



THE ABC'S OF DELIRIUM

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Overview

- What is delirium
- Epidemiology
- Pathophysiology
- Risk factors and causes
- Prevention
- Management

History

- Hippocrates (400BC)
 - ▣ “In phrenitis ... the hands are waved before the face, hunting through empty space, or tearing chaff from the wall... all such symptoms are bad and deadly.”

- Celsus (1AD)
 - ▣ “Sick people, sometimes in a febrile paroxysm, lose their judgment and talk incoherently... when the violence of the fit is abated, the judgment presently returns...”

Delirium

- Latin:
 - ▣ **de:** away from/off
 - ▣ **lira:** ridge between ploughed furrows/tracks
 - ▣ “off the tracks”
- Acute confusional state
- Acute brain failure
- Metabolic encephalopathy
- Reversible madness



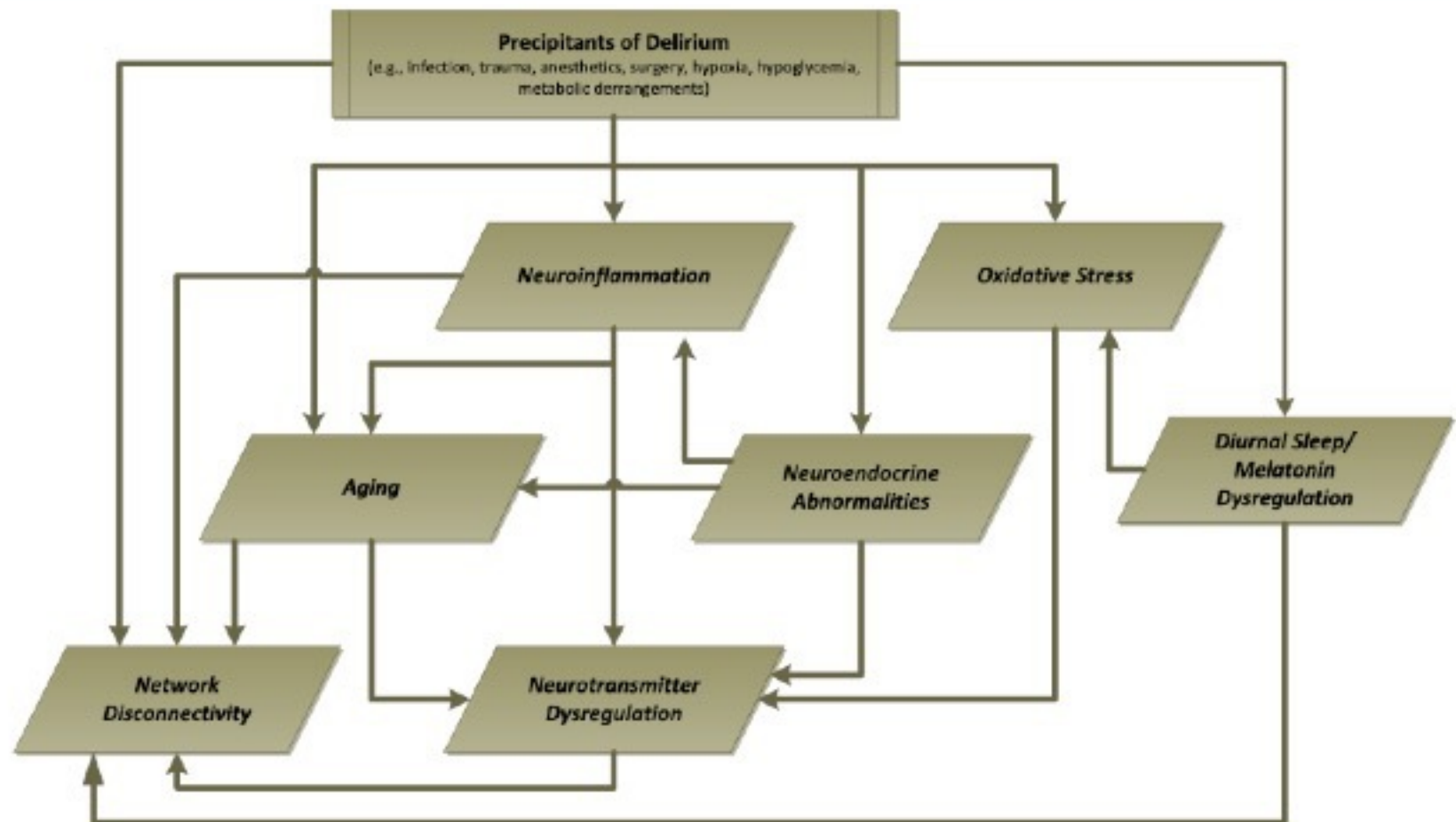
Prevalence

Setting	%
General community	1-2
> 85yo community	14
ED	10-30
O/A to hospital	14-24
During admission	6-56
Post op	15-53
ICU	70-87
Nursing Home	Up to 60
End of life	Up to 85

Cardinal features

- Disturbance of attention and awareness
- Develops over short period and fluctuates
 - ▣ Change from baseline
- Change in cognition or perception not better accounted for by dementia
- Direct physiological consequence of medical condition/ substance intoxication or withdrawal

Models of delirium aetiology



Aetiology

- Direct brain insults
- Indirect mechanisms
 - ▣ Aberrant stress response
 - ▣ Inflammation
 - ▣ Neurotransmitter dysregulation
 - ↓ Ach
 - ↑ Dopamine

Risk Factors

- Dementia/cognitive impairment
- Previous delirium
- ↑ age
- Frailty
- Sensory impairment
- Polypharmacy
- Alcohol, opioid, BDZ use
- Palliative care population

Age

