Dementia Module Objectives

1. Discuss clinical features of dementia and differentiation from depression and delirium

2. Define DSM IV criteria for dementia and clinical features of primary dementing illness such as Alzheimer’s disease, vascular dementia, and Lewy body dementia

3. Be aware of early signs of Alzheimer's disease and red flags that should lead to screening for potential underlying dementing disease

4. Describe stressors and illnesses for which care giving family members are at extra risks, which include isolation, lack of understanding, guilt, sleep deprivation, and behavioral problems of the demented patient

5. Describe general clinical features of prodromal, mild, moderate, severe and terminal stages of progression of dementia

6. Describe behavioral and environmental techniques in managing well-being and functionality of the patient with dementia, which include pharmacologic and non-pharmacologic techniques (‘no fail environment’)

7. Describe indications, mechanisms of action, potential benefits, and recommended duration of memory-enhancing cholinergic medications

8. Describe ethical and legal issues common to demented older adults including decision making capacity and driving
Dementia Case 1: Dr. Cramer

Dr. Cramer and his wife come to the University of Florida Senior Care Center for an initial visit to establish primary care with you. A prominent geriatrician, now at age 75, Dr. Cramer retired from the faculty of an academic center in Boston, MA, and relocated to Gainesville, FL, 5 years ago to live close to his children and grandchildren. In a separate interview with Mrs. Cramer, she brought up her concern that although her husband seems to adjust to life in Gainesville, he has not been quite like his former self for the past 3 years. She fears he may have a serious illness such as cancer, since she thinks he is losing weight and he will not tell her anything about how he is feeling. His wife also says that Dr. Cramer used to be an avid reader and often finished reading a book in one evening. Now he seems to be preoccupied and often stares at the same page of a book for hours. He does not sleep well. His wife also describes that during a family reunion 6 months ago, Dr. Cramer could not recall the names of his grandchildren. After talking to his wife, you decide to see Dr. Cramer to discuss this further.

On further questioning, Dr. Cramer states that he has history of hypothyroidism, hypertension and heart attack. However, he does not remember names or dosages of his medications and looks at his wife and waits for her to give answers. His wife states that he takes 4 medications including synthroid, atenolol, lisinopril, and aspirin. His social history reveals he drinks 2 shots of scotch before dinner and a glass of wine with dinner every evening. He quit smoking cigars 5 years ago. His family history reveals his father died of a heart attack. His mother died at 75 of pneumonia after suffering from Alzheimer’s disease for a long time. His youngest son at age 30 has Down syndrome. When Dr. Cramer is asked about his wife’s concern about his health, he says, "My wife is overreacting. I am in good shape and have no problems with memory." Physical examination is unremarkable. His mini-mental status exam score is 29/30 and missed one number on calculation. His Geriatric Depression Scale score is 3/15. In addition, he performed a Clock Drawing Test (See Clock Drawing Test, Dr. Cramer, Initial Visit)

1. What is the most appropriate next step?

A. I and II  
B. II and III  
C. II and IV  
D. I and V

   I. Reassure him – as he most likely has simple age-related memory loss  
   II. Perform further testing such as blood work  
   III. Refer him to a neurologist for treatment of memory problems  
   IV. Refer him to a geriatric psychologist for further testing of memory  
   V. Start an antidepressant
Question 1: Answer C (II and IV)

Memory loss is common in elderly and one of the major criteria for dementia (See Clinical Features of Syndrome Dementia). Although Alzheimer’s disease is by far the most common cause of progressive dementia in older age (See Facts on Dementia), some older adults with early Alzheimer’s disease may not fulfill the criteria of dementia (See Stages of Alzheimer’s Disease). Some of your patients with cognitive impairment ultimately recover from dementia if you evaluate and treat reversible causes of apparent dementia such as depression, thyroid disease, and normal pressure hydrocephalus (See Mnemonic DEMENTIA P). In evaluating causes of memory loss, we recommend you use the Geriatric Evaluation Screening Tools (See Geriatric Evaluation Tool Kit) to assess medical and psychological problems, nutritional status, pain, sleep, medication changes and home situation which may cause and exacerbate memory problems in older adults. Ordering lab work such as thyroid stimulating hormone, vitamin B12, and fasting glucose may be helpful in determining treatable cause of dementia (Choice II). A geriatric psychologist can help you by performing a battery of neuropsychological testing to evaluate subtle memory loss which may not be detected by screening tests such as Mini Mental Status Exam (MMSE) and Clock Drawing, especially in the highly educated such as Dr. Cramer who has high intelligence and nearly perfect MMSE score (Choice IV). Although memory loss is a common symptom in the elderly, it is an error to reassure Dr. Cramer that he has a benign memory problem because it is difficult to differentiate benign age-related memory loss (See Age-Related Memory Loss) from the early stage of dementia (Choice I). (Choice III). It is also inappropriate to prescribe an antidepressant before further investigating for treatable causes of dementia (Choice V).

2. Which of the following symptoms are more typical of dementia rather than depression?
   A. Shorter duration
   B. Previous history of mental illness
   C. Concealment of disabilities
   D. Giving ‘don’t know’ answers
   E. Lack of motivation

Question 2. Answer: C

A. This answer is incorrect.
   Shorter duration is more typical of depression than dementia. (See Distinguishing Differences Among Delirium, Depression and Dementia).

B. This answer is incorrect.
   Previous history of mental illness is not a typical feature of older adults with dementia. However, people with mental illness such as Down syndrome have a high prevalence of Alzheimer’s disease at a younger age (See Distinguishing Differences Among Delirium, Depression and Dementia).

C. This answer is correct.
   A patient with dementia often tries to conceal memory loss and gives ‘near-miss’ answers to orientation questions on the Mini-Mental Status Exam. On the other hand, a patient with depression often admits to having memory problems and gives ‘don’t know’ answers to
orientation questions on the Mini-Mental Status Exam. (See Distinguishing Differences Among Delirium, Depression and Dementia).

