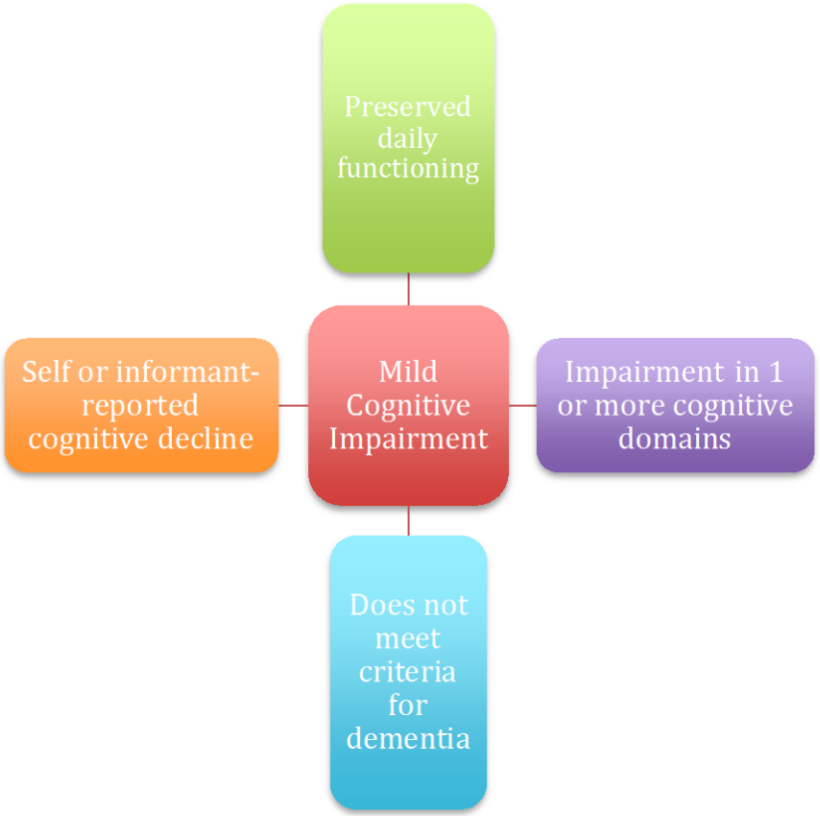
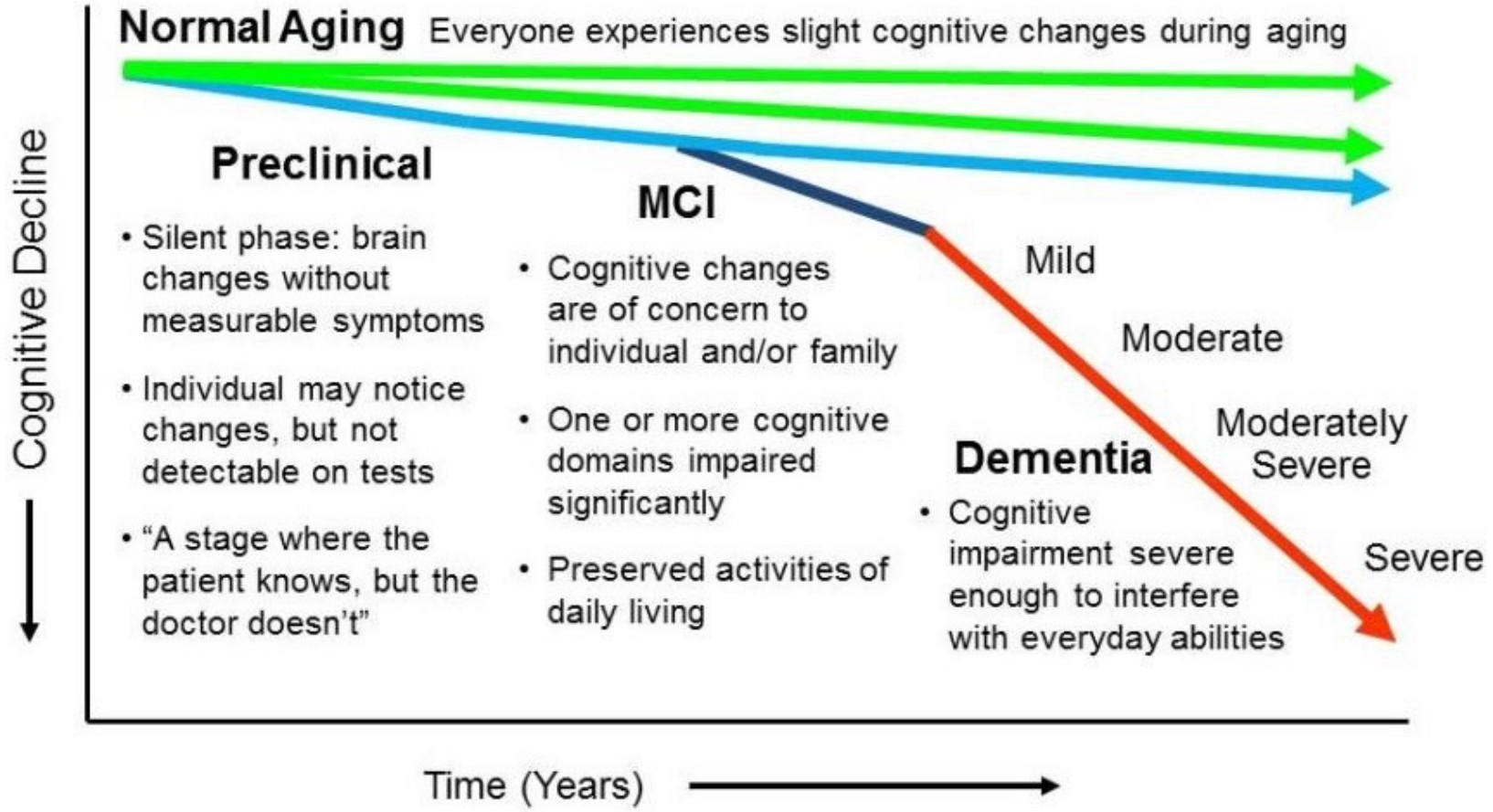


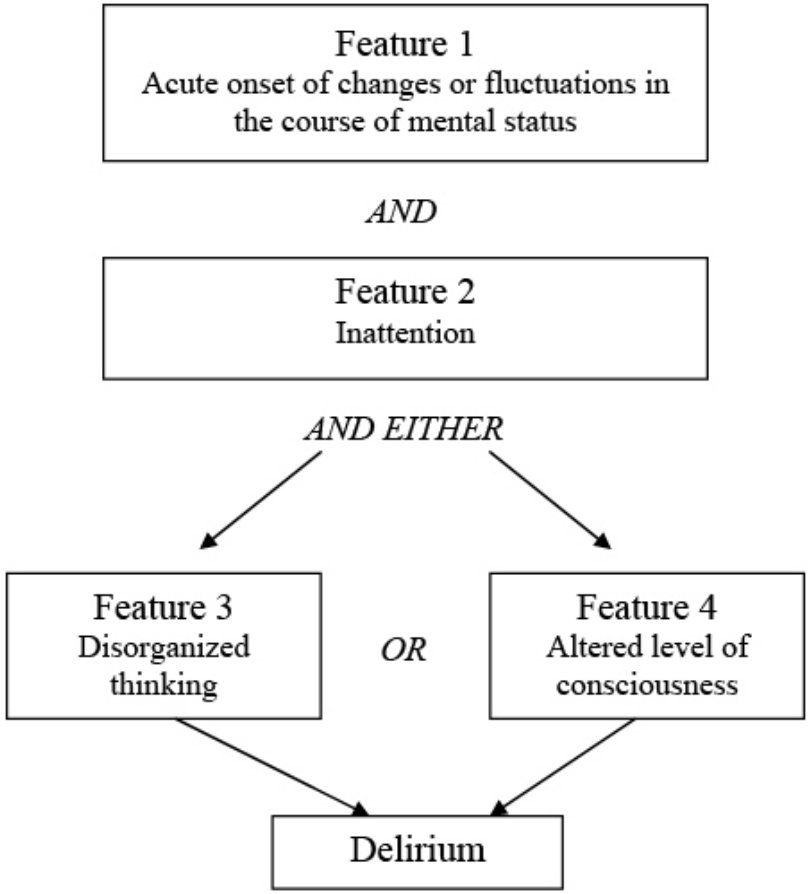
Figure 1: Characteristics of Mild Cognitive Impairment[1]

3 Stages in the Development and Progression of Dementia



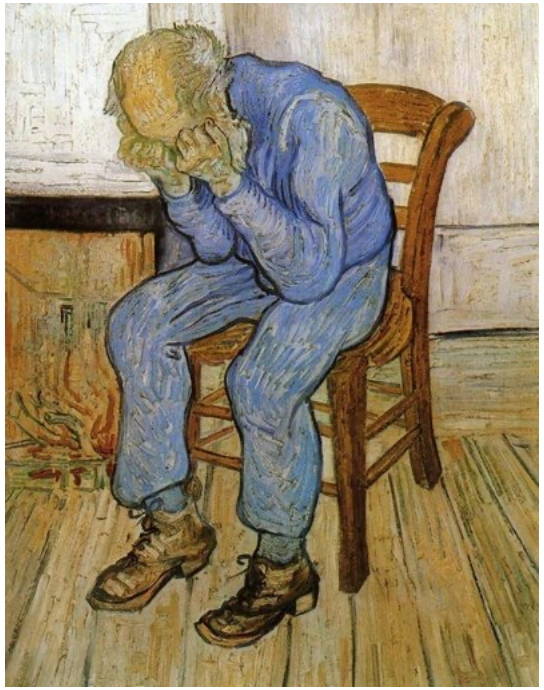
Dementia vs Delirium

- **Dementia and delirium often co-occur**, particularly in hospitalized or nursing home pts
- **The distinguishing signs of delirium are:**
  - Acute onset
  - Fluctuating cognition over hours to days
  - Impaired consciousness and attention
  - Altered sleep/wake cycles



Source: Simel DL, Rennie D: *The Rational Clinical Examination: Evidence-Based Clinical Diagnosis:* http://www.jamaevidence.com

Dementia vs Depression



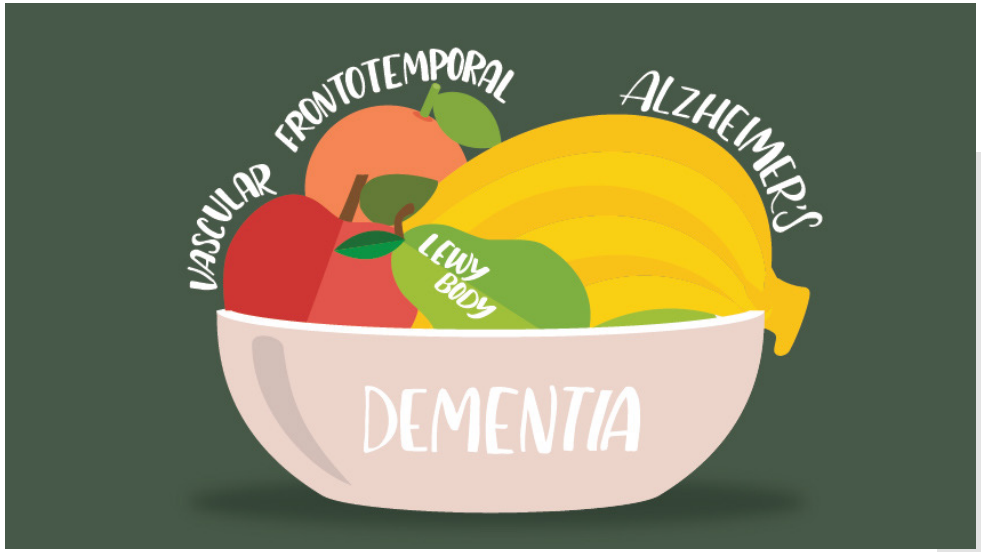
- **Symptoms of dementia and depression often overlap:**
  - Impaired concentration
  - Lack of motivation, loss of interest, apathy
  - Psychomotor retardation
  - Sleep disturbance (too much or too little)

