QuickTime™ and a DV - NTSC decompressor are needed to see this picture.
Case Presentation

(Actual Case)
66 y/o Female c/o Hip Pain

- Fell, but no pre-fall symptoms
- Did not hit head or have LOC

- PMHx: DM, ESRD, HTN
- Meds: Clonidine, Glucophag
- Exam: left hip tenderness only
X-Rays Are Negative

- Patient discharged home
- Appropriate follow-up instructions given
- Later that week...
“Remember That Patient. . .”

- Returns to the ED 4 days later
- Fell 2 more times
- No injury or syncope
- But, now has obvious delirium
- CT shows subdural hematoma

Should the EP have done more on the first visit?
Objectives of This Lecture
Delirium in the Elderly

Why should EP’s care about this?

What are some causes of delirium?

How does delirium present in the elderly?

Reducing the risk of delirium in admissions

Who are the high-risk patients?

How can the “CAM” help in the ED?

Objectives of this lecture
Why Should EP’s Care About Delirium?

EP’s are already stressed for time
Delirium In the ED

- **Common** in the elderly ED patient
- **Frequently missed** in the ED
- **Often a manifestation of significant illness**

Why Should EP’s Care?
A Common ED Problem

188 ED patients > 70 years of age
9.6% had delirium by CAM
Naughton et al; Ann Emerg Med 1995 Jun

385 ED patients > 65 years of age
10% had delirium by CAM
Lewis et al; Am J Emerg Med 1995
Recent Evidence

- **447 ED patients > 65 years of age**
  - 9.6% had delirium by CAM
  

- **297 ED patients > 70 years of age**
  - 10% had delirium by CAM

How Often Is Delirium Missed In The Elderly ED Patient?
Delirium Missed Too Often

- Only 17% identified delirium
- 38% of delirium pts discharged

Delirium identified in only 35%

Delirium documented in only 30%
- 37% of delirium pts discharged

Lewis et al; Am J Emerg Med 1995
Elie et al; CMAJ 2000
Hustey and Meldon; Ann Emerg Med 2002 Mar
Why Making The Diagnosis Is Important
75% Increase In Mortality

- Without delirium, 3-month mortality in elderly is 8%
- If delirium present, 3-month mortality is 14% in the elderly

Lewis et al; Am J Emerg Med 1995
What Is Delirium?
What is Delirium?

- Disturbance of consciousness
- A change in cognition
- Develops over a short period of time
- Fluctuates during the course of the day
- Not explained by dementia

DSM-IV 1999
Causes of Delirium
Not A Psychiatric Diagnosis!

- Medication-related is most common
  - Medication withdrawal
  - Poly-pharmacy
  - Excessive dose

Causes of Delirium
Medications and Delirium

- 30% of elderly (>75 yrs) admissions are due to adverse drug events
- 15% present as delirium

Chan et al; Internal Medicine Journal; 2001 May-June
A Common Iatrogenic Cause

Offending Agents:
- Sedative-hypnotics
- Narcotics (eg, Darvocet)
- Anticholinergic drugs

Inouye et al; Amer J Medicine; May 1999
Delirium Is A Symptom/Sign

- May be the only sign of significant medical illness in the elderly
- May co-exist with dementia
- If in doubt, assume the cognitive dysfunction is delirium
- Family often needed to diagnose

Inouye SK et al, American Journal of Medicine May 1999
Other Causes of Delirium

- **Pneumonia**
  - Elderly may not have cough/fever

- **Sepsis**
  - Fever often absent

- **Myocardial infaction**
  - Often no chest pain or dyspnea

- **Abdominal infections**
  - Pain may be minimal
How Does Delirium Present In The ED?

