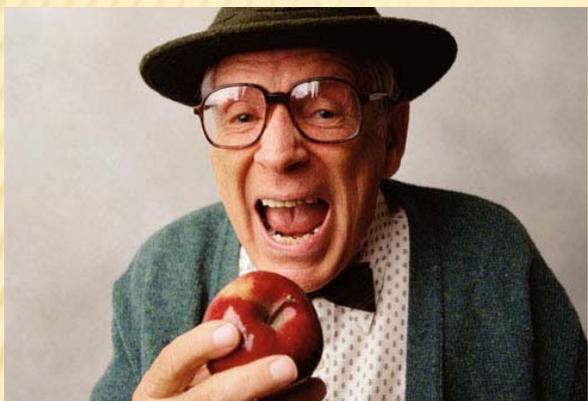
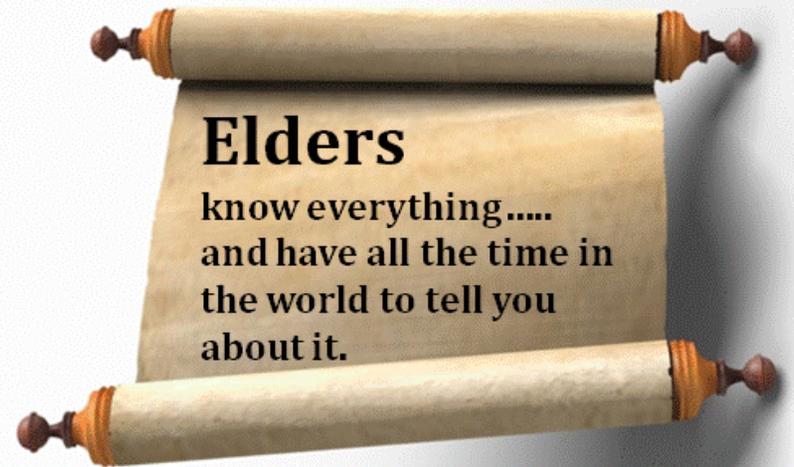


ALZHEIMER'S DISEASE: WHAT IS IT? WHO GETS IT? HOW DO YOU PREVENT IT?





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ALZHEIMER'S DISEASE:

WHAT IS IT? WHO GETS IT?

HOW DO YOU PREVENT IT?

**"DO EVERYTHING RIGHT"
STILL HAVE A SERIOUS HEALTH PROBLEM**

**"DO EVERYTHING WRONG"
LIVE TO BE 100**

PREVENTING ALZHEIMER'S DISEASE

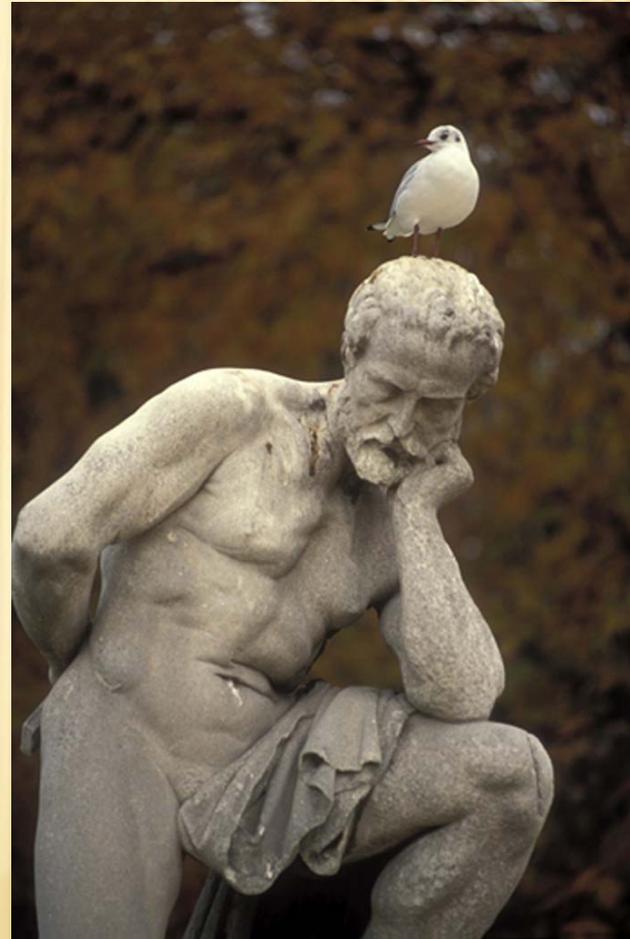
MOST STUDIES:

- ✗ Show suggestions
 - + Overall quality of evidence is low
- ✗ MANY ARE INCONCLUSIVE



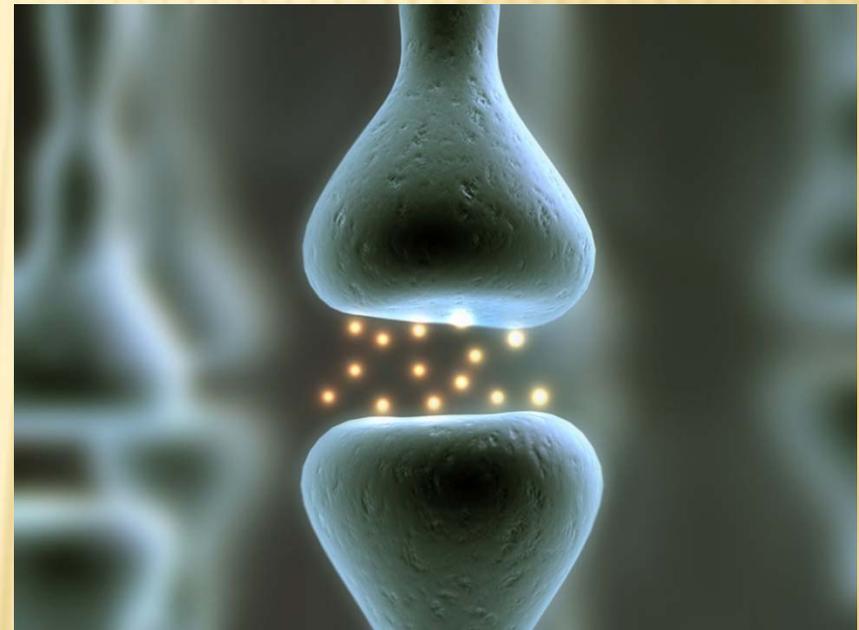
AN AGING MIND

- + Normal aging changes of the mind
 - × Not everyone will develop Alzheimer's disease
 - × Decreased number of neurons
 - × Decreased brain size
 - × Diminished brain weight



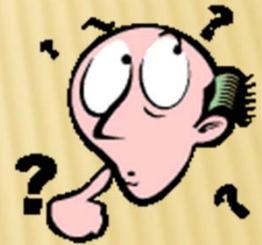
NEURON LOSS

- ✘ Mainly in Brain & Spinal Cord
 - + Most pronounced in Cerebral Cortex
- ✘ Neuronal dendrites atrophy with aging
 - + Impairment of synapses
 - + Changes in transmission of the chemical neurotransmitters
 - ✘ Dopamine
 - ✘ Serotonin
 - ✘ Acetylcholine
 - ✘ Glutamate



CONFUSION: MENTALITY/COGNITION

- ✗ The quickness of thinking normally slows as an individual ages
- ✗ But thinking processes are generally not affected
- ✗ Dementia is not a normal part of the aging process
 - + it is an organic disorder involving progressive loss of the capacity to think and remember



MEMORY LOSS

- ✗ Aging-Not a cause!
- ✗ Alzheimer's Disease
- ✗ Neurodegenerative illness
- ✗ Head trauma
- ✗ Seizures
- ✗ Stroke or Transient Ischemia Attacks
- ✗ Electroconvulsive Therapy
- ✗ Alcoholism
- ✗ Benzodiazepines & Barbituates



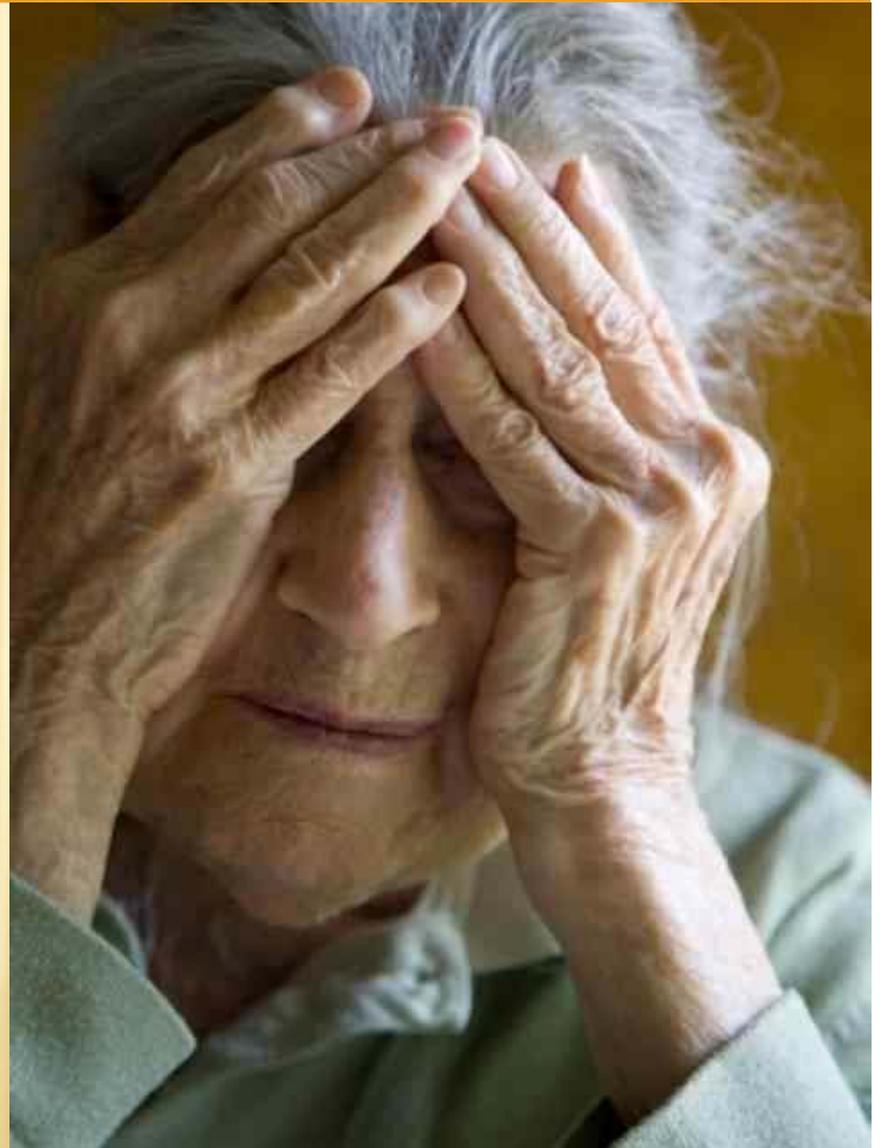
CAUSES OF CONFUSION IN ELDERERS

- + Depression
- + Urinary Tract Infection
- + Upper Respiratory Infection
- + Alcohol abuse
- + Medications
- + Nutritional deficiencies (vitamin B₁₂)
- + Dehydration
- + Thyroid disorders
- + Other causes include tumors, infections, or blood clots in the brain.



