

MENTAL STATUS CHANGES

LEARNING OBJECTIVES:

KNOWLEDGE - Students should be able to define or describe:

1. Mental status changes and the syndromes of dementia and delirium (acute confusional state) as well as psychiatric illnesses that may present as changes in mental status.
2. The major points of differentiation between dementia, delirium, and depression on history, physical examination, and mental status testing.
3. The differential diagnosis for dementia, the major causes of dementing illnesses, and the work-up for dementia.
4. The major causes for delirium (acute confusional states) and the diagnostic evaluation of the delirious patient.
5. How to speak with the patient and/or the patient's family regarding diagnosis, care plans, and prognosis. In the primary care of a person with dementia, this would include discussion of advance directives and durable power of attorney, planning for care at home or in another setting, and discussion of care in the event of a serious illness.
6. That mental status changes are a common pathway of a variety of illnesses in older patients and that older people should not be assumed to be demented when they present with mental status changes.
7. That mental status changes are a common event in the care of patients with HIV related illness.

SKILLS - Students should be able to:

1. Recognize altered mental status in a patient.
2. Gather a history from a patient or other informants that helps to differentiate between dementia, delirium, or a psychiatric illness.
3. Focus questions in the history that will elucidate the underlying etiology of the mental status change.
4. Perform a thorough physical examination with emphasis on the neurological evaluation that assists in the diagnosis of mental status changes
5. Do a screening mental status examination using the Folstein Mini-Mental State Exam and be able to interpret the results.
6. Recognize that the differential diagnosis of a person with mental status changes includes a delirium, a dementing illness, and a psychiatric illness such as depression, mania, or psychosis. In considering the diagnosis of dementia, one must further differentiate between a dementia of the

Alzheimer's type, vascular dementias (including multi-infarct dementia), other less common causes of dementia, and the reversible dementias (hypothyroidism, prolonged drug intoxication, vitamin B12 deficiency, chronic subdural hematoma, etc.). For persons with acute confusional states/delirium, the differential centers on the underlying etiology and can be roughly divided into neurologic causes (trauma, stroke, seizure, infection), systemic causes, and psychiatric illness. In individuals with HIV infection, mental status changes can have a long differential and include the AIDS dementia complex, another infectious process (e.g. Toxoplasmosis), a neoplastic process (e.g., CNS lymphoma), or any of the other reasons why an individual may have mental status changes.

7. Order and interpret the following laboratory examinations in the evaluation of a person with mental status changes: CBC, electrolytes, glucose, BUN, creatinine, liver function tests, thyroid function tests, calcium, phosphorus, vitamin B12, VDRL, drug screen, arterial blood gases, lumbar puncture, CT scan, MRI scan, EEG.
8. As necessary, perform a venipuncture for laboratory testing and, in selected cases, a lumbar puncture.

ATTITUDES AND PROFESSIONAL BEHAVIORS:

1. Recognize the anxiety and concern of patients and their families with mental status changes and be able to provide empathic care with accurate information, appropriate support, and on-going care.
2. An awareness that delirious and demented individuals are to be treated with respect, concern and compassion.
3. Willingness to assist and discuss care issues with the family of persons caring for individuals with dementing illnesses.

A brief word about terminology. The topic of mental status changes can be made more complicated than it need be by confusing terminology. Delirium and acute confusional states are used interchangeably by many physicians. Others reserve the term delirium for a person who is confused and agitated, the classic example would be delirium tremens. Another point of confusion concerns the use of the terms delirium, dementia, and reversible dementia. A delirium is normally considered reversible. Dementias are, in general, irreversible. So what is a reversible dementia? It is a dementing illness which, if the etiology is determined and appropriate treatment instituted, the signs and symptoms of the dementia will be reversed or lessened and the person will improve

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CASE #1:

An eighty-one year old man is brought to the physician's office by his son and daughter-in-law. The father, Mr. Ryan, lives in the lower level of a two story, two family home. The son and his wife live upstairs. They are concerned that he is increasingly forgetful. Recently, he became lost on a walk in his neighborhood. Mr. Ryan is relatively unconcerned and says: "My kids worry too much about me. After all, I am eighty years old. What do you expect?"

