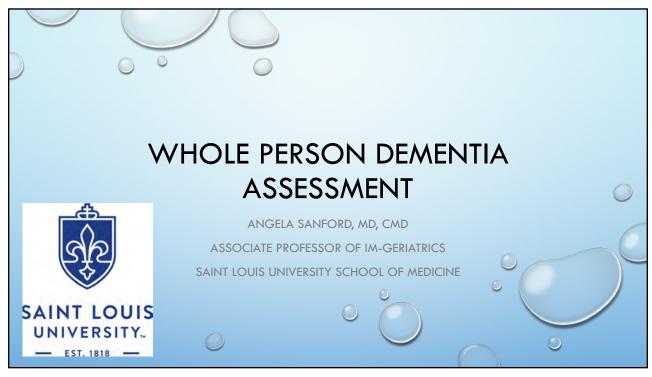


PRE/POST QUESTIONS WITH ANSWERS 3. WHAT IS THE ANNUAL RATE OF PROGRESSION OF MILD COGNITIVE 1. TRUE OR FALSE: THERE ARE NORMAL IMPAIRMENT TO DEMENTIA? **MEMORY CHANGES WITH AGE** 30% 50% 2. WHAT IS THE MOST COMMON TYPE OF 75% **DEMENTIA IN THE USA?** 90% D. A. PARKINSON'S DEMENTIA 4. WHICH OF THE FOLLOWING IS TRUE REGARDING PARKINSON'S DISEASE WITH DEMENTIA? B. LEWY BODY DEMENTIA 50% OF THOSE WITH PARKINSON'S DEVELOP DEMENTIA IN PARKINSON'S DEMENTIA, THE MOTOR SYMPTOMS PRECEDE THE MEMORY IMPAIRMENT BY ${\sf >}1$ YEAR C. ALZHEIMER'S DEMENTIA D. VASCULAR DEMENTIA IN PARKINSON'S DEMENTIA, THE MEMORY IMPAIRMENT PRECEDES OR \bigcirc ACCOMPANIES THE MOTOR SYMPTOMS HALLUCINATIONS ARE RARE WITH PARKINSON'S DEMENTIA





FINANCIAL DISCLOSURE

• DR. SANFORD HAS NO FINANCIAL DISCLOSURES

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OBJECTIVES

- GAIN AWARENESS OF THE IMPACT DEMENTIA HAS ON HE 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.

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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 $\frac{1}{2}$ OF PATIENTS WITH DEMENTIA SUFFER FROM DEPRESSION
- NEARLY 1/2 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



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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

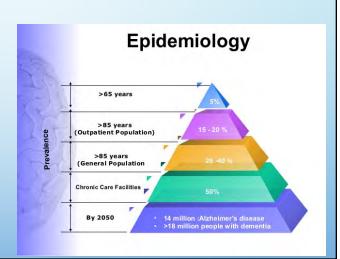
- ALZHEIMER'S DISEASE
- VASCULAR DEMENTIA
- LEWY BODY DEMENTIA
- FRONTOTEMPORAL DEMENTIA
- PARKINSON'S DISEASE WITH DEMENTIA



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EPIDEMIOLOGY

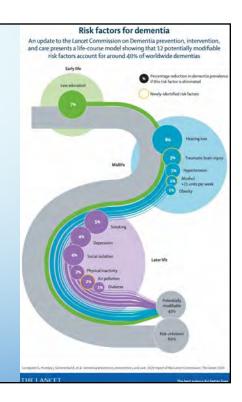
- 5-8% OF PEOPLE >65 Y/O HAVE DEMENTIA
- >40% OF THOSE >90 HAVE DEMENTIA
- PREVALENCE INCREASES BY 5% EVERY 5 YEARS OVER AGE 65



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



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WHAT ARE THE IMPLICATIONS FOR HEALTH CARE PROVIDERS?

