Delirium in the critically ill:

A Multi-modal and Multi-disciplinary approach

Wednesday, 10th May, 2017

South-West Critical Care Network

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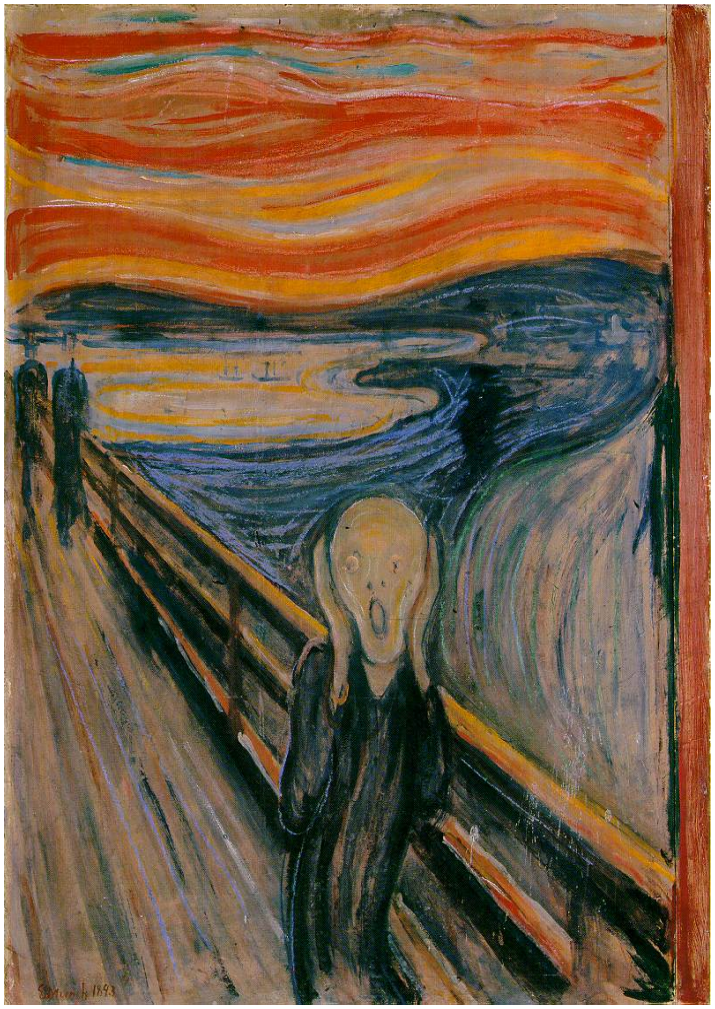
NHS Foundation Trust

Acknowledgement

- Colleagues at University Hospitals Bristol
  - J Bell- Charge Nurse
  - Louise Sherratt- Senior Staff Nurse ICU
  - Dr Kieron Rooney: Consultant in ICM
  - Dr Qiao Zhuo (RN ICU and now SPR COE)
  - Delirium project group

- Above and Beyond – UHB NHS (charitable fund)

Delirium



“an acutely disturbed state of mind that occurs in fever, intoxication and other disorders and is characterized by restlessness, illusions, and incoherence of thought and speech”

Clinical manifestations

- Acute /subacute presentation
- Fluctuating course
- Inattention
- Disorientation, hallucinations, agitation
- Poor concentration, abnormal sleep wake cycle

