Delirium

Derived from Latin ‘off the track’

Dr Shane Roche

Definition

Diagnostic and statistical manual of mental disorders (DSM IV)

"Delirium is characterised by a disturbance of consciousness and a change in cognition that develop over a short period of time. The disorder has a tendency to fluctuate during the course of the day, and there is evidence from the history, examination or investigations that the delirium is a direct consequence of a general medical condition, drug withdrawal or intoxication."

Epidemiology

Prevalence

- 26 - 40% of older people attending A&E have cognitive impairment
- 10 - 31% of older patients on admission have delirium
- Community prevalence uncertain
- 17 - 33% patients with delirium or cognitive impairment identified in A&E

Incidence

- Incidence in hospital 15 -33%
- 50% post op ,80% in ICU

Delirium

- Elderly population
- 40% our inpatients over 65 yrs
- Dementia common in the elderly
- Age and dementia RF for Delirium

- Cost for the NHS : LOS
- ↑ mortality (2x) & morbidity, HAI Placements
- In 30% symptoms persist ,worse prognosis
- Distressing for patients/ families/ staff

Clinical assessment method

- Acute onset and fluctuating course – hours to days with lucid periods.
- Inattention – patient is easily distracted, attention wanders.
- Disordered thinking.
- Altered level of consciousness – Drowsy or overactive.

Case 1

- 84 yr old man with “acute confusion”
- History from wife and GP:
  2 /52 behavioural change
- Wife frightened, he was hitting her, shouting ,talking to the wall, not eating

  Background of 1 year of mild cognitive impairment ,COPD

- **Medication**
  Inhalers
- **Mobility** : good, no falls
- **Function**
  Independent with PADL’s
  Severe visual impairment
  Continent
  No carers

Examination and Investigations

- Weight 48kg ,Afebrile

- HR 98 bpm, BP 122/56 mmHg
- RR: 26, SaO2 89% RA, wheeze

- Bladder not palpable, PR (NAD)

- CNS:
  able to count fingers
  no focal neurology
  visual hallucinations
  AMTS 3/10

- CRP 56
- PO2 8 on air
- WCC 13.3,Hb 12.0

- CXR hyper inflated lung
- ECG -SR
- Urine and blood culture no growth

- CT head: CVD

Progress

Diagnosis

- Delirium (hyperactive) using CAM
- Acute exacerbation of COPD
- Underlying dementia
- Visual impairment

Management

- Tx for COPD
- Delirium: I to1 nursing
- New POC
- LOS 10 days
- MMSE 20/30 (Memory clinic)

Case 2

- 94yr male
- Found by neighbour outside his house, shouting, not making sense
- Collateral Hx from daughter : his is acute, no recent fall or illness
- IPADL, lives alone, no history of cognitive impairment
- CVA 14yrs ago, minimal residual deficit
- HTN, ex smoker, prev high ETOH
- Med: Felodipine, Aspirin

Examination + Investigations

- Febrile, AMT 2/10
- Confused ,agitated

- CVS, Resp, Abdo exam: NAD
- CNS difficult to assess

- Treated for UTI
  (urine culture positive, E coli)
- Constipation

- CT :Old CVA,CVD
- ECG:SR
- CXR :NAD

- Bloods: High CRP(120), WCC (16)and urea(10)

- Bloods improved with antibiotics and fluids within 3 days

Progress

- Patient remained confused
- Hyperactive delirium on CAM
- MMSE 12/30
- Help of 1 for all ADL, mobile with assistance of 1
- Rehab for 6 weeks
- Total LOS 9 weeks
- Home with POC