DEMENTIA CAUSES

- ✘ Alzheimer's disease
- ✘ Vascular disease
- ✘ Lewy Body disease
- ✘ Pick's disease
- ✘ Parkinson's disease
- ✘ Down's Syndrome
- ✘ Other neurological diseases



CAN ALZHEIMER'S BE PREVENTED?

- ✘ NO clear cut answers yet — partially due to the need for more large-scale studies — but promising research is under way
- ✘ The Alzheimer's Association continues to fund studies exploring the influence of mental fitness, physical fitness, diet & environment.
- ✘ As the number of people affected by Alzheimer's rises, the effort to find prevention strategies continues to gain momentum

NORMAL AGING CHANGES

- Vision
- Hearing
- Elimination
- Fat Distribution

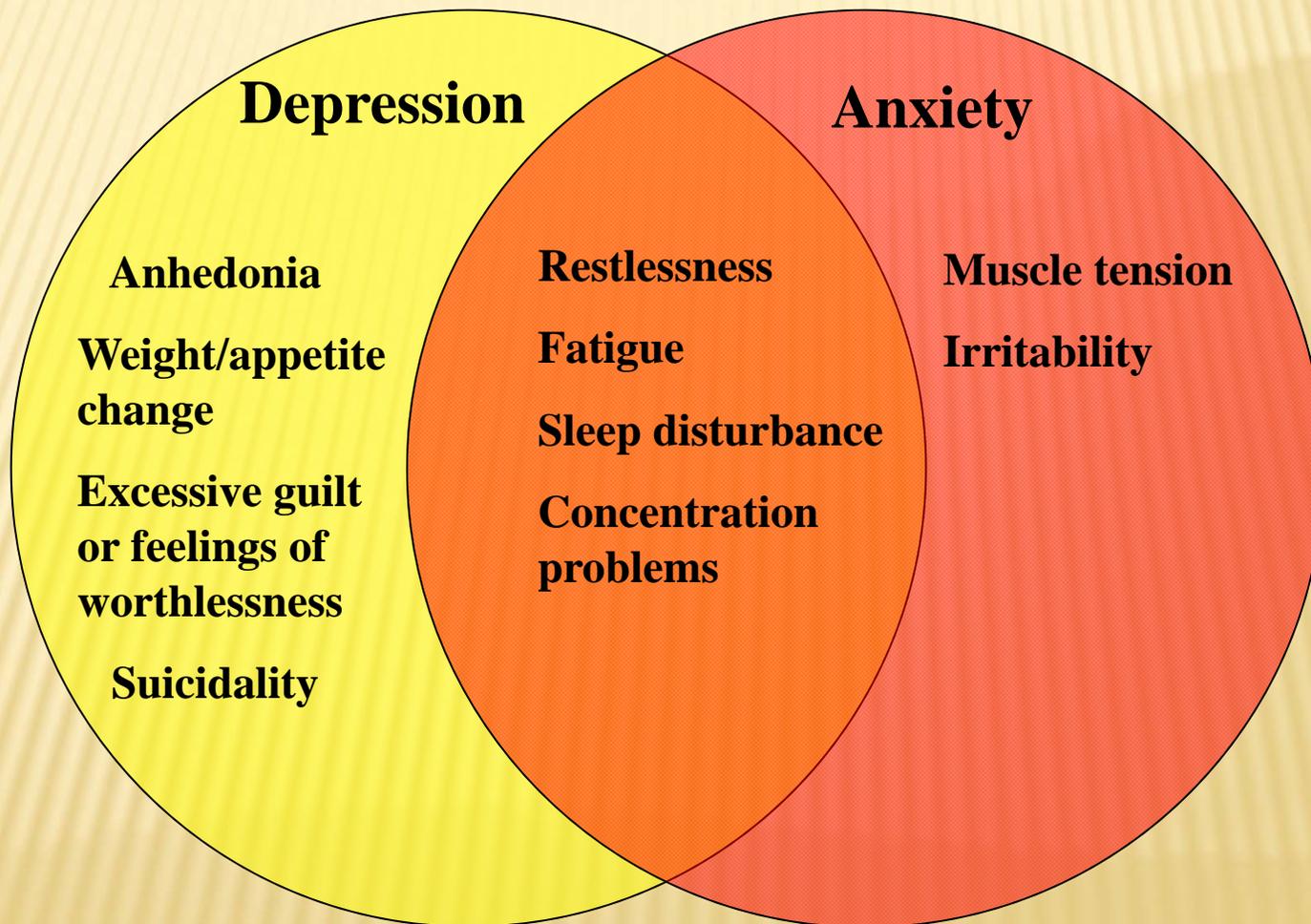


DEPRESSION

- ✘ Depression is not a normal part of growing older
- ✘ It is common in adults age 65 and over
- ✘ Can be confused with dementia



SYMPTOM OVERLAP BETWEEN DEPRESSION AND ANXIETY



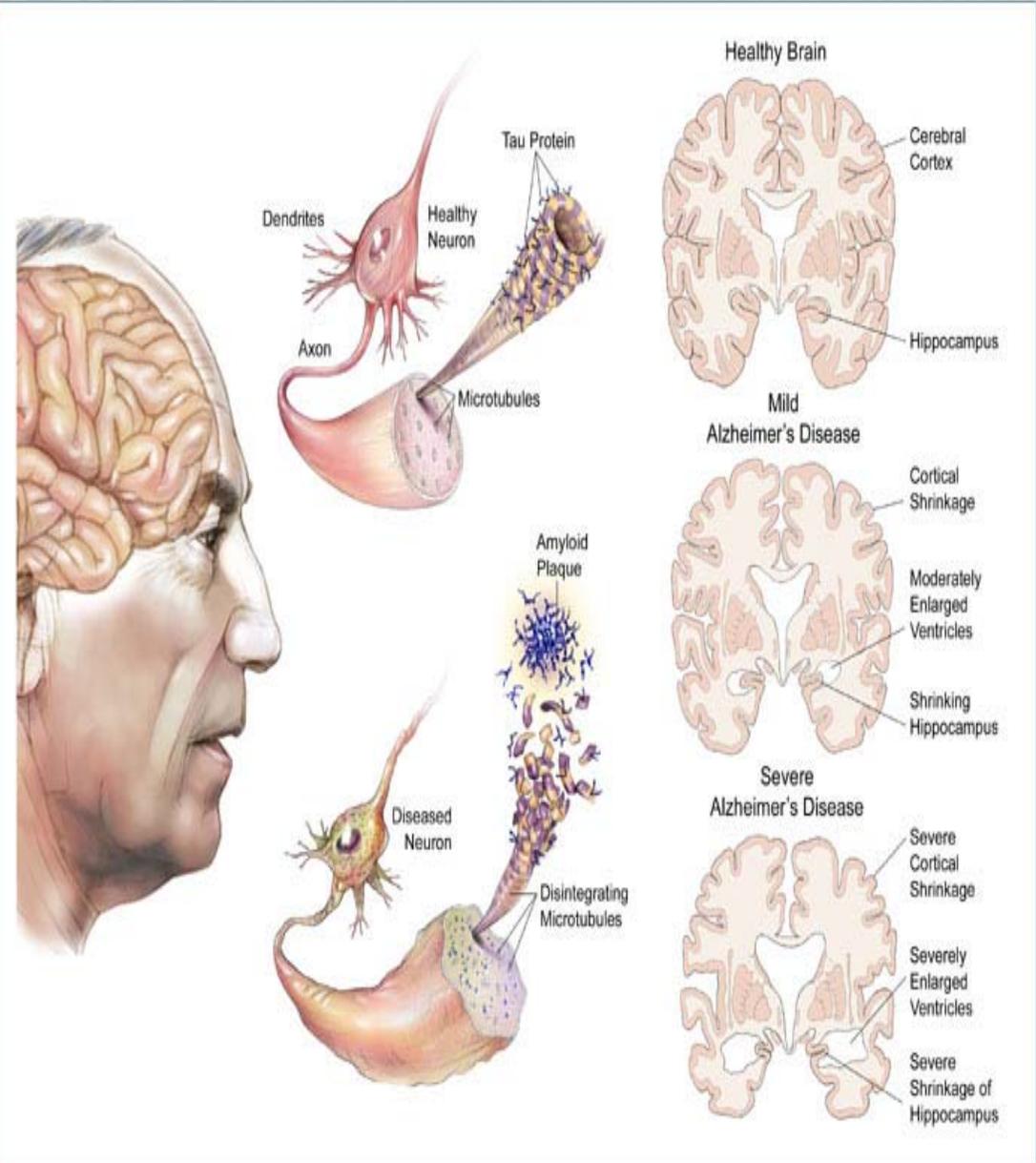
DEMENTIA CAUSES

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- ✘ Parkinson's disease
- ✘ Down's Syndrome
- ✘ Other neurological diseases



ALZHEIMER'S DISEASE

- ✗ Most common cause of dementia
- ✗ Progressive, neurodegenerative disease
- ✗ Characteristic brain anomalies
 - + Amyloid plaques
 - + Tangled bundles of fibers
 - ✗ Neurofibrillary tangles composed of misplaced proteins



ALZHEIMER'S DISEASE-WHO GETS IT?

- ✘ Age is a significant risk factor
 - + 2-5% of individuals with AD are in 40-50 years
- ✘ 10% of individuals >65 years
- ✘ As you age-incidence of getting AD increases
- ✘ NOT a normal part of aging!