D. This answer is incorrect.
'Don’t know’ answers are more typical of depression than dementia. (See Distinguishing Differences Among Delirium, Depression and Dementia.)

E. This answer is incorrect.
Lack of motivation is more typical of depression than dementia until at the late stages of dementia.

3. Which of the following statement is most appropriate to tell Dr. and Mrs. Cramer at this time?
   A. Because his Mini-Mental Status Exam score is almost a perfect score, it is unlikely that he has developed cognitive impairment.
   B. His risk of developing Alzheimer’s disease is similar to the general population based on his family history.
   C. He has likely developed the early stage of Alzheimer’s disease based on his symptoms and signs.
   D. He will need further testing for other causes of dementia although he has early warning signs of Alzheimer’s disease.

Question 3. Answer: D.

This answer is incorrect.
Patients who have mild memory loss may have a perfect or nearly-perfect score on the mini-mental status exam (MMSE) because MMSE is less sensitive in detecting mild memory loss than detecting moderate to severe memory loss. The MMSE is also influenced by the patient’s educational level. A person with higher education such as Dr. Cramer may have perfect or nearly-perfect score on the MMSE exam even if he has significant loss of memory. On the other hand, a person with lower education may have low score on the MMSE exam even if he has no significant loss of memory. Although MMSE is by far the most widely used screening test in detecting cognitive impairment, many other tests are available including Clock Drawing Test (See Clock Drawing Test), extended version of MMSE (the 3-MS), St. Louis University Mental Status Exam (SLUMS), and DEMTECT, which may be more sensitive in detecting cognitive impairment at an early stage of dementia.

This answer is incorrect.
A family history of Alzheimer’s disease is a risk factor for developing Alzheimer’s disease in the future. Research has shown that those who have a parent or sibling with Alzheimer’s are two to three times more likely to develop the disease than those who do not. The younger the age of onset and the more individuals in a family who have the illness, the greater are the risk. Another risk factor of Alzheimer’s disease is increasing age as most people with Alzheimer’s disease are 65 years and older. After 85 years old, the risk increases to nearly 50 % (See
Facts on Dementia). For more information about recent scientific discovery on Alzheimer’s disease, visit the Alzheimer’s Association website (See www.alz.com).

This answer is incorrect.
Although this patient puts out the early warning signs of Alzheimer’s disease (See Early Warning Signs of Alzheimer’s Disease), it is premature to determine that he has the early stage of Alzheimer’s disease before conducting further investigation. It is often difficult to differentiate benign age-related memory loss (See Age-Related Memory Loss) from the early stage of dementia (See Stages of Alzheimer’s disease). In evaluating causes of memory loss, we recommend you use the Geriatric Evaluation Screening Tools (See Geriatric Evaluation Tool Box) to assess medical and psychological problems, nutritional status, pain, sleep, medication changes and home situation which may cause and exacerbate memory problems in older adults. Ordering lab work such as thyroid stimulating hormone, vitamin B12, and fasting glucose is helpful in determining treatable causes of dementia.

This answer is correct.
Although screening and asking direct questions to the patients and family would definitely help discovering dementia, many patients display early warning signs of Alzheimer’s disease during regular check-ups with physicians (See Clues to Early Warning of Alzheimer’s Disease). As a clinician, you want to be cognizant of the clues and features of early dementia in an older patient who may seem older or different or more eccentric than at his last annual visit; cannot remember his recent medical history or events; or shows poorer personal hygiene and grooming. These should raise your suspicion and prompt you to perform further investigation of dementia and schedule him for more frequent follow-up visits.

You discuss with Dr. and Mrs. Cramer that Dr. Cramer has early warning signs of Alzheimer's disease. You counsel the patients to cut down on alcohol consumption. You also counsel them on benefits of early diagnosis of Alzheimer’s disease (See Benefits of Early Diagnosis of Alzheimer’s Disease). Blood tests are ordered.

4. All of the following are clues to early warnings of Alzheimer’s disease EXCEPT:
   A. Exhibits failure to thrive physically, socially, and/or emotionally
   B. Expresses profound sadness or worthlessness
   C. Is non-compliant with prescriptions or advice
   D. Is persistently 'No show' for appointments or arrives at the clinic on wrong day or at wrong time
   E. Prolonged time to answer questions or making decisions about treatment options

Question 4. Answer: B

This is incorrect.
Failure to thrive physically, socially, and/or emotionally is a clue to early warning of Alzheimer’s disease. (See Clues to Early Warning of Alzheimer’s Disease).
Sadness and worthlessness are more typical of clinical depression than dementia. However, depression can occur due to underlying dementia which can cause loss of social, physical, and intellectual abilities. Therefore, you will want to perform the Geriatric Depression Scale (See Geriatric Depression Scale) to screen for occult depression along with mental examinations such as Mini-Mental Status Exam (See MMSE) and Clock Drawing Test (See Clock Drawing Test).

Non-compliance with prescriptions or advice is a clue to early warning of Alzheimer’s disease. (See Clues to Early Warning of Alzheimer’s Disease).

Being persistently ‘No show’ for clinic appointments or arrives at the clinic on wrong day or at wrong time is a clue to early warning of Alzheimer’s Disease (See Clues to Early Warning of Alzheimer’s Disease).

Prolonged time to answer questions and making decisions about treatment options is a clue to early warning of Alzheimer’s Disease. (See Clues to Early Warning of Alzheimer’s Disease).