- **Infection/sepsis**
  - 30% will have delirium as well

- **Falls**
  - Delirium contributes
  - Often no significant injury
  - “Not acting right”
  - Vague complaints per family
Delirium In Admitted Patients
Financial Costs of Delirium

- > $5 billion in Medicare expenditures for in-hospital care

- Additional costs post-discharge for institutionalization, rehabilitation

Inouye SK et al, American Journal of Medicine May 1999
Mortality of patients who develop in-hospital delirium is 25-33%
Delirium More Likely To Develop If:

- Physical restraints used
- Indwelling bladder catheter used
- > 3 new medications added recently
- Malnutrition
- Prolonged ED stay (>12 hours)

Inouye et al; JAMA; March 20, 1996
Diagnosing Delirium In The ED
Use the CAM
Confusion Assessment Method

- Validated in clinical trials to be as good as lengthy psychiatric interviews
- Takes < 5 minutes to complete

Inouye et al; Annals of Internal Medicine; December 15, 1990
Validity of CAM in the ED

- Non-medical interviewers used CAM on elderly ED patients
- Results compared to a geriatrician’s CAM
- Detection rates for delirium were similar

Monette et al; Gen Hosp Psychiatry; 2001 Jan-Feb
What Is The CAM?
Four Items In CAM

Must have both of these:

- Acute onset and fluctuating course
- Inattention

AND . . .

Inouye et al; *Ann of Int Med*; December 15, 1990
And One of the Following

- **Disorganized thinking**
- **Altered level of consciousness**

Inouye et al; *Ann of Int Med*; December 15, 1990
Let’s Examine What Each of Those Mean

Doing the CAM
Acute Onset and Fluctuating Course

- Usually obtained from a family member, nursing home staff, etc.

- “Is there evidence of an acute change in mental status from the patient’s baseline?”

- “Did the behavior fluctuate during the day, that is, tend to come and go, or increase and decrease in severity?”
Inattention

“Did the patient have difficulty focusing attention?”

For example:

- Being easily distractible
- Having difficulty keeping track of what was being said
Disorganized Thinking

“Was the patient’s thinking disorganized or incoherent?”

Examples:

- Rambling or irrelevant conversation
- Unclear or illogical flow of ideas
- Unpredictable switching from subject to subject
Altered Level of Consciousness

Anything other than alert (normal):

- Vigilant
- Hyperalert
- Drowsy
- Lethargic
- Easily aroused
- Stupor
- Coma
- Difficult to arouse
Delirium is Diagnosed If:

- Mental status changes are acute in onset and has a fluctuating course
- Patient has difficulty focusing attention
- And patient demonstrates either:
  - Disorganized thinking or
  - Altered level of consciousness
Should EP’s “CAM” All Elderly Patients?
Probably Impractical

- But, perhaps we can identify the ED diagnoses in which delirium is often undiagnosed.

- Performing CAM’s on these “high-risk” patients might ensure better utilization of CAM and increase delirium detection.
Identifying The ED Patient Who Is High-Risk For Delirium
What Are the High-Risk Diagnoses For Delirium?

- **Admitted Patients:**
  “Infection, rule out sepsis” was noted in 1/3 of delirium admissions

- **Discharged Patients:**
  “Status post fall, no serious injury” was noted in half of discharged patients with undiagnosed delirium

Summary

- Understand the importance of detecting subtle delirium in the elderly
- Realize that delirium can represent serious illness in elderly ED patients
- Learn how to apply the CAM
- Use the CAM in patients who fall
Delirium in the Elderly ED Patient

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Delirium in the Elderly ED Patient

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Objectives

Why should EP’s care about delirium?

What is delirium?

What are some causes of delirium?

What are the common ED presentations of delirium?

Who are the high-risk patients?

How can the “CAM” help in the ED?
Why Should EP’s Care About Delirium?