3 major subtypes

Hyperactive delirium

- Agitation
- Delusions and
- Disorientation

Hypoactive delirium

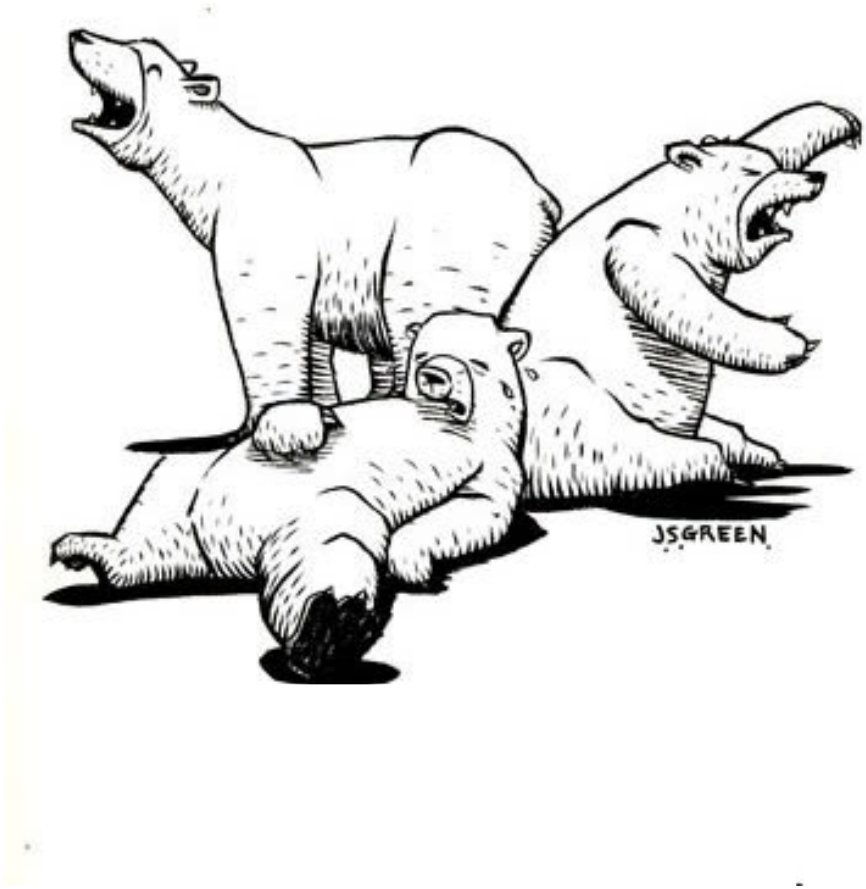
- Apathy and

- Quiet confusion

(easily missed !)