5. Which of the following tests are recommended for screening of dementia?
   A. I and II
   B. I and III
   C. I, II, and IV
   D. I, III, and IV
   E. All of the above

I. Syphilis serology
   II. Liver function test
   III. Vitamin B12 level
   IV. Thyroid stimulating hormone level

Question 5. Answer D. (I, III and IV)

Syphilis serology such as RPR is an appropriate screening test for dementia in older patients (I). Vitamin B12 (cobalamin) level is also an appropriate screening test of dementia in older patients (III). Vitamin B12 deficiency is a common condition in older patients with prevalence estimated to range between 3% and 44%. It may be caused by autoimmune atrophic gastritis, Helicobacter pylori infection, vegan diet, gastric/ileal surgery, and prolonged use of gastric antacids such as H2 blockers and proton pump inhibitors. Vitamin B12 deficiency causes
abnormal DNA metabolism and degeneration of neurons in the spinal cord and the brain, which results in abnormal gait and dementia. Thyroid stimulating hormone level is an appropriate screening test of dementia in older patients (Choice IV). Hypothyroidism is the most common form of thyroid disease in the elderly. Clinically apparent hypothyroidism is present in 0.5 to 5% of patients over 65 years old. Subclinical hypothyroidism is even more common with prevalence of 5 to 20% of patients over 65 years old. It is more common in women than men and in Caucasians than in African Americans. Older patients with hypothyroidism do not often present with typical signs and symptoms of young patients with hypothyroidism. Older patients with hypothyroidism may present with weight loss rather than weight gain, and more prominent emotional problems such as anxiety, depression and dementia rather than physical symptoms. (See Laboratory and Imaging Tests for Investigating Alzheimer's Disease).

Liver function test is not an appropriate screening test of dementia in older patients with no history of alcoholism (II). Although liver cirrhosis may cause encephalopathy, it is unlikely that this patient has cirrhosis without signs and symptoms of cirrhosis (e.g. ascites, jaundice, spider angioma, telangiectasia, asterixis).

The blood tests including basic metabolic panel, complete blood count, syphilis serology, vitamin B12, and thyroid stimulation test are all normal. You also ordered a CT scan of the head which revealed age-related atrophy of the cortical brain (See Cramer CT scan of the brain). Additionally, the patient underwent a comprehensive psychological evaluation which shows his MMSE score is again 29 out of 30. A battery of memory exams revealed that Dr. Cramer has moderate deficits with word finding, recalling, and calculation. His visuospatial ability, judgment and insights are intact. You call Dr. and Mrs. Cramer to report the results of these tests and tell them that the most likely diagnosis of his memory problem is Alzheimer’s disease.

6. All of the following are appropriate treatment plans for Dr. Cramer at this time EXCEPT:
   A. Prescribe Aricept (donepezil) for his memory problems
   B. Counsel them on how to create a home and social environment in which Dr. Cramer retains dignity without facing embarrassing situations
   C. Refer him to occupational therapy for evaluation of driving skills and home safety
   D. Prescribe Benadryl (diphenhydramine) as needed for sleep problems

Question 6. Answer: D

A. This answer is incorrect.
It is appropriate to offer an acetyl cholinesterase inhibitor such as donepezil (Aricept) which may delay the progression of memory loss among patients with mild to moderate Alzheimer's disease. Once you make a diagnosis of Alzheimer’s disease, your role as a clinician is to discuss with the patient and family what the disease will mean to them. This will include discussion on what the prognosis and progression of the disease is, what management options
are available, what resources are available to the patients and family. For more information, visit the Alzheimer's Association web site (See www.alz.org.)

Although the recent research has uncovered the pathophysiology and possible molecular markers, Alzheimer's disease remains a progressive and incurable disease. Diagnosis of Alzheimer's disease is often devastating to the patient and family because there is currently no cure and the risk of developing Alzheimer's disease increases among siblings and children of the patient with the disease. While we are still waiting for the cure, it is important that you, as a clinician, inform the patient and family about the disease, and prepare them for the future problems by teaching them how to modify patient’s aberrant behaviors, how to adjust home and social environments in reducing embarrassing situations, and how to get help for caregivers in reducing caregiver burdens. For more information on Alzheimer’s disease, visit the Alzheimer's Association web site (See www.alz.org/Health/qcc/overview.asp).

B. This answer is incorrect.
It is important to counsel the patient and family on how to create home and social environments in which the patient retains dignity without facing embarrassing situations (See ‘No Fail Approach’ to dementia).

C. This answer is incorrect.
It is appropriate to refer patients to occupational therapy for evaluation of driving skills and home safety. Driving is a complex task requiring intact function in several domains, including cognitive, visual, auditory, and musculoskeletal systems. Older patients with medical conditions such as dementia, stroke, diabetes and heart disease have significantly higher incidence of car crash every year. Therefore, you, as a clinician, will want to refer at-risk patients to an occupational therapist with special training in conducting a driving skill test. An occupational therapist can also evaluate the patient’s functional status and determine needs for equipment and devices to ensure home safety. For more information on safety of older drivers, visit the UF National Older Driver Research and Training Center website (See http://driving.phhp.ufl.edu).

D. This answer is correct.
It is inappropriate to prescribe an anticholinergic sleep medication such as diphenhydramine to ANY older patient because of its side effects such as drowsiness, confusion, dizziness, urinary retention, constipation and dry mouth. Diphenhydramine (Benadryl, Tylenol PM) is a common anticholinergic sleep medication and is available over the counter at a local pharmacy. Therefore, it is important for you, as a clinician, to ask older patients about all the over-the-counter medications that they take on each clinic visit.

