Delirium in hospital: Identification, prevention and management

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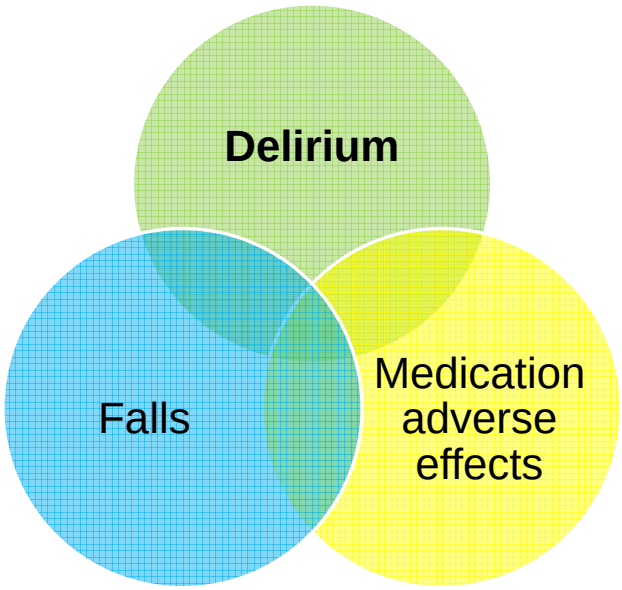
With thanks to Dr Thomas Jackson for some of the slides

The triad of inpatient harm



Delirium in hospital

- Definition
- Epidemiology
- Identification
- Prevention
- Management

Definition

- *Deliriare* – to become crazy or rave
- *De* – away from, *lira* - furrow
  - acute confusional state
  - acute cerebral insufficiency
  - toxic-metabolic encephalopathy
  - Acute brain failure

DSM-IV Criteria for Delirium

A. Disturbance of consciousness with reduced ability to focus, sustain, or shift **attention**.

B. A change in cognition (memory, language, or orientation) or the development of a perceptual disturbance not better accounted for by a dementia.

C. Disturbance develops over hours or days and fluctuates during course of day.

D. Evidence from history, physical, or lab findings that disturbance is caused by direct physiological consequences of a general medical condition.

Disorder of attention

- Initially “clouding of consciousness”
- Now more thought of as:
  - Reduced ability to maintain attention to external stimuli
    - Must repeat questions etc
  - Reduced ability to shift attention to new external stimuli
    - Perseverates over answers to previous question

Acute confusion

You gotta ask yourself 2 questions

Is it acute?

- **Get a collateral history**
- When did it start?
- What were they like yesterday, a week ago?
- Has it happened before?
- What else have you noticed?

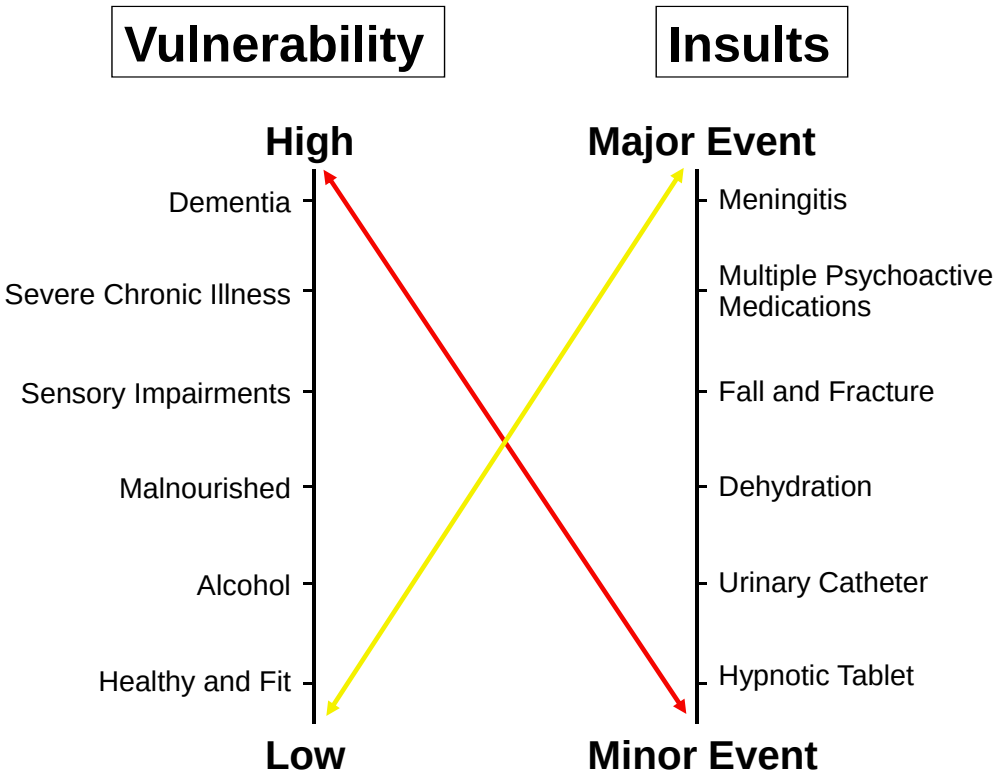
Is it confusion?