Dementia vs Depression

- **Pts w/ primary depression are unlike those with dementia in that they:**
  - Demonstrate poor motivation during cognitive testing
  - Cognitive complaints exceed measured deficits
  - Maintain language and motor skills
- **Good news is that tx of depression improves cognition in these pts!**

DEMENTIA	DEPRESSIVE PSEUDODEMENTIA
Progressive onset	Rapid onset
Long term symptomatology	Short term symptomatology
Mood variations	Consistently depressed mood
The patient tries to answer to the questions	Short answers like "I don't know", negativism
Patient is concealing amnesia	Highlighting amnesia
Constant cognitive decline	Fluctuating cognitive impairment

Table 1:Differential diagnosis between dementia and pseudodementia



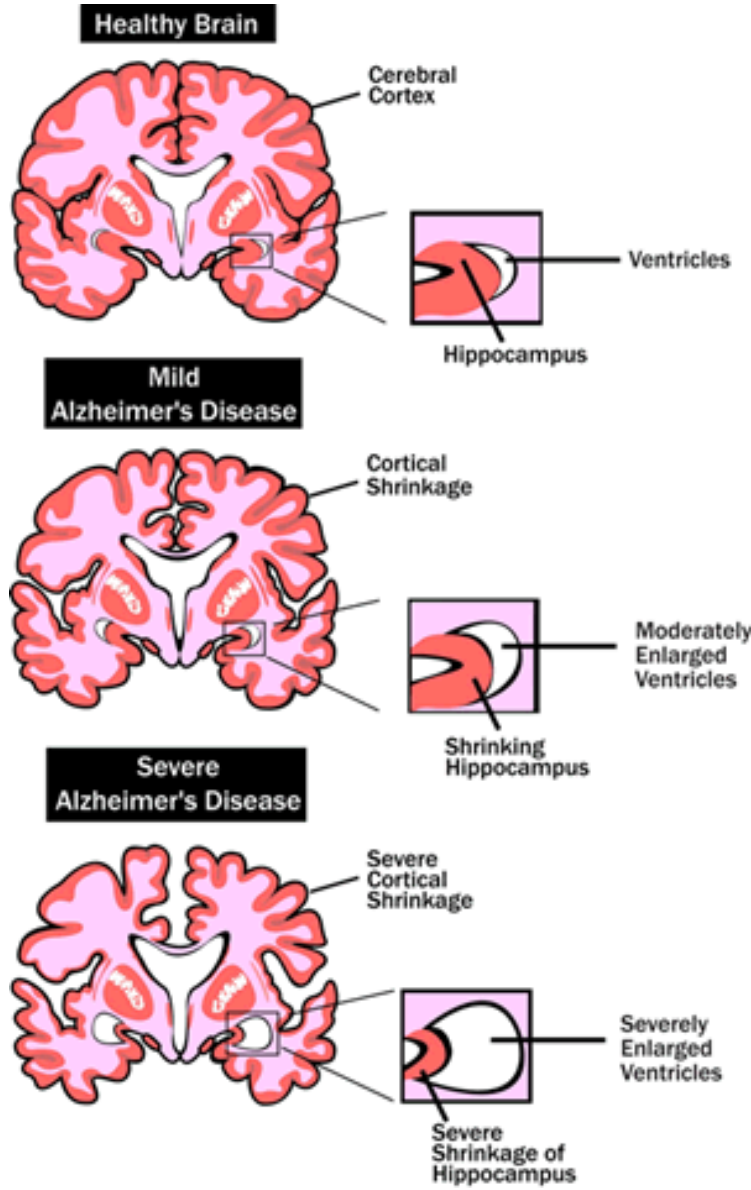
Main Types of Dementia

Alzheimer's Disease, Vascular disease, Lewy Body Dementia, Parkinson's Disease with Dementia, Frontotemporal Dementia

Alzheimer's Disease

Alzheimer's Disease

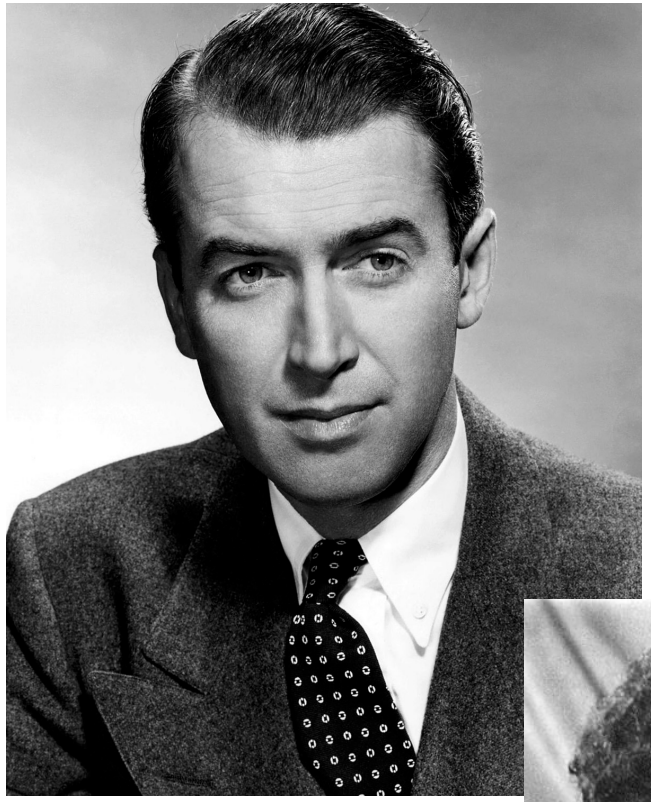
- **What causes Alzheimer's Disease**?
  - Not fully understood yet
  - Develops as a result of **complex series of events** that take place in the brain **over many years**
    - Genetic, environmental and lifestyle factors contribute
  - Caused by:
    - **Accumulation of "plaques" and "tangles"**
    - **Neurotransmitter deficits**
    - **Inflammation**
  - Early-onset form is rare (1-2%) and occurs before the age of 60
  - Late-onset form develops after the age of 60



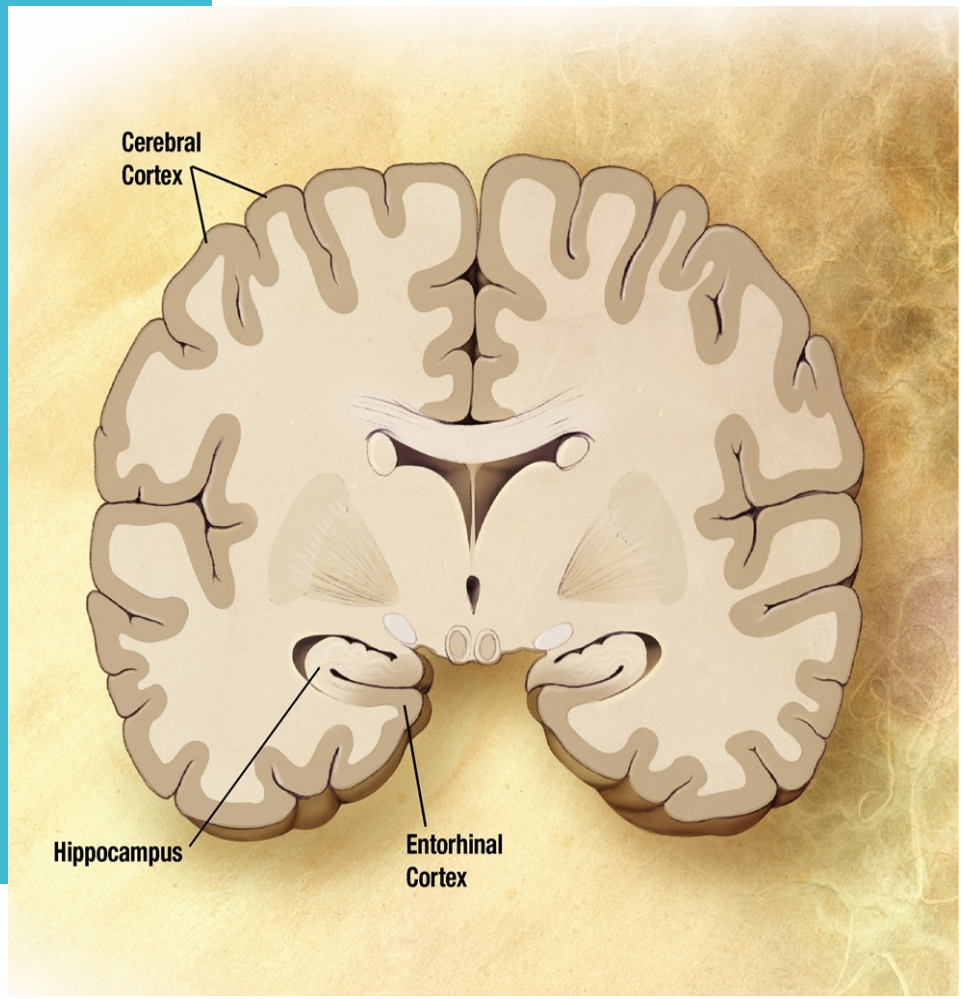
Alzheimer's Disease

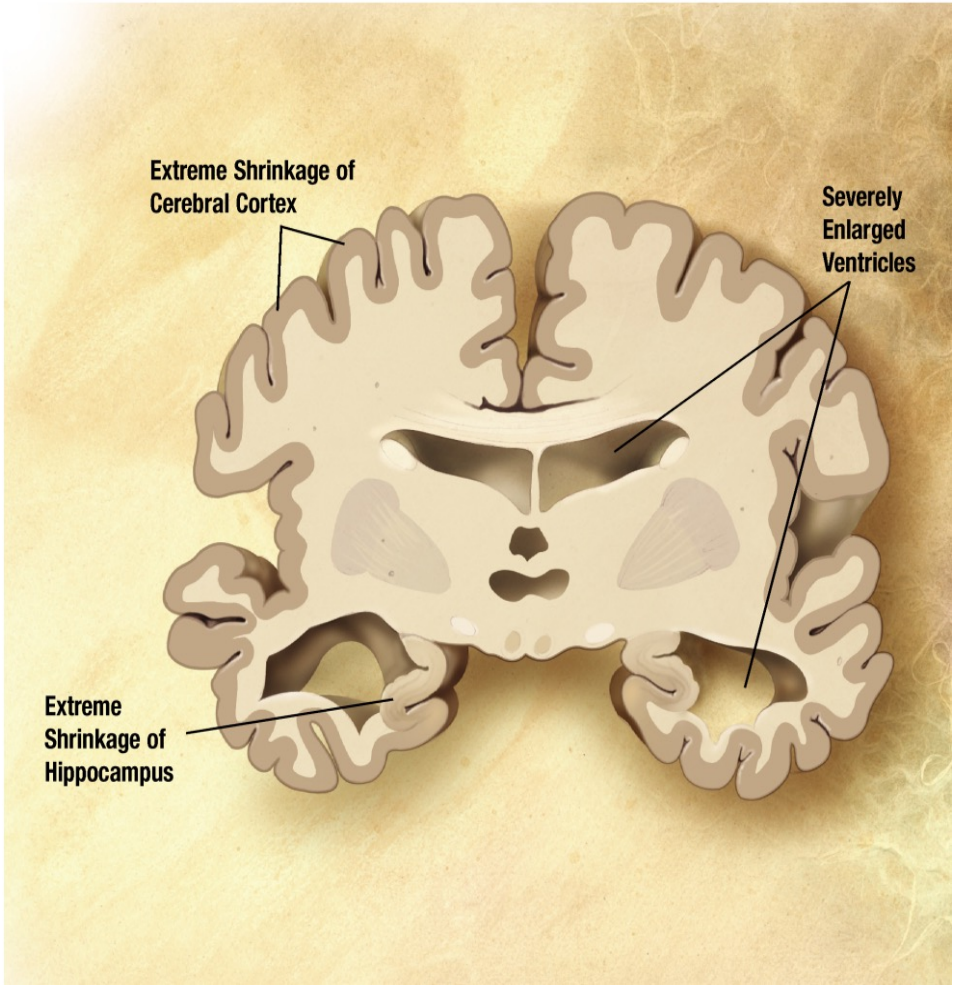
- History:
  - Named in 1901 by German psychiatrist **Alois Alzheimer**
- **Pathophysiology:**
  - Caused by **plaques and tangles**
    - **Plaques occur outside of nerve cells** and are made of an abnormal protein fragment called **amyloid beta**
    - **Neurofibrillary tangles occur inside nerve cells** and are made of **tau protein**
    - This abnormal protein accumulation also leads to **increased inflammation and cellular death**, causing more damage