You prescribe Aricept to Dr. Cramer. You also counsel both Dr. and Mrs. Cramer on the ‘No Fail Environment’ approach to dementia (See ‘No Fail Approach’ to dementia) and refer him driving skill assessment. 3 months later, Mrs. Cramer calls you and reports that Dr. Cramer’s memory has improved.
1 year later, Dr. and Mrs. Cramer return to see you in the Senior Care Center. Mrs. Cramer reports that Dr. Cramer’s memory problems are getting worse. He misplaces things in the house. He has difficulty in making phone calls. He is always anxious and has problems sleeping through the night. One night, Dr. Cramer woke up and wandered out on the street without telling Mrs. Cramer. The police later found him and brought him back home. Dr. Cramer admits to having difficulty remembering things. His physical examination is unchanged except that his Mini-Mental status exam score has decreased to 23/30 and he has given ‘near-miss’ answers to orientation, calculation, registration, recall, and copying intersecting pentagons. His geriatric depression scale score is 8/15. He performed a Clock Drawing Test (See Clock Drawing Test, Dr. Cramer, Follow-up Visit)

7. Based on his symptoms and signs, at what stage of Alzheimer’s disease is Dr. Cramer?
   A. Preclinical stage
   B. Early stage
   C. Moderate stage
   D. Late stage

Question 7. Answer: C

A. This answer is incorrect. Based on his signs and symptoms, he is not at the preclinical stage of Alzheimer’s disease. (See Stages of Alzheimer’s Disease)

B. This answer is incorrect. Based on his signs and symptoms, he is not at the early stage of Alzheimer’s disease. (See Stages of Alzheimer’s Disease)

C. This answer is correct. Based on his signs and symptoms, he is at the moderate stage of Alzheimer’s disease (See Stages of Alzheimer’s Disease).

D. This answer is incorrect. Based on his signs and symptoms, he is not at the late stage of Alzheimer’s disease (See Stages of Alzheimer’s Disease)

8. What is the most appropriate next step at this time?
   A. I and IV
   B. II and IV
   C. II and III
   D. II, III, and IV.
I. Discontinue Aricept (donepezil) and prescribe Namenda (memantine) for his memory problems
II. Ask Mrs. Cramer about her coping skills with her husband’s memory and behavioral problems
III. Refer the patient and his wife to a nursing home for skilled nursing care.
IV. Prescribe Zoloft (sertraline) for his depression

Question 8. Answer: B (II and IV)

Since Alzheimer’s disease is progressive and currently has no definitive cure, Dr. Cramer will be faced with difficulty coping with progressive loss of memory and decreasing functional status. Mrs. Cramer will also have difficulty coping with heavy responsibility of caring for the patient with behavioral problems since Dr. Cramer wanders off. The prevalence of depression among caregivers of patients with dementia is as high as 50%. In order to prevent burn out and depression, you, as a clinician, will want to ask Mrs. Cramer about her coping skills and offer resources to relieve care-burden at home (Choice II). These resources include arranging patients to go to an adult day care center a few times per week, asking other family members or friends to stay with Dr. Cramer a few hours per day, and arranging respite care in order to occasionally relieve Mrs. Cramer from responsibility of care giving. Social workers and case managers can help you find the right resources for Dr. and Mrs. Cramer. It is also appropriate to counsel his wife about coping skills with her husband’s memory and behavioral problems. (See ‘No Fail Approach’ to Dementia). Furthermore, it is appropriate to provide treatment of depression including an antidepressant and mental counseling (Choice IV) since his Geriatric Depression Scale (GDS) is >5/15, which indicates clinical depression. (See How to Manage Depression in Older Adults). Donepezil and memantine are different classes of memory-enhancing medications and have different mechanisms of actions. (See Pharmacologic Treatment of Alzheimer’s Disease). Donepezil is an acetyl cholinesterase inhibitor which enhances the action of acetylcholine at the neuronal synapses and helps improve memory in patients with mild to moderate Alzheimer’s disease. Memantine is an NMDA receptor antagonist which helps slow calcium influx and subsequent nerve damage in patients with moderate to severe Alzheimer’s disease. It is also inappropriate to refer the patient to a nursing home at this time because the patient does not have any needs for skilled nursing care (Choice IV) (See Assessing Needs for Appropriate Placement and Home Care for Older Patients).

On further questioning to Mrs. Cramer, you find that she feels overwhelmed with the tasks of staying with her husband constantly at home because she is not sure when he will wander out of the house and get lost on the street. She is afraid that something bad is going to happen to him.

9. All of the following advice is appropriate to give to Mrs. Cramer in reducing the stress of giving care to Dr. Cramer at home EXCEPT?
A. Refer him to an adult daycare service available at an assisted living facility (ALF) near their home
B. Refer him to Alzheimer’s Association Safe Return Program®
C. Counsel them about preparing advance directives and durable power of attorney for health care
D. Discuss with them disclosing his diagnosis of Alzheimer’s disease to his family and close friends
E. Instruct Mrs. Cramer to give him a low dose of risperidone (Risperdal) as needed for agitation and sleep problems at night

Question 9. Answer: E

A. This answer is incorrect. 
Treating patients with Alzheimer’s disease involves guiding and supporting their caregivers as well. Stress and depression can take their toll on caregivers who attend to daily needs of an Alzheimer patient. Therefore, it is appropriate to discuss strategies in reducing caregiver’s burden by referring the patient to an adult daycare service at an assisted living facility which will give the caregiver freedom for a few hours (See Assessing Needs for Appropriate Placement and Home Care for Older Patients).

B. This answer is incorrect. 
It is appropriate to refer the patient to Alzheimer’s Association Safe Return®, which is a nationwide identification, support and enrollment program that provides assistance when a person with Alzheimer’s or a related dementia wanders and becomes lost locally or far from home. For more information, visit the Alzheimer’s Association Safe Return® website (http://www.alz.org/Services/SafeReturn.asp#about).

C. This answer is incorrect.
It is appropriate to counsel the patient and wife about preparing advance directives and designating durable power of attorney of health care at the earlier stage of Alzheimer’s disease while the patient has adequate mental capability to make decisions about his health care. Advance Directive is a legal document in which the patient gives an instruction about what health care he/she would like to receive, when the directives will take effect, who he/she names as a health care power of attorney in case he/she is incapacitated to make health care decisions. If the patient is able, he/she can give instructions orally to health care providers or to a person serving as his/her power of attorney. However, it is best if the patient puts his/her instructions in writing. During this clerkship, we expect you to ask your patients about their advance directives. For more information, please see the Guide on How to Give Advance Directive Counseling (See Guide to How to Give Advance Directive Counseling).

