Detecting Dementia:
Frontline Tools for Early Diagnosis

Emily Trittschuh, PhD
VA Puget Sound Health Care System
Geriatric Research Education and Clinical Center (GRECC)
University of Washington School of Medicine
Department of Psychiatry and Behavioral Sciences

MTGEC Annual Conference:
Geriatric Workforce Enhancement Program
October 31, 2017

Aging Population

- In 2011, adults 65+ were 14.1% of the U.S. population
- How does Montana compare?
  - 16.2%
  - 5th in the nation by 2030
- What is the greatest risk factor for dementia?

Stage is set for a dementia epidemic

- By 2050, Americans aged 65+ will have doubled from 48 million to 88 million
  - 26% percent of physician office visits
  - A third of all hospital stays and of all prescriptions
  - Almost 40% of all emergency medical responses
  - 90% of nursing home residents
- Est. 5.5 million Americans are living with Alzheimer’s disease (AD) in 2017
  - 1 in 10 people age 65+ has AD: 44% are age 75-84; 38% are over 85

Objectives

- Explain the difference between dementia and Alzheimer's disease (AD)
- Understand the critical elements for dementia diagnosis
- Recognize the “3 D’s of Aging”
- Utilize a decision-tree model to address changes in cognition
- List 3 quick tools to assess and monitor your patients

What is dementia?
A decline in some aspect of cognitive function and/or behavior

- **Loss**
  - new impairments (not lifelong)
- **Chronic**
  - insidious onset & progressive course
- **Significant**
  - functional consequences
- **Structural Damage**
  - neurons die

### Normal Aging vs. Dementia

- What changes in cognitive functioning do you expect to see with age?
- At what age would you expect to begin seeing changes?
- Does everyone eventually develop dementia?

### Normal Age-Related Cognitive Changes

- Crystallized intelligence
- Verbal knowledge
- Focused attention
- Creativity
- Procedural memory
- Emotional processing
- Processing speed
- Divided attention
- Word retrieval
- Working memory
- Executive function
- Decreased encoding

Adapted from Robertson, K
Primary Causes of Sporadic Dementia in Older Adults

Dementia
Neurodegenerative Disease

- Alzheimer's Dementia
- Lewy Body Dementia
- Vascular Dementia

Types of dementia

- Alzheimer's disease (AD)
  - Onset: 65+
  - Course: 2-15 years
- Vascular dementia
  - History of cerebrovascular disease or risk factors
- Lewy Body dementia (LBD)
  - Onset: 70's
  - Rapid progression
- Frontotemporal dementia (FTD)
  - Early Onset: 50's
  - Changes in behavior and/or language

Definite Alzheimer's Disease

- Evidence on autopsy of:
  - Amyloid plaques and neurofibrillary tangles (NFTs)
  - In a certain density and distribution

  - NFTs - Bundles of twisted threads that are the product of collapsed neural structures (contain abnormal forms of tau protein)
  - Amyloid Plaques - dense deposits of deteriorated amyloid protein, surrounded by clumps of dead nerve and glial cells
Alzheimer’s Disease Dementia

- Clinical diagnosis
- Medial Temporal Lobe function
  - New learning
  - Retention of newly acquired information
  - Retrieval of these memories
  - Recognition
- Other areas of thinking affected early in the disease
  - Naming
  - Complex attention

Mild Cognitive Impairment

- Declines in memory or other thinking abilities
- No significant impairment in activities of daily living
- No dementia
- Subjective complaints (changes noticed by others, including health care providers)
- Conversion rate to AD is significantly higher in MCI than NC
  - MCI = 12 - 15% per year
  - NC = 1 - 2% per year (Petersen et al., 1999)

What you might hear in clinic

- I can’t focus
- She’s not interested in her usual activities
- I can’t come up with the word I want
- My energy is low
- My husband’s “selective attention” is worse – he doesn’t listen to me
- My short-term memory is shot
- I couldn’t find my car in the parking lot

The Three D’s of Aging

Dementia
Depression
Delirium
Delirium Is . . .