The Faces of Alzheimer's Disease

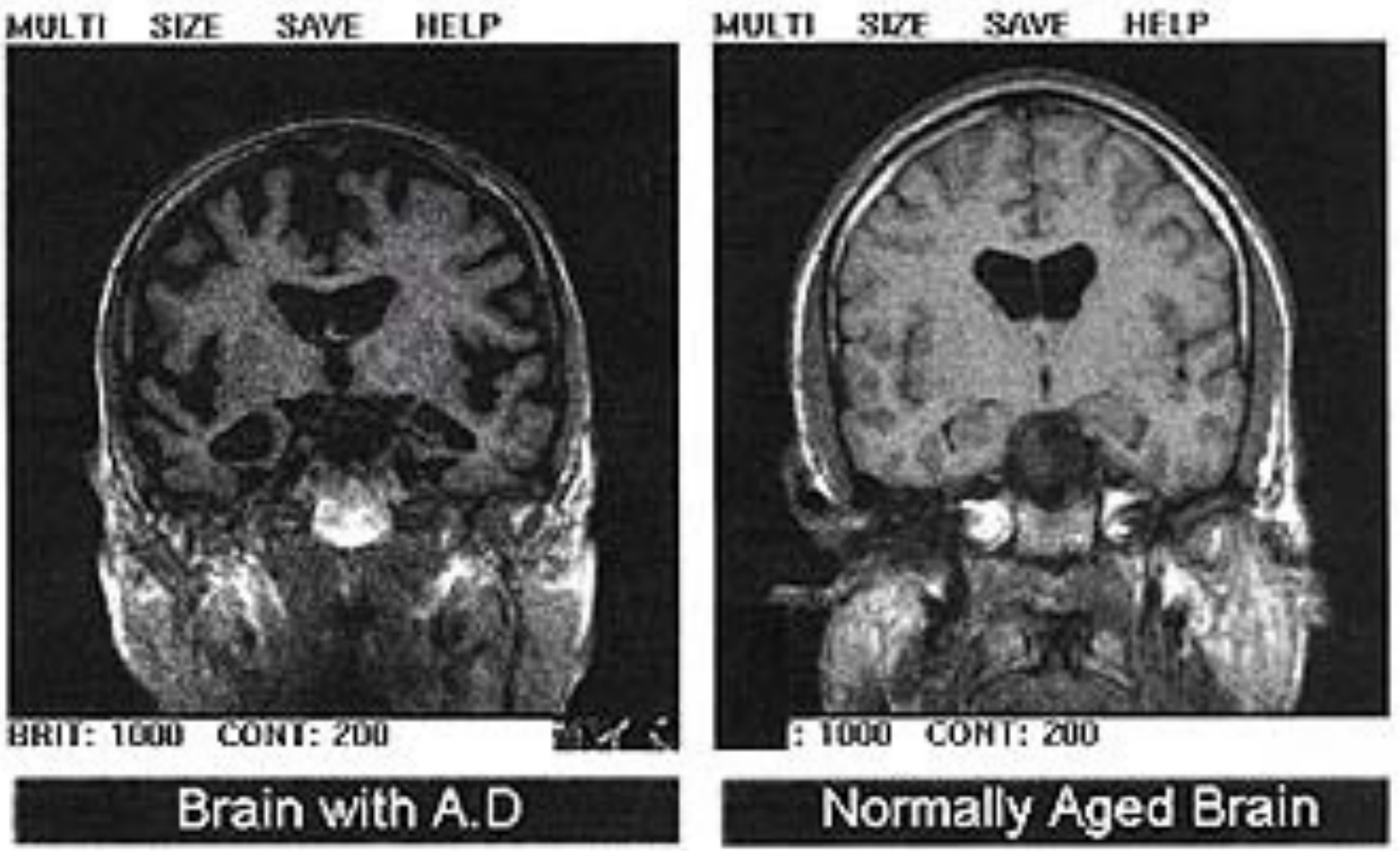


Alzheimer's Disease

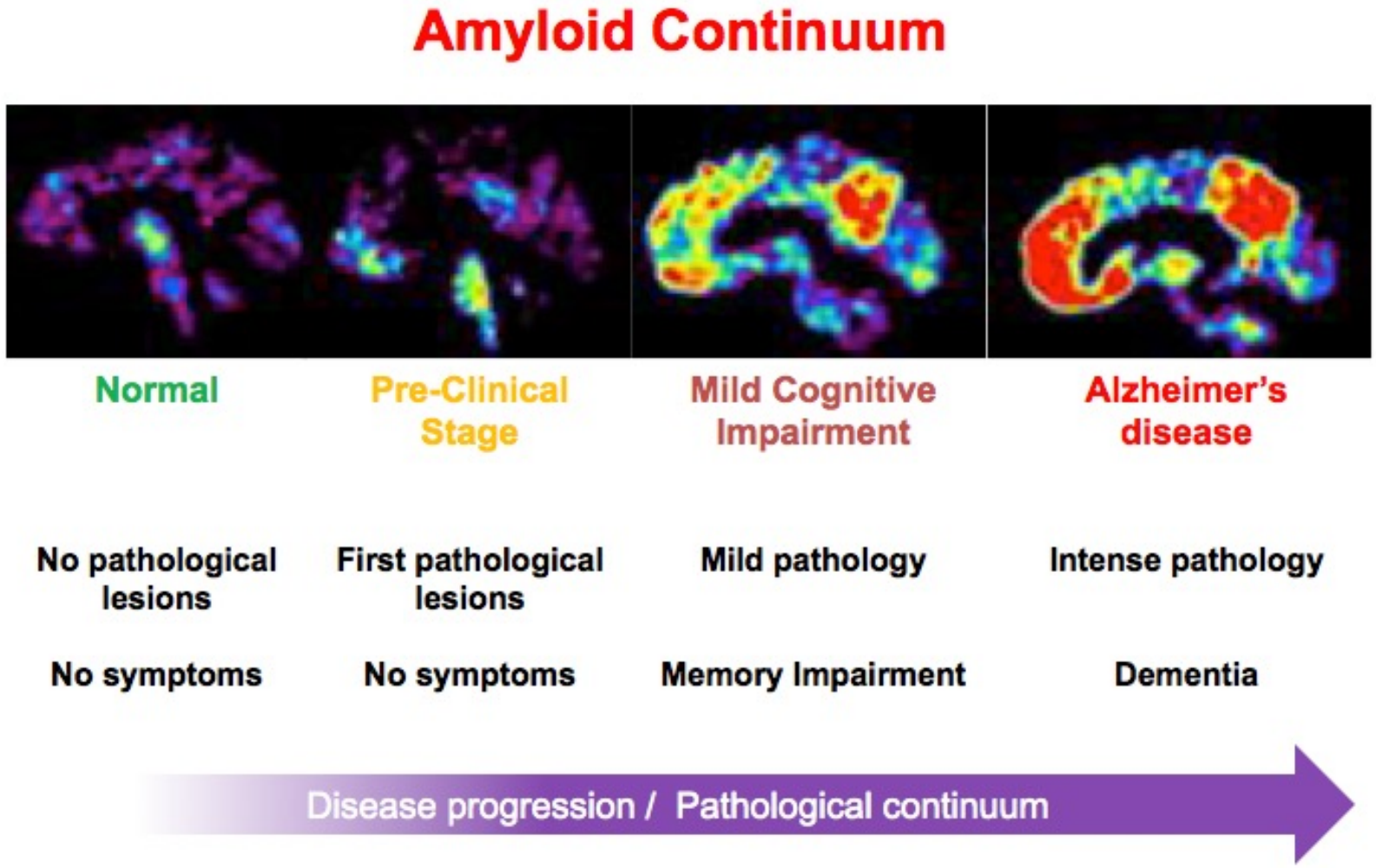




Alzheimer's Disease– Imaging

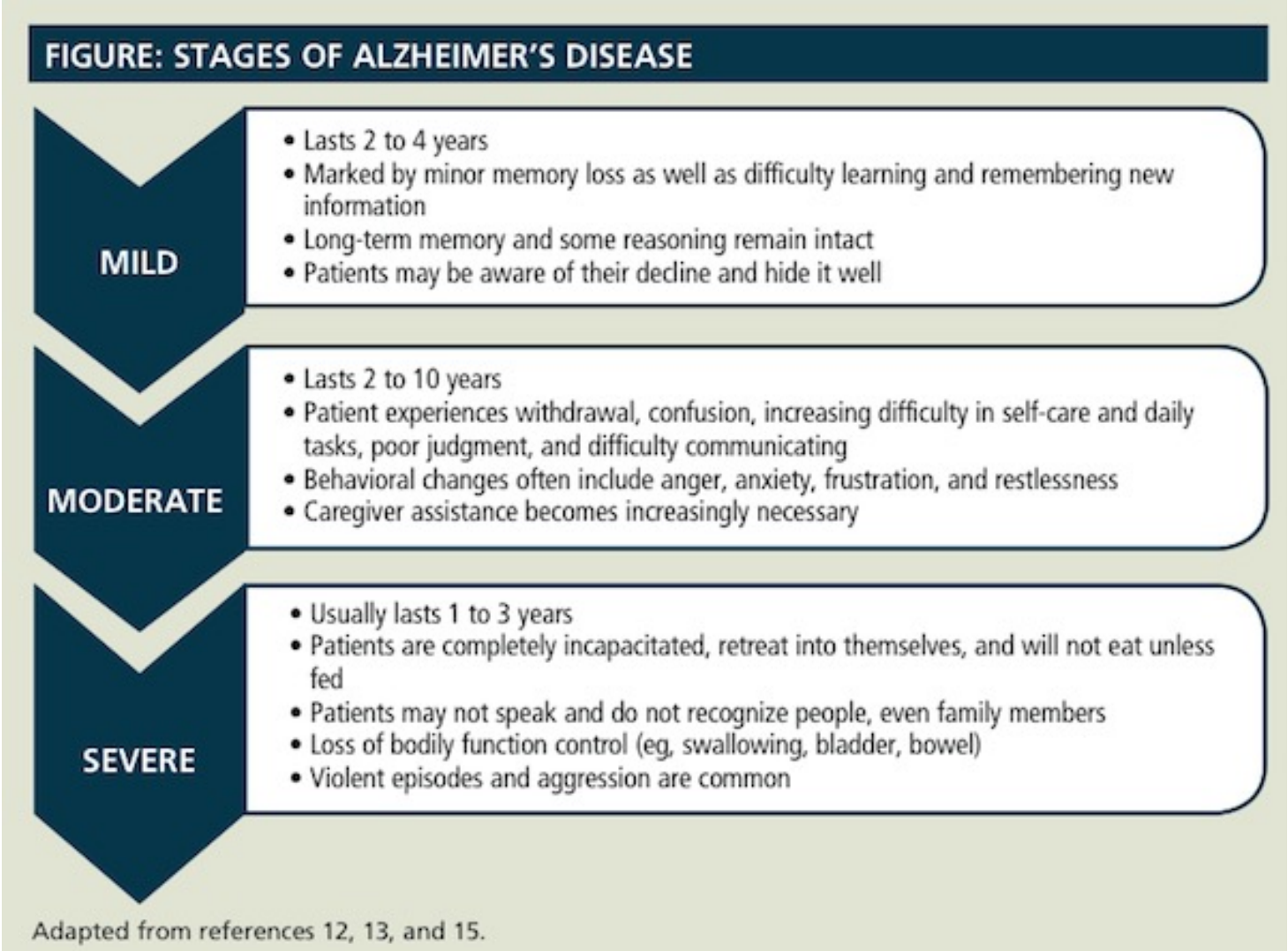


Alzheimer's Disease—Imaging



Alzheimer's Disease—Stages

- Gradual onset with progressive decline
- Motor symptoms are rare early in disease course but develop later in disease