- Dementia
- Dysphasia
- Deaf
- Drunk
- Drugged
- Depressed
- Downright difficult

- **Delirium**

What causes delirium

- Poorly understood and under-researched
  - Hard to define
  - Variety of symptoms and severity
  - Multiple predisposing and precipitating factors
  - CNS relatively difficult to access, until recently
  - Animal models of limited use
- Neurotransmitter imbalance and synaptic dysfunction
- Usually caused by insults to a vulnerable brain



Multifactorial Model for Delirium (from Inouye 2006)

Epidemiology

Delirium Rates

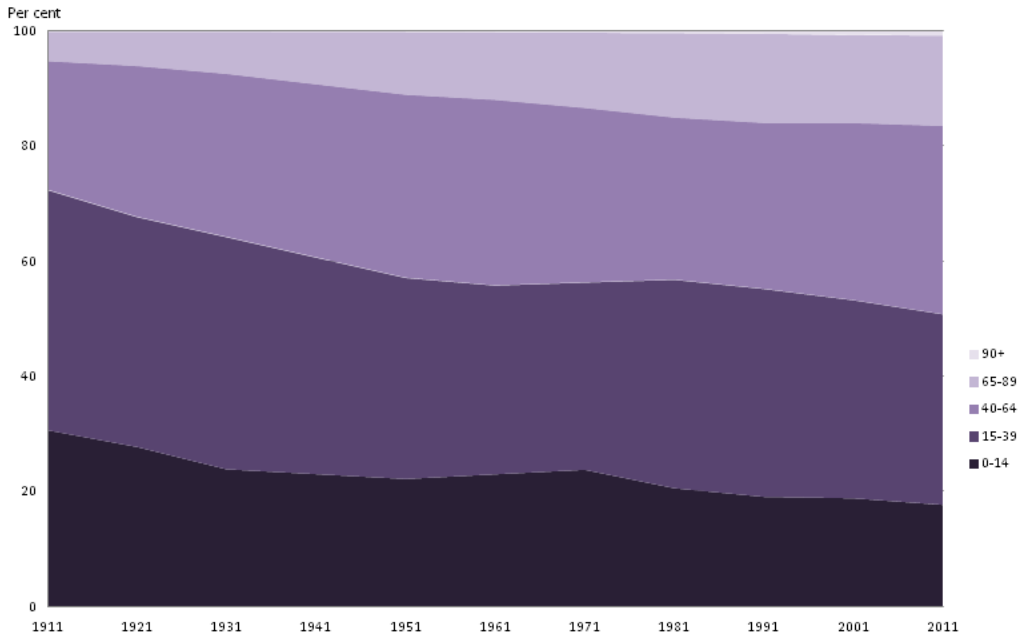
In hospital:

- Prevalence (on admission) 14-24%
- Incidence (in hospital) 6-56%
- Postoperative: 15-53%
- Intensive care unit: 70-87%
- Nursing home/post-acute care: 20-60%
- Palliative care up to 80%