1) E.Coli UTI
2) New diagnosis of dementia
3) Delirium

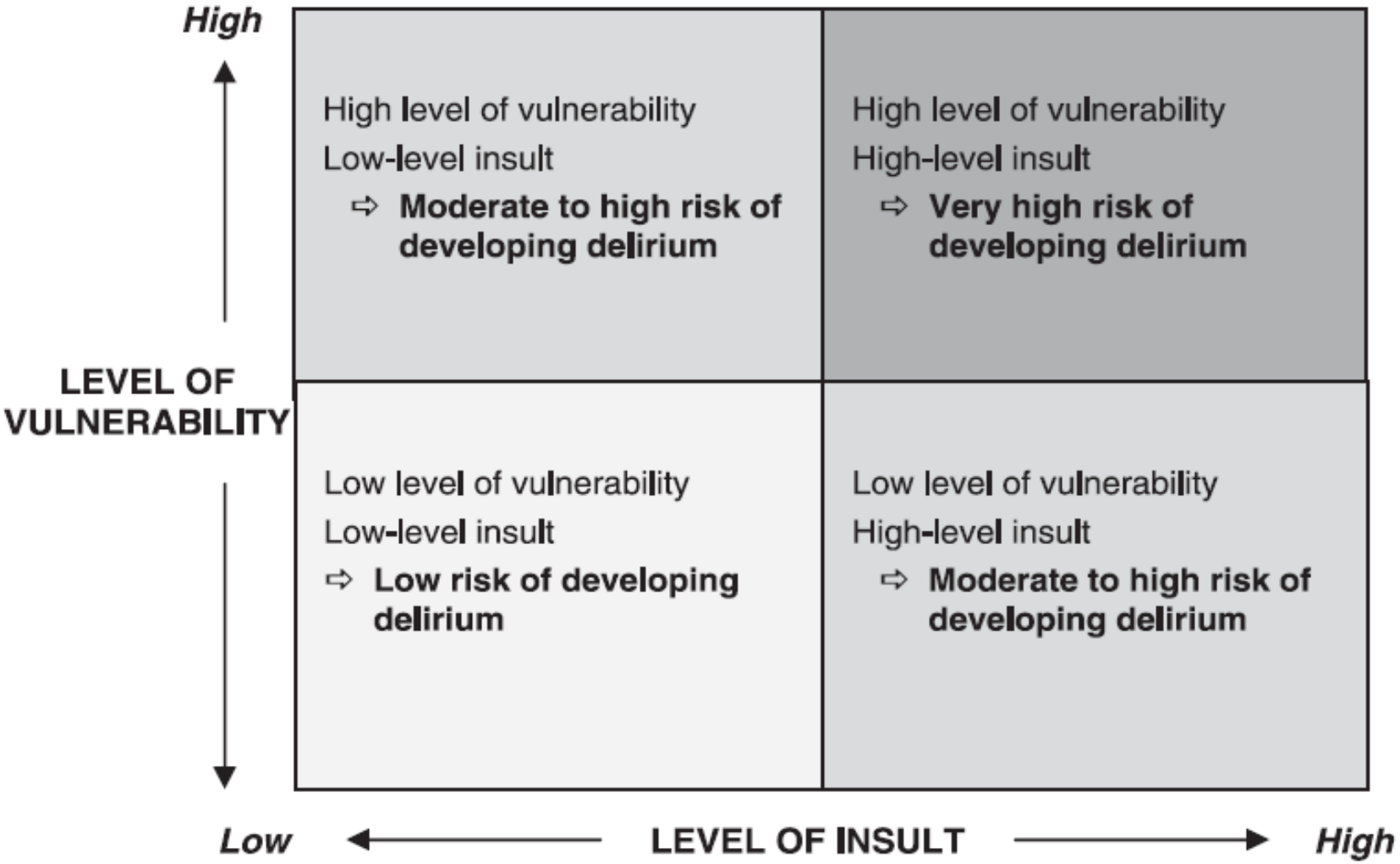
Risk factors for developing delirium

- Age, male sex
- Poor cognitive status
- Poor functional status
- Drugs
- Post Operative
- Fractured Femur
- Sensory impairment
- Severity of illness
- ICU admission
- Genetic :
  APO e4 allele 3x more likely to develop delirium.

Prevalence of Ageing health issues amongst acutely ill elderly patients aged over 70 years screened on 2 MFE wards

%	Age 70-79	Age 80+	All
5 or more medications	78	70	74
Difficulty walking	50	59	54
Falls	26	50	39
Difficulty with PADL*	30	32	31
Cognitive problems	20	35	28
Incontinence	25	24	24
Sensory disability	16	30	24
Mental health issues	13	17	15
Tissue viability risk	7	8	8

Interrelationship between vulnerability and Insult



Aetiology

Table 2. Causes of delirium in 171 patients[a]

Cause	No. of cases	%
Infection	73	34
Chest	40	-
Urinary	25	-
Other	8	-
Stroke	24	11
Drugs[b]	24	11
Myocardial infarction	11	5
Fractures	10	5
Hip	7	-
Other	3	-
Carcinoma	10	5
Fluid and electrolyte imbalance	9	4
Heart failure	8	4
Diabetes (hypo- or hyperglycaemia)	7	3
Peripheral vascular disease/gangrene	6	3
Alcohol withdrawal	6	3
Gastrointestinal bleed	5	2
Respiratory failure	5	2
Pulmonary embolus	4	2
Anaemia	4	2
Perforation of duodenal ulcer	2	1
Subdural haematoma	2	1
Brain tumour	1	0.5
Miscellaneous	6	3
Total	217	-

[a]42 patients (25%) had two or more equally contributory causes.
[b]Analgesics, hypnotics, sedatives and anti-cholinergic drugs.