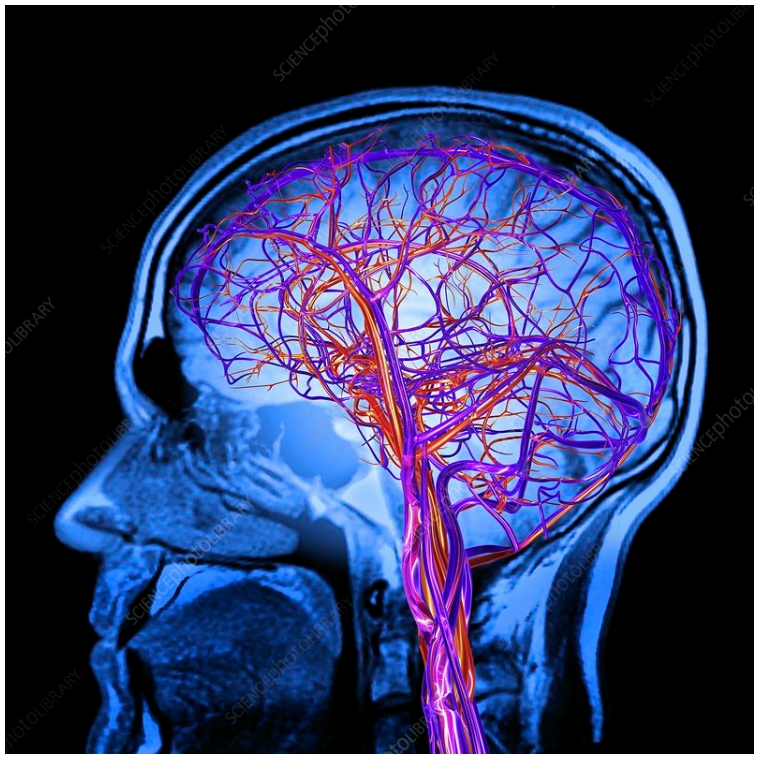


Alzheimer's Disease--Fast stages

Functional Assessment Staging (FAST)

FAST Stage and Characteristics	Clinical Diagnosis	Duration of stage*
1. No functional decrement	Normal Adult	50 years
2. Subjective word difficulties	Normal Aged Adult	15 years
3. Decreased function in demanding employment settings	Compatible with possible incipient Alzheimer's disease in minority of cases	7 years
4. Decreased ability to handle complex tasks such as finances or planning dinner for guests	Mild Alzheimer's disease	2 years
5. Requires assistance in choosing proper clothing	Moderate Alzheimer's disease	18 months
6. a) difficulty dressing properly	Moderately severe Alzheimer's disease	5 months
b) requires assistance bathing		5 months
c) inability to handle mechanics of toiletting		5 months
d) urinary incontinence		4 months
e) fecal incontinence		10 months
7. a) ability to speak limited to about six words	Severe Alzheimer's disease	12 months
b) intelligible vocabulary limited to single word		18 months
c) ambulatory ability lost		12 months
d) ability to sit up lost		12 months
e) ability to smile lost		18 months
f) ability to hold head up lost		*Not applicable*

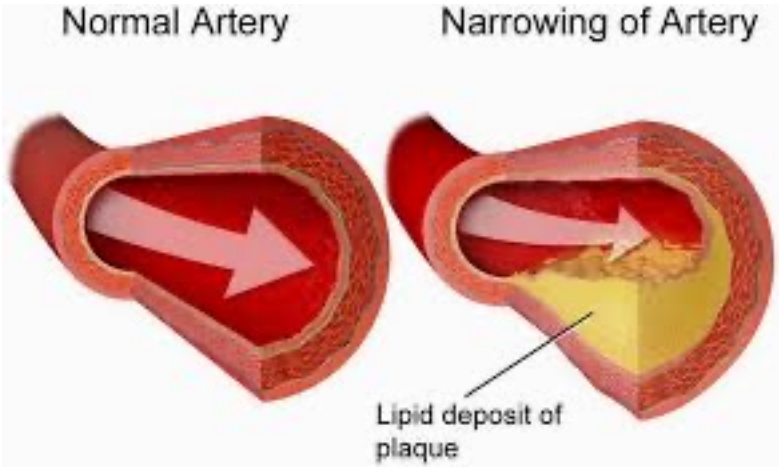
**duration of stage in those entering the stage who progress into the next stage; not all patients progress.*

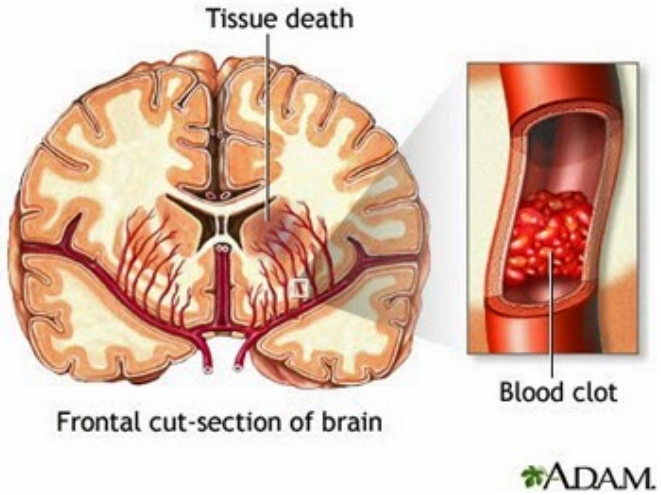


Vascular Dementia

Vascular Dementia

- Caused by **poor blood flow/ischemia→ strokes, diabetes, high blood pressure, high cholesterol, atrial fibrillation**
- Sudden onset and stepwise progression
- Abrupt changes in cognitive ability
- **Future damage can be prevented or slowed** by aggressive control of chronic medical conditions





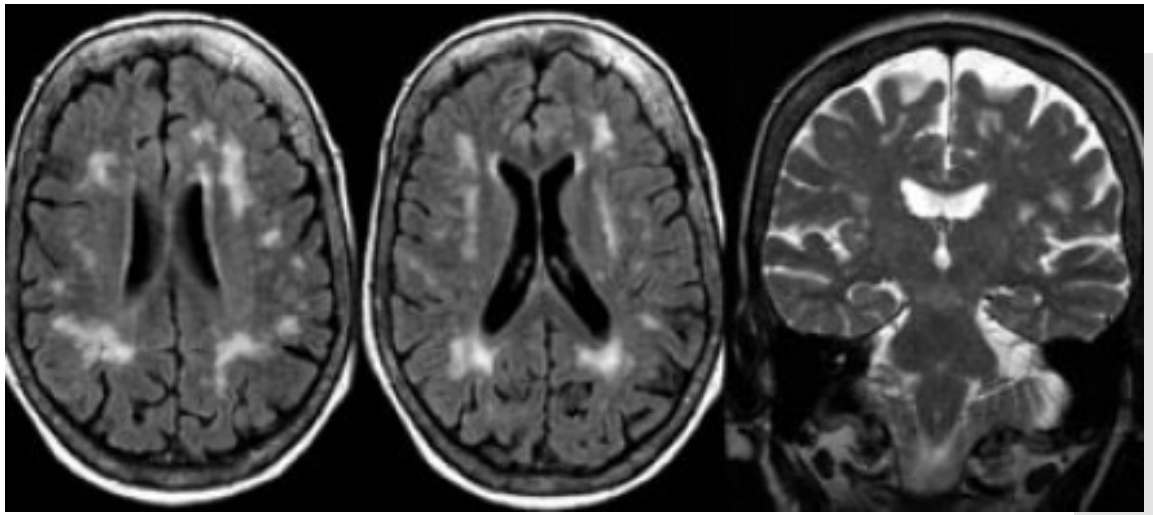
Vascular Dementia

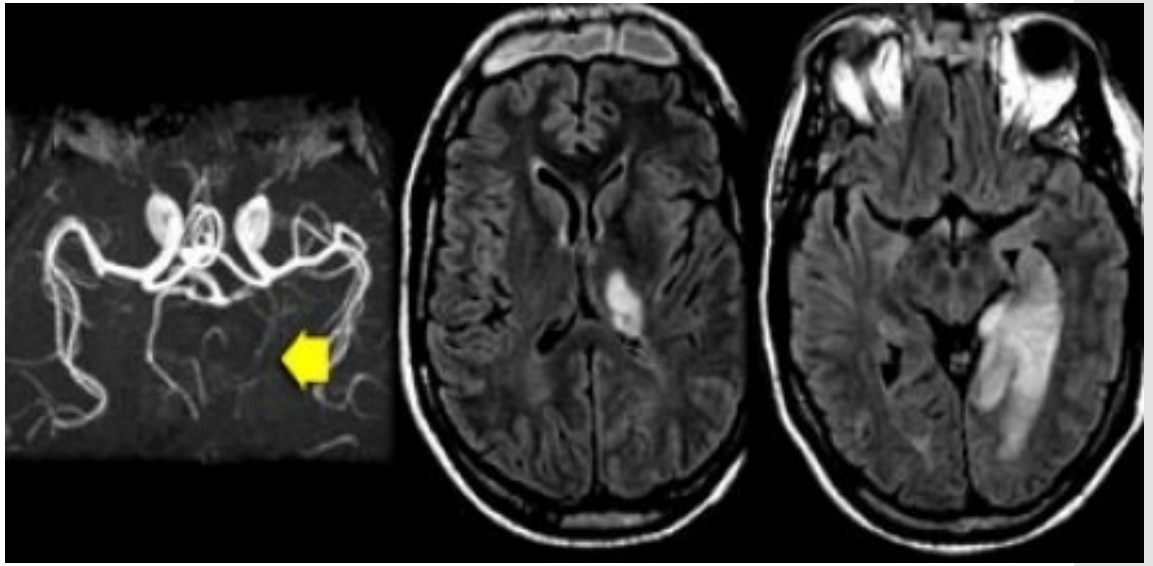
- Multi-infarct dementia → Renamed vascular dementia

TABLE 4: HACHINSKI ISCHEMIC SCORE[4,66]	
Feature	Score
Abrupt onset	2
Stepwise deterioration	1
Fluctuating course	2
Nocturnal confusion	1
Preservation of personality	1
Depression	1
Somatic complaints	1
Emotional incontinence	1
History of hypertension	1
History of stroke	2
Associated atherosclerosis	1
Focal neurological symptoms	2
Focal neurological signs	2
A score of 4 or less suggests dementia is due to Alzheimer's disease, a score of 7 or greater suggests vascular dementia.	