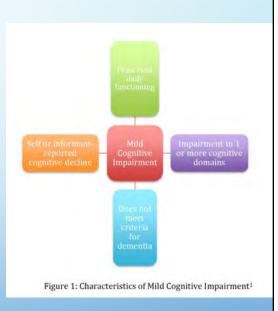
DEMENTIA DX CHANGES IN OUR APPROACH WITH THE PATIENT:

- 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 SIGNIFICANT 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)



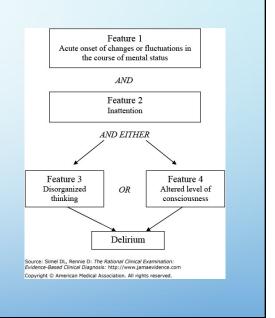
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3 STAGES IN THE DEVELOPMENT AND PROGRESSION OF DEMENTIA Normal Aging Everyone experiences slight cognitive changes during aging Cognitive Decline Preclinical MCI · Silent phase: brain Mild · Cognitive changes changes without are of concern to measurable symptoms Moderate individual and/or family · Individual may notice · One or more cognitive Moderately changes, but not domains impaired Dementia Severe detectable on tests significantly Cognitive · "A stage where the impairment severe Severe · Preserved activities of patient knows, but the enough to interfere daily living doctor doesn't" with everyday abilities

Time (Years)

DEMENTIA VS DELIRIUM

- DEMENTIA AND DELIRIUM OFTEN CO-OCCUR, PARTICULARLY IN HOSPITALIZED PTS
- THE DISTINGUISHING SIGNS OF DELIRIUM ARE:
 - ACUTE ONSET
 - FLUCTUATING COGNITION OVER HOURS TO DAYS
 - IMPAIRED CONSCIOUSNESS AND ATTENTION
 - ALTERED SLEEP/WAKE CYCLES



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DEMENTIA VS DEPRESSION



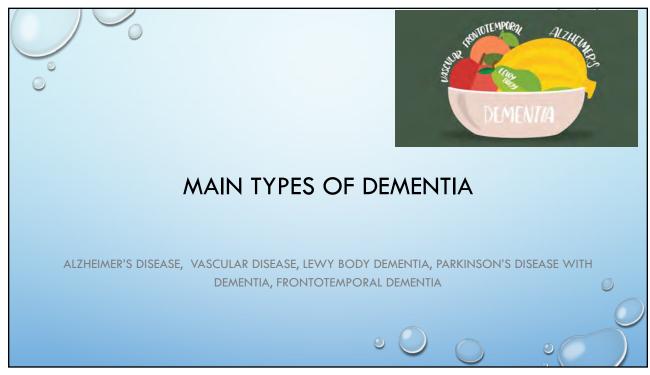
- SYMPTOMS OF DEMENTIA AND DEPRESSION OFTEN OVERLAP:
 - IMPAIRED CONCENTRATION
 - LACK OF MOTIVATION, LOSS OF INTEREST, APATHY
 - PSYCHOMOTOR RETARDATION
 - SLEEP DISTURBANCE (TOO MUCH OR TOO LITTLE)

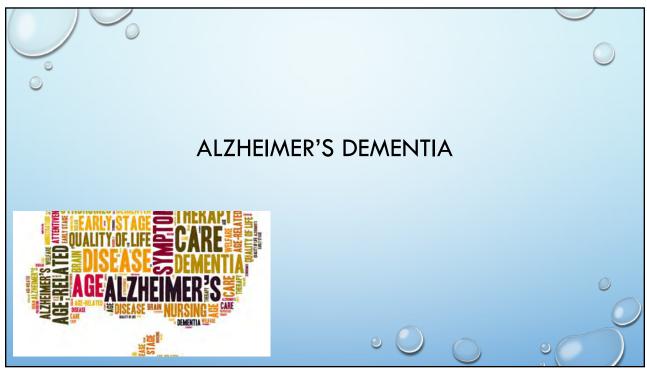
DEMENTIA VS DEPRESSION

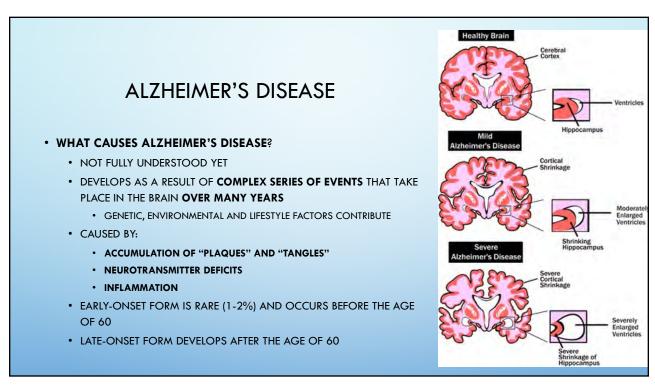
- PTS W/ PRIMARY DEPRESSION ARE UNLIKE THOSE WITH DEMENTIA IN THAT THEY:
 - DEMONSTRATE POOR MOTIVATION DURING COGNITIVE TESTING
 - COGNITIVE COMPLAINTS EXCEED MEASURED DEFICITS
 - MAINTAIN LANGUAGE AND MOTOR SKILLS
- GOOD NEWS IS THAT TX OF DEPRESSION IMPROVES COGNITION IN THESE PTS!