D. This answer is incorrect. 
It is appropriate to encourage the patient and family to disclose the diagnosis of Alzheimer’s disease to their family and close friends. Although the patient and wife may feel embarrassed about revealing the diagnosis of Alzheimer’s disease, open discussion about the disease often increases understanding and support of the family and friends and decreases the anxiety of the patient and caregiver in social situations.
E. This answer is correct.
It is inappropriate to prescribe medications such as risperidone before counseling the patient and caregiver about non-pharmacologic interventions for behavioral problems in demented patients (See Non-Pharmacological Approaches to Behavioral Problems in Demented Patients). Medications to control behaviors may be used judiciously if the patient fails to respond to the non-pharmacological approaches (See Pharmacological Treatment of Agitation in Demented Patients).
Dementia Case 2: Mrs. MacDonald

Mrs. MacDonald is an 81 year old woman, not previously known to you, was brought to the emergency room of the Shands Medical Center. Tonight, you are on call to take admission with an Internal Medicine resident. Mrs. MacDonald arrived around 7 pm on a cold night, after being found outside in her nightgown, confused and attempting to enter a condominium similar to her own, but on a different floor in her complex. A condominium resident called the police when she became abusive and confused. Since the police could not establish her correct address at that time, she was brought to the emergency room.

In the emergency room, Mrs. MacDonald becomes increasingly agitated, looks pale and ill. EKG performed on arrival to the emergency room does not reveal any arrhythmia or significant ST changes (See EKG, Mrs. MacDonald). On examination, she is unkempt and has poor personal hygiene. It takes several attempts to gain her attention to answer any questions. At times, she looks drowsy and falls asleep. Once you gain her attention, she rambles with incoherent speech. She is unable to tell you who she is, where she is, or where she lives. Her vital signs revealed her temperature of 95.5 F, heart rate of 97 beats per minutes, blood pressure of 150/90, respiration of 28 per minutes and O2 saturation of 96%. She appears agitated, diaphoretic at times, and at other times quiet, withdrawn and near sleep. Her physical examination reveals there is no wound, bruising, deformity or tenderness in the head, neck, back, buttocks, chest, abdomen, pelvis, or extremities. She does not have any localizing abnormal signs of nervous system. The range of movement of shoulders, elbows, hips, and knees elicits no pain.

1. Which of the following are appropriate initial steps?

A. I & II
B. I & V
C. II, III & IV
D. I, II & IV
E. I, II, III and IV

I. Obtain lab work
II. Admit her to an inpatient ward and monitor her closely
III. Obtain MRI scan of the brain
IV. Find a family member who may be able to provide more history
V. Give a small dose of haloperidol (Haldol) to calm her down

Question 1: Answer: D (I, II, and IV)

The acute onset of symptoms such as disorganized thinking with rambling, irrelevant or incoherent speech, and inability both to maintain and to shift attention are cardinal symptoms of delirium. Delirium is the acute effect of physical illness on brain function. It can occur at any age, but is much more common in the older patients and affects 30% to 40% of all older persons admitted to the hospital. DELIRIUM IS A MEDICAL EMERGENCY! Delirium is also associated with
increased morbidity, functional decline, greater hospital costs, increased length of stay, and greater rates of nursing home placement. Therefore, it is critical that you admit Mrs. McDonald to an inpatient ward and monitor her closely (Choice II). Unfortunately, delirium is often neglected or misdiagnosed by physicians. Delirious patients with more psychomotor agitation such as hallucinations or delusions often end up with psychiatric rather than medical admission. Furthermore, delirious patients with atypical presentations like apathy and “quiet” symptoms often are undiagnosed and result in delayed treatment. The first step in management of delirium is to explore causes by ordering lab work such as electrolytes, liver function, kidney function, WBC count, urinalysis, chest X-ray, blood and urine culture (Choice I) (See Mnemonic DELIRIUM (S)). It is also appropriate to find a family member who may be able to provide more history about the patient since Mrs. MacDonald is confused and unable to give a good history to you (Choice IV). Her family member can provide you with critical information such as the patient’s previous mental status, medical conditions and medication, all of which may predispose the patient to delirium. It is inappropriate to order MRI scan of the brain at this time (Choice II). The first step in management of delirium is to explore causes. In the absence of another clear cause, it is important to perform a non-contrast CT scan of the brain to look for subdural hematoma, which is a possible cause of delirium. CT scan of the brain will reveal acute bleeding more quickly and inexpensively than MRI Scan. Unless the patient is a danger to herself or others, it is inappropriate to give antipsychotics before initiating diagnostic workup to explore causes of delirium (Choice V). Again, DELIRIUM IS A MEDICAL EMERGENCY!! It is critical that you recognize delirium, search for underlying causes (See Mnemonic DELIRIUM (S)), and give treatment as soon as possible.

2. Which of the following signs and symptoms are more typical of delirium rather than dementia?
   A. I & III
   B. II & III
   C. III & IV
   D. IV & V
   E. III, IV, and V

   I. Gradual onset that cannot be dated
   II. Psychomotor changes (hypoactive or hyperactive) occur at the later stage
   III. Generally irreversible
   IV. Strikingly short attention span
   V. Disturbed sleep-awake cycle with hour-to-hour variation

Question 2: Answer: D (IV & V)

Unlike dementia, strikingly short attention span is a hallmark of delirium (Choice IV). Disturbed sleep-awake cycle with hour-to-hour variation is a feature of delirium (Choice V). (See Distinguishing Features Among Dementia, Depression and Delirium). Psychomotor changes occurring at the later stage is NOT a feature of delirium (Choice II). In delirium, psychomotor changes are prominent at the onset. Gradual onset of symptoms is also a hallmark of dementia, but NOT delirium (Choice I). Unlike most dementia, delirium is reversible (Choice III). If diagnosis and treatment of delirium are delayed, however, delirium is associated with a high death rate. It is also associated with increased functional decline, greater hospital costs, increased
length of stay, and greater rates of nursing home placement. Therefore, it is critical that you as a clinician, recognize delirium, find and treat underlying causes as soon as possible.