Vascular Dementia—Imaging

- Symptoms tend to correlate with where in the brain the stroke or blood vessel narrowing occurs → "Swiss Cheese Brain"
- Head imaging reveals "ischemic small vessel disease" or previous "infarcts"

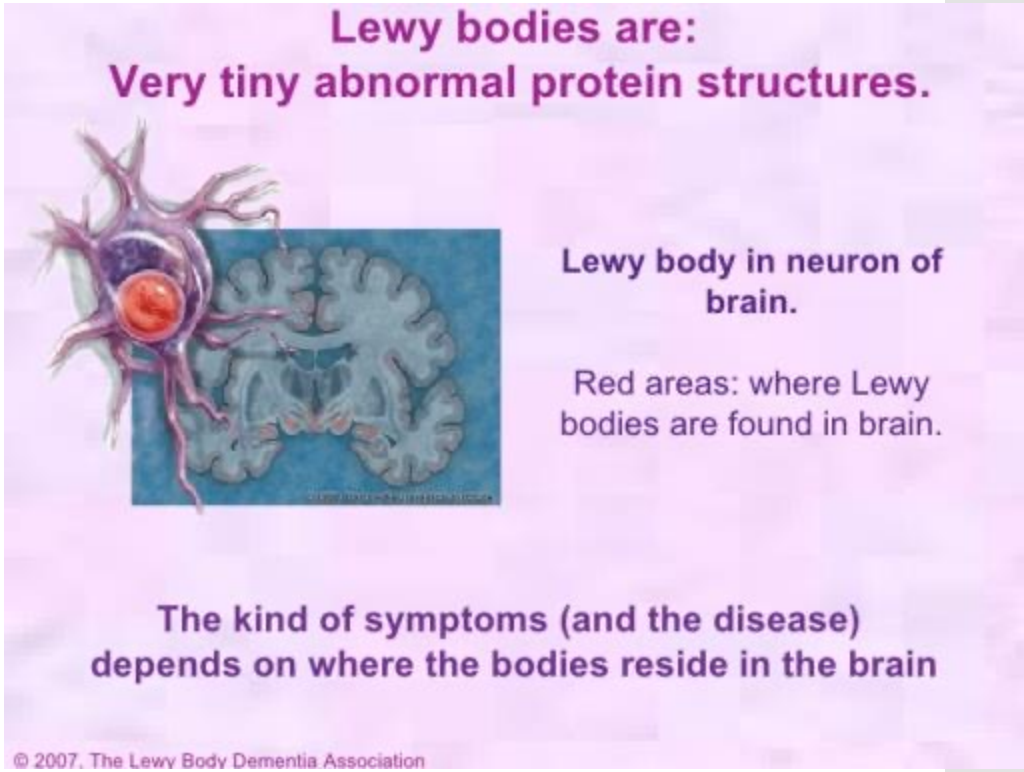




Lewy Body Dementia

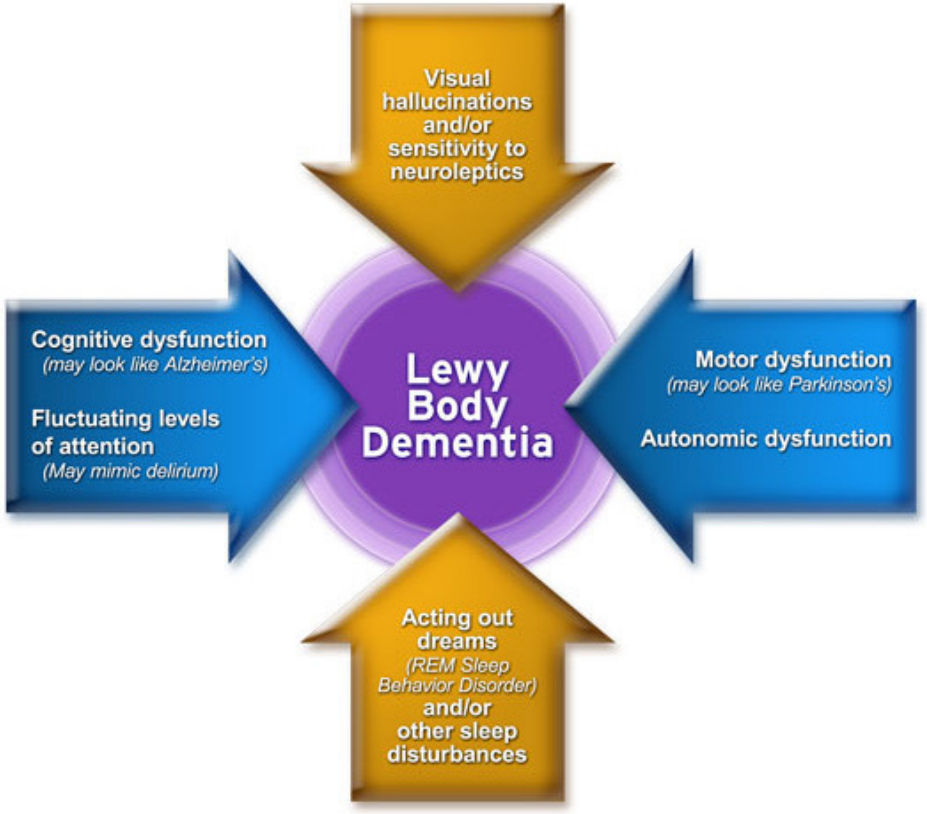
Lewy Body Dementia

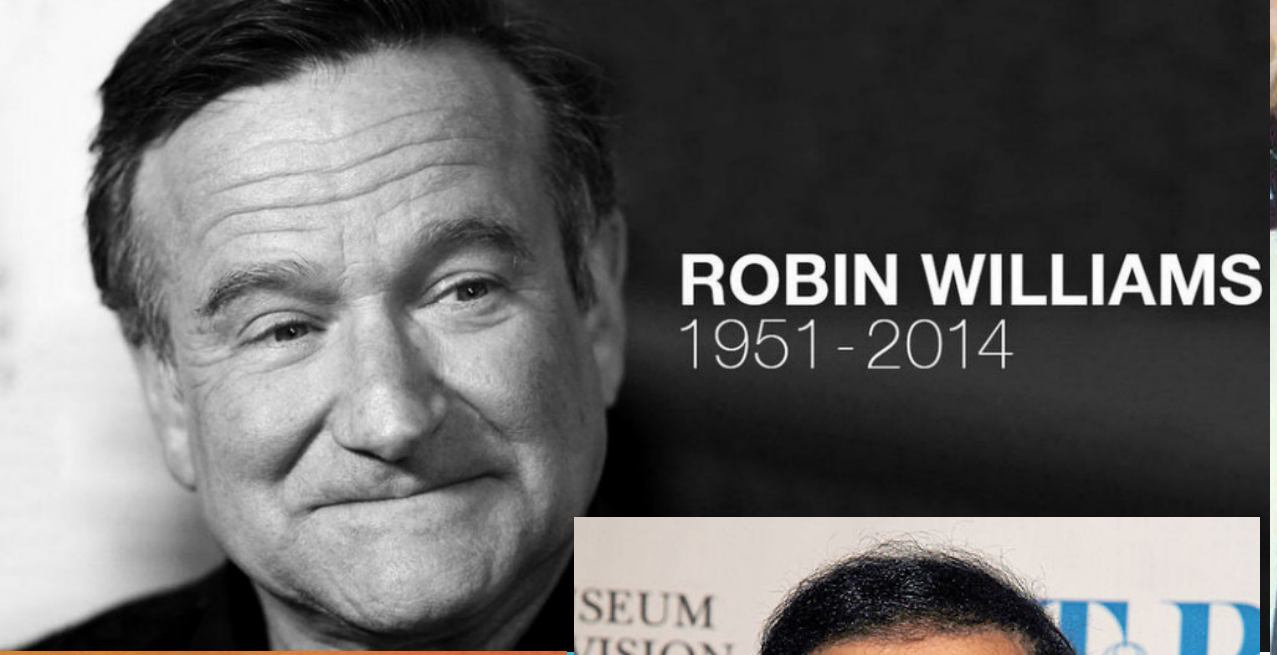
- Caused by **abnormal protein deposits "Lewy Bodies"** in cytoplasm of neurons
- On the same spectrum as Parkinson's Disease
- More common in men
- **Symptoms:** visual hallucinations, fluctuating attention, motor dysfunction, abnormal movements during sleep
- Widely **under-diagnosed**

