DIAGNOSIS OF DEMENTIA IN THE OUTPATIENT SETTING
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FINANCIAL DISCLOSURES

- Dr. Little has no relevant financial disclosures to report
- Dr. Little will not be discussing any off-label or unapproved medications

LEARNING OBJECTIVES

By the end of the session, participants will be able to:

- Define and distinguish dementia and mild cognitive impairment
- Describe the impact dementia has on the patient and caregiver
- Identify the most common types of dementing illnesses
- Successfully perform brief cognitive screens that can be used in daily clinical practice
**BACKGROUND**

- 1 in 3 elderly individuals develop some form of dementia
- 5.7 million Americans are currently living with Alzheimer's and this number is expected to rise to 14 million by the year 2050
- Between 2000 and 2015, deaths from heart disease declined by 11% but deaths due to dementia have increased by 123%!
- Dementia is the only cause of death in the top 10 causes of death in America that cannot be prevented, cured, or slowed
- Nearly 1/3 of patients with dementia suffer from depression
- Nearly 1/2 of caregivers also suffer from depression
- This year (2018), dementia has led to an expenditure of $277 billion in healthcare and caregiving costs

**ALZHEIMER'S ASSOCIATION**
**2018 ALZHEIMER'S DISEASE FACTS AND FIGURES REPORT**

**BACKGROUND: DEFINITION OF 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

**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

**NOT ALL DEMENTIA IS ALZHEIMER'S DISEASE**

- 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
- 10% of those w/ MCI progress to Alzheimer's each year (70% of people w/ MCI don’t progress)

**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
- 10% of those w/ MCI progress to Alzheimer's each year (70% of people w/ MCI don’t progress)

**3 STAGES IN THE DEVELOPMENT AND PROGRESSION OF DEMENTIA**

- Preclinical: Slight changes in memory, no changes in daily activities
- MCI: Moderate changes in memory, but still able to live independently
- Dementia: Severe changes in memory, unable to live independently

Everyone experiences slight cognitive changes during aging.
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 asked to be updated after visits?
  - Should written and verbal instructions be provided?
  - Is there a pattern to repeat hospitalizations, ER visits, etc. This 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?

NOW ON TO MAKING THE DIAGNOSIS...

DIAGNOSIS

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

- Complete medical history
- Physical and neurological examinations
  - “Memory Test” or 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.**

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**REVERSIBLE CAUSES OF MCI/DEMENTIA**

- Drugs
  - Antidepressants
  - Hyperthyroidism
  - Hypothyroidism
  - Vitamin and mineral deficiencies
  - Infections (medical, chronic infections)
- Tumor or other space-occupying lesion
  - Tissue or other space-occupying lesions

- Alcoholism

- 10% of all Dementias

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**DETECTING MCI**

Which of the following dementia screening tools can also be used to screen for MCI?

1. Mini Mental Status Examination (MMSE)
2. Saint Louis University Mental Status Examination (SLUMS)
3. Montreal Cognitive Assessment (MoCA)
4. Mini-Cog Test
5. Rapid Cognitive Screen (RCS)
6. All of the Above
### SLUMS: SAINT LOUIS UNIVERSITY MENTAL STATUS EXAM

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Sensitivity to detect MCI according to area under the curve (AUC) analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Education Less than HS</td>
</tr>
<tr>
<td>MMSE</td>
<td>AUC</td>
</tr>
<tr>
<td>SLUMS</td>
<td>67%</td>
</tr>
<tr>
<td>MOCA</td>
<td>93%</td>
</tr>
<tr>
<td>MOCA</td>
<td>64%</td>
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</tbody>
</table>

What are we measuring in each SLUMS item?

- Q1-Q3: Attention, Immediate Recall, and Orientation.
- Q4 & Q7: Delayed Recall with Interference.
- Q5: Numeric Calculations and Registration.
- Q6: Immediate Recall with Interference (time constraint).
- Q8: Registration and Digits Span.
- Q9: Visual Spatial and Executive Function.
- Q10: Visual Spatial.
- Q11: Executive Function plus Extrapolation.