Mr. Ryan denies depressed mood, difficulty sleeping, ruminative thoughts, concerns about death, or thoughts about taking his life. On further questioning, Mr. Ryan's son describes that over the last two years his father has had increasing difficulty managing his finances, caring for his apartment, and preparing meals. He has trouble remembering the names of his three grandchildren and has forgotten all family birthdays over the past year. He will spend most of the morning reading the paper and seems to reread the sports pages several times.

Medical history is unremarkable except for bilateral cataract replacements. There are no prescribed medications. There is no history of depression. Social history is remarkable for owning the house where his son and daughter live, a remote smoking history but no cigarettes for over thirty years, and one to two drinks a night. Mr. Ryan's wife died ten years ago.

Physical exam is remarkable for a pleasant older man, laughing and winking as his son mentions his concerns. Vital signs include a regular pulse at 70 and a blood pressure of 140/80. Pertinent physical findings include no evidence of head trauma, full extraocular motions, clear lungs, a regular cardiac rhythm with a soft systolic murmur heard at the right second intercostal space, no carotid bruits, a benign abdominal exam with guaiac negative stool, and a firm prostate nodule. Neurologic exam reveals normal cranial nerve findings, motor strength 5/5 in all extremities, sensory intact to light touch with decreased vibratory sense in both legs, and normal cerebellar exam, gait, and reflexes. Toes are bilaterally down-going on plantar stimulation.

A Folstein Mini-Mental State Exam reveals a total score of 23. Mr. Ryan missed the day, date, year, and place. He was attentive and able to spell WORLD backwards. He remembered 0/3 objects after 5 minutes.

QUESTIONS FOR DISCUSSION:

1. What is your differential diagnosis for Mr. Ryan and why? What parts of the history, physical, and mental status examinations aid you in your differential diagnosis?
2. What tests would you order for Mr. Ryan's work-up?
3. What would you discuss with Mr. Ryan and his family about diagnosis and planning for the future?

CASE #2:

A seventy-three year old woman, Mrs. Walker, is brought into the emergency room by her daughter. Her daughter had found her in her apartment unkempt, confused, and saying that people had broken in and stolen things. Mrs. Walker's daughter had last spoken with her mother two days previously and became alarmed when she did not answer the phone earlier today. Mrs. Walker had not felt well for the past two weeks with complaints of nausea, abdominal discomfort, and worsening of her chronic pain from osteoarthritis of the knees.

In the emergency room, Mrs. Walker does not answer questions appropriately and is unable to provide a coherent history.

Mrs. Walker had been taking ibuprofen 600 mg, three times a day, for her knee pain. A friend in her building suggested she try over-the-counter cimetidine for her abdominal discomfort. Mrs. Walker takes no other medications. She is allergic to penicillin, and develops hives as a reaction.

Social history is remarkable for a supportive family that lives in the surrounding community. Mrs. Walker is normally active in her local church where she volunteers at the church-run day care center. She has been independent in her activities of daily living and instrumental activities of daily living. She does not smoke and has only a rare drink. Mrs. Walker has been widowed for many years.

Physical exam reveals a frightened, thin, older woman who is unkempt, picking at her hospital gown, and not cooperative with efforts to examine her.

Vital signs include a regular pulse of 120, blood pressure of 100/80, a temperature of 100.5 R, and a respiratory rate of 20.

Skin:	There are several bruises on her back and buttocks.
HEENT:	Pupils equal and reactive, EOM's full, no blood behind tympanic membranes, oropharynx appears very dry.
Neck:	Not cooperative with exam but no clear rigidity.
Lungs:	Bibasilar crackles.
Cardiac:	Regular and rapid with no murmur or gallop.
Abdomen:	+ bowel sounds. Diffusely tender to exam without rigidity. No masses or organomegaly. Rectal exam reveals black, guaiac positive stool.
Extremities:	Bony deformity and swelling of both knees without erythema or warmth.
Neuro:	Speech is fluent but confused. Frightened that □those men will get me.□ Cranial nerves without gross deficit. Moves all extremities well. Sensory and cerebellar not checked. Gait not checked. Reflexes 3+ throughout. Toes withdraw to plantar stimulation.

Folstein Mini-Mental State Exam: Impossible to do secondary to inattention. Unable to do serial sevens or spell "WORLD" backward.