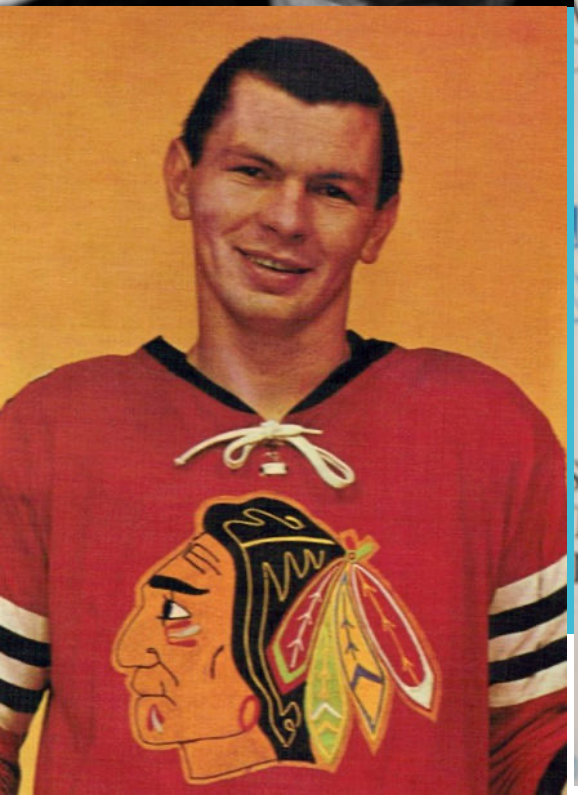


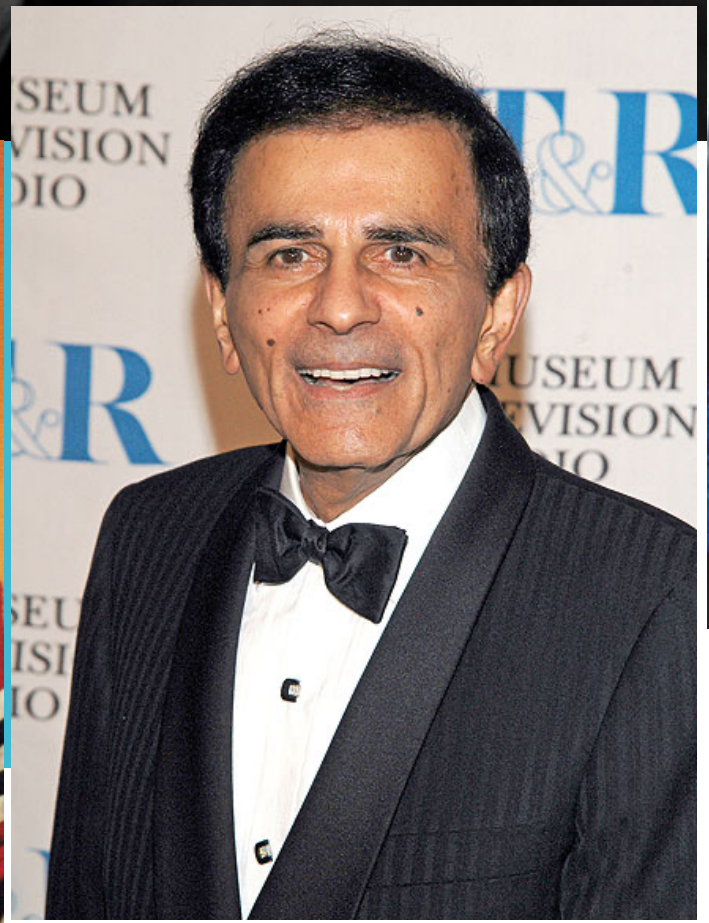
Lewy Body Dementia

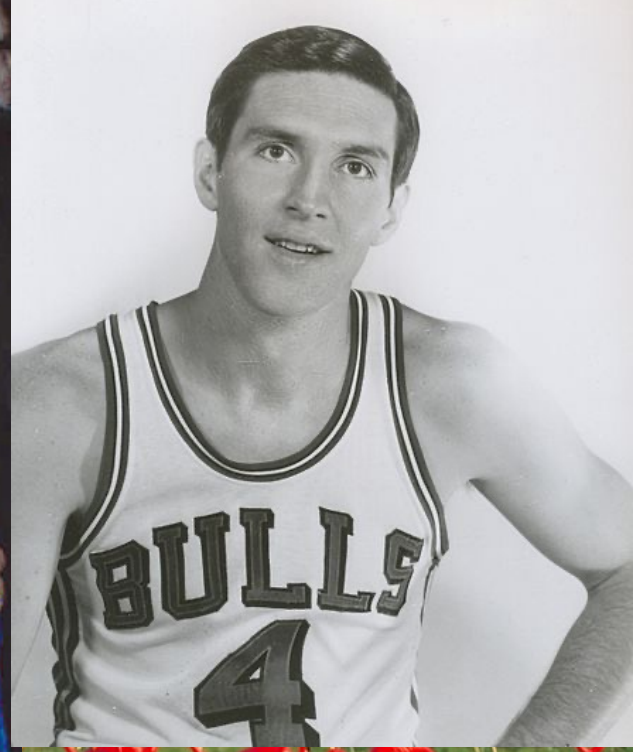
- **Symptoms are dependent on where in brain that the Lewy bodies deposit**
  - Typically, starts in PNS and moves in CNS into brainstem and upwards towards cortex
  - If deposits form in areas that release acetylcholinesterase, may have more of an Alzheimer's symptomatology
  - If deposits form in areas that release dopamine, will have more parkinsonian features
  - Deposition in occipital cortex leads to hallucinations











The Faces of Lewy Body Dementia

Lewy Body Dementia—Imaging

Gore R, Vardy E, O'Brien J. Delirium and dementia with Lewy bodies: distinct diagnoses or part of the same spectrum? J Neurol Neurosurg Psychiatry 2015;86:50-9.

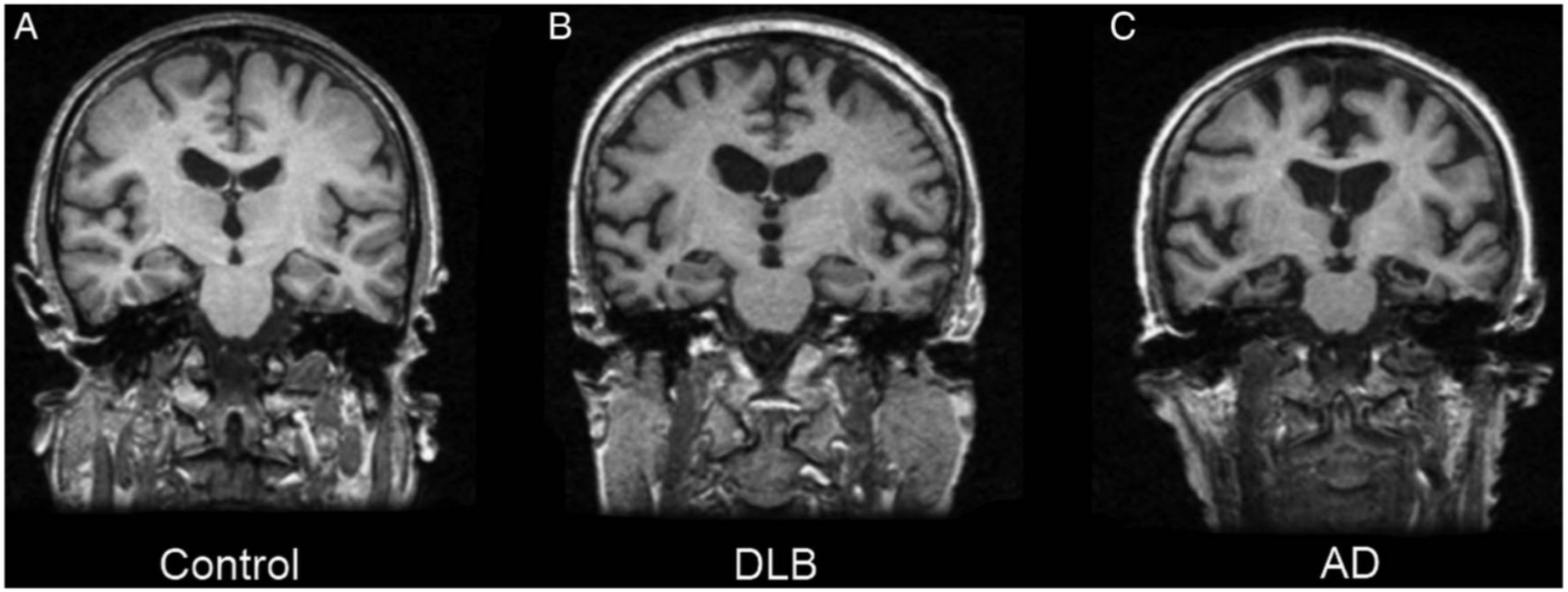
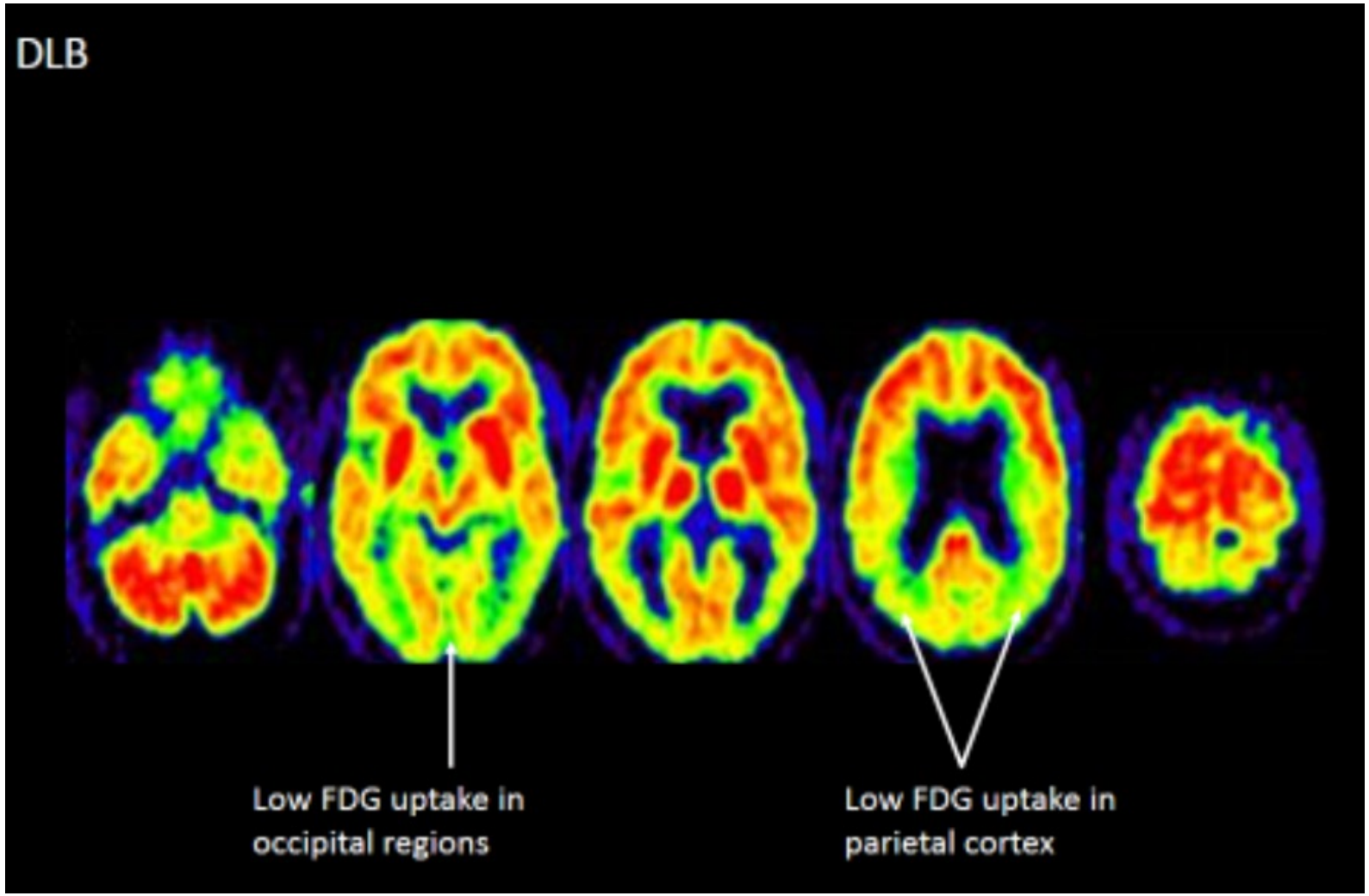


Figure 1 Coronal view of a structural MRI brain scan in (A) Control, (B) Dementia with Lewy bodies (DLB) and (C) AD. Note the relatively preserved medial temporal lobes in DLB compared with AD.