- A medical condition:
  - Rapid onset (hours, days, at most weeks)
  - Deficits in attention and concentration
  - Waxing and waning mental status
  - Fluctuating sleep disturbances
  - Hyperactive (agitated) or hypoactive (sedated)
  - Erratic, uncharacteristic, inappropriate behavior
  - Hallucinations (especially visual), paranoia
- Mental status changes often precede objective signs of illness
- Risk associated with hospitalization
- Under-recognized (Inouye, et al, 2001)

Delirium Is Not . . .

- Insignificant: increased mortality over 6-24 months
- Rapidly resolving, even when cause corrected

Defficiencies

Endocrinopathies

Acute vascular

Toxins or drugs

Heavy metals

Depression is . . .

A syndrome of psychological and bodily symptoms

Low mood or anhedonia (lack of pleasure) +

- Problems with sleep (too little or too much)
- Problems with appetite (too high or too low)
- Trouble concentrating
- Decreased interests
- Feelings of guilt or having done something wrong
- Low energy
- Slowed movements
- Suicidal thoughts
- Unreal experiences: “my mind playing tricks on me” (hearing voices or feeling paranoid)

Recognizing Depression

Often presents as nonspecific physical symptoms

- Fatigue
- Pain
- GI problems

Older patients less likely than younger to admit to being “depressed”

Depression is stigmatized, particularly in older adults

Patients often more willing to endorse mental health symptoms in writing than in person
Depression in the Elderly

- Depression is not a normal part of aging
  
  - As many as 10% of adults age 65+ seen in primary care settings have clinically significant depression
  
  - However, only ~10% of older adults with depression receive treatment
  
  - Suicide rates: higher in the elderly, especially in males and in Veterans, White, and Native American pops
  
- Monitor for cognitive decline because chronic depression is a risk factor for dementia
  
  - Reported rates of depression in dementia range from 0-86% of cases


Dementia, Delirium, and Depression

<table>
<thead>
<tr>
<th></th>
<th>Common Features</th>
<th>Hallmarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dementia</td>
<td>Subjective confusion</td>
<td>Problems with memory plus problems with speech, actions, recognition, or executive functioning</td>
</tr>
<tr>
<td></td>
<td>Difficulty performing tasks</td>
<td>Chronic and progressive, slow onset</td>
</tr>
<tr>
<td></td>
<td>“Not right” on interview</td>
<td>Functional decline</td>
</tr>
<tr>
<td>Delirium</td>
<td>Loved ones are worried</td>
<td>Trouble with attention and concentration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rapid onset; waxing and waning Due to a medical cause</td>
</tr>
<tr>
<td>Depression</td>
<td></td>
<td>Decreased concentration and interest</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sensorium is clear</td>
</tr>
</tbody>
</table>

Causes that Mimic Dementia

- Toxic/metabolic: Medications, B12 deficiency, hypothyroidism, impaired liver/kidney function, poisoning
- Systemic illnesses: Infections (UTI to meningitis), pulmonary disease, cardiovascular disease
- Other: Depression/PTSD, sleep apnea, stress, subdural hematoma, ETOH/drugs

*Treatment may improve, but not fully reverse, symptoms
Delirium

Also known as “Acute Brain Failure”, “Toxic-Metabolic Encephalopathy”, or “Acute Confusional State”

Delirium commonly occurs in a patient with a history of dementia. Occurs commonly to sick older adults and in hospital settings, and in those with pre-existing cognitive problems. Marked by problems with attention and concentration.

Shows a waxing and waning course. Patients can seem normal at times.

- Consider delirium in ALL cases of mental status change.
- Work up potential causes of delirium in all patients with mental status changes.

Most common medical causes: metabolic, infectious, medications, hypoxemia, dehydration.

Most common medication causes: anticholinergics, sedative-hypnotics, opioids.