### SLUMS: SAINT LOUIS UNIVERSITY MENTAL STATUS EXAM

**Cognitive Impairment Screening Instruments ability in detecting Dementia**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Instrument</th>
<th>Sensitivity, %</th>
<th>Specificity, %</th>
<th>Comparison to MMSE</th>
<th>Class of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangals et al.</td>
<td>MMSE</td>
<td>82</td>
<td>99</td>
<td>-</td>
<td>II</td>
</tr>
<tr>
<td>Kehkim et al.</td>
<td>9-IMS</td>
<td>86</td>
<td>96</td>
<td>Y</td>
<td>II</td>
</tr>
<tr>
<td>Solomon et al.</td>
<td>7-Minute Screen</td>
<td>92</td>
<td>96</td>
<td>Y</td>
<td>II</td>
</tr>
<tr>
<td>Bucalac et al.</td>
<td>MMSE</td>
<td>87</td>
<td>95</td>
<td>Y</td>
<td>II</td>
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<tr>
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<td>7-Minute Screen</td>
<td>86</td>
<td>96</td>
<td>Y</td>
<td>II</td>
</tr>
<tr>
<td>Calh et al.</td>
<td>CDT</td>
<td>83</td>
<td>72</td>
<td>-</td>
<td>I</td>
</tr>
<tr>
<td>Nasreddine et al.</td>
<td>MoCA</td>
<td>100</td>
<td>87</td>
<td>Y</td>
<td>I</td>
</tr>
<tr>
<td>Tang et al.</td>
<td>SLUMS**</td>
<td>100/98</td>
<td>98/100</td>
<td>Y</td>
<td>II</td>
</tr>
</tbody>
</table>

**MINI-COG**

1. Instruct the patient to listen carefully and repeat: APPLE WATCH PENNY
2. Administer the Clock Drawing Test
3. Ask the patient to repeat the three words

**Score:**
- 0 Positive for cognitive impairment
- 1-2 Abnormal CDT then positive for cognitive impairment
- 1-2 Normal CDT then negative for cognitive impairment
- 3 Negative screen for dementia (no need to score CDT)

**Benefit:** QUICK! **Drawback:** Low sensitivity

**RAPID COGNITIVE SCREEN**

TIME TO DRAW A CLOCK!

Clock drawings by patients with AD.

van der Flier WM, Scheltens P. Neurology. 2005;65:v45-v52

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3 REASONS TO DO A RAPID COGNITIVE SCREEN (RCS)

- It's fast
- It's free – no copyright
- It detects mild cognitive impairment (MCI)

WHY IS AN EARLY DIAGNOSIS IMPERATIVE?

- Early diagnosis of dementia is important because:
  - It can identify any potentially reversible or treatable causes and treat before permanent damage is done
  - It can facilitate planning for patients and families
  - It includes making RPA, 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
MAIN TYPES OF DEMENTIA
ALZHEIMER'S DISEASE, VASCULAR DISEASE, LEWY BODY DEMENTIA, PARKINSON'S DISEASE WITH DEMENTIA, FRONTOTEMPORAL DEMENTIA, HIPPOCAMPAL SCLEROSIS OF AGING, PRIMARY TAUOPATHY

COMMON DEMENTIAS IN OLDER PERSONS

- Hippocampal sclerosis of aging
- Primary age-related tauopathy (PART)
- Vascular dementia
- Lewy body dementia
  - Dementia with Lewy bodies
- Dementia of Diabetes
- 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.
**ALZHEIMER'S DISEASE**

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

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**ALZHEIMER'S DISEASE**

*Amyloid Continuum*

- Normal
- Pre-Clinical Stage
- Mild Cognitive Impairment
- Alzheimer’s Disease

No pathological changes / No symptoms

Pathological changes / Memory impairment

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**ALZHEIMER'S DISEASE: STAGES**

- Gradual onset with progressive decline
- Motor symptoms are rare early in disease course but develop later on
ALZHEIMER’S DISEASE STAGING

<table>
<thead>
<tr>
<th>FTD Stages and Characteristics</th>
<th>Clinical Features</th>
<th>Stages of FTD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No functional decline</td>
<td>Normal</td>
<td>2 years</td>
</tr>
<tr>
<td>2. Subtle executive difficulties</td>
<td>Executive deficits</td>
<td>7 years</td>
</tr>
<tr>
<td>3. Significant executive deficits</td>
<td>Cognitive impairment</td>
<td>2 years</td>
</tr>
<tr>
<td>4. Decrease in activity and daily functioning</td>
<td></td>
<td>1 year</td>
</tr>
<tr>
<td>5. Complete dependence on others</td>
<td></td>
<td>1 year</td>
</tr>
</tbody>
</table>

VASCULAR DEMENTIA

- Caused by poor blood flow due to 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

Symptoms tend to correlate with where in the brain the stroke or blood vessel narrowing occurs