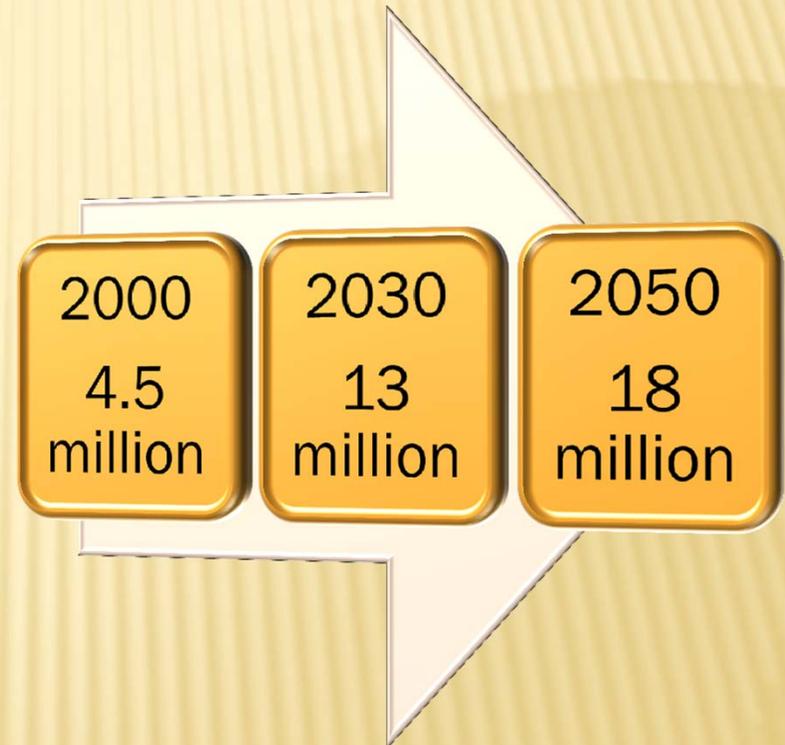
ALZHEIMER'S DISEASE ECONOMIC IMPACT

- ✘ \$100 billion in direct and indirect costs annually
 - + AD costs businesses \$24.5 billion in health care costs
- ✘ Annual costs per person is \$27,000
- ✘ Average lifetime cost per person is \$174,000



ALZHEIMER'S DISEASE

- ✘ 4.5 million in 2000
- ✘ Expected to increase to 18 million by 2050
- ✘ Affects 10% of people over 65 years of age
- ✘ Affects 50% of people over 85 years of age



GENETIC LINK

- ✘ Early onset familial forms of AD (types 1, 3, & 4) are believed to be inherited in autosomal dominant pattern
 - + One copy of altered gene in each cell is sufficient to cause the disorder
 - + In most cases, the affected person inherits the altered gene from one affected parent



GENETIC LINK

- ✗ Exact mechanism for late onset (type 2)
 - + Inheritance pattern is unknown
 - + Postulated: people who inherit one copy of the APO e4 allele have an increased chance of developing the disease
 - + Those who inherit 2 copies are at even greater risk
 - ✗ Not all people with AD have the e4 allele
 - ✗ Not all people who have the e4 allele will develop the disease

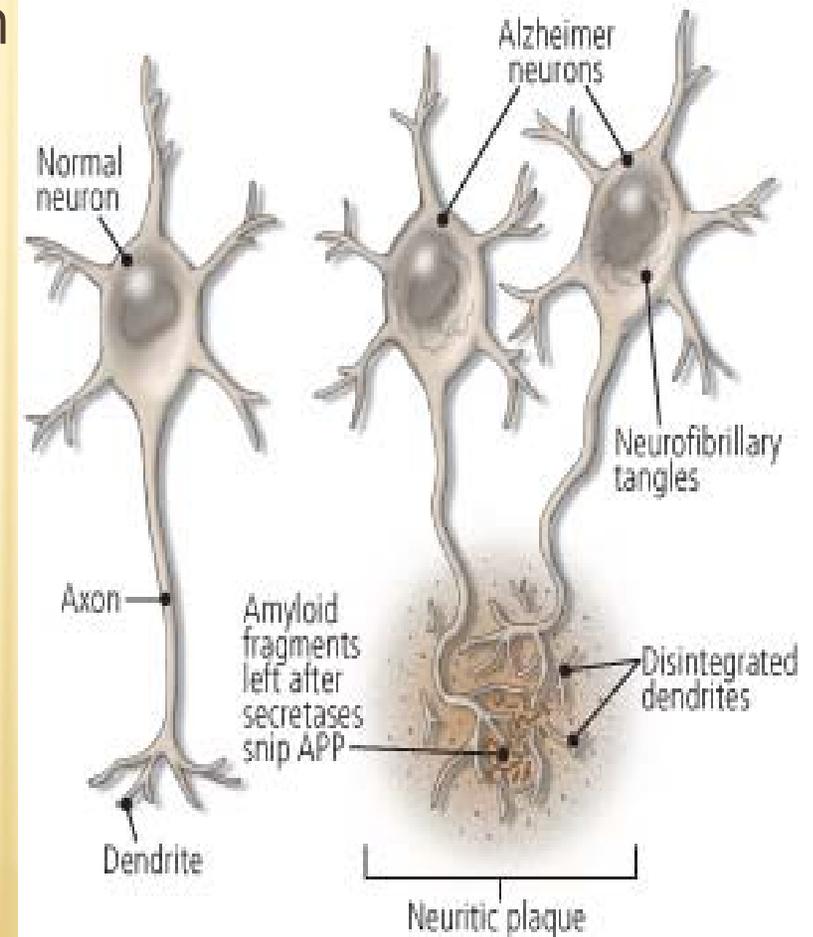
RISK FACTORS

- ✘ Hypertension
- ✘ Coronary artery disease
- ✘ Diabetes
- ✘ Elevated cholesterol
- ✘ History of depression
- ✘ Closed head injury
- ✘ Lower educational level
- ✘ Down's syndrome



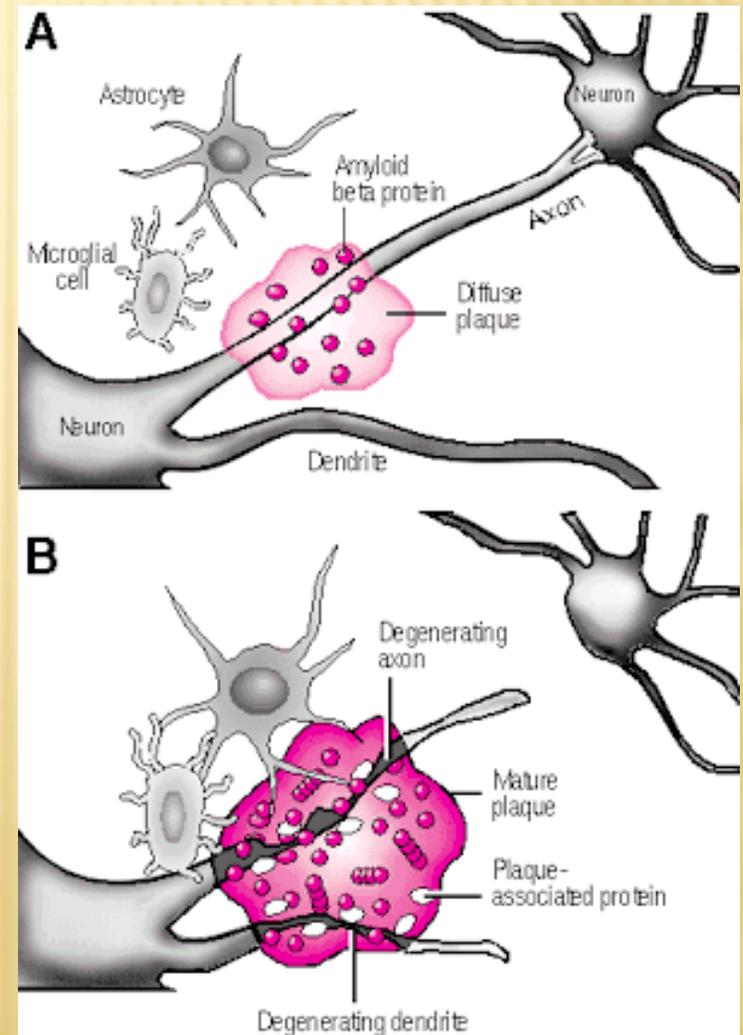
PATHOPHYSIOLOGY

- ✘ Senile plaques develop between neurons
- ✘ Neurofibrillary tangles develop within neurons
- ✘ Speculated that inflammation around plaques destroy neighboring neurons
- ✘ Chemicals
 - + Acetylcholine
 - ✘ Too rapidly destroyed
 - + Glutamate
 - ✘ Made too quickly & poor quality
 - ✘ Too much abnormal glutamate



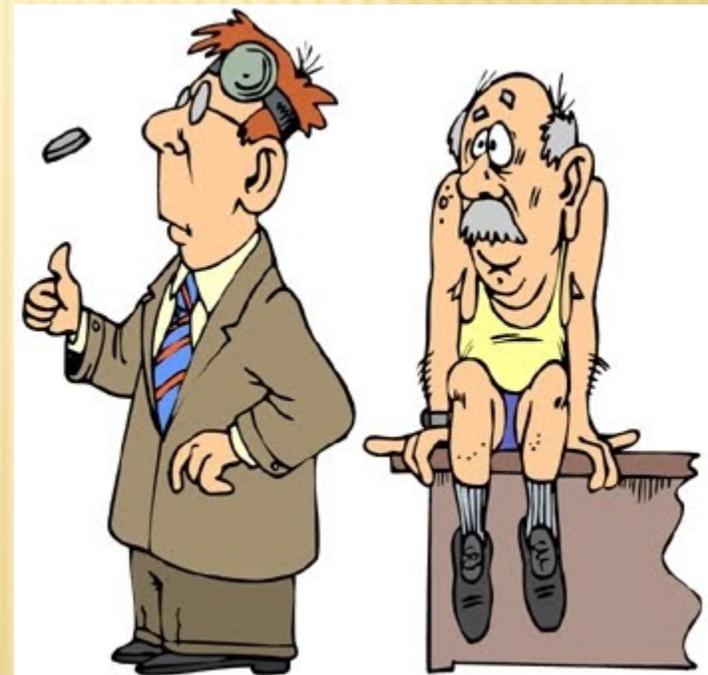
MULTIPLE DEMENTIAS

- ✘ A significant number of older adults have brain pathology such as plaques, tangles, & vascular infarcts
- ✘ Those with dementia most often have multiple brain pathologies i.e. vascular infarcts + tangles suggestive of AD



DIAGNOSIS

- ✗ Full medical work-up
- ✗ Interview family & close associates
 - + Emotional state
 - + Day to day routine
 - + Alcohol/drug abuse
 - + Trauma to head
- ✗ Psychiatric testing
 - + Rule out depression
 - + Other mental disorders



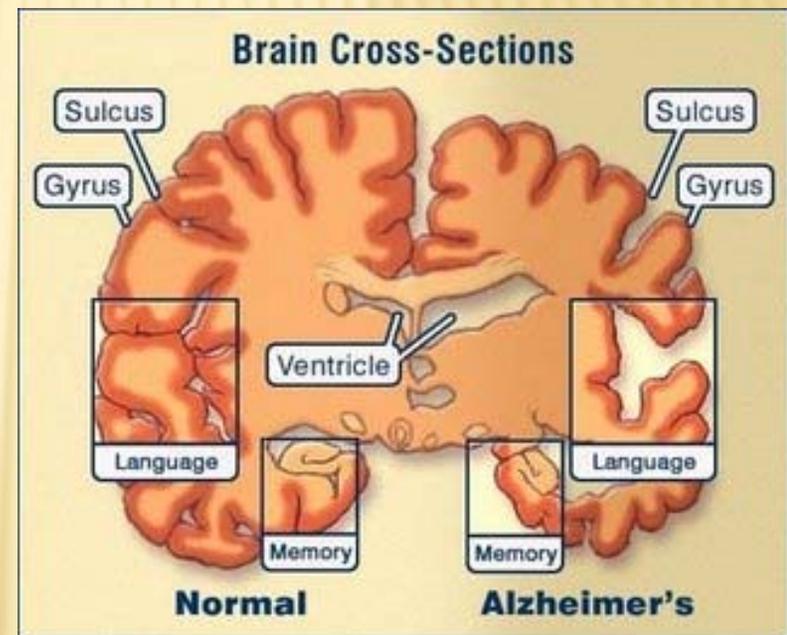
LABORATORY TESTS

| <u>test</u> | <u>rationale</u> |
|------------------------------|--|
| × CBC | anemia or infection |
| × Vit B 12 | anemia |
| × Homocystine | anemia |
| × C reactive protein | inflammatory process |
| × Thyroid functioning | hypothyroidism |
| × Liver functioning | metabolic disorder |
| × Renal functioning | uremia/metabolic disorder |
| × Electrolytes/serum calcium | hypo/hyponatremia; hypo/hyperkalemia; hypo/hypercalcemia |
| × Glucose | hypoglycemia |
| × Lipid panel factor | vascular dementia risk |
| × Baseline EKG | cardiac anomalies |
| × RPR | Syphilis |
| × HIV | Autoimmune disease (AIDS) |