| DEPRESSIVE PSEUDODEMENTIA |
|--|
| Rapid onset |
| Short term symptomatology |
| Consistently depressed mood |
| Short answers like "I don't know", negativism |
| Highlighting amnesia |
| Fluctuating cognitive impairment |
| |

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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





Plaques

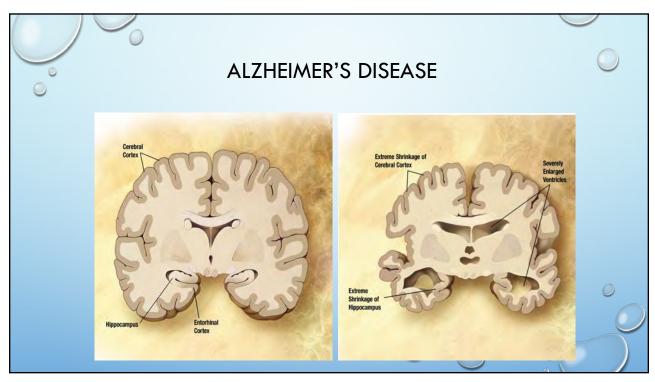
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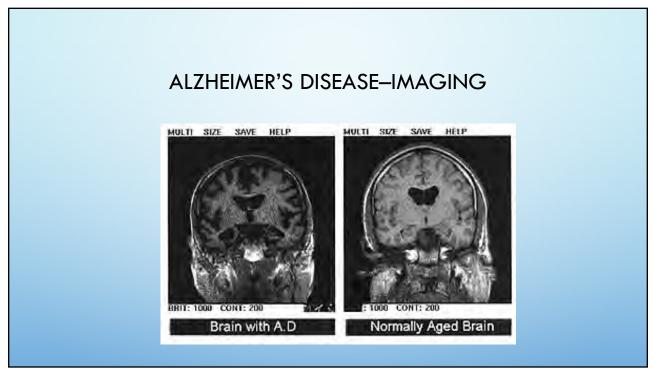
THE FACES OF ALZHEIMER'S DISEASE