- More frequent with increasing age

Inouye SK, NEJM 2006;354:1157-65

Older people are on the rise



Incidence in surgical inpatients

- 13-61% in hip fracture (several studies)
- 35% in vascular surgery
- <5% in cataract surgery

- Compared to other surgical complications
  - 1% wound infection - elective joint replacement
  - <0.1% fatal VTE 3 months post hip fracture

Outcomes

- In-hospital mortality: 22-76%
- One-year mortality: 35-40%
  - Studies are difficult to interpret (confounded by dementia and severe illness)
  - Higher co-morbidity
  - Dependence
  - Dementia incidence
  - Length of stay (Siddiqi 2006)

- Witlox 2010, Meta-analysis
  - 1.95 HR of death at 27 months
  - 2.41 OR of institutionalisation at 14.6 months
  - **12.54 OR of dementia at 4 years**

No other medical problem this common and this serious is as neglected

Identification

Delirium phenotypes

- Hyperactive (20%) "Confused"
  - Agitated, hyper-alert, restless, sympathetic overdrive
- Hypoactive (30%) "Not themselves"
  - Drowsy, inattentive, poor oral intake
- Mixed (50%)

Hypoactive delirium carries higher mortality and is more often unrecognised

Kiely et al. J of Geront Series A: 2007; 62: 174-179

Screening for delirium
Everyone or those 'at risk'?

- BGS best practice
  - document (presence or absence of delirium) in all admissions
- NICE guidance
  - Over 65
  - Cognitive impairment
  - Hip fracture
  - Severe illness

Confusion Assessment Method

- Sensitive, specific and reliable
- For the non-psychiatrist
- Assessment and Algorithm
  - 4 features

Inouye, et al.Ann Intern Med. 1990 Dec 15; 113(12):941-8

- **Feature 1: *Acute Onset and Fluctuating Course***
- This feature is usually obtained from a family member or nurse and is shown by positive responses to the following questions:
- Is there evidence of an acute change in mental status from the patient's baseline? Did the (abnormal) behaviour fluctuate during the day, that is, tend to come and go, or increase and decrease in severity?

- **Feature 2: *Inattention***
- This feature is shown by a positive response to the following question: Did the patient have difficulty focusing attention, for example, being easily distractible, or having difficulty keeping track of what was being said?

- **Feature 3: *Disorganized thinking***
- This feature is shown by a positive response to the following question: Was the patient's thinking disorganized or incoherent, such as rambling or irrelevant conversation, unclear or illogical flow of ideas, or unpredictable switching from subject to subject?

- **Feature 4: *Altered Level of consciousness***
- This feature is shown by any answer other than "alert" to the following question:
- Overall, how would you rate this patient's level of consciousness? (alert [normal]), vigilant [hyperalert], lethargic [drowsy, easily aroused], stupor [difficult to arouse], or coma [unrousable])

Is it delirium? - CAM (Confusion Assessment Method)

Feature 1: Acute onset of mental status change or a fluctuating course

And

Feature 2: Inattention

And

Feature 3: Disorganised Thinking

OR

Feature 4: Altered Level of Consciousness

4A Test

[1] ALERTNESS

Normal (fully alert, but not agitated, throughout assessment)	**0**
Mild sleepiness for <10 seconds after waking, then normal	**0**
Clearly abnormal	**4**

[2] AMT4

Age, date of birth, place (name of the hospital or building), current year.

No mistakes	**0**
1 mistake	**1**
2 or more mistakes/untestable	**2**

[3] ATTENTION

"Please tell me the months of the year in backwards order, starting at December."
To assist initial understanding one prompt of "what is the month before December?" is permitted.