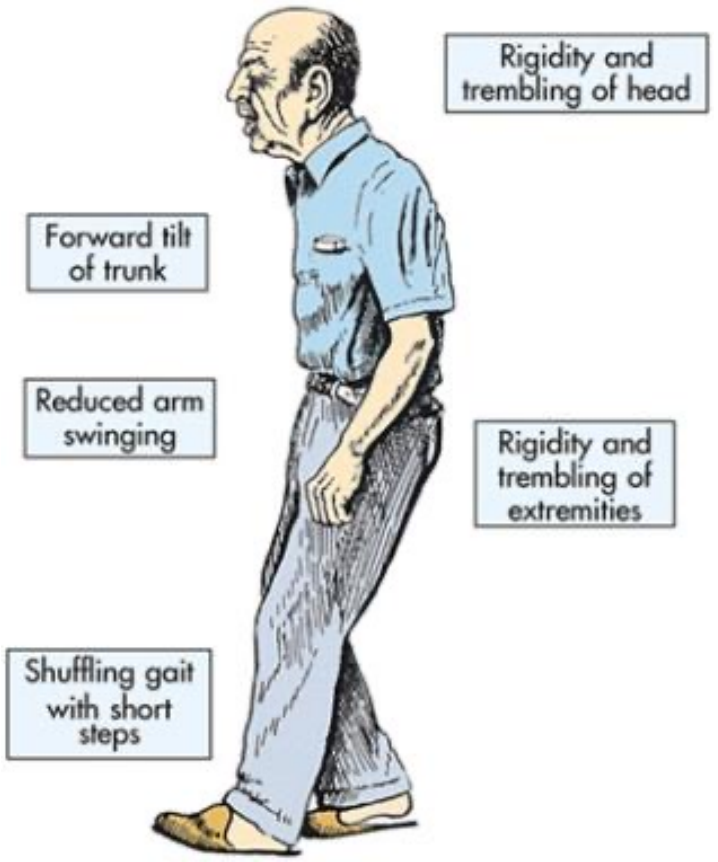
Lewy Body Dementia—Imaging



Parkinson's Disease with Dementia

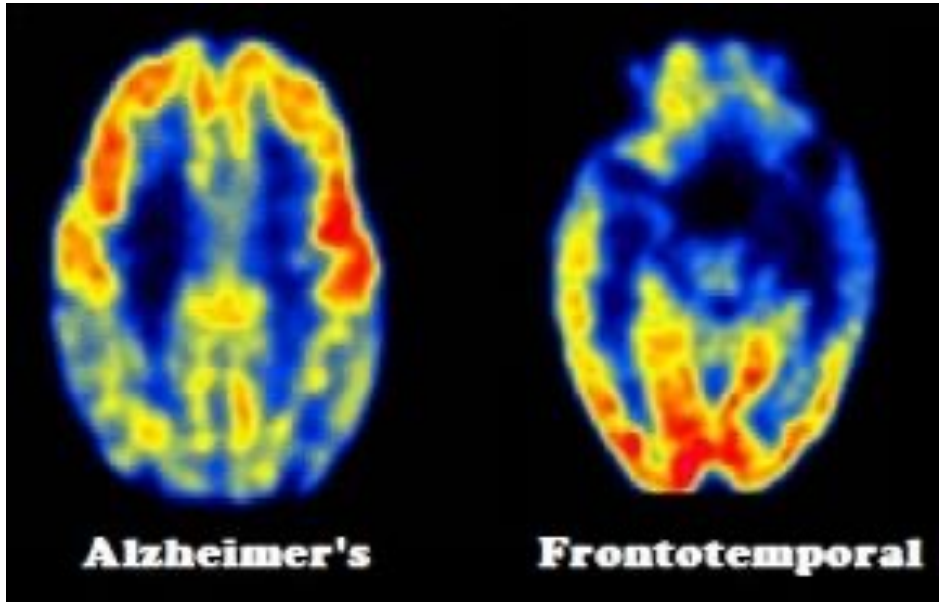
Parkinson's Disease with Dementia

- Parkinson's Disease is a **chronic, progressive neurological condition**
- **Symptoms:** tremors, muscle stiffness, masked faces, and slow, shuffling gait
- Most people with Parkinson's **will eventually develop dementia**
  - Memory loss is accompanied by depression, anxiety, and hallucinations
  - Often have marked impairment in visual-spatial functioning, causing earlier concern with driving



Parkinson's Disease with Dementia

- Parkinson's disease with dementia is very similar to Lewy Body Dementia and the two can be hard to tell apart at later stages
- **Timing differentiates:**
  - Lewy Body → memory impairment precedes or accompanies motor symptoms
  - Parkinson's disease with dementia → Motor symptoms precede memory impairment by >1 year, but usually by many years

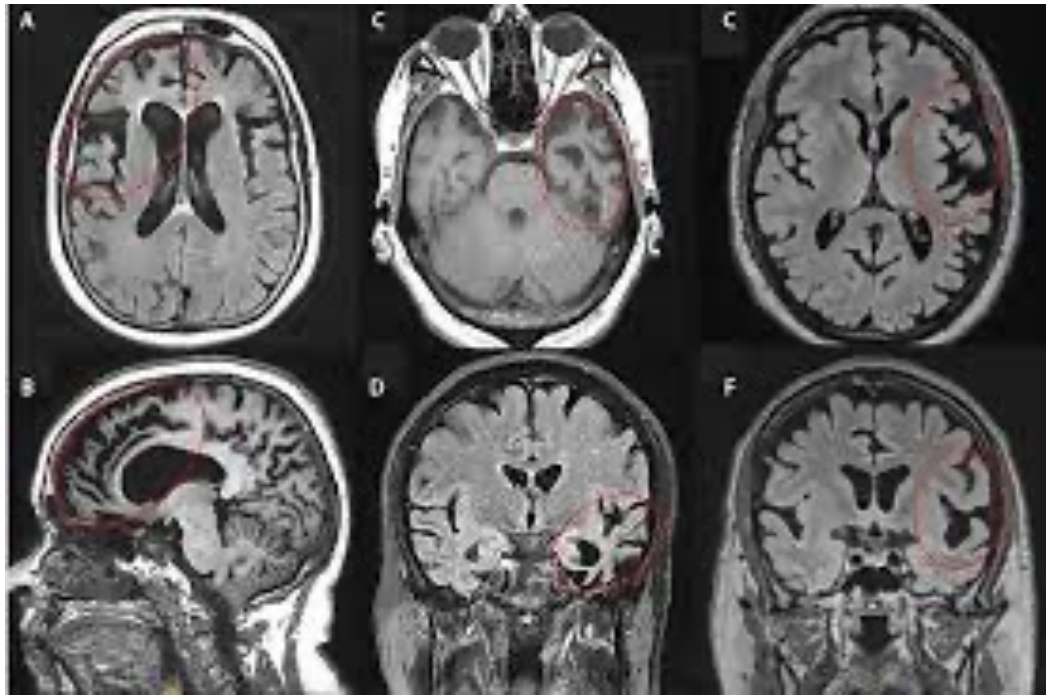


Frontotemporal dementia

Frontotemporal Dementia (FTD)

- AKA "Pick's Disease"
- Results from **progressive degeneration** of **frontal and temporal lobes**
- **Affects personality**, causing a **decline in social skills** and inability to understand/read another's emotions
- Can affect **language** and **motor skills**
- Behavior and personality changes manifest long before memory loss
- Occurs at a **younger age** and is the most common dementia in people <60

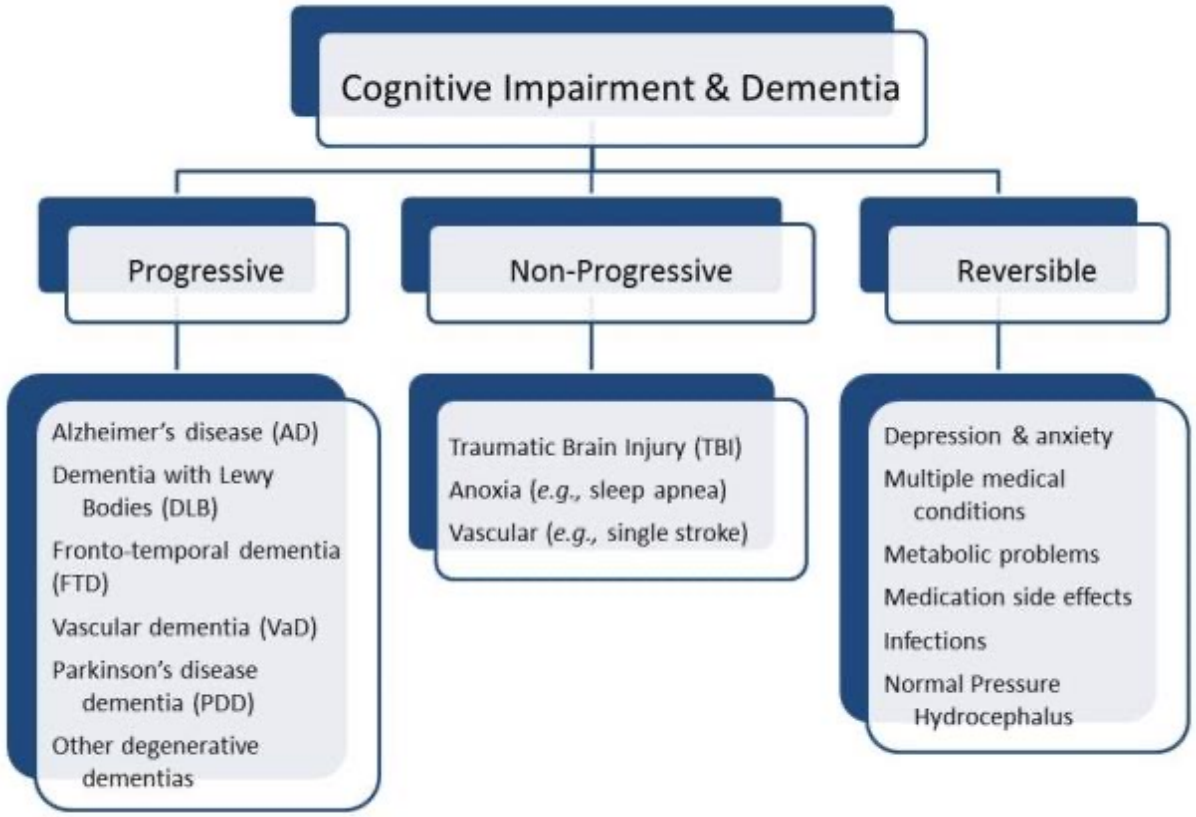
Frontotemporal Dementia—Imaging



Now on to making the diagnosis…

Diagnosis

- **Goals:**
  - Rule out reversible causes!
  - Distinguish between the various types of dementia
  - Build a comprehensive treatment plan (bio-psycho-social care) tailored to the individual



Diagnosis

- Complete medical history
- Physical and neurological examinations
  - "Memory Test"→ Saint Louis University Mental Status Examination (SLUMs) or Rapid Cognitive Screen (RCS)
- Neuroimaging
- Laboratory tests
- Neuropsychological assessment (optional)

****At the present time, there is no single diagnostic test for detecting mild cognitive impairment, Alzheimer's Disease or other types of dementia**

Diagnosis

Reversible Causes of MCI/Dementia

D rugs

E motional (depression)

M etabolic (hypothyroidism,B12)

E yes and ears (sensory isolation)

N ormal Pressure Hydrocephalus (ataxia, incontinence, and dementia)

T umor or other space-occupying lesion

I nfection (syphilis, chronic infections)

A trial fibrillation/Alcoholism

S leep Apnea

~10 % of all Dementias

SLUMS

VAMC
SLUMS Examination

Questions about this assessment tool? E-mail aging@slu.edu.

Name_____ Age _____

Is patient alert?_____ Level of education _____

__/1 ❶ **1. What day of the week is it?**

__/1 ❶ **2. What is the year?**

__/1 ❶ **3. What state are we in?**

4. Please remember these five objects. I will ask you what they are later.

Apple Pen Tie House Car

5. You have $100 and you go to the store and buy a dozen apples for $3 and a tricycle for $20.

❶ **How much did you spend?**

__/3 ❷ **How much do you have left?**

6. Please name as many animals as you can in one minute.

__/3 ❶ 0-4 animals ❶ 5-9 animals ❷ 10-14 animals ❸ 15+ animals

__/5 **7. What were the five objects I asked you to remember?** 1 point for each one correct.

8. I am going to give you a series of numbers and I would like you to give them to me backwards. For example, if I say 42, you would say 24.

__/2 ❶ 87 ❶ 649 ❶ 8537

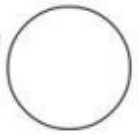
9. This is a clock face. Please put in the hour markers and the time at ten minutes to eleven o'clock.

❷ Hour markers okay

__/4 ❷ Time correct

__/2 ❶ **10. Please place an X in the triangle.**

❶ **Which of the above figures is largest?**



11. I am going to tell you a story. Please listen carefully because afterwards, I'm going to ask you some questions about it.

Jill was a very successful stockbroker. She made a lot of money on the stock market. She then met Jack, a devastatingly handsome man. She married him and had three children. They lived in Chicago. She then stopped work and stayed at home to bring up her children. When they were teenagers, she went back to work. She and Jack lived happily ever after.