Drug causes of Delirium
Severe risk

- Benzodiazepines.
- Opiod analgesics
- Anti Parkinsonian agents
- Tricyclic antidepressants
- Lithium
- Steroids

Why do patients develop delirium?

Pathophysiology

Two stress response systems thought to be involved

1- Inflammation and sickness behavior response
2- Activity of the limbic-hypothalamic-pituitary-adrenal axis

Proposed etiological factors: (a) Direct brain insults and (b) aberrant stress responses

Direct brain insults : sepsis, infection, drugs, vascular

Aberrant stress responses : neurotransmitter depletion, Ach, dopamine increase, cytokines affecting BBB

Ageing and CNS diseases alter magnitude or duration of stress and sickness behavior responses

(Unraveling the path physiology of delirium: a focus on the role of aberrant stress responses .Maclullich AM et al)

Evidence

Haloperidol dopamine antagonist ↑ AcH release

Rivastigmine used for behaviour symptoms in dementia

Haloperidol is used to treat delusions and hallucinations and dementia

Some evidence for Noradrenalin and serotonin pathways involvement

Clinical features of delirium

- Acute onset
- Fluctuating course
- Inattention
- Disorganised thinking
- Altered level of consciousness
- Cognitive deficits
- Perceptual disturbances
- Psychomotor disturbances
- Altered sleep-wake cycle
- Emotional disturbances


I went to the doctor with fluid on the knee and he said "You're not aiming straight"
Sandi V
www.wackywits.com

	Hypoactive type 25%	Hyperactive type 25%	Mixed type 50%
Level of alertness	Drowsy, lethargic, stays in bed Refuses therapy	Vigilant, hyper alert, hallucinate	Alternates between hypo/hyper alert
Ability to follow commands	Able to follow simple commands Passively cooperative with requests	May be combative Pulls on tubes Wants to climb out of bed	Alternates between hypo/hyper alert
Likely complications	Pressure sores Malnutrition Loss of function	Falls Malnutrition Over sedation	Pressure sores Malnutrition Over sedation Loss of function Falls

Diagnosis

Practitioner awareness

- History

Acute onset / fluctuating course

Any acute illness

Collateral history important

Medications

Tools

- Confusion Assessment Method (CAM)
- Screening (for nurses)
- Delirium Observation Screening Scale (DOSS)
- EEG
- Biomarkers
- Computerised neuropsychological tests

CAM

CONFUSION ASSESSMENT METHOD (CAM) SHORTENED VERSION WORKSHEET

EVALUATOR: DATE:

I. ACUTE ONSET AND FLUCTUATING COURSE

a) Is there evidence of an acute change in mental status from the patient's baseline? No ____ Yes ____

b) Did the (abnormal) behavior fluctuate during the day, that is tend to come and go or increase and decrease in severity? No ____ Yes ____

II. INATTENTION

Did the patient have difficulty focusing attention, for example, being easily distractible or having difficulty keeping track of what was being said? No ____ Yes ____

BOX 1

III. DISORGANIZED THINKING

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? No ____ Yes ____

IV. ALTERED LEVEL OF CONSCIOUSNESS

Overall, how would you rate the patient's level of consciousness?

-- Alert (normal)

-- Vigilant (hyperalert)
-- Lethargic (drowsy, easily aroused)
-- Stupor (difficult to arouse)
-- Coma (unarousable)

Do any checks appear in this box? No ____ Yes ____

BOX 2

If all items in Box 1 are checked and at least one item in Box 2 is checked a diagnosis of delirium is suggested.