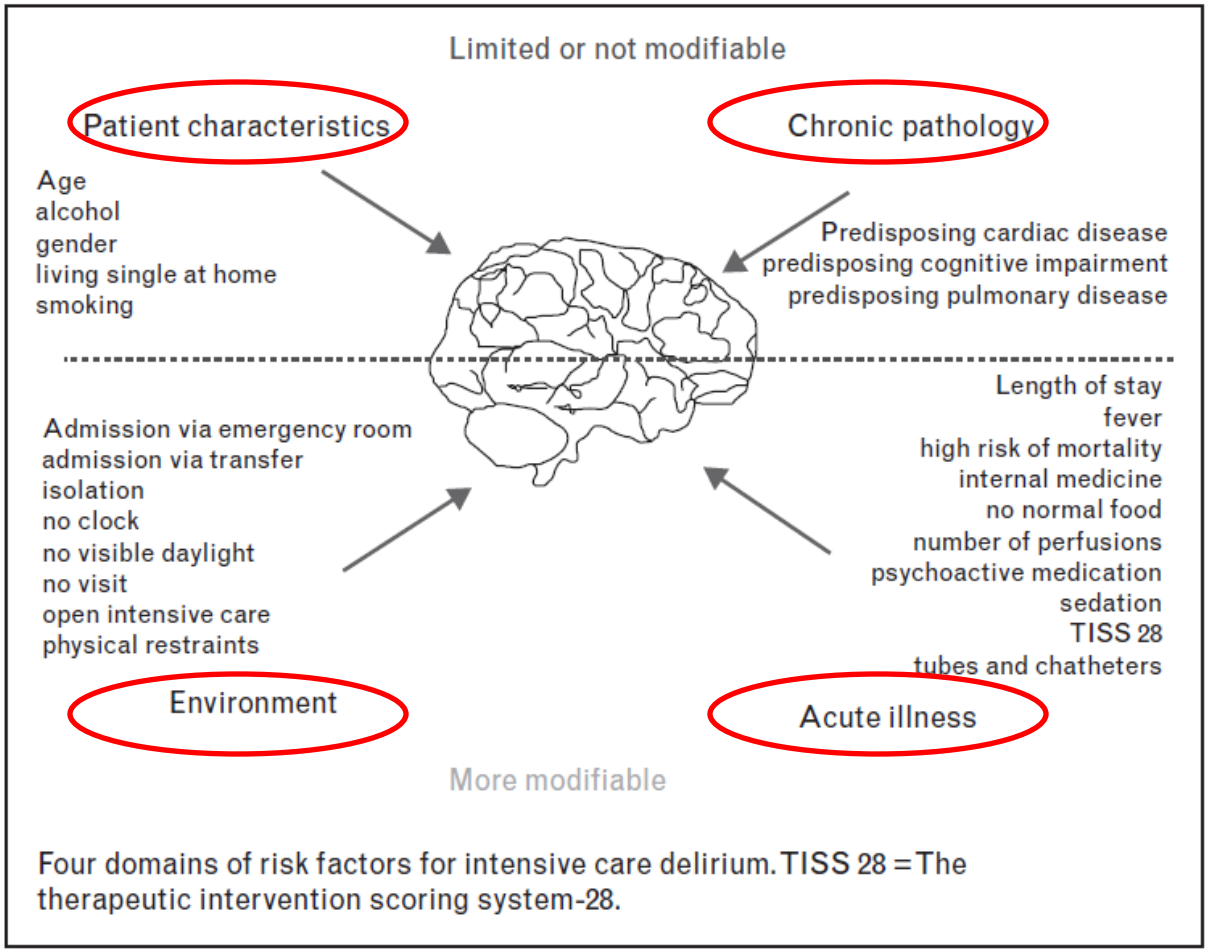
Mixed subtype delirium

- Vary from hypoactive to hyperactive.



Causes and risk factors

Causes and risk factors



Four domains of risk factors for intensive care delirium. TISS 28 = The therapeutic intervention scoring system-28.

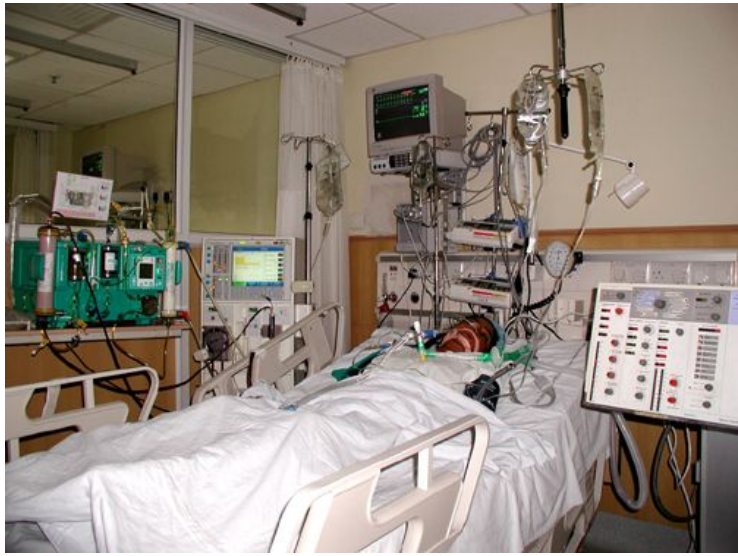
Pathophysiology

Pathophysiology

Infection **SIRS** **Sepsis** **Severe Sepsis** **Septic Shock**

Sepsis associated with acute organ dysfunction

- Cardiovascular – ↓ low BP, shock
- Renal - Oliguria
- Respiratory - ARDS
- Hematologic – ↑ WBC, DIC
- Metabolic acidosis