- Aging processes in the brain
- Structural brain disease
- ↓ homeostatic capacity
- ↓ vision and hearing
- ↑ prevalence of chronic disease
 - ▣ polypharmacy
- Pharmacokinetic and pharmacodynamic changes
- ↓ resistance to acute disease and stress

In Hospital Risk Factors

- Drugs
- IDC: 2x risk
- Restraints: 4x risk
- Multiple room changes
- ICU admission
- Sensory deprivation
 - ▣ Glasses/hearing aids/no natural light
- No clock/watch

Causes: 30% Drugs

- Adverse effects at lower doses
 - ▣ ↓ renal excretion/hepatic metabolism
- Analgesics
- Benzodiazepines
- “Anti” drugs
- Withdrawal
 - ▣ Narcotics, BDZ, EtOH, SSRIs, TCAs
- Toxicity
 - ▣ Digoxin, Li

Causes

- Sepsis
- Vascular event
- Fluid balance (dry/CCF)
- Electrolyte disturbance
- Immobility
 - ▣ IDC, restraint
- Malnutrition
- Pain
- Urinary retention/constipation
- **30%: no obvious cause**

Assessment

- Collateral history
 - ▣ Baseline cognitive function & functional capacity
 - ▣ Onset & course of confusion
- Medication history
 - ▣ OTC drugs, alcohol, benzodiazepines
- Clinical examination

Features

- Disturbance in attention
- Disorganised thinking
- Disorientation
- Memory impairment
- Perceptual disorders
- Increased or decreased psychomotor activity
- Disturbed sleep/wake cycle
 - ▣ Fluctuates, worse at night

4AT

- Alertness
 - ▣ ↓: delirium very likely

- AMT4
 - ▣ Age, date of birth, place (building), year

- Attention
 - ▣ Months of year backwards

- Acute change or fluctuating course

Delirium vs Dementia

- Onset
 - ▣ Dementia: months to years
 - ▣ Delirium: hours/days
- Fluctuation
 - ▣ Dementia does not fluctuate over minutes to hours
- Attention
 - ▣ Intact in dementia until late stages

