Module 3: Change in Mental Status – Mrs. Feinstein

Date Created: November 2006 (case adapted for high fidelity medical simulation from SAEM Geriatric Task Force Cases originally developed in 2005 by the Geriatric Emergency Medicine Task Force)

Target Audience: Emergency Medicine Residents PGY 1-4
Medical Students

Objectives:
1. Develop an approach to assessing the risk of a patient with rapid functional decline using the Identification of Seniors at Risk Tool and the Confusion Assessment Method.
2. Demonstrate the initial approach to the stabilization and management of an elderly patient with a change in mental status.
3. Describe and demonstrate assessment tools used to help differentiate among potential causes of mental status change.
4. Describe the diagnosis, etiology, and prognosis of delirium.
5. Differentiate delirium from other causes of mental status change, especially dementia.
6. Describe the changes in pharmacokinetics and pharmacodynamics with aging and how these affect the activity and toxicity of various drugs.
7. List important paradoxical reactions which may occur with commonly used drugs.
8. List several drugs that are not recommended by some experts for use in the elderly.
9. Describe how to manage the agitated elderly patient in the ED.
10. Demonstrate the ability to gather data pertinent to an initial assessment of an elderly patient seen in the ED after transfer from a nursing home (using the universal transfer form).
11. Recognize the need to obtain and review information from the nursing home and to interview nursing home staff.
12. Describe a thorough physical examination for a patient with functional status change.
13. Recognize the importance of determining the cause of rapid functional decline, because many causes are serious and treatable. Construct a broad differential diagnosis of rapid functional decline.
14. Recognize the subtle clues to serious infection in an elderly patient and construct a differential diagnosis of serious infection in nursing home patients.

Readings & Assignments:


Core Competency Objectives (see Critical Actions Checklist)
1. Medical knowledge
2. Patient Care
3. Interpersonal and Communication skills
4. Systems based practice
5. Professionalism
6. Practice based learning
Environment and Equipment
- Community ED
- Female clothing
- Nursing home paperwork/Med list
- Old ecchymosis moulage for forehead

Personnel:
- Nursing home personnel on phone
- Daughter
- Nurse
- Continuing care on phone

Case Summary:
Ms. Henson is a 73 year old female brought to the Emergency Department by EMTs from a nursing home for “change in mental status”. When interviewing the patient it becomes apparent that her mental status is not normal. Under more complete assessment, including mental status evaluation, a diagnosis of delirium is made. While working the patient up for change in mental status she becomes progressively more agitated, yelling and trying to get off the stretcher so that an intervention needs to occur. The cause of her delirium is found to be a drug effect secondary to a drug interaction. The patient is also being treated for a urinary tract infection. The focus of the case is the differential diagnosis of delirium and the use of assessment tools for classifying mental status changes. The importance of delirium as a marker of underlying disease is emphasized. Management of the agitated patient should be discussed and the topic of polypharmacy in the elderly is also reviewed.

Case Narrative: Mrs. Feinstein is brought to the ED by EMS on a stretcher and triaged to the urgent area. She is unable to provide a medical history, a quick 6 question cognitive screen should be performed. The nursing home paperwork comes with her and states that she has been acting more agitated and difficult to control. Her initial vital signs are BP 160/70, P 96 with occasional extrasystoles, RR 20, T 99.9F. Patient is uncooperative. When you ask her what’s wrong she says, “Nothing, I don’t know why those people sent me here.” On review of systems the patient denies any complaints and becomes agitated stating, “Why do you keep asking me so many questions?”

Past Medical History:
- CHF
- Hypertension
- Chronic bronchitis
- NIDDM
- PVD

Medications:
- Digoxin
- Furosemide
- Chlopropamide
- ASA
- Theophylline extended release
- Pilocarpine 1% ophthalmic solution
- Ciprofloxacin started 2 days ago for a UTI
- Chlordiazepoxide prn for insomnia
- Fentanyl patch for chronic back pain

Social and Family History: Patient quit smoking, lives at NH for last 5 years

Physical Exam:
General She is an elderly, mildly obese female. She is awake and in a clean housecoat. Her
eyes are closed but she opens them to voice.
BP 160/70, P: 96, RR: 20, T 99.9F Pox: 96% RA
Skin is warm and dry
HEENT: small and old appearing ecchymosis on left forehead
Neck: supple and nontender
Chest: a few bibasilar crackles, II/VI flow murmur in the aortic area
Abdomen: soft, nontender, no masses, normal rectal exam with heme negative stool
Extremities: good pulses and cap refill, no edema
Neuro: Opens eyes to voice, agitated, no facial asymmetry, good gag reflex, normal tone, moves
all four extremities equally, reflexes symmetric, unable to test cerebellar function and gait.

