

Journal Meeting

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Delirium in the Emergency Department: An Independent Predictor of Death Within 6 Months

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- Disorders of consciousness
- **Arousal behaviors** : **reticular activating system** wakefulness and basic eyes-open, alerting functions.
- **Content of consciousness** : **cerebral cortex** self-awareness, language, reasoning, emotions that we regard basic to being human.

- **Dementia**
- **Delirium**
- **Coma**
- **Psychiatric disorders**

- **Dementia** is failure of the content portions of consciousness with relatively preserved alerting functions.
- **Delirium** is an arousal system dysfunction, and content of consciousness is affected as well.
- **Coma** is failure of both arousal and content functions.
- **Psychiatric disorders** and altered mental states may share features such as hallucinations or delusion

Table 229-1 Features of Delirium, Dementia, and Psychiatric Psychosis

Characteristic	Delirium	Dementia	Psychiatric
Onset	Over days	Insidious	Sudden
Course over 24 h	Fluctuating	Stable	Stable
Consciousness	Reduced	Alert	Alert
Attention	Disordered	Normal	May be disordered
Cognition	Disordered	Impaired	May be impaired
Orientation	Impaired	Often impaired	May be impaired
Hallucinations	Visual and/or auditory	Often absent	Usually auditory
Delusions	Transient, poorly organized	Usually absent	Sustained
Movements	Asterixis, tremor may be present	Often absent	Absent

Age , Psy Hs

Delirium

- Delirium represents a form of **brain failure**, but the patient is more alert than in coma.
- Alerting functions are working, **perhaps overworking**.
- The patient may have difficulty in focusing, shifting, or sustaining attention.
- The formal definition also includes disturbed **wake-sleep cycles** and a fluctuating course of confusion

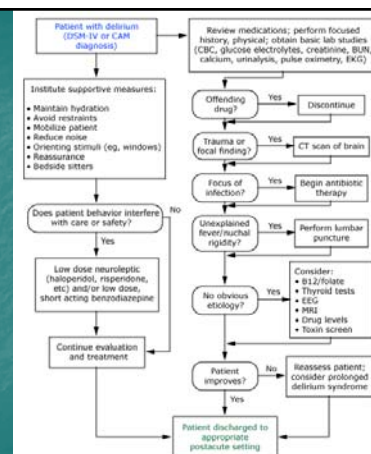
- Delirium always has an organic cause
- ✓ Primary intracranial disease
- ✓ Systemic diseases secondarily affecting the central nervous system (CNS)
- ✓ **Exogenous toxins**
- ✓ **Drug withdrawal**

- Three variants are described:
- ✓ Hypoalert-hypoactive
- ✓ Hyperalert-hyperactive
- ✓ Mixed: fluctuate rapidly between hypoactive and hyperactive states

Table 229-3 The Mini-Mental State Examination

Maximum Score	Score
	ORIENTATION
5	(1) What is the: (year) (season) (date) (day) (month)?
5	(1) Where are we: (state) (county) (town) (hospital) (floor)?
	REGISTRATION
3	(1) Name 3 objects; ask patient to repeat.
	ATTENTION AND CALCULATION
5	(1) The serial 7 test; 1 point for each correct. Stop after 5 answers. Option: spell "world" backwards.
	RECALL
3	(1) Ask for the 3 objects repeated above. 1 point scored for each correct object recalled.
	LANGUAGE
9	(1) Name a pencil and watch (2 points)
	Repeat the following, "No if's, and's, or but's." (1 point)
	Follow 3 stage command: "Take a paper in your right hand, fold it in half, and put it on the floor." (3 points)
	Read and follow the following printed command:
	"Close your eyes" (1 point)
	Write a sentence (1 point)
	Copy design (1 point)

Confusion Assessment Method for the Intensive Care Unit



Treatment

- **Haloperidol**
this may be repeated at 20- to 30-min intervals as the clinical situation indicates.
- **Lorazepam**
may be used in combination with haloperidol

INTRODUCTION

- delirium occurs in 8% to 10% of older ED patients.
- acute change in cognition.
- Approximately 1.5 million older patients with delirium will be evaluated in the ED each year in the United States, which is similar to the number of annual acute coronary syndromes, a disease with comparable mortality and morbidity.
- miss delirium in **up to 75%**

INTRODUCTION

- delirium has been shown to be a marker for long-term death in inpatients
- Limitation
 - 1: exclude patients discharged from the ED and enrollment typically occurs in 24 to 48 hours after admission
 - 2: many of these studies include patients who developed delirium during their hospital course

Goals of This Investigation

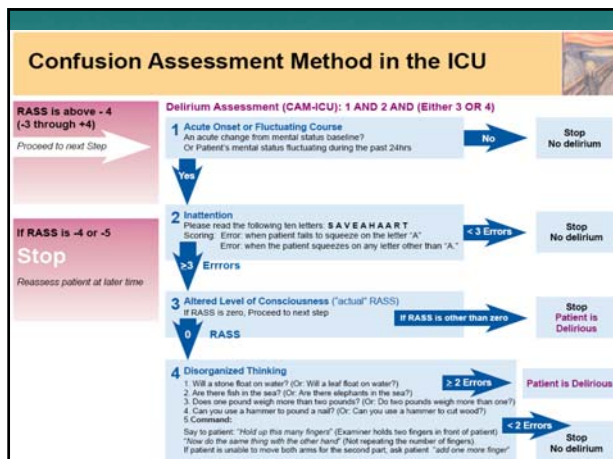
- to determine whether delirium is an independent predictor of 6-month mortality in older ED patients