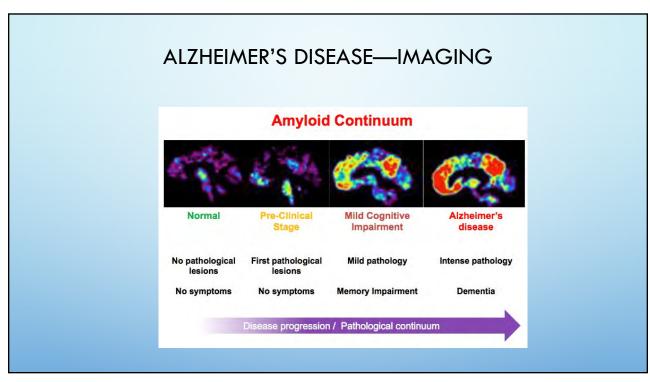






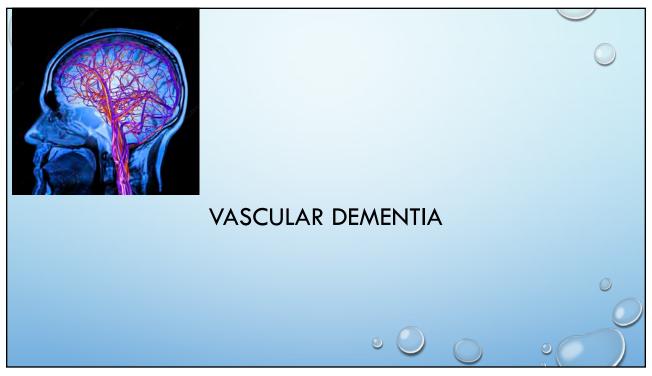






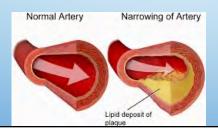
ALZHEIMER'S DISEASE—STAGES FIGURE: STAGES OF ALZHEIMER'S DISEASE · Marked by minor memory loss as well as difficulty learning and remembering new information Long-term memory and some reasoning remain intact Patients may be aware of their decline and hide it well MILD · Gradual onset with progressive decline Lasts 2 to 10 years Patient experiences withdrawal, confusion, increasing difficulty in self-care and daily tasks, poor judgment, and difficulty communicating Behavioral changes often include anger, anxiety, frustration, and restlessness Caregiver assistance becomes increasingly necessary Motor symptoms are rare early in disease MODERATE course but develop later on Usually lasts 1 to 3 years Patients are completely incapacitated, retreat into themselves, and will not eat unless Patients may not speak and do not recognize people, even family members Loss of bodily function control (eg. swallowing, bladder, blowel) Violent episodes and aggression are common SEVERE Adapted from references 12, 13, and 15.

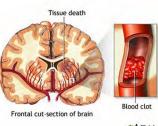
| | Functional Assessment Stagin | Clinical Diagnosis | Duration of stage* |
|------------------------------------|--|---|--------------------|
| ALZHEIMER'S DISEASE FAST STAGES | No functional decrement | Normal Adult | 50 years |
| | Subjective word difficulties | Normal Aged Adult | 15 years |
| | Decreased function in demanding employment settings | Compatible with possible incipient Alzheimer's disease in minority of cases | 7 years |
| | Decreased ability to handle complex tasks such as finances or planning dinner for guests | Mild Alzheimer's disease | 2 years |
| | Requires assistance in choosing proper clothing | Moderate Alzheimer's disease | 18 months |
| | 6. a) difficulty dressing properly | Moderately severe Alzheimer's | 5 months |
| | b) requires assistance bathing | disease | 5 months |
| | c) inability to handle mechanics of toiletting | | 5 months |
| | d) urinary incontinence | | 4 months |
| | e) fecal incontinence | | 10 months |
| | 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 |



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





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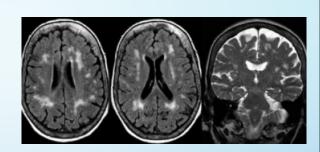
VASCULAR DEMENTIA

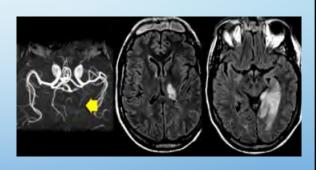
 MULTI-INFARCT DEMENTIA → RENAMED VASCULAR DEMENTIA

| 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 |

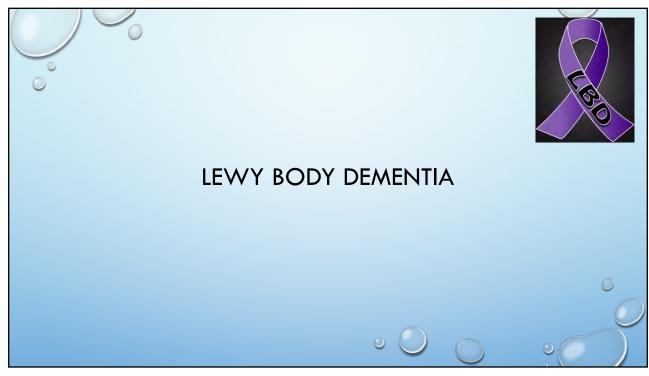
VASCULAR DEMENTIA— IMAGING

- 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"



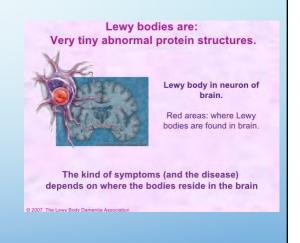


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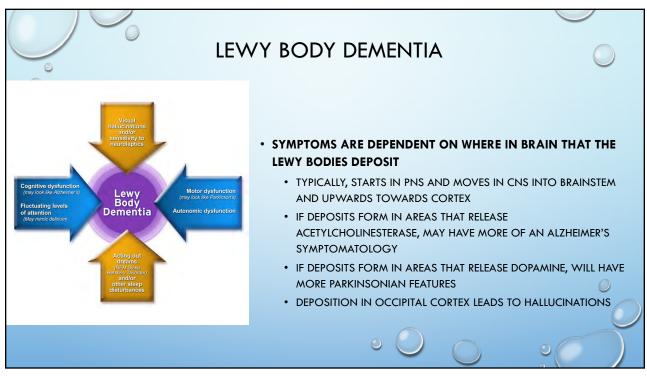