**Laboratory Values:**
CBC: Hgb 12.3/37, Plt 190, WBC 9 normal diff
Chem7: Na 131, Cl 92, BUN 24, Glucose 194, K 3.9, HCO 26, Cr 0.7
UA: few bacteria, +LE, 3 RBC, 10 WBC
Troponin: normal
Digoxin 1.2 (therapeutic 0.9-2) and theophylline 28 (therapeutic is 10-20)
EKG: NSR, non specific ST changes, rate 110, unifocal PVCs

**Imaging Studies:**
CXR: normal
Head CT: atrophic brain

**Scenario Flow of the Case:**
**Time 0:** See above narrative. Patient is on stretcher with eyes closed. If spoken to becomes
easily agitated when answering questions.

**2 minutes:** Participant should perform a rapid 6 item cognitive screen. The patient will be
disoriented to year and month and will not be able to repeat or remember any of the three items.
The more questions you ask the more agitated the patient becomes. The participant should
perform a full physical exam including a neurologic exam. The patient will not be able to fully
cooperate or follow instructions. The participant should contact the nursing home. The nursing
home states the patient is usually alert and oriented. She has a short temper at times but is
usually able to be redirected. She ambulates with a walker and is able to get herself dressed and
show up for meals in the dining hall.

**5 minutes:** The daughter arrives and is able to give additional information. She states that she
visited her several times during the week and felt her mom wasn’t really asking like herself. One
or two evenings she seemed a little off and had trouble sustaining a conversation. Her mind
would wander and she wouldn’t make sense. She also seemed to be more sleepy, dozing off in
the middle of conversations. The patient lives in the assisted living portion of the nursing home
and arranges her own medications. Participants should get a d stick (180) and consider trying
narcan which has minimal effect and worsens the patient’s agitation. A full secondary survey
looking for trauma, sources of infection, focal neuro deficits, dehydration or cardiovascular
disorders should be done. A Confusion Assessment Method (CAM) should be performed and a 6
item cognitive screen. A diagnosis of delirium is made. The patient is becoming increasingly
more agitated and difficult to control alternating with periods of drowsiness and the nurse is
requesting that you restrain or medicate the patient.

**8 minutes:** Participant should order appropriate studies to assess the common reversible causes
delirium (med effects, CNS disorders, cardiovascular disorders, fluid and electrolyte imbalance,
dehydration, infections). Labwork returns and shows evidence of mild dehydration and
hyponatremia and an elevated theophylline level. Participant should make an effort to chemically
restrain patient. If patient is given ativan she becomes more agitated and if given Haldol has
appropriate sedative effects.
Interrupt case to elicit participants current differential diagnosis and supporting evidence

10 minutes: Disposition decision should be made after considering the ISAR questionnaire. Social services should be contacted for disposition planning to a higher level of care. Follow up on the patient reveals that after 24 hours the patient became alert, attentive and cooperative. A diagnosis of delirium secondary to theophylline toxicity and UTI is made. Cipro increases theophylline levels.
### I. Medical/Surgical Issues

- The patient’s presentation is frequently complex
- Common diseases present atypically in this age group
- The confounding effects of comorbid diseases must be considered
- **Polypharmacy is common and may be a factor in presentation, diagnosis and management.**

*Approximately 65% of all prescribed drugs are taken by people aged 65 or older.*

- Polypharmacy: At least 20% of people aged ≥65 take at least 5 medications, and 12% take more than 10 medications.

- Drugs implicated in hospital admissions: diuretics, warfarin, NSAIDS, chemotherapy, antidiabetic agents, cardiotonic agents, antiepileptic drugs, immunosuppresants, antibiotics


- Some diagnostic tests may have different normal values

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### II. Mental Status/Emotions/Coping

- Recognition of the possibility for cognitive impairment is important
- Health problems must be evaluated for associated psychosocial adjustment

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### III. Physical Functioning

- The likelihood of decreased functional status must be anticipated
- A knowledge of baseline functional status is essential for evaluating new complaints

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### IV. Living Environment

- Social support systems may not be adequate and patients may need to rely on caregivers
- The emergency department encounter is an opportunity to assess important conditions in the patient’s personal life
### Critical Actions Checklist

<table>
<thead>
<tr>
<th>Critical Action</th>
<th>Yes</th>
<th>No</th>
<th>Time</th>
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<tbody>
<tr>
<td>1. Contacts nursing home for baseline mental status</td>
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<td>2. Contacts or discusses with daughter baseline mental status</td>
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<td>3. Conducts 6 item mini cog</td>
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<td>4. Conducts CAM screen for delirium</td>
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<td>5. Checks d stick</td>
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<td>6. Checks drug levels</td>
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<td>7. Orders appropriate studies to rule out infection</td>
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<td>8. Controls patients agitation appropriately</td>
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<td>9. Contacts continuing care for discharge planning</td>
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<td>10. Uses ISAR screen to determine patient’s risk of morbidity</td>
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### Notes:

#### RIHMSC Global Competency Scale

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<tr>
<th>Category</th>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tr>
<td>Immediate critical EM actions</td>
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<td>Appropriately targeted H&amp;P</td>
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<td>Recognizes &amp; manages disease process</td>
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<td>Considers differential diagnosis</td>
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<td>Communication skills</td>
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<td>Case synthesis</td>
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<td>Degree of expertise &amp; leadership</td>
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<td>Crisis management behaviors/Teamwork</td>
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<td>Safety Behaviors</td>
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### Description of Elements in RIH MSC Global Rating Scale

