What Is Dementia?

• Decline in memory, language, problem-solving and other cognitive skills that affects a person's ability to perform everyday activities

• Progressive and disabling

• NOT a normal aspect of aging, delirium or major psychiatric disorder
Presumed Etiology

Alzheimer disease
- Amyloid plaques/oligomers
- Tau neurofibrillary tangles

Lewy body and Parkinson dementia
- Cytoplasmic α-synuclein inclusion bodies

Frontotemporal dementia
- Tau or ubiquitin proteins
Progression of Neurodegenerative Diseases

Presymptomatic: 5-20? years
Prodromal: 1-10? years
Dementia: 2-20 years

Cognitive / Behavioral / Motor Function
Progression of Neurodegenerative Diseases

Cognitive / Behavioral / Motor Function

Presymptomatic

Prodromal

Dementia

gradual accumulation of neuropathology

Years
Challenges in Primary Care

- Identifying the patient with dementia
- Making the right diagnosis
- Disclosing the diagnosis
- After the diagnosis
- Managing behaviors
General Screening

*In the primary care setting*

- Screening without symptoms
- Based on age alone
- Time consuming
- False positives/false negatives
## Dementia Red Flags

<table>
<thead>
<tr>
<th>Agitation</th>
<th>&gt;2 admits/ED visits past year</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than 7 meds</td>
<td>DM/HTN/CAD/lipids</td>
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<tr>
<td>Med compliance</td>
<td>CVA</td>
</tr>
<tr>
<td>Multiple falls in past year</td>
<td>Anticholinergic meds</td>
</tr>
<tr>
<td>Missing appointments</td>
<td>Delirium</td>
</tr>
</tbody>
</table>
Assessment: History

Ask both the patient and a reliable informant about the patient’s:

• Date of onset and nature of symptoms
• Current medications & medication history
• Patterns of alcohol use or abuse
• Living arrangements
# Cognitive Screening Tests

<table>
<thead>
<tr>
<th>Name</th>
<th>Items/Scoring</th>
<th>Domains assessed</th>
<th>Web link</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mini-Cog</td>
<td>2 items Score = 5</td>
<td>Visuospatial, executive function, recall</td>
<td><a href="http://geriatrics.uthscsa.edu/tools/MINICog.pdf">http://geriatrics.uthscsa.edu/tools/MINICog.pdf</a></td>
</tr>
<tr>
<td>MoCA</td>
<td>12 items Score = 30</td>
<td>Orientation, recall, attention, naming, repetition, verbal fluency, abstraction, executive function, visuospatial</td>
<td><a href="http://www.mocatest.org">www.mocatest.org</a></td>
</tr>
<tr>
<td>Folstein MMSE</td>
<td>19 items Score = 30</td>
<td>Orientation, registration, attention, recall, naming, repetition, 3-step command, language, visuospatial</td>
<td>For purchase: <a href="http://www.minimental.com">www.minimental.com</a></td>
</tr>
</tbody>
</table>
Mini Cog

Faster and simpler than MMSE and just as good (3 minutes versus 15 minutes)

Could improve early recognition of cognitive impairment in primary care practice

Relatively unbiased by ethnicity, language, education

Detects AD and non-AD dementias well, many mild cognitive impairment/cognitive impairment-no dementia

Works precisely where physician recognition fails
Steps in the Mini-Cog

- Have patient repeat 3 words after you: car, pony, nickel
  (3-Word Registration)

+ Instruct patient to draw a clock showing a particular time
  (Clock Drawing Test)

+ Ask patient to repeat the words, with a maximum of 3 tries
  (3-Word Recall)
Assessment: Labs

Routine
- CBC
- CMP
- TSH
- Vitamin B$_{12}$

Optional (based on clinical exam and suspicion)
- Urinalysis / Toxicology
- CSF analysis
- RPR
- HIV test
Brain Imaging

Definitely if:

• Onset occurs at age <65 years
• Neurologic signs are asymmetric or focal
• Clinical picture suggests normal-pressure hydrocephalus
• Patient has had recent fall or other head trauma

Consider:

• Noncontrast CT head
• MRI brain
• Positron emission tomography
Neuropsychological Testing

To help distinguish between depression/mood disorders & dementia

To help determine competency

To assist in the evaluation and counseling of dementia in the early stages:
  ◦ Determination of disability
  ◦ Determine specific weakness/strengths
  ◦ Recommend strategies for safety and more efficient functioning
Dementia in Review

Differential Diagnosis

1⁰ Brain
- Cortical: AD
  - L-B
  - F-T
- Subcortical: Parkinson’s Disease
  - Huntington’s chorea