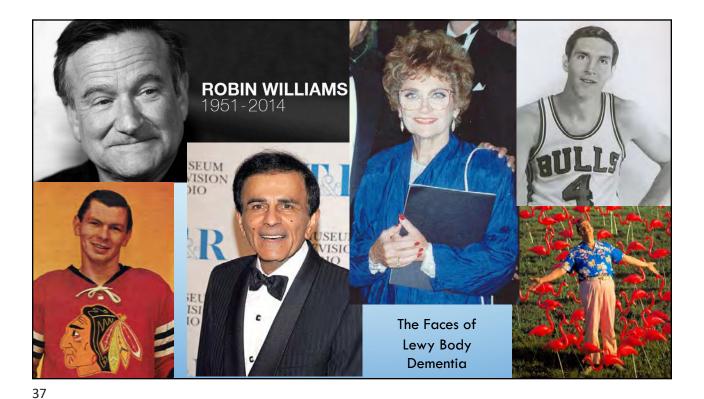
LEWY BODY DEMENTIA

- 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

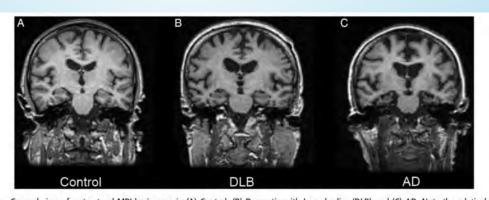


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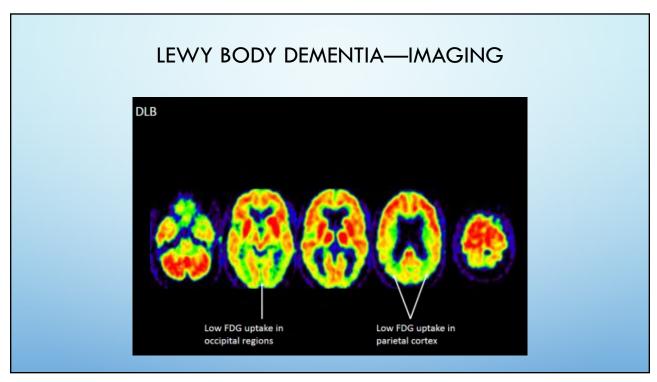


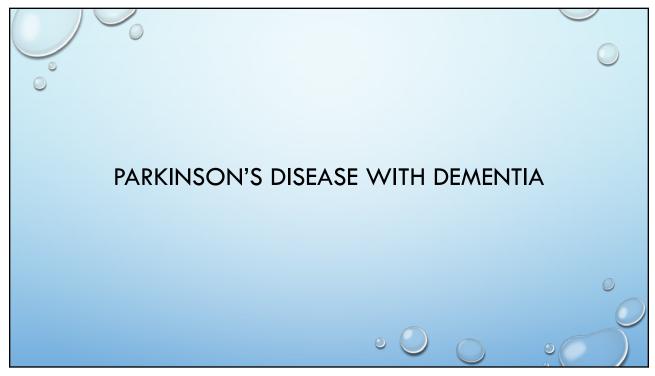
LEWY BODY DEMENTIA—IMAGING



Delirium and dementia wit Lewy bodies: distinct diagnoses or part of the same spectrum? J Neurol Neurosurg Psychiatry 2015;86:50-9.

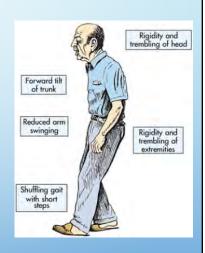
Figure 1 Coronal view of a structural MRI brain scan in (A) Control, (B) Dementia with Lewy bodies (DLB) and (C) AD. Note the relatively preserved medial temporal lobes in DLB compared with AD.