Initial laboratory tests return as follows:

CBC	Hgb 7.0, Hct 25
	WBC 15,000 with 85P, 10Ly, 3Mo, 1Eo, 1Ba
	Platelets 250,000

Electrolytes Na+ 153
 K+ 4.5
 Cl- 112
 C02 30

Renal functionBUN 70
 Cre 2.5

Glucose 180

Urine SG 1.020, + WBC, trace blood, micro with gram negative rods

ECG reveals sinus tachycardia with normal intervals, a poor baseline because of patient movement, non-specific ST and T wave changes, but no obvious signs of acute ischemia.

A nasogastric tube is dropped revealing only a few coffee grounds.

QUESTIONS FOR DISCUSSION:

1. Create a problem list for Mrs. Walker's acute presentation and a differential diagnosis of her mental status changes.
2. Write her admitting orders and plans for diagnosis and management over the next day or two.
3. What other laboratory tests or studies are indicated? Does she need an emergent CT scan?
4. What plan would you make to manage her confusion? Should she be restrained? Should she receive any sedating medication?
5. Shortly after admission, Mrs. Walker's three sons, a state policeman, a Marine Corps major, and a lawyer, come to the hospital. They are all upset about their mother and want to know what is wrong with her, why she is 'acting crazy', will she get better, and what you will do to make her better. How will you respond?
6. How does the information about Mrs. Walker's pre-morbid functional status influence your diagnosis?

CASE #3:

William Howard is a 75 year old man with a history of Type II diabetes mellitus, hypertension, peripheral vascular disease, and atrial fibrillation. He has a history of falls secondary to a peripheral neuropathy and decreased vision from diabetic retinopathy. You are called by Mr. Howard's wife who reports that he has been quite sluggish over the last few weeks, frequently sleeping during the day, having some difficulty walking, and occasionally confused. She is concerned since he seems to be getting worse and has had some trouble waking him this afternoon.

His medications include Nifedipine in an extended release preparation, 60 mg/day, NPH insulin 20 units in AM and 10 units in PM, and coumadin 4 mg/night. A blood test last week revealed his INR to be 2.5. Mr. Howard will occasionally have a drink and has a 50 pack year history of smoking, stopping five years ago.

On physical exam, Mr. Howard is a very sleepy older man who sometimes falls asleep while being questioned. Vital signs include an irregularly irregular pulse of 60, blood pressure of 160/80, and temperature of 99 rectally. Pertinent physical findings include no evidence of trauma, clear lungs, a 2/6 holosystolic murmur radiating from the left sternal border to the axilla, a benign abdomen, and no peripheral edema.

Neurological examination reveals a paucity of spontaneous speech. Cranial nerves are within normal limits. Motor exam is non-focal but there is poor cooperation. Gait is unsteady. Reflexes were 1+ throughout with both toes up-going on plantar stimulation.

A Folstein Mini-Mental State Exam was remarkable for disorientation to place and time, poor attention, inability to cooperate with comprehension, repetition, registration, naming, writing, and copying a diagram. A score of 10 was obtained. Mr. Howard had a score of 27 one year ago.

QUESTIONS FOR DISCUSSION:

1. What is your preliminary diagnosis and what should be done with Mr. Howard?
2. Screening laboratory tests return within normal limits. What further examinations or testing should be performed?
3. You decide to order an emergency CT scan. The CT scan cannot be obtained after 5 p.m. without the permission of the staff radiologist. Should you call the radiologist to obtain the scan that night? How would you justify this request?

RECOMMENDED READINGS:

Isselbacher KJ, Braunwald E, Wilson JD, et al (eds.): Harrison's Principles of Internal Medicine

Siu AL. Screening for dementia and investigating its causes. *Annals of Internal Medicine*. 1991;115:122-132. (A good reference regarding cost-effective approaches in the work-up of dementia)

Malaz Boustani, Britt Peterson, Laura Hanson, Russell Harris, and Kathleen N. Lohr
"Screening for Dementia in Primary Care: A Summary of the Evidence for the U.S. Preventive
Services Task Force" **Ann Intern Med**, Jun 2003; 138: 927 - 937.

Christopher M. Clark and Jason H.T. Karlawish "Alzheimer Disease: Current Concepts and Emerging
Diagnostic and Therapeutic Strategies" **Ann Intern Med**, Mar 2003; 138: 400 - 410.