<table>
<thead>
<tr>
<th>No</th>
<th>Competency</th>
<th>Descriptor</th>
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</table>
| 1  | Immediate emergency medicine actions | ● IV, O2, Monitor  
● Immediate stabilization dependent on case |
| 2  | Appropriately targeted history/physical exam | ● History and physical based on case |
| 2  | Recognizes & manages disease process | ● Completes all critical actions based on checklist in appropriate sequence and timeframe |
| 3  | Considers differential dx | ● Avoids premature diagnostic closure |
| 4  | Presentation skills/interpersonal relations | ● Quality of verbal presentation (assessment-oriented)\(^1\) = data content, expression, organization of medical decision making, overall presentation – (AO format = patient ID, assessment & mgmt/therapeutic plan, limited justification based on H&P)  
● Respectful interaction with patient  
● Works effectively with ED staff |
| 5  | Case synthesis/Cognition | ● Recognizes diagnosis  
● Appropriately dispositions patient  
● Obtains all appropriate consults/follow-ups  
● Recognizes unresolved issues  
● Avoids common cognitive errors\(^2\) |
| 6  | Degree of Expertise/Leadership\(^3\) | ● fluency: does the activity run together in an integrated and uninterrupted sequence with a minimum of pauses/hesitations.  
● automaticity: can practitioner deal appropriately with a situation even when not concentrating on it or expecting it  
● simultaneity: ability to complete several tasks at one time  
● rapidity: the ability to make an appropriate response quickly  
● knowledge base |
| 7  | Crisis Management Behaviors/Teamwork\(^4\) | ● Anticipation and planning  
● Awareness and utilization of all available resources  
● Distribution of workload and mobilization of help  
● Routine reevaluation of the situation  
● Awareness and utilization of all available information  
● Triage and prioritization  
● Efficient management of multiple patients  
● Effective coping with disruptions/distractions  
● Can add BARS assessment/Medteams\(^5\) |
| 8  | Safety Behaviors | ● Safe medication ordering (asks about allergies, Knows indications/contraindications for therapy, communicates dose, route and timing, knows pt weight)  
● Any potentially harmful behaviors should be noted |

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Change in mental status teaching points:

◦ High incidence of impaired cognition in patients > 70 years old
◦ Abnormalities may be subtle and easily missed
◦ 11% of cognitive impairment thought to be reversible
◦ Delirium: transient organic syndrome characterized by global disorder of cognition and attention
◦ Dementia: characterized by impairment in short and long term memory, abstract thinking and judgement and other higher cortical functions
◦ Acute psychosis: a major disorder of psychiatric or emotional origin characterized by derangement of personality or loss of contact with reality.

<table>
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<tr>
<th></th>
<th>Delirium</th>
<th>Dementia</th>
<th>Psychosis</th>
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<tbody>
<tr>
<td><strong>Onset</strong></td>
<td>Acute</td>
<td>Insidious</td>
<td>Acute</td>
</tr>
<tr>
<td><strong>Progression</strong></td>
<td>Fluctuating</td>
<td>Stable</td>
<td>Stable or progressive</td>
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<tr>
<td><strong>Attention</strong></td>
<td>Globally disordered</td>
<td>Normal</td>
<td>Usually intact</td>
</tr>
<tr>
<td><strong>Hallucinations</strong></td>
<td>Usually visual</td>
<td>Often absent</td>
<td>Often auditory</td>
</tr>
<tr>
<td><strong>Delusions</strong></td>
<td>Fleeting</td>
<td>Often absent</td>
<td>Sustained and systematized</td>
</tr>
<tr>
<td><strong>Cognition</strong></td>
<td>Globally disordered</td>
<td>Impoverished</td>
<td>May be selectively impaired</td>
</tr>
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</table>

Confusion Assessment Method (CAM): Assesses the four cardinal features of delirium (Inouye SK. Clarifying confusion: The confusion assessment method. Ann Int Med 1990; 113:941.) A test is positive if both 1 and 2 are present and either 3 or 4 is present.

1. Acute onset of fluctuating course
2. Inattention
3. Disorganized thinking
4. Altered level of consciousness

Six item mini cog:

1. What year is this?
2. What month is this?
3. What is the day of the week?
   What are the three objects I asked you to remember?
4. Apple
5. Table
6. Penny

If patient fails both of the above a full Folstein mini mental status should be attempted.

◦ Elderly patients on average are on 4.5 prescription drugs and 2.1 OTC drugs
◦ Adverse drug reactions are twice as likely
◦ Drug clearance is impaired and paradoxical reactions occur
◦ Common drugs implicated in delirium: digitalis, sedatives, antidepressants, steroids, alcohol, barbiturates, anticonvulsants, neuroleptics, antihistamines, diuretics, antihypertensive agents