Materials & Methods-1

- prospective cohort study
- May 2007 to August 2008 between 8 AM ~ 10 PM.
- Age > 65y/o
- < 12 hours at enrollment
(minimize extraneous factors, eg, psychoactive medication)
- Exclude:
 - refused consent
 - non-English speaking
 - previously enrolled
 - unable to follow simple commands before their acute illness
 - Comatose
 - did not have a completed delirium assessment performed

Materials & Methods-2

- Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) :
highly sensitive (93% to 100%) and specific (89% to 100%) and has excellent reliability between physicians and nurses
- 4 features:
 - (1) **acute onset** of mental status changes or a **fluctuating** course
 - (2) **inattention**
 - (3) altered level of consciousness
 - (4) disorganized thinking**1 + 2 + (3 or 4) => delirium**



RASS

- +4有攻擊性有暴力行為
- +3非常躁動試著拔除呼吸管、鼻胃管或靜脈點滴
- +2躁動焦慮身體激烈移動，無法配合呼吸器
- +1不安焦慮焦慮緊張，但身體只有輕微移動
- 0 清醒平靜清醒，自然狀態
- 1昏昏欲睡沒有完全清醒，但可維持清醒超過十秒
- 2輕度鎮靜無法維持清醒超過十秒
- 3中度鎮靜對聲音有反應
- 4重度鎮靜對身體刺激有反應
- 5昏迷對聲音及身體刺激都沒有反應

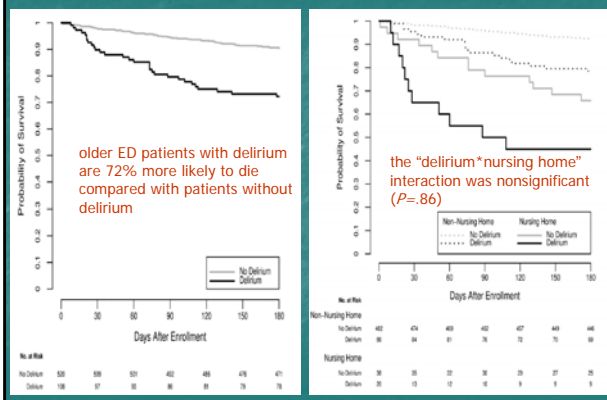
RESULTS

- Patients who were delirious in the ED were more likely to be older and severely ill.
- delirious patients were more likely to have:
 - dementia
 - premorbid functional impairment
 - hearing impairment
 - reside in a nursing home.

Table 1. Patient demographics and characteristics stratified by delirium status.

Variable	Delirium, N=108	No Delirium, N=520
Median age (IQR)	78 (72, 84)	74 (69, 80)
Female	65 (60.2)	300 (57.7)
Nonwhite	23 (21.3)	88 (16.9)
Dementia	<u>68 (63.0)</u>	213 (41.0)
Functional dependence	<u>52 (48.2)</u>	85 (16.4)
Nursing home residence	<u>20 (18.5)</u>	38 (7.3)
Median modified APACHE II (IQR)	3 (2, 5)	2 (1, 4)
Median Charlson (IQR)	3 (2, 4)	2 (1, 4)
Triage ESI		
1	0	0
2	69 (63.9)	313 (60.2)
3	36 (33.3)	193 (37.1)
4	3 (2.8)	13 (2.5)
5	0	1 (0.2)
Hearing impairment	<u>58 (53.7)</u>	133 (25.6)
Emergency physician diagnosis, categorized by organ system		
Cardiovascular	13 (12.0)	116 (22.3)
Drug toxicity/withdrawal	13 (12.0)	50 (9.6)
Gastrointestinal	11 (10.2)	81 (15.6)
Genitourinary	11 (10.2)	35 (6.7)
Neurologic	17 (15.7)	41 (7.9)
Hematologic	3 (2.8)	15 (2.9)
Pulmonary	14 (13.0)	49 (9.4)
Trauma/musculoskeletal	21 (19.4)	104 (20.0)
Other	5 (4.6)	29 (5.6)

RESULTS



DISCUSSION

- delirium is missed by emergency physicians in up to 75%
→ underlying life-threatening illness may remain undiagnosed.
- The ED is ideally positioned to perform delirium surveillance
- (Confusion Assessment Method) CAM-ICU : < 2mins to perform, highly reliable in physicians and nurses, easy to use, and requires minimal training.
- Because many of these interventions were started 24 to 48 hours after admission.
→ early intervention in the ED may be better.

Conclusion

- In older ED patients, delirium is an independent predictor for death, even after adjusting for age, comorbidity burden, severity of illness, dementia, functional dependence, and nursing home residence.
- This relationship is present regardless of nursing home residence.
- Future :
 - optimal screening for delirium in the ED
 - if earlier detection and intervention of delirium in the ED improves patient outcomes.

■ Thanks for your attention!