EP’s are already stressed for time
Delirium

- Common in the elderly ED patient
- Frequently missed in the ED
- Leads to higher hospital mortality

Why Should EP’s Care?
Delirium: *Statistics*

- Noted in 1/3 of admitted elderly with infections
- Complicates 30-60% of elderly patients after hip surgery
- Complicates 14-56% of hospitalized elderly pts

*Inouye SK et al, American Journal of Medicine May 1999*
Delirium: *In the ED*

- May be the only sign of underlying medical illness in the elderly
  - Pneumonia
  - Sepsis
  - Myocardial infarction

- Previously referred to as sundowning
- May co-exist with dementia

*Inouye SK et al, American Journal of Medicine May 1999*
Delirium: The Problem

Unrecognized by physicians 30-50% of the time

Inouye SK et al, American Journal of Medicine May 1999
Delirium: Common ED Problem

- 188 adults greater than 70 years of age screened in the ED
- 24% had delirium

Naughton et al; Ann Emerg Med 1995 Jun
Delirium: Financial Costs

- Accounts for > $5 billion in Medicare expenditures for hospital care
- Additional costs post discharge for institutionalization, rehabilitation
What is Delirium?

- Altered sensorium
- Recent onset
- Fluctuating course
What is Delirium?

- Disturbance of consciousness
- A change in cognition
- Develops over a short period of time
- Fluctuates during the course of the day
- Not explained by dementia

*DSM-IV 1999*
Causes of Delirium

- Multiple medications
- Medication withdrawal
- Infection
- Myocardial infarction
Presentations of Delirium

- Infection
- Falls
- “not acting right”
How Can EP’s Diagnose Delirium?

- Use the Confusion Assessment Method (CAM)
- Validated in clinical trials to be as good as lengthy psychiatric interviews
- Takes less than 5 minutes to complete

Inouye et al; Annals of Internal Medicine; December 15, 1990
Validity of CAM in the ED

- Non-medical interviewers used CAM on elderly ED patients
- Results compared to a geriatrician’s CAM
- Detection rates for delirium were similar

Monette et al; Gen Hosp Psychiatry; 2001 Jan-Feb
THE CAM

4 Areas

- **Must have:**
  - Acute onset and fluctuating course
  - Usually obtained from family member, caretaker
  - Inattention
    - Difficulty focusing attention, easily distracted, difficulty keeping tract of a conversation

*Inouye et al; Annals of Internal Medicine; December 15, 1990*
THE CAM

Must have one of the following:

- **Disorganized thinking**
  - Rambling talk, illogical flow of ideas, unpredictable switching of subjects

- **Altered level of consciousness**

- **Hyper-vigilant or lethargic**

  Inouye et al; Annals of Internal Medicine; December 15, 1990
Who Are the High-Risk Patients?

- 385 patients greater than 65 years of age screened in the ED.
- 38 (10%) met the criteria for delirium using the CAM.

Medication and Delirium

- Most common iatrogenic cause
- Sedative-hypnotics
- Narcotics (Darvocet)
- Anticholinergic effects

*Inouye et al; Amer J Medicine; May 1999*
Risk Factors for Delirium

- Use of physical restraints
- Use of bladder catheter
- > 3 new medications added recently
- Malnutrition
- Prolonged ED stay (>12 hours)

Inouye et al; JAMA; March 20, 1996
Who Are the High-Risk Patients?

- 6/38 had delirium or other similar diagnosis on the chart.
- 21/38 were admitted to the hospital, with “infection, rule out sepsis” being the most common ED diagnosis (7/21 admissions).
- In the 13 discharges, the most common diagnosis was “status post fall, without serious injury” (6/13) Lewis et al Am J Emerg Med 1995 Mar
Adverse Drug Events and Delirium

30% of elderly (>75 yrs) admissions are due to adverse drug events

15% of these admissions presented as delirium

Chan et al; Internal Medicine Journal; 2001 May-June
Difficulty in Identifying Delirium in the ED

- 447 patients over 65 years of age screened in the ED.
- Prevalence of delirium was 9.6%
- EP recognized delirium only 35% of the time, but was 98% specific

*Elie M, et al. CMAJ 2000 Oct 17*
**More Difficulty**

- 180 patients over 70 years of age were screened in the ED
- 22 or 12% had delirium
- 10/22 delirium patients were identified by the EP
- but 7/22 were sent home.

Mortality of Delirium

Mortality of in-hospital delirium
25-33%

Inouye SK et al, American Journal of Medicine May 1999