2⁰
- Vascular
- Vitamin deficiency
- Metabolic disorders
- TBI
- Infection
- NPH
<table>
<thead>
<tr>
<th>Lobe</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>frontal</td>
<td>restraint, planning, initiative empathy language production (left)</td>
</tr>
<tr>
<td>temporal</td>
<td>memory face and object identification language comprehension (left)</td>
</tr>
<tr>
<td>parietal</td>
<td>spatial processing</td>
</tr>
<tr>
<td>occipital</td>
<td>visual processing</td>
</tr>
</tbody>
</table>
Neurodegenerative Diseases

Alzheimer’s disease

frontotemporal dementia (FTD)
  ◦ behavioral variant ("Pick’s disease")
  ◦ primary progressive aphasias

progressive supranuclear palsy (PSP)

dementia with Lewy bodies (DLB)

Huntington’s disease

Parkinson’s disease

ALS (Lou Gehrig’s disease)

predominantly cognitive symptoms

cognitive & motor symptoms

predominantly motor symptoms
Mr. M

72 years old, recently retired executive from a local company. He states his mind is not as sharp as it used to be. He has trouble remembering names of his neighbors and he is always misplacing his glasses.

IADLs and basic ADLs are intact.

He scores 27/30 on the MoCA

No acute findings on physical exam. Labs are normal.
Mild Cognitive Impairment

Cognitive decline greater than expected for age and education level

DOES NOT significantly interfere with everyday activities

Approximately 15-20% of people age 65 or older
MCI

About 1/3 of people with MCI develop dementia in 5 years

May be the earliest phase of AD

Clinical diagnosis....no “MCI test”
  ° ?role for biomarkers

No specific treatment...yet
The Story Continues...

Mr. M returns 3 years later, with his wife. She tells you he can no longer manage the checkbook. She sent him to the store last week for bread, and he came back with apples, canned corn and crackers. He frequently has difficulty finding the right word to complete a sentence.

He can dress, bathe and feed himself. He is not incontinent.

He scored 24/30 on MoCA.
Early Symptoms of AD

Early cognitive symptoms may include:
- Trouble keeping appointments
- Difficulty finding words
- Misplacing objects

Early functional symptoms may include:
- Difficulty driving
- Difficulty selecting clothes
- Missing appointments
- Problems at work

Early behavioral symptoms may include:
- Subtle changes in personality
- Social withdrawal
- Depression
Alzheimer’s Dementia

• **Onset:** gradual

• **Cognitive symptoms:** memory impairment core feature with difficulty learning new information

• **Motor symptoms:** rare early, apraxia later

• **Progression:** gradual, over 8–10 yr on average

• **Lab tests:** normal

• **Imaging:** atrophy of hippocampus & temporal lobe > frontal & parietal
Pharmacologic Management

• Cholinesterase inhibitors: donepezil, rivastigmine, galantamine

• Memantine

• Antidepressants

• Psychoactive medications
Cholinesterase Inhibitors: Side-Effects

GI side effects common (nausea, vomiting, diarrhea)
Bradycardia and syncope (infrequent)
Muscle cramps
Sleep disturbances and vivid dreams

Use with caution in patients with COPD, cardiac conduction defects, peptic ulcer disease, or in those who will be receiving general anesthesia
Memantine

• Neuroprotective effect is to reduce glutamate-mediated excitotoxicity

• Modest *benefit* on cognition, ADLs, and behavior

• Common adverse events: constipation, dizziness, headache
Mrs. C

70-year-old woman with memory deficits and lost interest in outside activities over the last year. Symptoms started after hospital admission for MI. Smoked 25 pack year history, quit after her MI. 10 year history of Type II DM.

BP 152/86.
Last cholesterol level was 245.
MoCA scored 22/30
Vascular Dementia

Three common pathologic entities:

1. Large artery infarctions, usually cortical

2. Small artery infarctions or lacunes, exclusively subcortical

3. Chronic subcortical ischemia in small arteries of periventricular white matter
Vascular Dementia

Cortical syndrome (large artery)
- Medial frontal: Executive dysfunction, apathy
- Left parietal: Aphasia, apraxia, agnosia
- Right parietal: Hemineglect, confusion, agitation, visuospatial and constructional difficulty
- Medial temporal: Anterograde amnesia
Vascular Dementia

Subcortical Syndrome (lacunes and chronic ischemia)

- Focal motor signs
- Gait disturbance (magnetic, apraxic, Parkinsonian)
- Unsteadiness, frequent falls
- Urinary frequency, urgency
- Pseudobulbar palsy
- Personality and mood changes, apathy, depression
- Relatively mild memory deficit, psychomotor, retardation, abnormal executive function
Vascular Dementia

Focus on controlling cv risk factors
- Blood pressure control
- Statins
- Stop smoking
- Control blood sugar
- Diet
- Exercise
Mr. W

69 year old retired construction, active in his church and former Boy Scout leader. He was caught stealing candy when shopping with his wife. Lately, he has been inappropriately commenting on the outfits worn by his daughter-in-law.