DIAGNOSTIC TESTING

- ✗ CT
 - + Changes in later AD
 - + Reduction in size of brain
- ✗ MRI
 - + r/o other causes such as CVA, tumors
 - + May see structural changes associated with AD
- ✗ PET or SPECT scanning
 - + Difference in brain activity between normal brain & AD
 - + Can help differentiate AD from other forms of dementia
- ✗ Other
 - + Neuropsychiatric testing
 - + Central Spinal Fluid analysis



DIFFERENTIAL DIAGNOSIS

- ✗ Delirium
- ✗ Infectious disease
 - + Chronic Syphilis
 - + Chronic HIV
 - + Chronic fungal meningitis
- ✗ SE of medications
 - + Benzodiazepines, barbituates, anticholinergics, opioid analgesics, antihypertensives, antidepressants, anticonvulsants, antiarrhythmics, digitalis



ALZHEIMER'S DEMENTIA

- ✘ Memory impairment with
 - + Aphasia (language disturbance)
 - + Apraxia (impaired ability to carry out motor functioning)
 - + Agnosia (failure to recognize familiar objects)
 - + Disturbance in organizational skills (planning, organizing, sequencing, abstract thinking)



MINI MENTAL STATUS EXAMINATION TEST

- ✗ Drs Folstein & Folstein
- ✗ Patented
- ✗ Screening tool
- ✗ Dependent upon educational level
- ✗ Dependent upon dexterity
 - + (to some degree)
- ✗ Determines level of cognitive functioning
- ✗ Scored 0-30
 - + 0-10 severe cognitive impairment
 - + 11-20 moderate cognitive impairment
 - + 21-30 mild cognitive impairment
- ✗ Not diagnostic!

The mini-mental state examination

Orientation
Year, month, day, date, season _____ /3
Country, county, town, hospital, word (filled) _____ /3

Registration
Examiner names three objects (for example, apple, pen, and table)
Patient asked to repeat objects, one point for each _____ /3

Attention
Subtract 7 from 100 then repeat from result, stop after
five subtractions. (Answers: 93, 86, 79, 72, 65)
Alternatively if patient errs on subtraction get them to
spell world backwards: O I R O W
Score best performance on either task _____ /5

Recall
Ask for the names of the objects learned earlier _____ /3

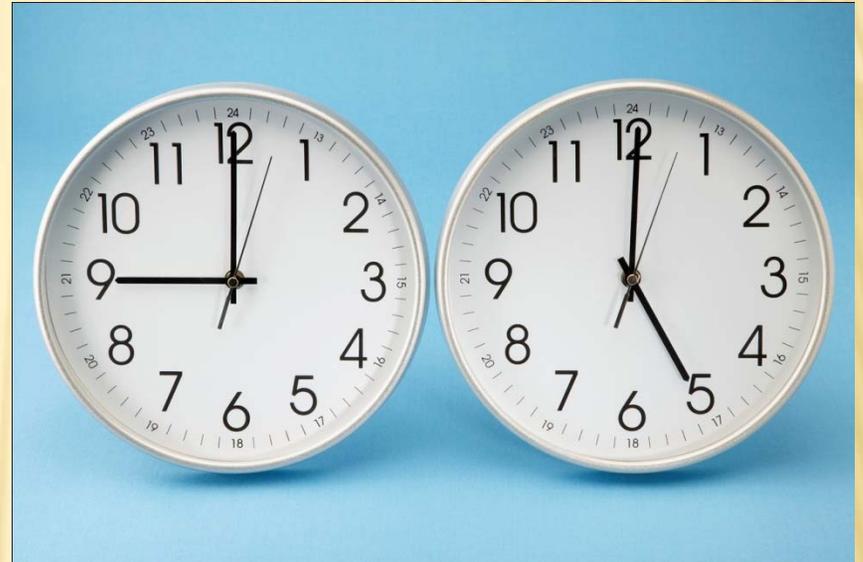
Language
Name a pencil and a watch _____ /2
Repeat: "No ifs, ands or buts." _____ /1
Give a three stage command. Score one for each
stage (for example, "Take this piece of paper in your right
hand, fold it in half and place it on the table.") _____ /3
Ask patient to read and obey a written command
on a piece of paper stating: "Close your eyes." _____ /1
Ask patient to write a sentence. Score correct if
it has a subject and a verb. _____ /1

Copying
Ask patient to copy intersecting pentagons.
Score as correct if they overlap and each has five sides. _____ /1

Total score: _____ /30

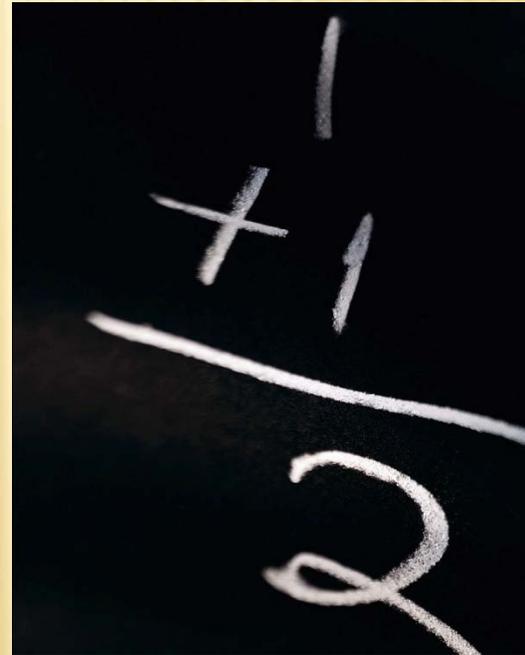
CLOCK DRAWING TEST

- ✘ Screens for cognitive impairment & dementia
- ✘ Measures spatial dysfunction & neglect
- ✘ Originally used to assess visual-constructive abilities
- ✘ Has high correlation with MMSE
- ✘ Easy to administer
- ✘ Non threatening to patient



CLOCK DRAWING TEST

- ✘ Normal score is 4 or 5
 - + 1 point for clock circle
 - + 1 point for all numbers in correct order
 - + 1 point for numbers in proper special order
 - + 1 point for 2 hands on clock
 - + 1 point for correct time



MINI-COG TEST

- ✗ 3 item recall
- ✗ Clock drawing test
- ✗ ASSISTS IN differentiating the type of dementia



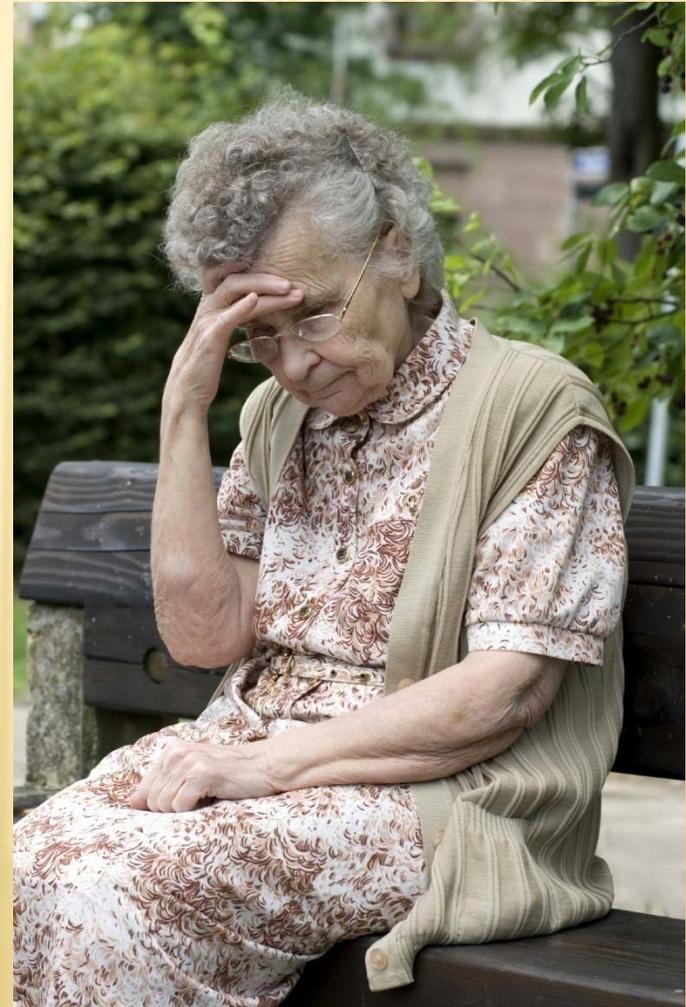
- ✗ If can remember all 3 items
 - + Not Alzheimer's disease
- ✗ If can remember 1-2 items
 - + Evaluate results of clock drawing test to determine
- ✗ If cannot remember any of the 3 items
 - + Probably Alzheimer's disease

RECOGNIZING ALZHEIMER'S DISEASE

- ✗ Memory loss
- ✗ Difficulty performing familiar tasks
- ✗ Problems with language
- ✗ Problems understanding instructions
- ✗ Impaired Judgment
- ✗ Disorientation
- ✗ Misplacing things
- ✗ Abstract thinking issues
- ✗ Changes in mood & behavior
- ✗ Altered personality
- ✗ Loss of initiative
- ✗ Loss of ability to interpret bodily sensations

EARLY ALZHEIMER'S DISEASE

- ✘ Memory loss or other cognitive deficit
- ✘ Person realizes he/she is forgetting
- ✘ Initially individual can compensate
- ✘ Able to function independently



MILD BEHAVIORS (EARLY STAGE)

- ✘ Poor short term memory
- ✘ Confusion
- ✘ Forgets names & words, might make up words or quit talking to avoid mistakes
- ✘ Repeats questions, phrases or stories, in same conversation
- ✘ Forgets own history, recent personal events, & current events

COMMUNICATION (EARLY STAGE)

- ✘ May converse normally
- ✘ Begins to have difficulty expressing self
- ✘ Even if unable to speak well-is able to respond to what you tell him/her-to your emotion & to humor
- ✘ Increasing difficulty comprehending reading material

PERSONALITY (EARLY STAGE)