PARKINSON'S DISEASE WITH DEMENTIA

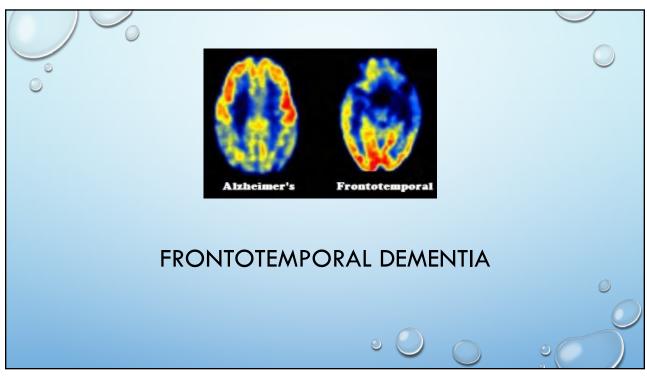
- PARKINSON'S DISEASE IS A CHRONIC, PROGRESSIVE NEUROLOGICAL CONDITION
- SYMPTOMS: TREMORS, MUSCLE STIFFNESS, MASKED FACES, AND SLOW, SHUFFLING GAIT
- MOST PEOPLE WITH PARKINSON'S WILL EVENTUALLY DEVELOP DEMENTIA
 - MEMORY LOSS IS ACCOMPANIED BY DEPRESSION, ANXIETY, AND HALLUCINATIONS
 - OFTEN HAVE MARKED IMPAIRMENT IN VISUAL-SPATIAL FUNCTIONING, CAUSING EARLIER CONCERN WITH DRIVING



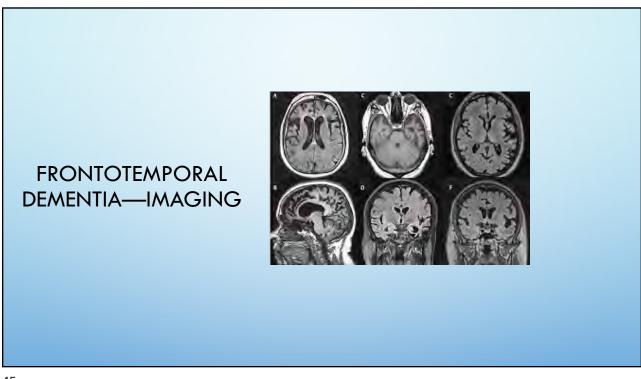
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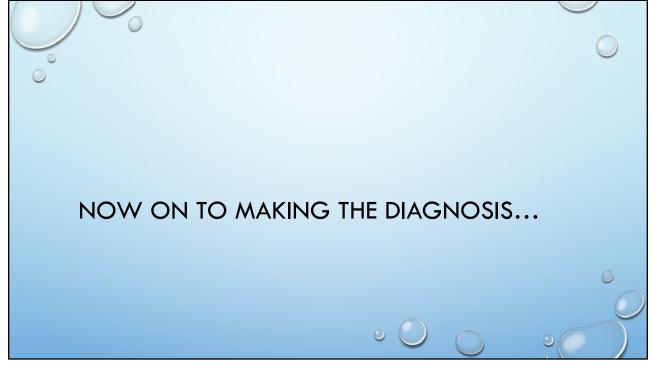
PARKINSON'S DISEASE WITH DEMENTIA

- 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
 YEAR, BUT USUALLY BY MANY YEARS



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

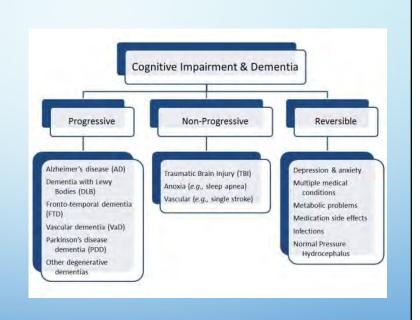




DIAGNOSIS

• GOALS:

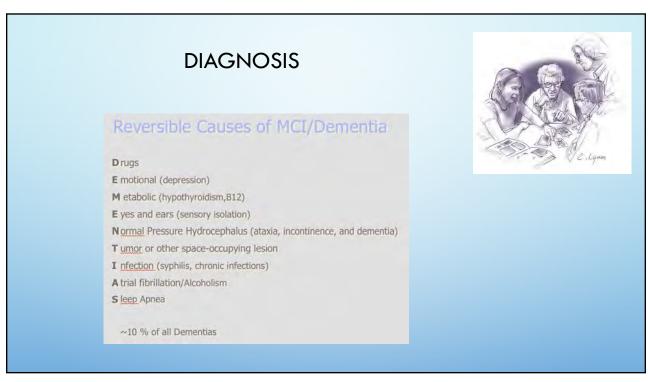
- RULE OUT REVERSIBLE CAUSES!
- DISTINGUISH BETWEEN THE VARIOUS TYPES OF DEMENTIA
- BUILD A COMPREHENSIVE TREATMENT PLAN (BIO-PSYCHO-SOCIAL CARE) TAILORED TO THE INDIVIDUAL