Her urinalysis revealed >10 white blood cells on the high power field and positive nitrates and leukocyte esterase. Urine culture is pending.

3. All of the following is the most appropriate management of her agitation at this time EXCEPT:

A. Give Antibiotics
B. Ask for a sitter to monitor her closely and reassure her
C. Put her on 4-point restraints for agitation
D. Find a family member who can bring glasses and hearing aids to her bedside

Question 3: Answer: C

A. This answer is incorrect.
Giving an antibiotic to a delirious patient with pyuria after obtaining blood and urine culture is appropriate in management of agitation due to delirium because infection, particularly urinary tract infection, is a common cause of delirium. (See Mnemonic DELIRIUM (S)).

B. This answer is incorrect.
Asking for a sitter to monitor her closely and reassure her is a first-line approach to management of delirium (See How to Manage Delirium).

C. This answer is correct.
Physical restraints are used ONLY AS A LAST RESORT. (See How to Manage Delirium).
Physical restraints are used to maintain patient safety such as preventing from pulling out tubes and catheters. Use of restraints can further exacerbate agitation in delirious patients. Therefore, you, as a clinician, should be judicious about use of restraints.

D. This answer is correct.
Finding a family member who can bring glasses and hearing aids to her bedside is appropriate in giving orientation to a delirious patient such as Mrs. MacDonald. (See How to Manage Delirium).

You decide to admit Mrs. MacDonald to an inpatient ward. The lab work ordered in the emergency room reveals her complete blood count, electrolytes, kidney function, and liver function tests are all normal. CT scan of the head revealed significant atrophy of bilateral cerebral cortex, but no acute bleeding (See CT Scan, Mrs. MacDonald). You conclude that Mrs. MacDonald developed delirium from urinary tract infection and decides to treat her with IV fluid and antibiotic.

In the meantime, the patient’s daughter, called by the police, arrives at the hospital. Daughter states that Mrs. MacDonald has lived alone in the condominium for 8 years since her husband
died. She lived independently without any difficulty, however, for the past 5 years, the patient has become increasingly forgetful. She often forgets to take her medications for hypertension, coronary heart disease, and hypothyroidism. She no longer plays bridge with her neighbors because she gets irritated and abusive when she loses. The patient has history of multiple urinary tract infections for the past 2 years since she developed stool incontinence and does not always change her “Depends” after each accident. Last year, the daughter tried to persuade Mrs. MacDonald to move to her daughter’s house, but Mrs. MacDonald refused because she did not want to lose her freedom living independently. The daughter asks you for your advice on what to do about this.

4. Based on the symptoms and signs described by the daughter, at what stage of Alzheimer’s disease is Mrs. MacDonald?

A. Preclinical Stage
B. Mild Stage
C. Moderate stage
D. Advanced stage

**Question 4: Answer: C**

A. This answer is incorrect.
She has loss of both Activities of Daily Living (ADL’s) and Instrumental Activities of Daily Living (IADL’s). Therefore, the patient is not at the preclinical stage of Alzheimer’s disease. (See [Stages of Alzheimer’s disease](#))

B. This answer is incorrect.
She not only has loss of Instrumental Activities of Daily Living (IADL’s), but also loss of Activities of Daily Living. Therefore, the patient is not at the mild stage of Alzheimer’s disease. (See [Stages of Alzheimer’s disease](#))

C. This answer is correct.
She has moderate to severe deficit of Instrumental Activities of Daily Living (IADL’s) and mild deficit of Activities of Daily Living (ADL’s), which are the characteristics of the moderate stage of Alzheimer’s disease. (See [Stages of Alzheimer’s disease](#))

D. This answer is incorrect.
She has only mild deficits in Activities of Daily Living (ADL’s), which is not a feature of advanced stage of Alzheimer’s disease. (See [Stages of Alzheimer’s disease](#))
5. Which of the following advice is appropriate to give to the daughter regarding Mrs. MacDonald’s living arrangement?

A. Since the patient wants to live in her condominium, you suggest to the daughter that she move in with Mrs. MacDonald.
B. Since it is unsafe for Mrs. MacDonald to live independently, you suggest to the daughter that Mrs. MacDonald move in with her.
C. Since the patient lacks mental capacity to make her own decision, you suggest holding the discussion until her mental status clears.
D. Since it is unsafe for Mrs. MacDonald to live independently, you suggest to the daughter that she should arrange to have her mother move to a skilled nursing facility after discharge.

**Question 5: Answer: C**

A. This answer is incorrect.
It is inappropriate to suggest to the daughter that she should move in with the patient without discussing with the patient. It is prudent to wait for the patient’s cognitive function to improve before making any decision about her living arrangement after discharge from the hospital.

B. This answer is incorrect.
It is inappropriate to suggest to the daughter that the patient should move in with her without discussing with the patient. It is prudent to wait for the patient’s cognitive function to improve before making any decision about her living arrangement after discharge from the hospital.

C. This answer is correct.
It is prudent to wait for the patient’s cognition to improve before making any decision about her living arrangement after discharge from the hospital. Unlike dementia, delirium is a reversible condition if treated early.

D. This answer is incorrect.
It is inappropriate to refer the patient to a skilled nursing facility based on her current mental status. Unlike dementia, delirium is a reversible condition if treated early. Therefore, it is prudent to wait for her cognitive function to improve before making any decision about her living arrangement after discharge from the hospital.