❷ **What was the female's name?** ❷ **What work did she do?**

__/8 ❷ **When did she go back to work?** ❷ **What state did she live in?**

_____ **TOTAL SCORE**

Department of Veterans Affairs

SAINT LOUIS UNIVERSITY

SCORING

High School Education		Less than High School Education
27-30	Normal	25-30
21-26	MNCD*	20-24
1-20	Dementia	1-19

* Mild Neurocognitive Disorder

SH Tariq, N Tumosa, JT Chibnall, HM Perry III, and JE Morley. The Saint Louis University Mental Status (SLUMS) Examination for Detecting Mild Cognitive Impairment and Dementia is more sensitive than the Mini-Mental Status Examination (MMSE) - A pilot study. J am Geriatri Psych (in press).

Rapid cognitive Screen

SAINT LOUIS UNIVERSITY

Rapid Cognitive Screen (RCS)

Name_____ Age_____

Is the patient alert?_____ Level of education_____

1. **Please remember these five objects. I will ask you what they are later.**
[Read each object to patient using approximately 1 second intervals.]

Apple **Pen** **Tie** **House** **Car**

Please repeat the objects for me. [If patient does not repeat all 5 objects correctly, repeat until all objects are recalled correctly or up to a maximum of 2 times.]

2. [Give patient pencil and the blank sheet with clock face.]
This is a clock face. Please put in the hour markers and the time at ten minutes to eleven o'clock.

____/2 (points) Hour markers okay
____/2 (points) Time correct

[When scoring, give full credit for all 12 numbers. If the patient puts only ticks on the circle, prompt them once to put numbers next to those ticks for full credit. Do not repeat the time. When scoring the correct time, make sure that the minute hand points at the 10 and the hour hand points at the 11.]

3. **What were the five objects I asked you to remember?**

____/1 (point) Apple
____/1 (point) Pen
____/1 (point) Tie
____/1 (point) House
____/1 (point) Car

4. **I'm going to tell you a story. Please listen carefully because afterwards, I'm going to ask you about it.**

Jill was a very successful stockbroker. She made a lot of money on the stock market. She then met Jack, a devastatingly handsome man. She married him and had three children. They lived in Chicago. She then stopped work and stayed at home to bring up her children. When they were teenagers, she went back to work. She and Jack lived happily ever after.

What state did she live in?

____/1 (point) Illinois

[Do not repeat the story but do make sure the patient is paying attention the first time you read it to them. Do not prompt or give hints. The answer of "Chicago" as the state she lives in gets no credit but you may prompt them once by repeating the question when "Chicago" is given as the answer.]

____ Total Score [0-10 points]

SCORING	
8-10……..	Normal
6-7…….	Mild Cognitive Impairment
0-5…….	Dementia

_____ _____ _____
CLINICIAN'S SIGNATURE DATE TIME

Why is an Early Diagnosis Imperative?

- **Early diagnosis of dementia is important** because:
  - It can **identify any potentially reversible or treatable causes** and these can be corrected before permanent damage to brain is done
  - It can **facilitate planning** for patients and families
    - Includes naming POA, getting finances "in order," discussion of medical preferences
  - Can **address critical safety issues** such as driving and living alone before a crisis occurs
  - It can explain why the patient acts and thinks "different" and allow families to place blame on the disease process and not the patient themselves

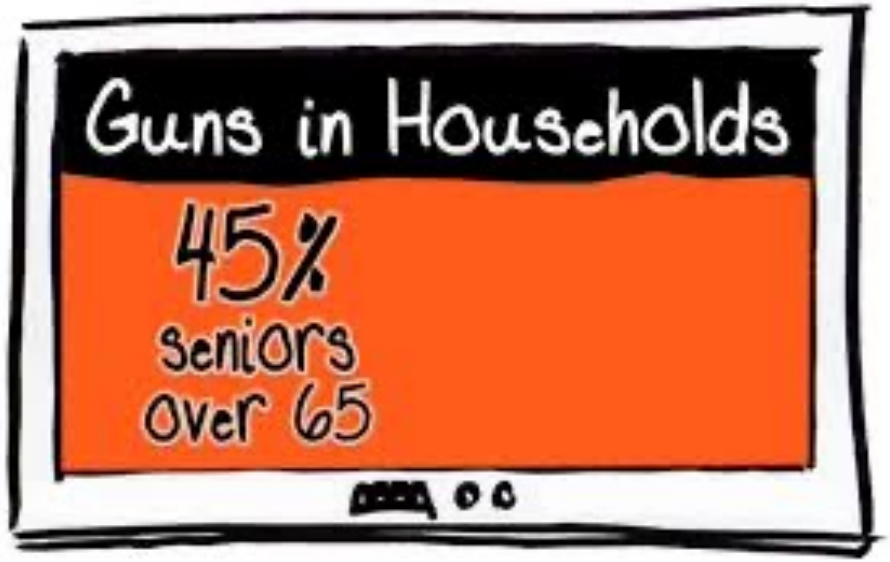
Safe Return Identification

Bracelet

Bracelet Back

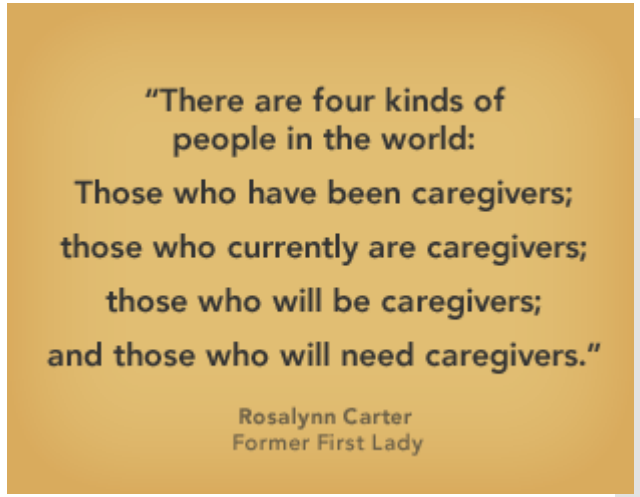
Necklace

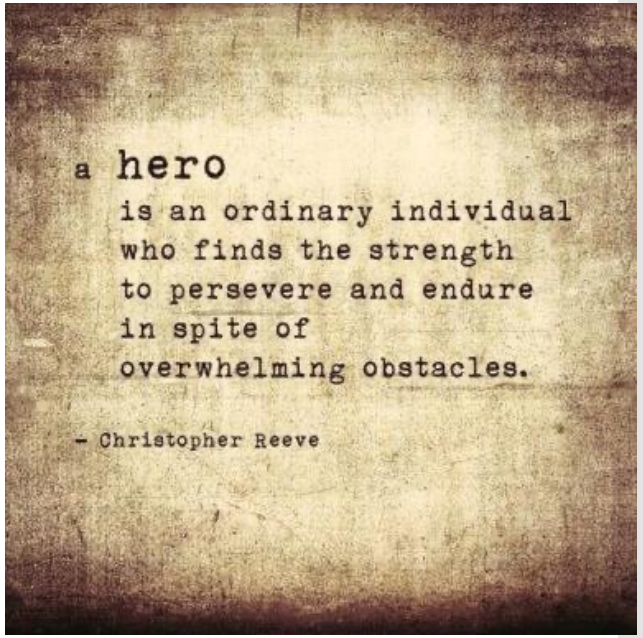
Guns and Dementia don't mix…



Caregiver Support

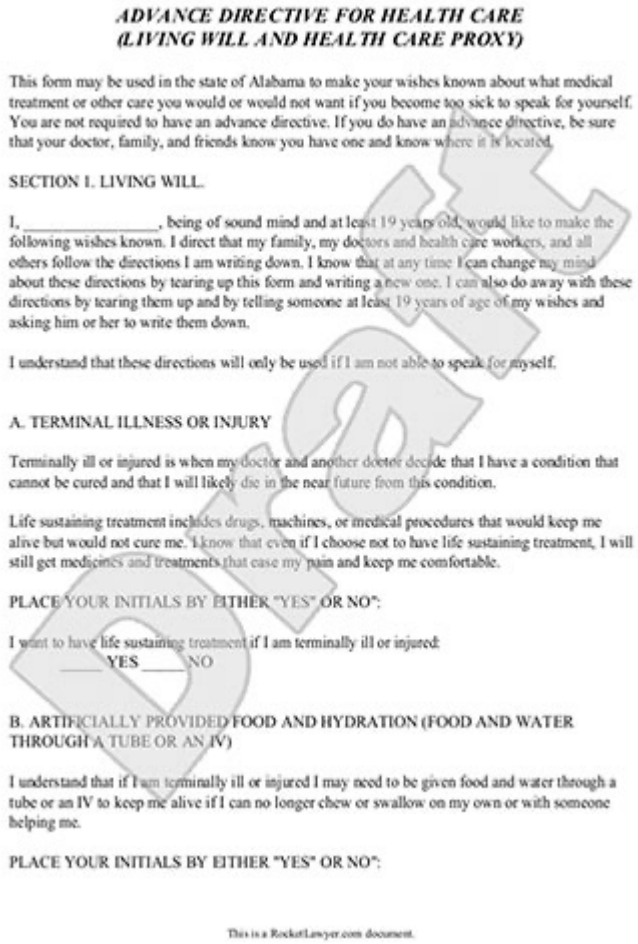
- **Assess for caregiver burden/burnout**
- **What resources may be available?**
  - Memory Home Care Solutions
  - Alzheimer's Association
  - Private duty nursing
  - Respite care
- **Explore feelings regarding when placement outside of the home may be needed**





Advance Directives

- **Advance Directive:**
  - Legal document containing preferences for health care decisions should one become unable to make decisions/incapacitated due to illness (dementia) or injury
- **Living will:**
  - One form of advance directive that discusses specific preferences such as feeding tube placement, ventilator usage, CPR preferences, etc
- **Durable power of attorney (DPOA):**
  - Individual named to make decisions should one become incapacitated



ADVANCE DIRECTIVE FOR HEALTH CARE
(LIVING WILL AND HEALTH CARE PROXY)

This form may be used in the state of Alabama to make your wishes known about what medical treatment or other care you would or would not want if you become too sick to speak for yourself. You are not required to have an advance directive. If you do have an advance directive, be sure that your doctor, family, and friends know you have one and know where it is located.

SECTION 1. LIVING WILL.

I, _____, being of sound mind and at least 19 years old, would like to make the following wishes known. I direct that my family, my doctors and health care workers, and all others follow the directions I am writing down. I know that at any time I can change my mind about these directions by tearing up this form and writing a new one. I can also do away with these directions by tearing them up and by telling someone at least 19 years of age of my wishes and asking him or her to write them down.

I understand that these directions will only be used if I am not able to speak for myself.

A. TERMINAL ILLNESS OR INJURY

Terminally ill or injured is when my doctor and another doctor decide that I have a condition that cannot be cured and that I will likely die in the near future from this condition.

Life sustaining treatment includes drugs, machines, or medical procedures that would keep me alive but would not cure me. I know that even if I choose not to have life sustaining treatment, I will still get medicines and treatments that ease my pain and keep me comfortable.

PLACE YOUR INITIALS BY EITHER "YES" OR NO":

I want to have life sustaining treatment if I am terminally ill or injured:
_____YES _____NO

B. ARTIFICIALLY PROVIDED FOOD AND HYDRATION (FOOD AND WATER THROUGH A TUBE OR AN IV)

I understand that if I am terminally ill or injured I may need to be given food and water through a tube or an IV to keep me alive if I can no longer chew or swallow on my own or with someone helping me.

PLACE YOUR INITIALS BY EITHER "YES" OR NO":

This is a RocketLawyer.com document.

Thanks!


331
LAST DAY OF
third grade!
LAST DAY OF
second grade!
LAST DAY OF
fourth grade!