PHQ-9

1. Little or no interest or pleasure in doing things?
2. Feeling down, depressed, or hopeless?
3. Trouble falling asleep, staying asleep, or sleeping too much?
4. Feeling tired or having little energy?
5. Poor appetite or overeating?
6. Feeling bad about yourself, feeling that you are a failure, or feeling that you have let yourself or your family down?
7. Trouble concentrating on things such as reading the newspaper or watching television?
8. Moving or speaking so slowly that others could have noticed, or being so fidgety and restless that you have been moving around a lot more than usual?
9. Thinking that you would be better off dead or that you want to hurt yourself in some way?

All questions use 0 – 3 scale (as on PHQ-2)

Depression is likely if the total score is greater than 10

Immediate “warm hand-off” to a mental health specialist if response to question #9 is 1, 2 or 3.

PHQ-2 is a quick screen

Self-report

“Over the past two weeks, how often have you been bothered by these problems?”

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Several days</th>
<th>&gt; Half of the days</th>
<th>Nearly every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Little or no interest or pleasure in doing things?</td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2. Feeling down, depressed, or hopeless?</td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

A score of 3 or greater merits completing the PHQ-9, AND a suicide risk evaluation should be completed within 24 hours.
Dementia Warning Signs: ‘Red flags'
Signs/symptoms a clinician, caregiver, or patient may notice. Use of DWS is recommended to prompt provider evaluation of cognition.

Clinicians may notice:
- Inattentive to appearance or unkempt, inappropriately dressed for weather or disheveled?
- A “poor historian” or forgetful?

Does your patient:
- Fail to keep appointments, or appear on the wrong day or wrong time for an appointment?
- Have unexplained weight loss, “failure to thrive” or vague symptoms e.g., dizziness, weakness?
- Repeatedly and apparently unintentionally fail to follow directions e.g., not following through with medication changes?
- Defer to a caregiver or family member to answer questions?

Patients or caregivers may report:
- Asking the same questions over and over again
- Becoming lost in familiar places
- Not being able to follow directions
- Getting very confused about time, people & places
- Problems with self-care, nutrition, bathing or safety

For more information, visit: www.prevention.va.gov/docs/0514_VANCP_Dementia_Fact_F.pdf

Functional Activities Questionnaire

1. Writing checks, paying bills, balancing checkbook
2. Assembling tax records, business affairs or papers
3. Shopping alone for clothes, household goods, groceries
4. Playing a game of skill, working on a hobby
5. Heating water, making cup of coffee, turning off stove
6. Preparing a balanced meal
7. Keeping track of current events
8. Paying attention to, understanding, discussing a TV show, book or magazine
9. Remembering appointments, family occasions, holidays, medications
10. Traveling out of neighborhood, driving, taking buses

Sum scores to obtain total, which ranges from 0-30. Cut-off point of 9 (dependent in 3+ activities) suggests impaired function/possible cognition dysfunction

Scoring for each item:
Dependent = 3  Requires assistance = 2
Has difficulty but does by self = 1  Normal = 0
Never did (the activity), but could do now = 1

Never did, but would have difficulty now = 1


Dementia Tools: Mini-Cog

• Screening Tool; does not diagnose dementia

1. Get the patient’s attention then say, I am going to say three words that I want you to remember now and later. The words are: Banana, Sunrise, Chair. Please say them for me now.
   Give the patient 3 tries to repeat the words. If unable after 3 tries, go to next item.
2. Say all the following phrases in order, Please draw a clock in the space below. Start by drawing a large circle. When done, say, Put all the numbers in the circle. When done, say, Now set the hands to show 11:10 (10 past 11). If subject has not finished clock drawing in 3 minutes, discontinue and ask for recall items.
3. What were the three words I asked you to remember?