**Treat all
precipitating
causes**

**Optimise conditions
for the brain**

**Communicate with
patient & carers**

COMPONENTS OF DELIRIUM CARE

Prevention

**Detect & treat
distress /
agitation**

**Follow-up /
consider
dementia**

Rehabilitation

**Prevent
complications**

Prevention

***Table.* The Most Common Components of Successful Delirium Prevention Programs**

- Anesthesia protocols
- Assessment of bowel/bladder functions
- Early mobilization
- Extra nutrition
- Geriatric consultation
- Hydration
- Medication review
- Pain management
- Prevention and treatment of medical complications
- Sleep enhancement
- Staff education
- Supplemental oxygen
- Therapeutic cognitive activities/orientation
- Vision and hearing protocols

Management

- Identify and treat underlying cause
- If doesn't resolve
 - ▣ Re-evaluate for underlying causes

- Management of the confusion
 - ▣ Non pharmacological management
 - ▣ Pharmacological management

Non pharmacological management

- Few studies
 - ▣ Variable methods
 - ▣ Clear trial evidence in favour remains minimal
 - ▣ Some show improved patient and carer experience
- Management guidelines mostly expert consensus

Non pharmacological management

- Support and educate the family
- Remain calm & avoid confrontations
- Avoid restraint
- Assist with reorientation
 - ▣ Consistency of staff
 - ▣ Clocks, calendars
 - ▣ Familiar photos and visitors
- Appropriate lighting
- Minimise level of stimulation

Non pharmacological management

- Hearing aids/glasses available and work
- Avoid complications
 - ▣ immobility, malnutrition, pressure sores, over-sedation, falls, incontinence
- Adequate hydration
- Mobilise
- Sleep hygiene

Pharmacological Management

- ❑ Stop what you can
- ❑ Reduce doses
- ❑ Assess anticholinergic load
- ❑ Avoid starting drugs unless clear indication

Anti-psychotics

- ❑ Do not treat the underlying delirium
- ❑ Do not alter the natural history
- ❑ Wandering & disorientation are NOT indications for drug treatment

Anti-psychotics

- Used to
 - ▣ Mx patient safely
 - ▣ ↓ agitation, aggression, distress
 - Most useful for psychotic sx
 - ▣ Facilitate essential investigations or treatment
- Safety and efficacy not established by placebo controlled trials
- Significant SEs
- Lowest dose for shortest time