He used to be a very polite and formal person. Recently he walked up to a woman in the grocery store and hugged her.

Physical examination is normal.

Labs are normal.

MoCA scored 28/30.
Frontotemporal Dementia

Insidious onset, gradual progression

Early decline in social skills, self regulation of personal conduct

Early emotional blunting, loss of insight

May see
• Memory sparing
• Obsessive-compulsive behaviors
• Rigidity in behavior
• Emergent artistic abilities

Neary, Neurology, 1998
Epidemiology

FTD occurs in 5–15% of patients with dementia and it is the third most common degenerative dementia.

FTD occurs with equal frequency in both sexes.

The age of onset is usually between 45 and 65 years though it may range anywhere from 21 to 81 years.

There is progressive clinicopathological deterioration with mortality within 6-8 years.

Strong genetic basis and family history of FTD is seen in 40-50% of cases.
bvFTD: Structural Imaging Findings

MRI: atrophy of frontal and temporal lobes

normal  bvFTD
bvFTD: Functional Imaging Findings

**FDG PET:**

hypometabolism frontal and temporal lobes
FTD: Clinical Findings

Behavioral Variant (bvFTD)
- disinhibition
  - socially inappropriate behavior
  - impulsivity
- apathy
  - loss of interest, drive, motivation
- loss of sympathy / empathy
- repetitive / compulsive / ritualistic behavior

language variants (3 subtypes)
- progressive nonfluent aphasia (PNFA)
- logopenic progressive aphasia (LPA)
- semantic dementia (SD)
FTD: Treatment

- No role for cholinesterase inhibitors
- SSRIs for irritability, depression, impulsivity
- Depakote for behavior control
Mrs. B

80 years old, presents with her son with history of seeing strange children in her home. They sit around the kitchen table and she wants to make them sandwiches. She has difficulty sleeping at night and seems to have active dreams. She has fallen out of bed many times and often yells and punches her pillows. She can’t remember conversations, and recently gave a neighborhood child $100 for shoveling her driveway.

She has problems completing IADLs, but is able to dress, bathe and feed herself. She has urinary incontinence and frequent constipation. She has fallen 3 times in the past month without serious injury.

Physical exam: bp 122/80 sitting; 96/60 standing. Flat affect, stiff posture and limbs and a shuffling gait.

MoCA scored 24/30

Normal labs and MRI brain
Dementia with Lewy Bodies

Short term memory loss, gradual onset
  ◦ Memory initially relatively less affected than attention and executive function

Visual hallucinations – vivid!

Cognitive fluctuations

Parkinsonism

REM sleep disorder is common

Frequent falls

Autonomic dysfunction
Friederich Heinrich Lewy (1885-1950)

Described the inclusion bodies named for him in 1912 but the identification and description of dementia with Lewy bodies followed much later.
Lewy bodies and the synucleinopathies

Characterized by intracellular protein called $\alpha$-synuclein

Primarily *sporadic* disorders.

The two most common of these are:

1) Parkinson’s disease
2) Dementia with Lewy bodies
Depression is common in DLB, no RCT evidence for treatment

- SSRI and SNRIs are generally used
- REM behavior disorder (dream enactment)
- Clonazepam, melatonin (high doses) are helpful
- Memory and executive dysfunction
- Cholinesterase inhibitors have larger effect sizes in DLB than in Alzheimer disease

Disclosing the Diagnosis

**Physicians**
- Value of dx given lack of treatment options
- Risk of misdiagnosis
- Lack of knowledge of local support services

**Patients**
- Majority want to know
- No increase in depression; reduced or no change in anxiety

**Families**
- Majority want to know
Disclosing the Diagnosis

**Patient factors**
- Dementia disease stage
- Age of patient

**Caregiver/Family factors**
- Family dynamics
PRIMARY GOAL OF TREATMENT

To enhance quality of life and maximize functional performance by improving cognition, mood, and behavior
Medication: Tip of the Iceberg
Much More Than Just Starting Aricept and Namenda

After the Diagnosis

- Advance Directives/POA/HCP
- Legal issues
- Financial concerns
- Driving
- Employment
- Patient and family education
- Caregiver stress and burden
- Functional Status/Level of Care
Summary

• Dementia is common in older adults but NOT an inherent part of aging

• AD is the most common type of dementia, followed by vascular dementia and dementia with Lewy bodies

• Evaluation includes history with informant, physical & functional assessment, focused labs, & brain imaging
Summary

• Primary treatment goals: enhance quality of life and maximize function by improving cognition, mood, behavior

• Treatment may involve both medications and nonpharmacologic interventions
Thank you!

Questions?