Scoring: 0-5 possible
0-2 = possible impairment
3-5 = suggests no impairment

Unscored
2 pts for a clock without errors, 0 for any error
1 pt per word (max 3)

Mini-Cog Clock

Normal clock is 2 points; abnormal clock is 0 points.
• A normal clock has all of the following elements: all numbers 1-12, each only once, present in the correct order and direction (clockwise).
• Two hands are present, one pointing to 11 and one pointing to 2.
• Any clock missing any of these elements is scored abnormal.
• Refusal to draw a clock is scored abnormal.
Montreal Cognitive Assessment (MOCA)

MOCA:
http://www.mocatest.org/
- Better than MMSE, more sensitive, not specific
- WELL-RESEARCHED
http://www.mocatest.org/references.asp
- Comes in multiple English versions and >25 other languages

Why use brief cognitive tests?
Designed to detect dementia
- To obtain a quick sense of global cognitive function
- To identify if there are deficits
- To follow someone with identified deficits over time
- To identify cognitive decline early
- Benefits include: early introduction of cholinesterase inhibitors, addressing any reversible influences, assist with care planning, motivate toward positive behavioral change
- Is there any reason to question whether they lack decision-making capacity?

Screening Meaning
- Interpretation and appropriate populations?
  - Limited detection for individuals who are outside the average range (either higher or lower)
  - Learning disability or low education?
  - Hearing or vision problems?
  - Limited hand function?
- Poor as stand-alone measures
  - Recommend informant/collateral input
  - Consider other risk factors and context

Work Up for Cognitive Concerns

- History — use collateral sources, query daily function
- Rule out delirium, depression, and reversible causes
- Labs:
  - TSH, CBC, Chem-7, Calcium, LFTs, B12, Folate, Urinalysis
- Brief cognitive testing (e.g., Mini-Cog or MOCA)
- Complex/early-stage cases: consult neurology and/or psychiatry & refer for neuropsychological evaluation
- Neuroimaging can be helpful
  - Order if - Rapid decline and/or Unexplained focal neurological symptoms
  - Consider if – Metastatic process, NPH, or lesions are of concern

Brief Cognitive Measure: do the results suggest a decline in thinking?

Is there functional decline?

- Yes
  - Does it fit with the test scores?
  - Yes
    - Possible Dementia
  - No or ?
    - Mild Cog Impairment
    - Other Cog D/O
- No
  - Unlikely Dementia
  - Not Dementia

Consider Mental Health Issues

Biomarkers and Genetics of AD

- No blood/imaging/CSF test for dementia
- Only one consistent association for sporadic AD
  - E4 allele of APOE (gene found on ch19)
- Familial AD (aka “early-onset”) with rare autosomal dominant mutations are <5% of all cases
  - Amyloid Precursor Protein (APP) gene mapped to ch21
  - Presenilin 1 (PS1) is found on ch14
  - Presenilin 2 (PS2) is found on ch1
- Future: Amyloid and Tau PET imaging?
Do we have a cure or tx for AD?

- 4 FDA-approved medications for AD
- No effective treatment, no cure, and the exact cause of AD and other dementias is poorly understood
- Effective intervention = improve functional status to a degree discernable to caregivers or health care providers
- In the case of a progressive disorder . . .
  “improvement” = slower decline

Dementia Prevention = HEALTHY Aging

Good nutrition, Physical exercise, Socialization, and Cognitive activity
### Risk Factors to Manage or Avoid

#### Medical Conditions
- High Blood Pressure
- High Cholesterol
- Type II Diabetes
- Hearing Loss
- Sleep Apnea

#### Behavioral Factors
- Alcohol / Tobacco
- Stress
- Exercise
- Nutrition / Diet
- Socialization

---

**Dementia affects everyone**

Further questions/comments: etritt@uw.edu

---

If you’ve met one person with dementia, you’ve only met one person with dementia . . .

Resources:
- Alzheimer’s Association (national and MT chapter: www.alz.org/montana)
- Montana Alzheimer’s Disease Research Center (www.montana-adrc.com)
- Services for Seniors via the MT Dept of Health & Human Services (http://dphhs.mt.gov/seniors)
- Momentia, a grass-roots movement to empower persons with memory loss: see www.momentiaseattle.org for inspiration