- ✘ Apathetic, withdrawn, avoids people
- ✘ Anxious, irritable, agitated
- ✘ Insensitive to other's feelings
- ✘ Easily angered
 - + Frustrates easily, tires easily, feels rushed, surprises easily
- ✘ Idiosyncratic behaviors start to develop
 - + Hoards, checks repeatedly, or searches for objects of little values
 - + Forgets to eat or eats constantly



MIDDLE STAGE

- ✘ Memory loss or other cognitive deficits noticeable
- ✘ Mental abilities
 - + Physical problems develop so that the person becomes more dependent



BEHAVIORS (MIDDLE STAGE)

- ✘ Significant cognitive decline & memory problems
 - + Increasing difficulty in sorting out names & faces of family and friends
 - ✘ Is able to distinguish familiar from unfamiliar
 - + Still knows own name
 - ✘ No longer remembers addresses or phone numbers
 - + Can no longer think logically or clearly
 - ✘ Cannot organize own speaking or follow logic of others
 - ✘ Unable to follow written or oral instructions
 - ✘ Unable to sequence steps
 - ✘ Arithmetic & money problems escalate
 - + Disorientated
 - ✘ Season, day of week, time of day

BEHAVIORS (MIDDLE STAGE)

- ✘ Communication skills worsen
 - + Problems with speaking, understanding, reading, & writing
 - + Repeats stories, words, & gestures
 - + Repetitive questions
 - + Problems finishing sentences
- ✘ Apathy, withdrawn
- ✘ Anxious, agitated
- ✘ Suspicious/paranoid
 - + Accuse spouse of having an affair
 - + Frequently accuse family of stealing
- ✘ Delusions/hallucinations
 - + May hear, see, smell, or taste things that are not present

LATE STAGE

- ✘ Mental abilities decline
- ✘ Personality changes
- ✘ Physical problems begin
- ✘ Complete deterioration of personality
- ✘ Loss of control of bodily functions
- ✘ Cognition
 - + Appears uncomfortable
 - ✘ Cries when touched or moved
 - + Can no longer smile
 - + Either unable to speak or speaks incoherently
 - + Cannot write or comprehend reading material



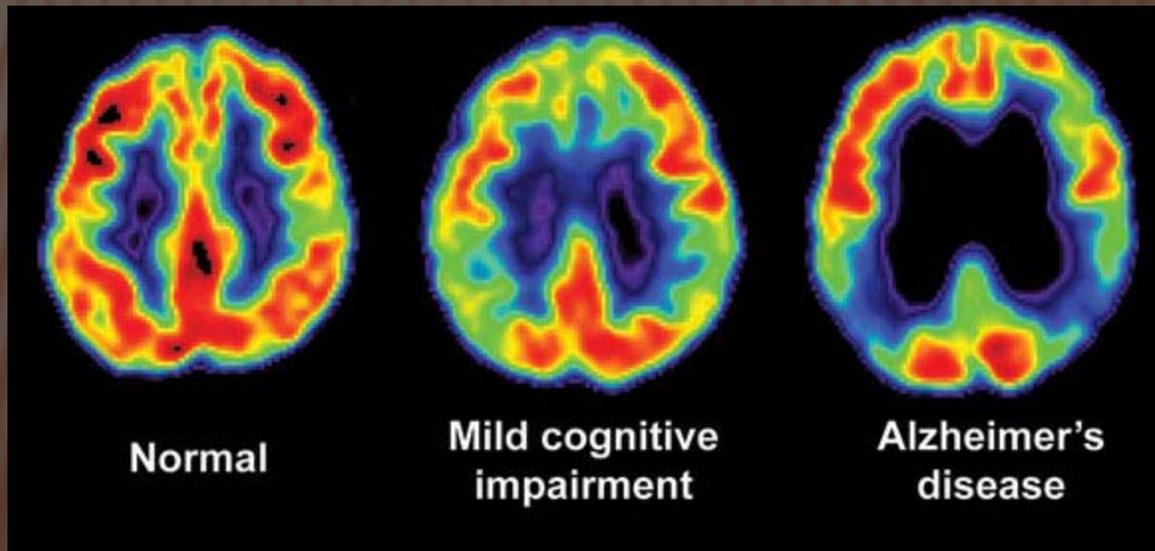
PHYSICAL CHANGES (LATE STAGE)

- ✘ Voluntary control of bodily functions decline
 - + Urinary and/or bowel incontinence
 - + Unable to walk, stand, sit up, or hold head without assistance
 - + Cannot swallow easily
 - ✘ Pockets food or medicines in mouths
 - ✘ Chokes easily
 - + Cannot move voluntarily

TERMINAL STAGE

- ✘ Unable to swallow
 - + Increased incidence of choking/aspiration
- ✘ Becomes contracted in fetal position
 - + Increased incidence of pressure ulcers
- ✘ Incontinent of urine and feces
 - + Increased incidence of urinary tract infections
 - + Increased incidence of constipation/fecal impactions
- ✘ Decreased respiratory movements
 - + Increases incidence of respiratory infections & pneumonia
- ✘ Immune system fails
 - + Unable to fight off infections
- ✘ Is considered THE cause of death

PREVENTION



AGE

- ✘ Although Alzheimer's is not a normal part of growing older, the greatest risk factor for the disease is increasing age
- ✘ After age 65, the risk of Alzheimer's doubles every five years
- ✘ After age 85, the risk reaches nearly 50 percent



FAMILY HISTORY

- ✘ Research has shown that those who have a parent, brother, sister or child with Alzheimer's are more likely to develop the disease
 - + Early onset Alzheimer's disease strong genetic predisposition
- ✘ The risk increases if more than one family member has the illness
- ✘ When diseases tend to run in families, either heredity (genetics) or environmental factors or both may play a role



SMOKING & DRINKING

- ✘ Smokers have a higher risk of losing brain function as they age—that much is clear from the scientific evidence
- ✘ The studies are less certain when it comes to predicting former smokers' Alzheimer's risk or the risk for those who drink excessive amounts of alcohol



HEART-HEAD CONNECTION

- ✘ The risk of developing Alzheimer's or vascular dementia appears to increase as a result of many conditions that damage the heart or blood vessels
 - + These include high blood pressure, heart disease, stroke, diabetes and high cholesterol



SIX PILLARS OF A BRAIN-HEALTHY LIFESTYLE

- ✘ Regular exercise
- ✘ Healthy diet
- ✘ Mental stimulation
- ✘ Quality sleep
- ✘ Stress management
- ✘ An active social life



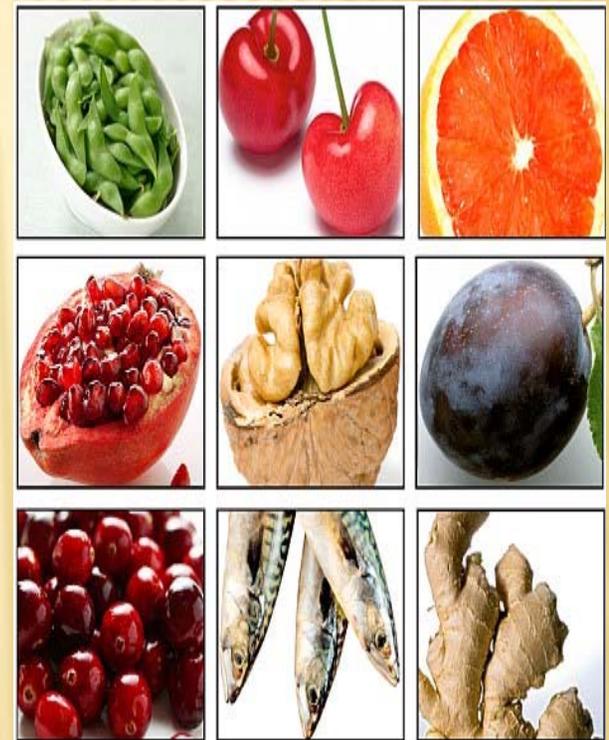
PREVENTION

- ✘ Consume a low fat diet
- ✘ Eat cold-water fish (tuna, salmon, mackerel) rich in Omega 3 fatty acids at least 2-3 times a week
- ✘ Reduce intake of linoleic acid found in margarine, butter, & dairy products
- ✘ Increase antioxidants like carotenoids, vitamin E, & vitamin C by eating plenty of darkly colored fruits & vegetables
- ✘ Maintain a normal blood pressure
- ✘ Stay mentally & socially active
- ✘ Consider taking anti-inflammatory drugs such as NSAIDs



BRAIN FOOD

- ✘ Some of the strongest current evidence links brain health to heart health
- ✘ Your brain is nourished by one of the body's richest networks of blood vessels
- ✘ Every heartbeat pumps about 20 to 25 percent of the blood to the head, where brain cells use at least 20 percent of the food and oxygen the blood carries



have vitamins and nutrients to prevent disease & preserve cognition

BRAIN FOODS

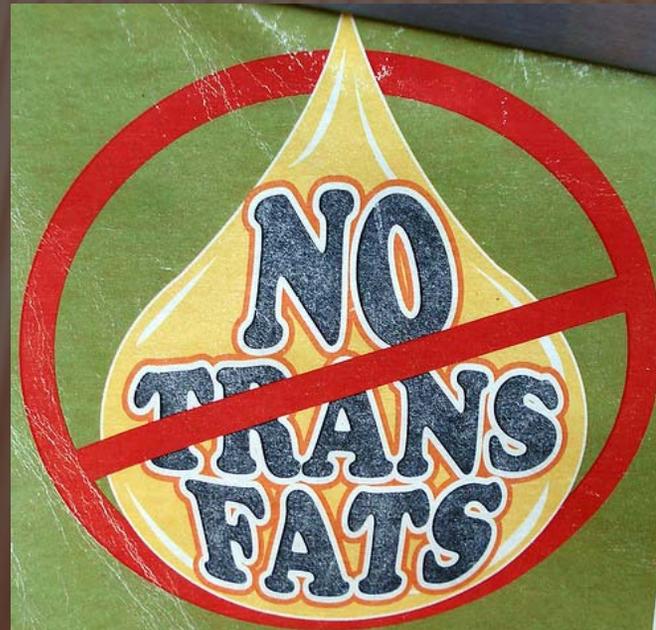
BRAIN FOOD

- ✘ Heart-healthy eating patterns
- ✘ Mediterranean diet
 - + relatively little red meat
 - + emphasize whole grains, fruits and vegetables, fish and shellfish, and nuts
 - + olive oil and other healthy fat