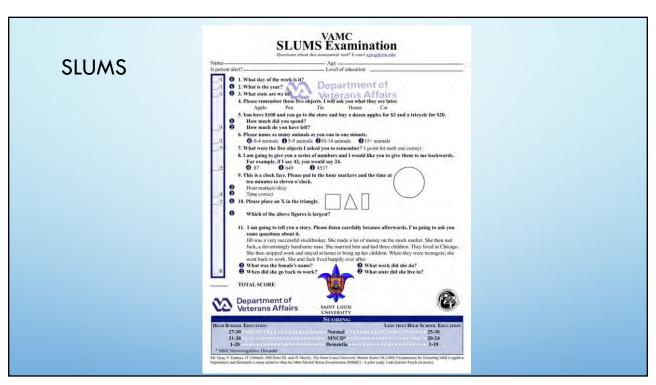


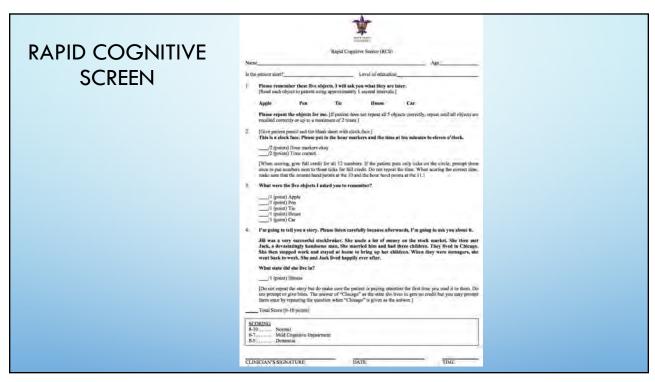
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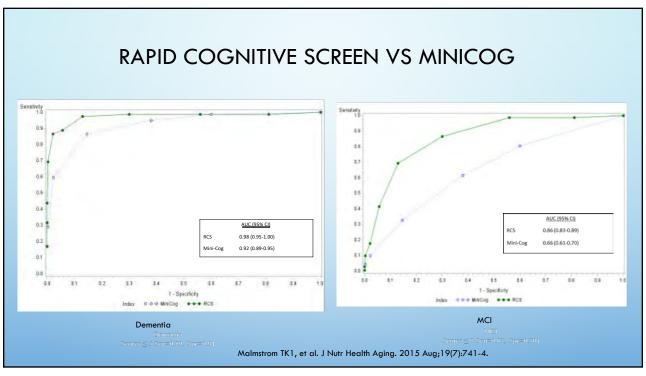
DIAGNOSIS

- 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









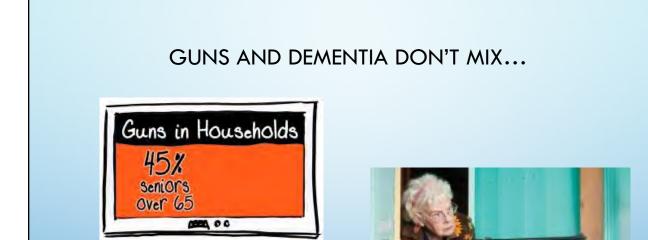
WHY IS AN EARLY DIAGNOSIS IMPERATIVE?

- 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

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SAFE RETURN IDENTIFICATION





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

"There are four kinds of people in the world:

Those who have been caregivers; those who currently are caregivers; those who will be caregivers; and those who will need caregivers."

Rosalyno Carter Former First Lady



ADVANCE DIRECTIVES

ADVANCE DIRECTIVE:

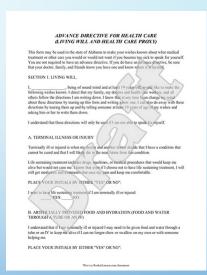
 LEGAL DOCUMENT CONTAINING PREFERENCES FOR HEALTH CARE DECISIONS SHOULD ONE BECOME UNABLE TO MAKE DECISIONS/INCAPACITATED DUE TO ILLNESS (DEMENTIA) OR INJURY

• 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



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