DOSS

Imperial College Healthcare NHS
NHS Trust

OBSERVATION The patient		Day shift			Evening shift			Night shift			TOTAL SCORE TODAY (0 - 39)
		Never	always - sometimes	unable	never	always - sometimes	unable	never	always - sometimes	unable	
1	Dozes off during conversation or activities	0	1	-	0	1	-	0	1	-	
2	Is easily distracted by stimuli from the environment	0	1	-	0	1	-	0	1	-	
3	Maintains attention to conversation or action	1	0	-	1	0	-	1	0	-	
4	Does not finish question or answer	0	1	-	0	1	-	0	1	-	
5	Gives answers that do not fit the question	0	1	-	0	1	-	0	1	-	
6	Reacts slowly to instructions	0	1	-	0	1	-	0	1	-	
7	Thinks they are somewhere else	0	1	-	0	1	-	0	1	-	
8	Knows which part of the day it is	1	0	-	1	0	-	1	0	-	
9	Remembers recent events	1	0	-	1	0	-	1	0	-	
10	Is picking, disorderly, restless	0	1	-	0	1	-	0	1	-	
11	Pulls IV tubing, feeding tubes, catheters etc.	0	1	-	0	1	-	0	1	-	
12	Is easily or suddenly emotional	0	1	-	0	1	-	0	1	-	
13	Sees/hears things which are not there	0	1	-	0	1	-	0	1	-	
TOTAL SCORE PER SHIFT (0 - 13)											
DOS SCALE FINAL SCORE = TOTAL SCORE TODAY / 3											

⇓

DOS SCALE Final Score	< 3	Not delirious
	≥ 3	Probably delirious

The UK's first A … ctly to its patients

Diagnosis

- Serum anticholinergic activity (SAA) is a suggested biomarker for anticholinergic burden and delirium risk, but the association with cerebral cholinergic function remains unclear

  (Thomas C as et al. BMC Neurosci. 2008 Sep 15;9:86)