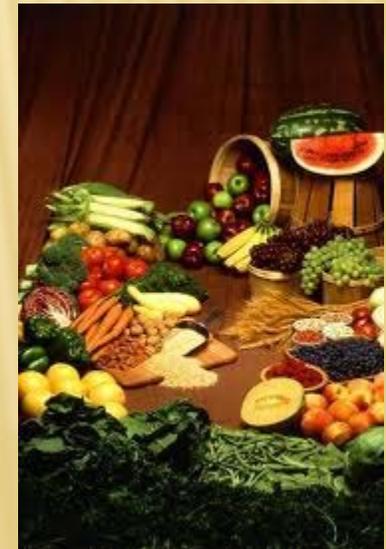
Increased incidence of AD

TRANS FAT & DIET HIGH IN SATURATED FAT



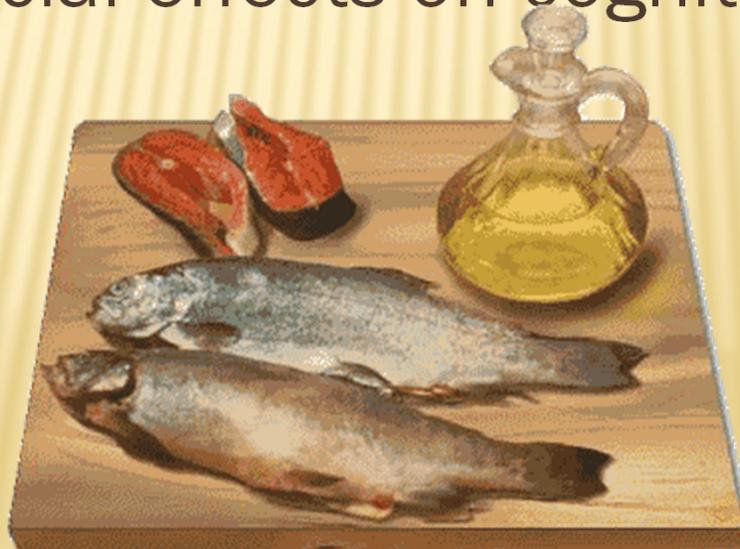
VITAMIN B & FOLIC ACID

- ✘ Vitamin B helps regulate homocysteine
 - + elevated levels of homocysteine have been associated with AD
- ✘ Slow rate of brain atrophy associated with AD
- ✘ Foods Vitamin B:
 - + Fish, poultry, meat, eggs, & milk
- ✘ Recommendations:
 - + B12-1mg daily
 - ✘ some studies say 400ug daily
 - + Folic Acid-5mg daily
 - + B6-25 mg daily



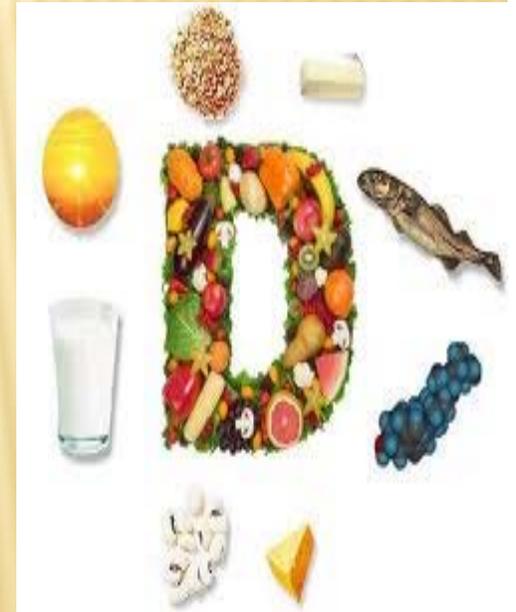
OMEGA 3 FATTY ACIDS

- ✘ an essential fatty acid: docosahexanoic acid
- ✘ reduced oxidized lipids
- ✘ prevented formation of protein deposits in the brain
- ✘ have beneficial effects on cognition



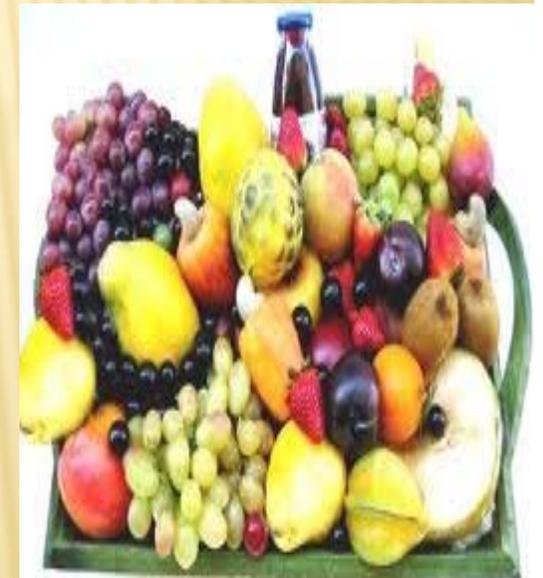
VITAMIN D

- ✘ Fat soluble vitamin
 - + Fish, oysters, fortified cereals, & dairy products
- ✘ offers neuro-protective effects
- ✘ offers anti-inflammatory effects
- ✘ Vitamin D receptors & Vitamin D activating enzymes are abundant in the brain
 - + indicated the brain uses high levels of Vitamin D
- ✘ Researchers: inconclusive & further studies are ongoing
- ✘ Recommended dosage of Vitamin D
 - + 400-600 IU daily



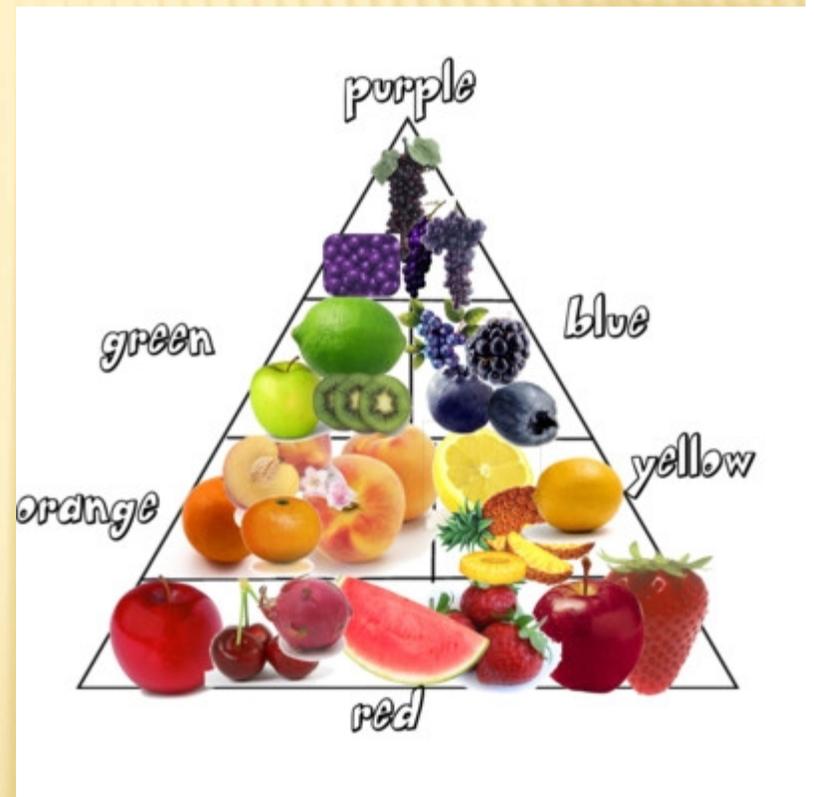
VITAMIN C

- ✘ an essential & powerful anti-oxidant that helps build the immune system
 - + oranges, papaya, grapefruits, strawberries, & kiwifruit
- ✘ Mainly studied in conjunction with vitamin E
 - + 2005 study: 400 IU Vit E & 500 mg Vit C reduced frequency of Alzheimer's disease
 - + 2004 study: 400-1000 IU Vit E & 500-1500 mg Vit C are most effective at preventing Alzheimer's disease
- ✘ Vit E found in wheat germ oil & nuts
 - + almonds, hazelnuts, & peanuts



ANTIOXIDANTS

- ✗ berries, dark green and orange vegetables, nuts, and beans
 - + blueberries, strawberries, and cranberries
- ✗ Green tea is also high in antioxidants, and although it hasn't been proven specifically to prevent Alzheimer's
 - + it has been shown that drinking five cups a day can reduce one's risk of heart disease



OTHER NUTRIENTS/VITAMINS

- ✘ Vitamin E
 - + Inconclusive
- ✘ Vitamin C
 - + Inconclusive
- ✘ Memory specific nutrients
 - + coenzyme Q10
 - + alpha lipoic acid
 - + ginkgo biloba
 - + phosphatidylserine
 - + DHA (an omega-3 oil)
 - + acetyl-L-carnitine
- ✘ IF MODERATE TO SEVERE MEMORY LOSS
 - + huperzine-A
 - + vinpocetine



IDEAL PREVENTION DIET

- ✘ 20% "good" fats
 - + extra virgin olive oil, avocado, & flax seed oil
- ✘ 40% lean proteins
 - + fish, chicken, turkey, & soy on a daily basis.
- ✘ 40% complex carbohydrates
 - + a rainbow of fresh vegetables, whole grains, legumes, & fresh fruits
- ✘ Superfoods for the brain - as much as you want!
 - + blueberries, spinach, & seaweed, have fabulous antioxidant properties preventing causes of Alzheimer's.



BRIAN FOOD #1: DARK CHOCOLATE

- ✘ flavonoids in cocoa increase blood flow to the brain and may help to protect against conditions with reduced cerebral blood flow like dementia and stroke
- ✘ to get the most benefits, buy chocolates with low sugar but high cocoa content



BRAIN FOOD #2: RED WINE

- ✘ modest wine drinking for conferring protective effect on cognitive function and decreasing the risk of Alzheimer's disease & dementia
 - + this is due to the high levels of **flavonoids** and possibly other polyphenolics such as **resevratrol** that are presence in red wine
- ✘ double-edged sword that should be used with caution
 - + excessive alcohol intake can lead to dementia as well as a host of other serious health conditions such as cancer by triggering chronic inflammation
- ✘ so if you do drink, limit yourself to no more than one glass a day



BRAIN FOOD #3: CLAM

- ✘ low vitamin B12 levels had more than four times the usual risk of Alzheimer's
- ✘ when vitamin B12 levels are low, blood levels of homocysteine will raise, significantly increasing the risk for dementia, heart attack and other ailments
- ✘ CLAMS
 - + packs a whopping 98.9mcg of vitamin B12 in just 100g serving, or 1648% of the RDA
- ✘ Alternative sources:
 - + oysters, mussels, fish, shrimps, scallops, liver of most animals and beef
 - + Lower levels of vitamin B12 can also be found in seaweeds, yeasts and fermented foods like miso and tempeh



BRAIN FOOD #4: ASPARAGUS



- ✘ folate deficient were 3.5 times more likely to develop dementia
- ✘ one cup of these green spears will fulfill nearly 66% of daily folate needs
- ✘ Alternative sources of folate:
 - + citrus fruits, beans (be sure to sprout them to maximize their nutrients and enhance absorption by the body), broccoli, cauliflower, beets, lentils and leafy green vegetables such as spinach and turnip greens.