After 3 days in the hospital, Mrs. MacDonald’s mental status is gradually clearing up. Her speech is more coherent. The daughter confirms that Mrs. MacDonald’s mental capacity is about the same as before this hospitalization. You formally assess her mental status and reveals that her mini-mental status exam (MMSE) score is 18/30, and her geriatric depression scale (GDS) score is 2/15. When you ask her to stand and walk in the hallway, you notice that her gait is unsteady and she needs assistance from one person to get out of the bed. You decide to progress her activity from ‘bed rest’ to ‘as tolerated’ and institute physical therapy to improve her balance and strength. You, then, explain to Mrs. MacDonald and her daughter that the most likely diagnosis of her progressive forgetfulness is Alzheimer’s disease. You also explain to the patient that it is no longer safe for her to live alone and you recommend that she should live either with her daughter or in an assisted living facility. After further discussion, the patient determines that she would rather live with her daughter.
6. Which of the following statements predicts poor rehabilitation outcome of an elderly patient who moves to an inpatient rehabilitation facility?

A. II and IV  
B. I and II  
C. I, II, and III  
D. All of the above

I. She has inadequate family support at home.  
II. She has problems with cognitive ability.  
III. She tolerates 3 hours per day of therapy sessions.  
IV. She has multiple medical conditions which are stable.

Question 6: Answer: B (I and II)

Having inadequate family support at home is associated with a poor rehabilitation outcome (Choice I). A rehabilitation program in a multi-disciplinary setting is one of the most effective models of rehabilitation in an older adult who has lost physical functions after amputation, hip fracture, or long hospitalization. A family member who can serve as a caregiver plays an important role in rehabilitation since they will support your patient to continue home therapy and give assistance for the functions that the patient has not yet regained. Having problems with cognitive ability also predicts poor outcome since the patient may not be able to follow instructions during therapy sessions (Choice II). (See How to Determine Rehabilitation Potential for Inpatient Rehabilitation). Tolerating 3 hours per day of therapy sessions are a predictor of good rehabilitation outcome. Therefore, Choice III is wrong. Having stable medical conditions with no contraindication to do exercises is associated with good rehabilitation outcome. Therefore, Choice IV is wrong.

Before discharging Mrs. MacDonald, you counsel the patient on advance directives. Mrs. MacDonald shares with you her experience watching her husband kept alive on an “artificial breathing machine” for 2 months before he died in a hospital. Mrs. MacDonald states that she does not want to be kept alive like her husband if her condition is deemed terminal. She also states that she wants her daughter to make medical and financial decision for her if she can no longer make any decisions for herself due to progressive dementia.

7. What is the daughter’s role that the patient describes in her advance directives?

A. Power of Attorney  
B. Durable Power of Attorney  
C. Conservator  
D. Guardian
A. This answer is incorrect. 
A Power of Attorney is a legal term for an individual who is appointed by a competent person to act on behalf of that person usually on fiscal and property matters. A Power of Attorney for Health Care extends the power to act as a health care proxy in health care decisions. Unless the Power of Attorney is durable, the power terminates when the patient becomes incompetent. Since Mrs. MacDonald wishes for her daughter to make decisions AFTER she is incapacitated, her daughter’s role is rather a Durable Power of Attorney, not just a Power of Attorney.

B. This answer is correct. 
A Durable Power of Attorney is a legal term for an individual who is appointed by a competent person to act on behalf of that person even after that person becomes incapacitated. Therefore, the power is durable. A Durable Power of Attorney usually makes decisions on fiscal and property matters. Durable Power of Attorney for Health Care extends the power to act as a health care proxy in health care decisions.

C. This answer is incorrect. 
A Conservator is a legal term for a person appointed to oversee and take care of the property of a person unable to do so. A conservatorship is usually appointed by a court. However, conservatorship is not based on competency or incompetence of the owner of the property, and the property remains the owner’s. A conservator is synonymous with a guardian.

B. This answer is incorrect. 
A Guardian is a legal term for a person appointed to oversee and take care of the property of a person unable to do so. A guardianship is usually appointed by a court. However, guardianship is not based on competency or incompetence of the owner of the property, and the property remains the owner’s. A guardian is synonymous with a conservator.

The daughter asks you about Mrs. MacDonald’s driving privilege. The daughter does not think Mrs. MacDonald is safe to drive because she is forgetful and gets lost easily while driving. When you talk to Mrs. MacDonald, however, she insists on driving.

8. In assessing the driving ability of Mrs. MacDonald, which of the following abilities are the most crucial for safe driving?
   A. I and II 
   B. I and III 
   C. II and III 
   D. I, II and IV 
   E. I, II, IV, and V 
   F. All of the above

   I. Cognition 
   II. Vision 
   III. Balance 
   IV. Hearing 
   V. Upper and lower extremity flexibility
Question 8. The correct answer: D (I, II and IV)

Due to rapidly growing number of older drivers, combined with the fact that the majority of seniors depend on automobiles to maintain mobility, the mortality rates of older adults due to car crashes is expected to grow in the future. Studies have shown that healthy older adults possess the same or superior driving abilities compared with younger drivers. However, older adults with impaired functions in cognitive, visual, auditory and musculoskeletal systems account for the highest morbidity and mortality associated with older driver crashes (Choice I, II and IV). (See Deficits Associated with Older Driver Crashes). For patient and public safety reasons, it is important for you as a physician to identify a potentially crash-prone older driver like Mrs. MacDonald, refer her to a formal on-road driving skill test and provide interventions in restoring functional deficits if possible. Balance and upper and lower extremity flexibility are not associated with increased risk for driving accidents among older persons (Choice III and V).

9. Which of the following conditions is most commonly associated with crashes in older drivers?
   A. Turning left across traffic at an intersection
   B. Driving at night
   C. Merging into traffic on an interstate highway
   D. Driving on a country road.

Question 9. Correct answer: A.