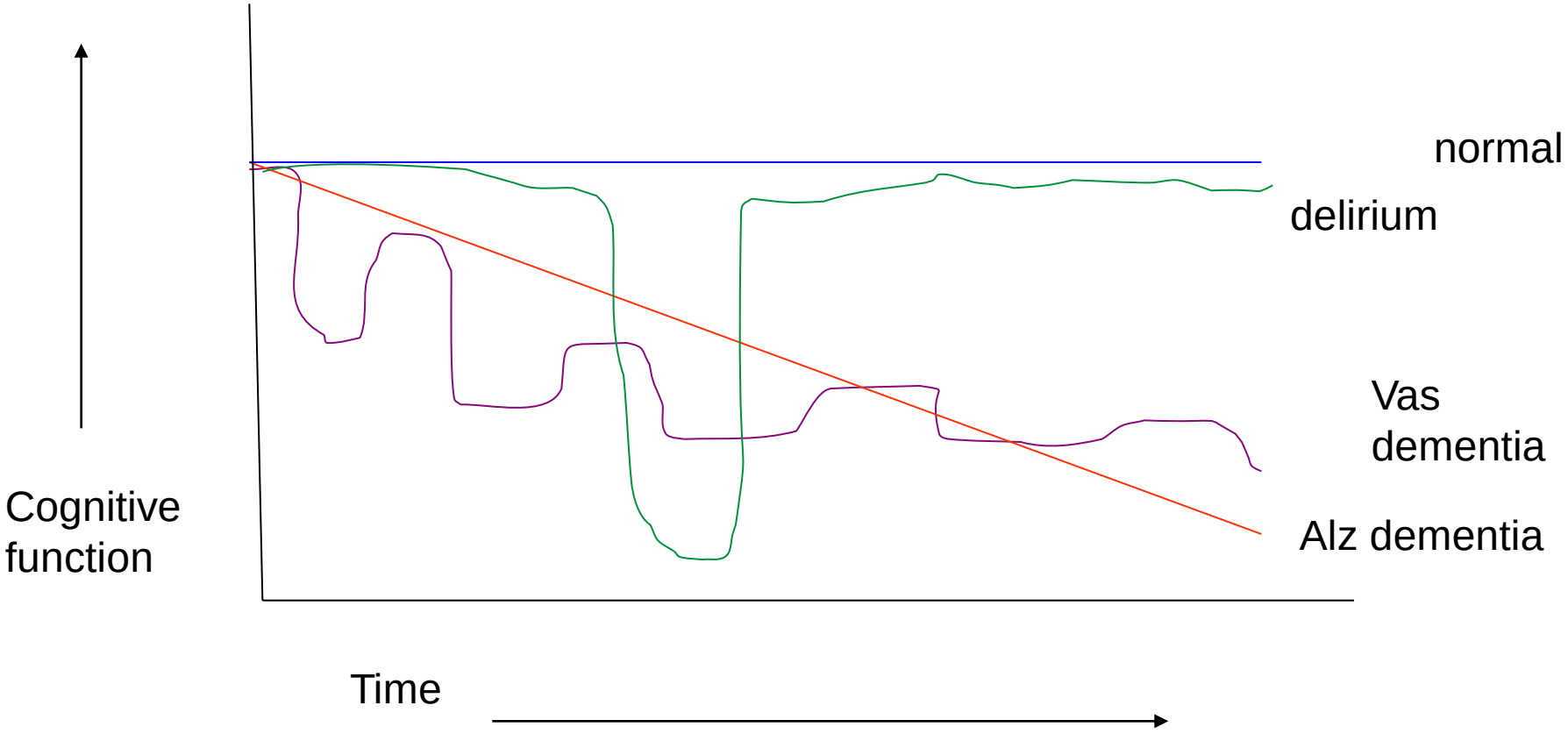
- CT / MRI limited value in diagnosis

  (Soiza RL et al Neuroimaging studies of delirium: a systematic review)

- Quantitative activated spectral EEG : 4 studies

  Abnormal pattern in delirium, useful in hypoactive delirium or in patients with dementia

  (Thomas C et al J Neurol Neurosurg Psychiatry. 2008 Feb;79(2):119-25)


normal
delirium
Vas dementia
Alz dementia
Cognitive function
Time

Management

Management of delirium

•Diagnosis
•Prevention

Multidisciplinary

Aims
Manage symptoms
Prevent complications
Education/training

Environment

quiet room
Reorientation TPP
Reduce ward moves

Nursing +therapy
1:1 nursing,
promote sleep and activity
Nutrition and hydration,
prevent p sores,

Doctor
exclude acute illness
Sedation ,Poly pharmacy
Pain
capacity

Can we predict?

Validated prediction model for in hospitalised elderly patients based on 4 risk factors at admission (Inouye et al)

1) Severe illness
2) Visual impairment
3) Cognitive impairment
4) High Ur /Creat ratio

Model revealed

83% incidence of delirium in the pts with 3 or 4 risk factors vs. 9% in pts with no risk factors

Prevention

- Limited evidence

- Pharmacological :
  1 trial with haloperidol in surgical patients, reduced duration of delirium and LOS

- Non pharmacological:
  1) CEA by geriatrician
  Cochrane : 6 RCT trials looking at prevention of delirium in surgical setting
  N = 833 patients
  Proactive CEA
  Incidence reduced by 50%,NNT 5.6 patients to prevent 1 delirium

Prevention

2) Environment :

Repeated orientation, promoting sleep, early mobilization, adequate hydration and minimising noise / stimuli shown to reduce incidence in high risk patients (Grade c)

3) Protocols:

Use of acute confusion/ delirium protocols have reduced incidence of falls by 25%,polypharmacy identified in 50%(wisconsin,USA)

Prognosis

- 29% recover completely
- 32% persistent symptoms at discharge and 1 year
- 2 fold increased mortality at 1 year
- Incident but not prevalent delirium is predictor of LOS
- Duration and severity has an impact on LOS, complications and prognosis

Siddiqi N, Allan O, House D et al. Age & Ageing 2006; 35: 350-364

STEP 1

Identify all older patients (over 65 years) with cognitive impairment using the AMT or MMSE on admission

STEP 2

Consider delirium in all patients with cognitive impairment and at high risk (severe illness, dementia, fracture neck of femur, visual and hearing impairment). Use the CAM screening instrument

STEP 3

Identify the cause of delirium if present from the history – obtained from relatives/carers – examination and investigations. Treat underlying cause or causes – commonly drugs or drug withdrawal, infection, electrolyte disturbance, dehydration or constipation

STEP 4

In patients with delirium *and* patients at high risk of delirium:

Do:

- provide environmental and personal orientation
- ensure continuity of care
- encourage mobility
- reduce medication but ensure adequate analgesia
- ensure hearing aids and spectacles are available and in good working order
- avoid constipation
- maintain a good sleep pattern
- maintain good fluid intake
- involve relatives and carers (carers leaflet)
- avoid complications (immobility, malnutrition, pressure sores, over-sedation, falls, incontinence)
- liaise with old age psychiatry service

Do not:

- catheterise
- use restraint
- sedate routinely
- argue with the patient

STEP 5

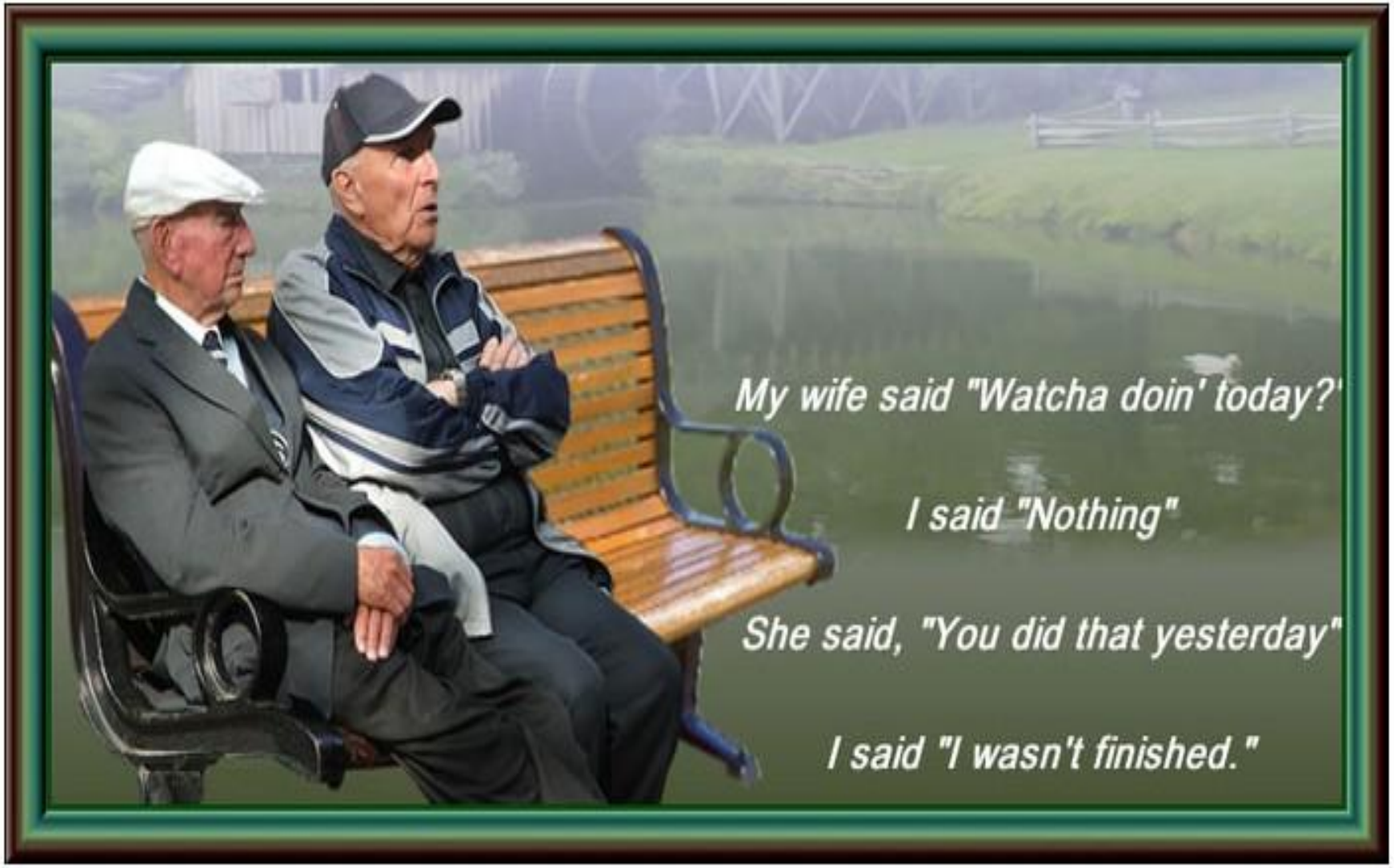
If sedation has to be used, use one drug only starting at the lowest possible dose (haloperidol 0.5 mg currently recommended) and increasing in increments if necessary after an interval of two hours

STEP 6

Ensure a safe discharge and consider follow-up with old age psychiatry team. Provide family/carer education and support

Service Implications

- Screen on admission
- Identify high risk patients
- Identify incident delirium and treat early + Prevent complications
- Education + Training
- Practice Development Nurse (like CCF, resp,diabetic)
- Hospital protocol
- Systems reviewed regularly, Audit
- Research: Use of dementia drugs in delirium (Trial)


My wife said "Watcha doin' today?"
I said "Nothing"
She said, "You did that yesterday"
I said "I wasn't finished."

Summary

- Importance of diagnosis
- Delirium
- RCP Guidelines
- Service development