BRAIN FOOD #5: WILD SALMON



- ✘ omega-3 fatty acid docosahexaenoic acid in the blood than those who took less fish in their diets
- ✘ SALMON contains omega-3 essential fatty acids as well as other important nutrients such as vitamin D and B12 that can help to prevent neurodegenerative disorders
- ✘ wild caught salmons, frozen or canned, generally contain more omega-3, less omega-6 and fewer toxins
 - + Aim to eat at least two to three servings of oily fish each week to supply your body with inflammation-fighting compounds
 - + If you're concerned about environmental toxins such as PCB in seafood, you can also consider taking high purity fish oil supplement
- ✘ Alternative sources:
 - + walnuts, flaxseeds and dark green leafy vegetables are rich in plant-based omega-3 precursor, alpha-linolenic acid (ALA)

BRAIN FOOD #6: WALNUT

- ✘ moderate, but not high, diet of walnuts helped improve motor and cognitive skills
- ✘ a combination of polyphenols, omega-3 fats and other bioactive substances in walnut is responsible for this beneficial effect
- ✘ mixed nuts, dried fruits and seeds – like hazelnuts, pecans, pistachios, raisins, dried cranberries and blueberries – to get a spectrum of health-boosting nutrients each day



BRAIN FOOD #7: CHERRY

- ✘ antioxidant compounds, **anthocyanins**, which give cherries their bright red color possess anti-inflammatory properties that could work like pain medications such as Vioxx and Celebrex, but without the nasty side effects
- ✘ cherries do not irritate the stomach the way manufactured drugs do and they also contain compounds that keep platelets in the blood from clumping together



BRAIN FOOD #8: TURMERIC

- ✘ curcumin in turmeric is an effective substance that removes plaques from the brain
- ✘ Turmeric, a top anti-inflammatory food used since ancient times, is commonly used as a spice in curry dishes
- ✘ countries with populations that eat curry regularly, such as India, have been observed to report lower rates of dementia.
- ✘ add this inexpensive, versatile spice into meals at least once a week to cool inflammation and ward off dementia
- ✘ alternative foods: Ginger is a close cousin of turmeric with similar anti-inflammatory properties



BRAIN FOOD #9: APPLE



- ✘ Quercetin, found in abundance in the skins of apples, has been found to protect the brain from damages associated with Alzheimer's disease and other neurodegenerative disorders
- ✘ Other studies have also suggested that eating apples may also help reduce the risk of cancer
- ✘ ***Alternative Foods for the Brain:***
 - + Capers, a common ingredient in Mediterranean cuisine
 - + lovage
 - + red onion
 - + berries like cherries, raspberries and cranberries also contain some but lower amounts of this flavonoid

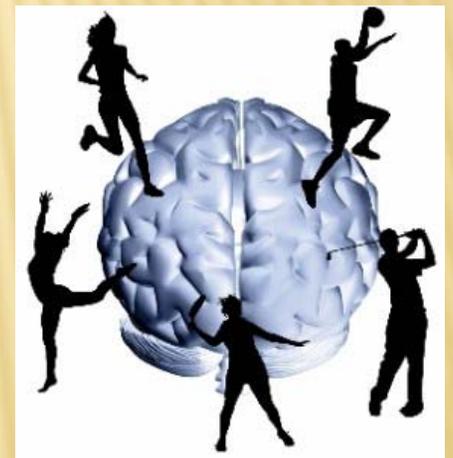
HEAD TRAUMA

- ✘ Strong link between future risk of Alzheimer's and serious head trauma, especially when injury involves loss of consciousness
- ✘ PREVENTION:
 - + Wear a seat belt
 - + Use a helmet when participating in sports
 - + "Fall-proof" the home



EXERCISE

- ✘ Regular physical exercise may be a beneficial strategy to lower the risk of Alzheimer's and vascular dementia
- ✘ Some evidence suggests exercise may directly benefit brain cells by increasing blood and oxygen flow
- ✘ Even stronger evidence suggests exercise may protect brain health through its proven benefits to the cardiovascular system



EXERCISE

- ✘ Increased physical activity such as walking, may help maintain or improve cognitive function in normal adults
- ✘ A meta-analysis of several random controlled trial studies concluded that data was insufficient to state aerobic activity improves or maintains cognitive function
- ✘ A small, higher quality randomized trial of physical activity in persons with confirmed memory problems showed modest benefit in reducing cognitive decline (this is preliminary data)
 - + more studies are ongoing



EXERCISE

- ✘ Aim for at least 30 minutes of aerobic exercise five times per week-get Heart-Rate up
 - + walking, swimming
 - + gardening, cleaning, or doing laundry count as exercise.
- ✘ Build muscle to pump up your brain
 - + weight & resistance training
 - + combining aerobics & strength training
- ✘ Include balance and coordination exercises
 - + head injuries from falls are an increasing risk
 - + balance and coordination exercises can help you stay agile and avoid spills
 - + try yoga, Tai Chi
 - + exercises using balance discs or balance balls

EXERCISING

- ✘ **Stick with it for a month**
 - + 28 days for a new routine to become habit
 - + then keeping up your exercise routine will feel natural
 - + write realistic goals on a workout calendar and post it on the fridge
 - + build in frequent rewards
 - + eventually the feel-good endorphins from regular exercise will help you forget the remote...and head out the door.

SAFETY-PROTECT THE HEAD

- + studies suggest that head trauma at any point in life significantly increases the risk of Alzheimer's disease
- + this includes repeated hits in sports activities such as football, soccer, and boxing
- + one-time injuries from a bicycle, skating, or motorcycle accident
- + protect the brain by wearing properly fitting sports helmets, buckling seatbelts, & trip-proofing the environment



EDUCATION-LEARN SOMETHING NEW

- ✘ learn something you didn't know before
 - + study a foreign language
 - + learn sign language
 - + practice a musical instrument
 - + read the newspaper or a good book
 - + take up a new hobby
- ✘ the greater the novelty and challenge, the larger the deposit in the brain reserves



MEMORIZE

- ✘ start with something short-progressing to something a little more involved
 - + 50 U.S. state capitals
 - + the presidents
 - + poems
 - + create rhymes & patterns to strengthen memory connections



ENJOY STRATEGY GAMES, PUZZLES, & RIDDLES

- ✘ provide a great mental workout and build your capacity to form and retain cognitive associations
 - + brain teasers
 - + strategy games
 - + crossword puzzle
 - + play board games or cards
 - + work word & number games
 - ✘ Scrabble
 - ✘ Sudoku

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
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| | 9 | 2 | 3 | 1 | 7 | | | |
| 8 | | | | 4 | | 1 | | |
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| | 1 | 5 | 8 | | | 2 | | |
| | | 9 | | 8 | | | | 5 |
| | | | 9 | 2 | 1 | 8 | 7 | |
| 1 | 4 | | | 3 | 5 | | | |

PRACTICE THE 5 W'S

- ✘ Observe and report
- ✘ Keep a “Who, What, Where, When, and Why” list of your daily experiences
- ✘ Capturing visual details keeps the neurons firing



FOLLOW THE ROAD LESS TRAVELED

- ✘ take a new route
- ✘ eat with the non-dominant hand
- ✘ rearrange the computer file system
- ✘ vary from habits regularly to create new brain pathways



QUALITY SLEEP

- ✘ brain needs regular, restful sleep in order to function at optimum capacity
- ✘ sleep deprivation
 - + leaves a person cranky & tired
 - + impairs the ability to think, problem-solve, & process, store, and recall information
- ✘ deep, dreamy sleep is critical for memory formation and retention



SLEEP

- ✘ Establish a regular sleep schedule
- ✘ Be smart about napping
- ✘ Set the mood-sleep hygiene
 - + Reserve the bed for 2 things: sleep & sex
 - + NO television, computers, reading, eating
- ✘ Create a relaxing bedtime ritual
- ✘ Quiet the inner chatter

STRESS

- ✘ Stress that is chronic or severe
 - + takes a heavy toll on the brain
 - + leading to shrinkage in a key memory area of the brain known as the hippocampus
 - ✘ hampering nerve cell growth
 - ✘ increasing risk of Alzheimer's disease & dementia
 - + simple daily tools can minimize its harmful effects



KEEP STRESS IN CHECK

✘ Breathe!

- + stress alters a person's breathing rate and impacts oxygen levels in the brain
- + quiet stress response with deep, abdominal breathing
- + restorative breathing is powerful, simple, and free!

✘ Schedule daily relaxation activities

- + walk in the park, playtime with pets-dog, yoga, or a soothing bath.

✘ Nourish inner peace

- + strong mind-body connection
- + spirituality with better brain health
- + Regular meditation, prayer, reflection, and religious practice

SOCIALIZATION

- ✘ Maintaining strong social connections & keeping mentally active
- ✘ It may be due to direct mechanisms through which social and mental stimulation protect the brain
 - + People who eventually develop Alzheimer's may feel less inclined to engage in socially & intellectually stimulating activities years before current diagnostic methods can detect symptoms



we don't thrive in isolation, and neither do our brains

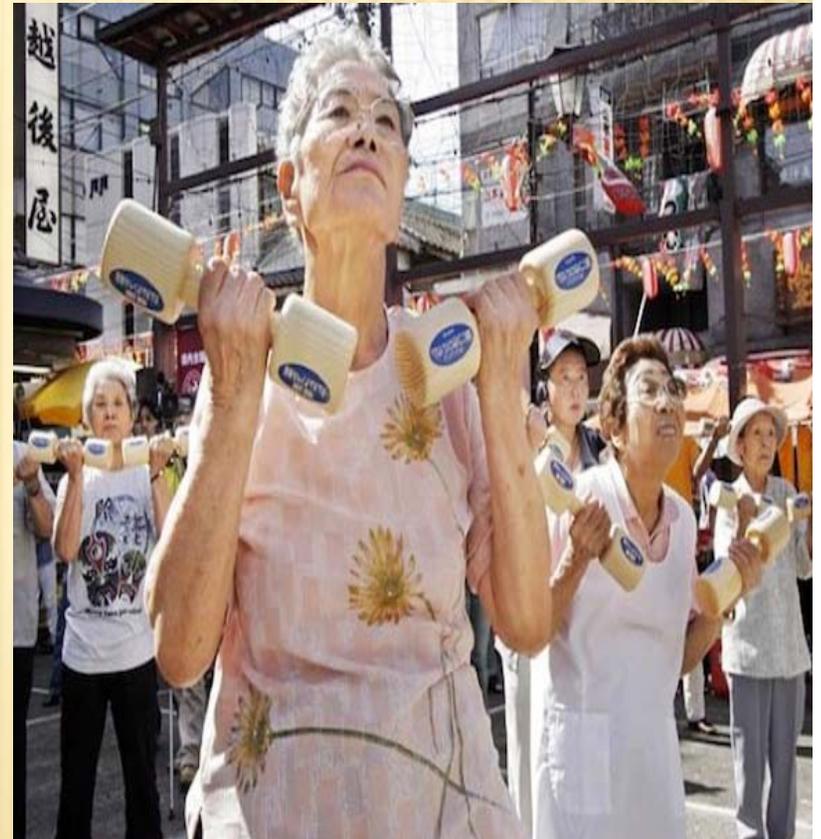
HUMAN BEINGS ARE HIGHLY SOCIAL CREATURES

KEEP SUPPORT SYSTEM STRONG & DEVELOP NEW RELATIONSHIPS:

- ✘ Volunteer
- ✘ Join a club or social group
- ✘ Visit the local community center or senior center
- ✘ Take group classes (such as at the gym or a community college)
- ✘ Reach out over the phone or email
- ✘ Connect to others via social networks such as Face book
- ✘ Get to know the neighbors
- ✘ Make a weekly date with friends
- ✘ Get out
 - + go to the movies, the park, museums

SLOWING & MANAGING COGNITIVE DECLINE

- ✘ Routine, Routine, Routine
- ✘ Controlling environmental factors
- ✘ Memory therapy
- ✘ Exercise
 - + Repetitive
 - + Non-demanding
- ✘ Activities
 - + Meeting the person's abilities
 - + Not learning new info
 - + Non-demanding
- ✘ Anti-stress measures
- ✘ Music therapy



ROUTINE

- ✘ Establish a routine
 - + Grooming activities for the same time & same place each day
 - + Respect privacy
 - ✘ Close doors & blinds
 - + Encourage independence
 - ✘ Promotes sense of independence & accomplishment
 - + Keep in mind the person's abilities
 - + Provide encouragement
 - + Tell the person what to do, Consider showing an example/demonstration

ENVIRONMENT

- ✘ Safety
 - + Place medications out of reach
 - + Place sharp objects out of reach
 - + Place dangerous objects out of reach
 - ✘ (including car keys)
- ✘ Accessible
 - + Fall hazards: Loose rugs, clutter, electrical cords
 - + Small pets
- ✘ Home-like environment
 - + Familiar objects
 - + Pictures 10-20 years ago so they recognize people
- ✘ Do not change things often

ENVIRONMENT

✘ Colors

+ Yellowing of lenses

- ✘ poor ability to see blues, greens, & purple
- ✘ better ability to see yellows, oranges, reds, & black

✘ Depth perception & Patterns

- + Busy patterns make things appear to be moving

✘ Auditory & Visual Stimulation

- + Overstimulation can cause excitement & agitation



MEMORY THERAPY

- ✘ Trigger memories to jump start the brain to working
- ✘ Verbal & Non-verbal triggers
- ✘ Tell a story & Share memories
- ✘ Use old pictures
- ✘ Use old movies or television series
- ✘ Use miscellaneous items
 - + Baby booties, dried flowers, lace, wedding gowns, newspapers

ART & MUSIC THERAPY

- ✘ Brain works by numbers & patterns
- ✘ Helping paint & draw slows memory decline
- ✘ Listening to music
 - + (familiar to individual)
- ✘ Slows cognitive decline & can improve socialization
 - + (reduces isolation)



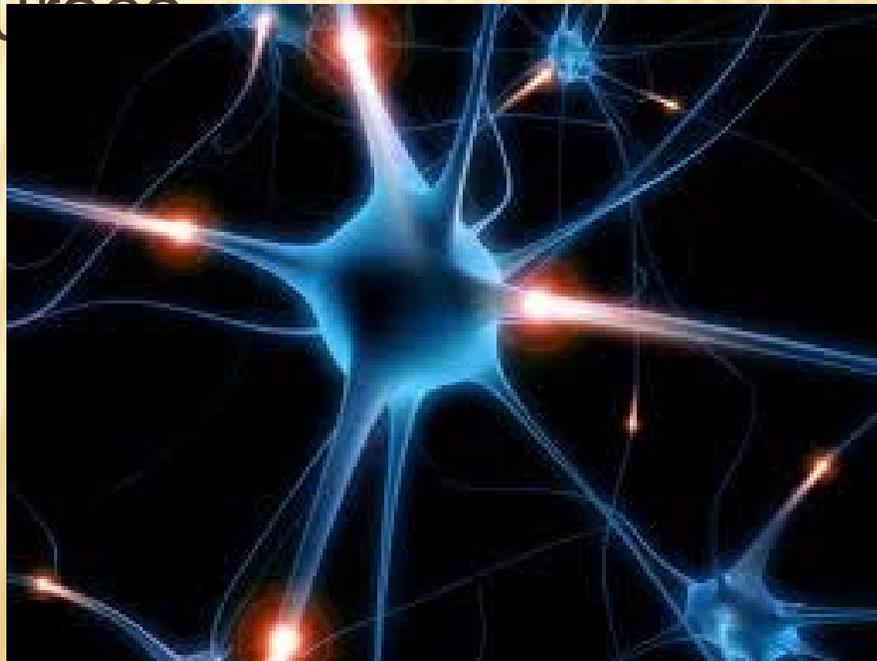
COGNITIVE ENGAGEMENT

- ✘ Memory, reasoning, & speed
- ✘ 5-6 weeks with a subsequent booster period showed modest benefits on cognitive functioning
- ✘ Larger study did not show benefit



CREATING NEW NEURON PATHWAYS

- ✘ Learning new information
 - + Non-demanding activities
- ✘ Slows and/or preventive measures
- ✘ College courses



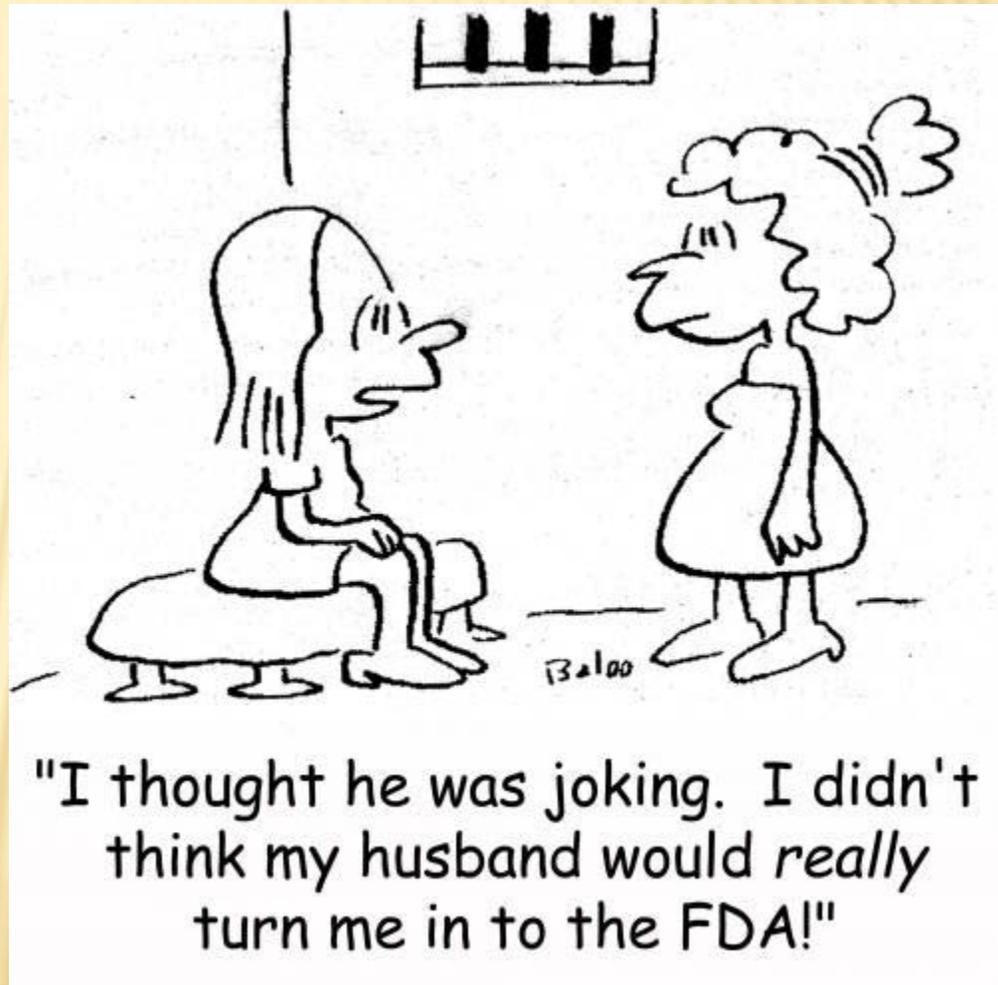


Aimed at slowing the disease process & treating behavioral problems

PHARMACOLOGICAL INTERVENTIONS

DISCLOSURE

- ✘ Some medications are used 'OFF-LABEL'
 - + For side effects
 - + Commonly used in practice
 - + Not 'INDICATED' for treating Alzheimer's disease, dementia, or psychosis in elders



TREATMENT CURRENTLY APPROVED

- ✘ Cholinesterase inhibitors
 - + Donepezil (Aricept)
 - + Rivastigmine (Exelon)
 - + Galantamine (Razadyne ER)
- ✘ N-Methyl-D-Aspartate Receptor Antagonist
 - + Memantine (Namenda)
- ✘ Other symptomatic treatments
 - + Antidepressants-SSRI
- ✘ Supportive Rx



CHOLINESTERASE INHIBITORS

- ✘ Slows the destruction of acetylcholine
- ✘ MMSE improves by 1 point
- ✘ Cognitive benefits were sustained over 1 to 2 years
- ✘ Average person untreated-dropped their MMSE score by 2 to 4 points annually



CHOLINESTERASE INHIBITORS

- ✘ Donezapril HCl (Aricept) 5 mg daily for 1 month then 10 mg daily
 - *New Dose* 23mg daily
- ✘ Ravistigmine (Exelon) start @ 1.5 Bid, increase every 2 weeks-3mg Bid, 4.5 mg Bid, 6 mg Bid (max dose-12 mg/day);
 - *Patch 4.6mg/Day for 1 month then 9.5mg/Day
- ✘ Galantamine (Razadyne) 4mg Bid; increase every 4 weeks (max dose-12 mg Bid)

N-METHYL D-ASPARTATE RECEPTOR ANTAGONIST (NMDA)

- ✘ Approved to treat moderate to severe AD
- ✘ Blocks NMDA receptors which help regulate glutamate
- ✘ Glutamate is essential for information retrieval & memory
- ✘ Over-stimulation of NMDA receptors has a negative impact in neurons
- ✘ Memantine HCL (Namenda)
 - + Started @ 5mg daily X 1 week, increased to 5 mg twice daily for 1 week, then 5 mg in morning & 10 mg in evening then to 10 mg twice a day
 - ✘ may stop @ 5 mg twice a day for renal impairment

COMBINATION THERAPY

- ✘ Combining cholinesterase inhibitors & NMDA receptor antagonist
- ✘ Gold standard of therapy
- ✘ Improves cognition
- ✘ Delays nursing home placement
- ✘ Decreases behavioral problems

NEWEST DRUG AVAILABLE

- ✘ Dextromethorphan HBr(Nuedexta)
- ✘ Indicated for Pseudobulbar dementia
 - + Emotional lability
 - + Inappropriate emotions or outbursts of emotions
 - + Must have a diagnosis of brain disorder
 - + Requires PreApproval (PA) from Medicare Part D programs
- ✘ 20/10mg tabs-once daily for 7 days then twice a day
- ✘ Adverse effects: QT prolongation
 - + monitor EKG after initial dose

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