Head imaging reveals “ischemic small vessel disease” or previous “infarcts”
VASCULAR DEMENTIA

- Multi-infarct dementia: vascular dementia

<table>
<thead>
<tr>
<th>Vascular Dementia Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forgetfulness</td>
</tr>
<tr>
<td>Attention issues</td>
</tr>
<tr>
<td>Sleep disturbance</td>
</tr>
<tr>
<td>Treadmill walking</td>
</tr>
<tr>
<td>Weakness in lower limbs</td>
</tr>
<tr>
<td>Emotional lability</td>
</tr>
<tr>
<td>Hallucinations</td>
</tr>
</tbody>
</table>

LEWY BODY DEMENTIA

- Caused by abnormal protein deposits “Lewy Bodies”
- 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 bodies are:

- Very tiny abnormal protein structures.
- Found in neurons of the brain.

The kind of symptoms (and the disease) depends on where the bodies reside in the brain.

Symptoms are dependent on where in the brain the Lewy Bodies deposit.
LEWY BODY DEMENTIA

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 foci 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.

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 (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 and read another’s emotions.
- Can affect language and motor skills.
- Behavior and personality changes may be long before memory loss.
- Occurs at a younger age and is more common than Alzheimer’s in people <60.
NOW A QUICK WORD ON TREATMENT…

TREATMENT

- Goal of treatment is to enhance quality of life and maximize functional performance by improving cognition, mood, and behavior.

- There are no proven cures or disease-slowing treatments.
- Goal is to maximize cognitive abilities for as long as possible (improve symptoms).
- Medications only work in a small subset of patients and on average improve memory test scores by 1-2 points.
- There are 4 FDA approved medications:
  - Donepezil (Aricept)
  - Rivastigmine (Exelon)
  - Galantamine (Razadyne)
  - Memantine (Namenda)
TREATMENT SOAPBOX

- Disclaimer: I am biased against "anti-dementia" medications in most cases
- If they worked, there would be no dementia
- Medications are aimed at only one pathway causing dementia, but we know it is more complicated than one pathway
- The public is misled into thinking that these are "must-have" cures and are effective for all

TREATMENT

- 257 studies included in review
- Cholinesterase inhibitors (ChEIs) produce small improvements in cognitive function in pts w/ mild to moderate Alzheimer's and Lewy Body dementia, but clinical significance is unclear
  - No improvement w/ vascular dementia
  - Efficacy wanes over time w/ minimal benefit after 1yr of tx
  - No evidence for benefit in advanced dx or in those >85 y/o
  - Adverse effects are significant and occur in a dose-dependent manner
    - 2-5x increase in side effects, particularly weight loss, syncope, and debility
    - Those >85 have 2x the risk of side effects seen in younger pts

TREATMENT

- Memantine (Namenda) is FDA approved for treating moderate to severe dementia
  - It is often used in combination with donepezil because the studies for monotherapy are not impressive
  - Even though it is not as beneficial for cognition, there are several positive studies that show improvements in behavior
SO IF MEDICATIONS DON'T REALLY WORK, WHAT TREATMENTS CAN WE OFFER?

EXERCISE AND DEMENTIA

- Exercise has been shown to improve quality of life for all stages of Dementia and Alzheimer's.
- It likely works better than our best medications in improving symptoms and behavioral issues.
- Can reduce risk of stroke and improve high blood pressure, diabetes, and dyslexia, all of which are risk factors for vascular dementia.
- Improved physical fitness can allow for longer independence.
- Reduces risk of falls.
- Improves mood.
- Improves sleep.

COGNITIVE STIMULATION THERAPY (CST)

- Organized group therapy program for those with mild to moderate dementia.
- Uses a structured approach to focus on:
  - Reminiscence
  - Orientation
  - Mental stimulation
- Not only enhances cognitive function but has been shown to improve quality of life for both patient and caregiver.
- Typically structured as a 14 session course which meets 2x/weekly.
- Can take place in nursing homes, adult day centers, assisted living or home.
SAFE RETURN IDENTIFICATION

GUNS AND DEMENTIA DON'T MIX...
**COMPLICATING FACTORS**

- Infections:
  - UTI
  - Pneumonia
- Change in environment
- Hospitalizations
- Move to higher level of care
- Change in routine

**CAREGIVER SUPPORT**

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

**ADVANCE DIRECTIVES**

- Advance Directives:
  - Legal document containing preferences for health care decisions should one become unable to make decisions (incapacitated due to illness/serious 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
THANKS!