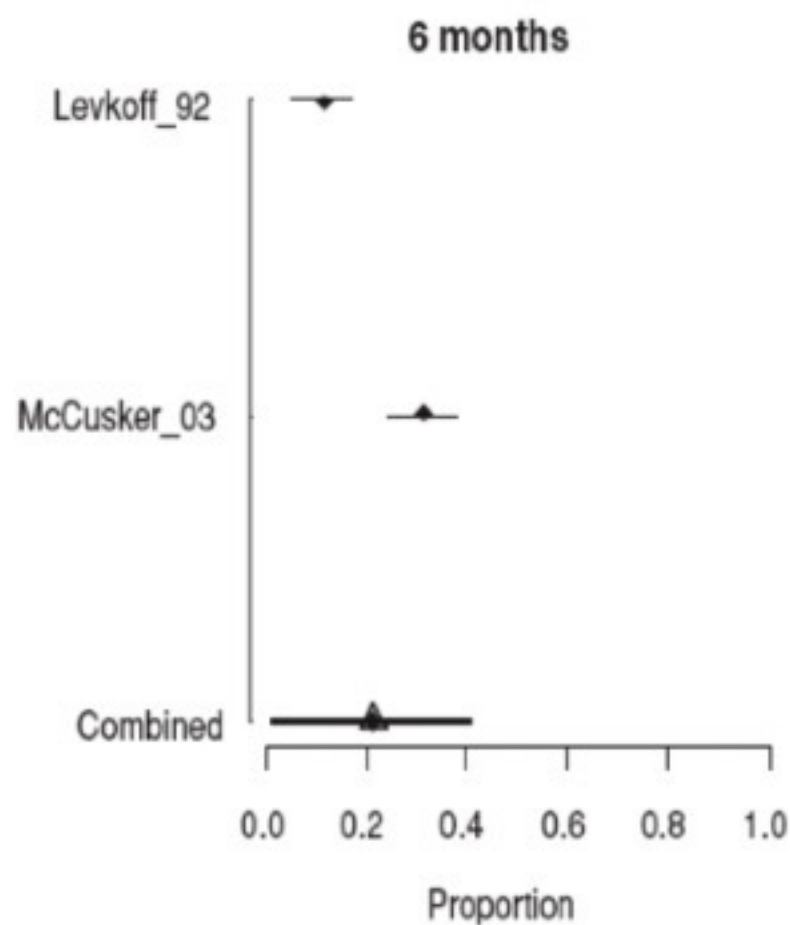
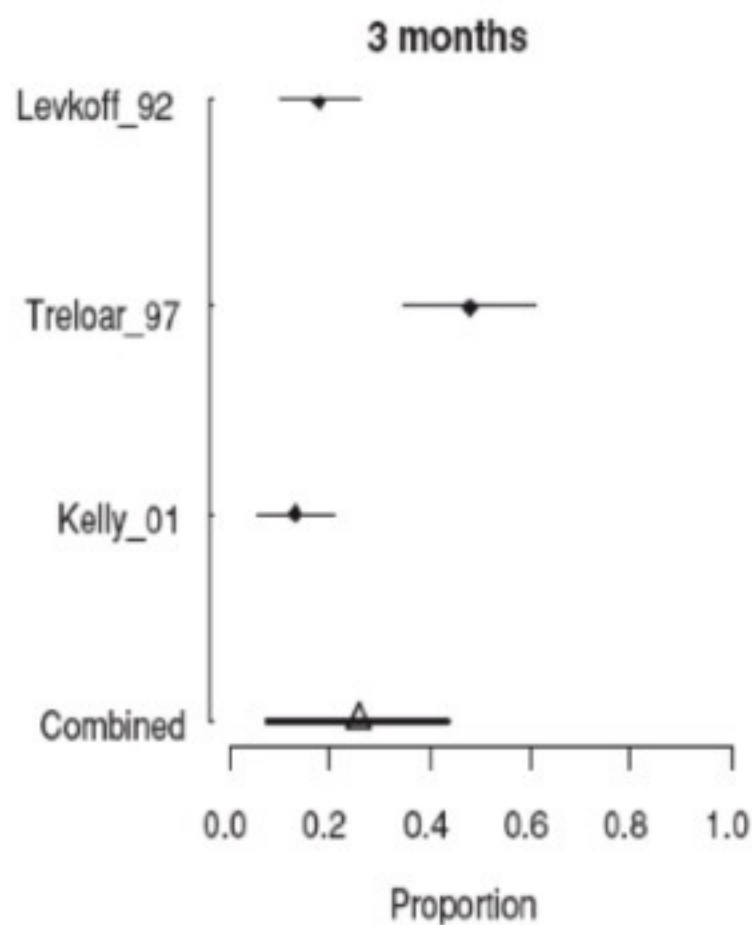
Anti-psychotics

- No consensus
- Haloperidol: 1st line
 - ▣ 0.25mg BD
- Atypicals
 - ▣ Limited data. Risperidone best studied
 - ▣ RCTs in dementia: ↑ risk of stroke and death
- Increased mortality
 - ▣ OR 1.61 (95% CI 0.88 – 2.96)

Anti-psychotics

- Parkinsons/LBD
 - ▣ Quetiapine
- ACH inhibitors (donepezil)
 - ▣ Insufficient or -ve
- BDZ
 - ▣ EtOH/drug withdrawal
 - ▣ Probably worsen delirium

Persistent delirium



Strong RF for new onset dementia

Outcome	Delirium (N)	No delirium (N)	OR	P value
Dementia	10	311	8.65 (2.13-35.12)	< 0.01
Dementia worsening	38	226	3.06 (1.49-6.29)	< 0.01
Functional worsening	42	230	2.76 (1.38-5.52)	< 0.01
Mortality	71	469	1.61 (1.26-2.10) *	< 0.01

* HR

Davis et al Brain 2012

Take home messages

- Common & serious illness
 - ▣ Often missed
- Collateral history vital
- ↓ risk with careful attention to risk factors