Achieves 7 months or more correctly	**0**
Scores < 7 months / refuses to start	**1**
Untestable	**2**

[4] ACUTE CHANGE OR FLUCTUATING COURSE

Evidence of significant change or fluctuation in: alertness, cognition, other mental function (eg. paranoia, hallucinations) arising over the last 2 weeks and still evident in last 24hrs

No	**0**
Yes	**4**

Total: 0 = Probably normal, 1-3 = Probable cognitive impairment, 4 or more = Probable delirium

Assessment for inattention

- *If only time to do one cognitive test, assess attention*
- Digit span test (normal: 5Forward, 3Back)
- Days of week backwards
- Months of year backwards
- 20-1 (AMT10)
- DLROW or serial 7s (MMSE)

Abnormal hand movements

Carphology
From carphologia (Latin): picking pieces of straw from mud walls
Plucking or picking at bedclothes or clothing

Floccillation
From floccus (Latin): tuft or wisp of wool
Plucking in the air

Abnormal hand movements

Prospective study of 438 acute elderly admissions

161 episodes of delirium in 120 patients

Carphology/flocillation in 44 (27%) of delirium episodes

Sensitivity for early delirium = 14%

Specificity for early delirium = 98%

Holt, Mulley, Young (unpublished)

Under-recognition

- Compared nurse recognition of delirium with interviewer ratings (N=797)
- Nurses recognized delirium in only 31% of patients and 19% of observations
- Nearly all disagreements in ratings were due to under-recognition by nurses
- Risk factors for under-recognition:
  - hypoactive delirium; age, vision impairment, dementia

Inouye SK, Arch Intern Med. 2001;161:2467-2473

Inpatient Audit (England)

Does the falls care plan/tool include:

- Cognitive assessment 57%
- Specific test for delirium 17%
- Action in response to delirium 22%
- Avoidance of sedatives 65%

In patients that had fallen in an acute hospital

- Assessed for delirium 49%
- Night sedation 8%

Inpatient Audit (Australia)

Patients with delirium or dementia

- Falls risk assessment (24h) 50%
  - Only 1/7 hospital achieving assessment in >75%
- On psychoactive medication 49%
- Medication review 6%

Patients at high risk of falls

- On psychoactive medication 37%
- Evidence of medication review 6%

Prevention

- Identify those at risk
  - Vulnerability factors
  - Insults
- Identify and manage risk factors
  - Medication
  - Orientation, lighting and signage
  - Bowels and bladder, nutrition and fluids
  - Pain

Evidence

- Multi-disciplinary, multi-factorial targeted approach to prevention and treatment of delirium
- Avoiding restraint, catheters, dehydration, more than 3 drugs
- Promoting nutrition, sensory correction
- Effective (delirium incidence reduced from 15% to 10%) and cost neutral

Inouye SK, Ann Med (2000)

Management

Management

- Identify the delirium
- Treat the underlying cause(s)
- Reassure, support, protect
- Minimise restraint
  - Physical - Drips and tubes
  - Chemical - Sedation

Underlying cause(s)

- **D**ementia
- **E**lectrolytes
- **L**ungs, liver, heart, kidney, brain
- **I**nfection
- **R**x—Treatment and/or withdrawal
  (ETOH, benzos, opiates)
- **I**njury, pain, stress
- **U**nfamiliar environment
- **M**etabolic derangement
  (e.g. glucose, sodium)

Inouye SK. Connecticut Medicine. 1993;57:309-315.

Clinical assessment

- Examination
  - Often not easy
  - Looking for signs of acute illness
- Investigation
  - ‘Routine’ blood screen
  - Arterial blood gas – for hypoxia and acidosis
  - Consider imaging
  - Specific neurological tests rarely useful

Sedation?

- **Last resort**
  Patient/others at serious risk of physical harm
- Haloperidol
  if no vascular or Lewy Body disease
  0.5-2 mg oral or i-m
- Quetiapine
  12.5-25 mg oral or i-m
- Lorazepam
  if vascular or Lewy body disease
  0.5-1 mg oral or i-m
- Monitor vital signs and *titrate* further doses

Evidence

- The drugs don't work

Cochrane reviews (2005-2009)

Reassurance, not restraint

- Ta Da
  - Tolerate
  - Anticipate
  - Don’t Agitate

Flaherty JH. Med Clin North Am. 2011 May;95(3):555-77

Conclusion

- Delirium is important, common and challenging but under-diagnosed
- Causes and risk factors must be vigorously sought and managed
- We need better understanding of mechanisms
- Tolerate, Anticipate, Don’t Agitate

Thank you

Selected references

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