A. This answer is correct.
Driving is a complex task requiring intact function in multiple domains including cognitive, visual, auditory, and musculoskeletal systems. Older driver crashes most commonly occur when the driver is turning left against traffic at intersections, during daylight hours and under good road conditions.

B. This answer is incorrect.
Driving at night is not a typical condition in which older driver crashes occur. This is partly due to self-limitation of night driving by many older drivers.

C. This answer is incorrect.
Merging into traffic on an interstate highway is not a typical condition in which older driver crashes occur. This is partly due to self-limitation of highway driving by many older drivers.

D. This answer is incorrect.
Driving on rural roads is not a typical condition in which older driver crashes occur.

10. Which of the following is the most appropriate approach to give to Mrs. MacDonald and daughter about continued driving?
   A. Advise her to stop driving
   B. Refer her to a local driving assessment clinic designed to assess and counsel older adult drivers
Question 10. Correct answer: B

A. This answer is incorrect.
Since the patient insists on driving, merely advising her to stop driving will not result in resolution of the problem.

B. This answer is correct.
Counseling an older patient to stop driving is clear cut in patients with advanced dementia, uncontrolled seizures, frequent hypoglycemia, active alcoholism, or legal blindness. However, in a moderately demented person such as Mrs. MacDonald who is at risk for car crashes and refuses to stop driving, intervention is required by caregivers (disabling the automobile), the courts, and/or state department of motor vehicles. The first step is to refer the patient to hospital or community-based older driver programs which provide objective assessments of driving competence and confidential feedback. A driving test usually consists of two parts: 1) Comprehensive clinical examination to test vision, strength, range of motion and cognition, 2) On-road driving test which is performed by a specially trained occupational therapist. There are two older driver’s programs in Gainesville, Florida. For more information, contact the UF Department of Occupational Therapy (See http://independencedrive.phhp.ufl.edu) or Shands Rehabilitation at the Magnolia Park (Phone: 352-265-9100).

If the patient refuses to take a driving test, the next step is to report Mrs. MacDonald to the Florida Department of Transportation (DOT). The DOT will evaluate her case and order her to complete a formal driving test at a local older driver’s program. Based on the test results, the DOT will recommend remediation and temporary limitation or suspension of her driver’s license. If the patient does not take the driving test within 45 days, the DOT may consider revoking her driver’s license. For more information, refer to the Florida Dept of Transportation web site (http://www.hsmv.state.fl.us/ddl/helpful.html).

C. This answer is incorrect.
Suggesting that Mrs. MacDonald reduce her exposure to unsafe conditions will not decrease her risk for car crashes because older driver crashes occur most commonly in broad daylight and under good road conditions.

D. This answer is incorrect.
Re-evaluating her medical history and physical examination will not result in resolution of the problem.
Dementia Case 3: Mr. Beck

Mr. Beck is a 70 year old man with progressive memory problems who has been living in the long-term care facility at the River Garden Retirement Community for the past 3 years. Today is your first day of the Geriatric Clerkship and you are assigned to care for Mr. Beck for the next 2 weeks. As you review his medical record, you note that he has occasional episodes of confusion for the past 2 years which are getting more frequent to once a week. He takes carbidopa-levodopa for progressive muscle rigidity and mask-like facies. The dosage recently was increased due to worsening gait difficulties and increased frequency of falls. Since then, he has had fluctuating episodes of confusion; he talks to people who are not present and sees animals in his room at night. His other medical history includes mild congestive heart failure and hypertension. His physical examination reveals muscle rigidity, mask like facies and shuffling gait which have not changed since 6 months ago. His functional assessment reveals inability to dress, groom or feed himself and incontinence to urination. Laboratory examination for blood and urine culture, electrolytes, leukocyte count and hemoglobin are normal. Carbidopa-levodopa is reduced to the previous dosage, and visual hallucination improves slightly.

Which of the following is the most likely diagnosis?

A. Myasthenia gravis
B. Dementia of Alzheimer’s type
C. Lewy body dementia
D. Vascular dementia

Answer: C.

A. This answer is incorrect. His presentation is not a typical of myasthenia gravis. Myasthenia gravis is an acquired autoimmune disorder in which acetylcholine-receptor antibodies attack the post synaptic membrane of the neuromuscular junction. Patients with myasthenia gravis presents with ptosis, diplopia, dysarthria, dysphagia, and prominent weakness that worsens with exertion. It is more common in women than men (See Different Types of Dementia).

B. This answer is incorrect. His presentation is not typical of Alzheimer’s disease. Alzheimer’s dementia features steady and progressive memory loss, and up to 30% of patients develop parkinsonism (See Different Types of Dementia). However, visual hallucination and fluctuation in mental state are less common in Alzheimer’s type (See Different Types of Dementia).

C. This answer is correct. Lewy body dementia is the third most common cause of dementia after Alzheimer’s disease and vascular dementia. Lewy body dementia features fluctuating mental status, episodes of delirium-like confusion, and a high incidence of visual hallucination that are often exacerbated by Carbidopa-Levodopa, an anti-Parkinsonism medication. Lewy body dementia begins with progressive memory disturbance and Parkinson’s disease with motor disturbance such as
cogwheel rigidity, mask facies, and resting tremors. But as the disease progresses, the cognitive disturbance becomes more dominant than expected in Parkinson's disease. An autopsy of the brain of the Lewy body disease reveals characteristic histopathology of intracytoplasmic neuronal inclusions (=Lewy bodies) in the brain globally, including cerebral cortex, basal ganglia, diencephalon, and brain stem. (See Different Types of Dementia).

D. This answer is incorrect. His presentation is not typical of vascular dementia. Vascular dementia is the second most common cause of dementia after Alzheimer’s type. Vascular dementia features step-wise loss of functions which is preceded by a new vascular ischemic event in the brain. MRI or CT scan of the brain of a patient with vascular dementia reveals diffuse infarction of the brain. (See Different Types of Dementia).