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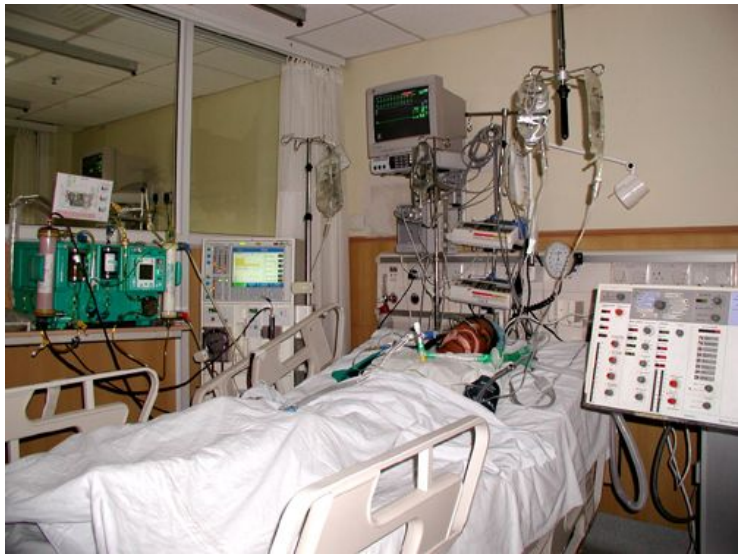
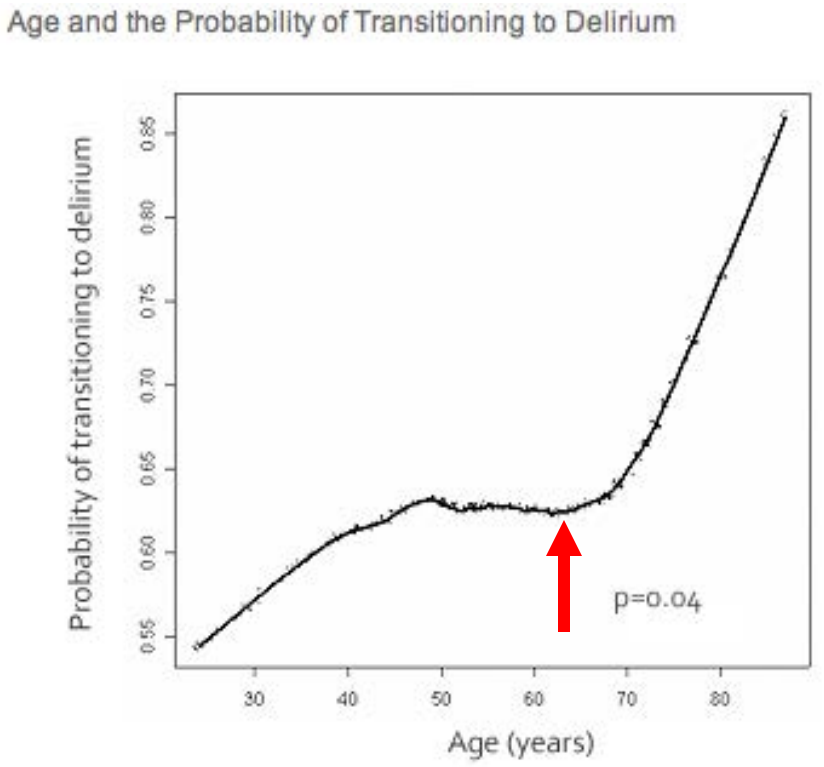
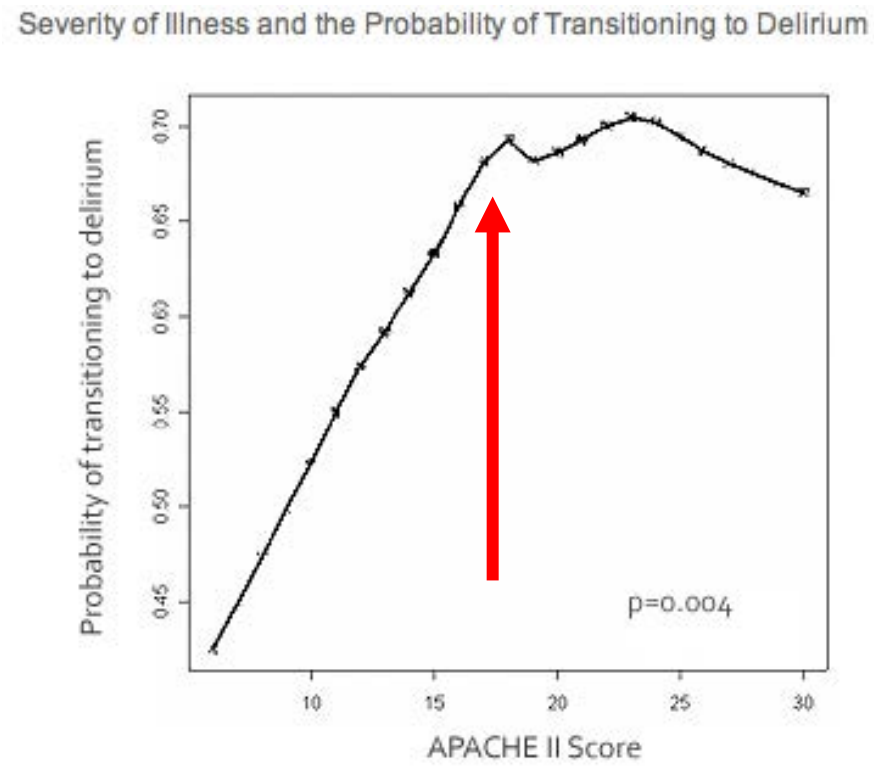
- ?? CNS



Why is it important?

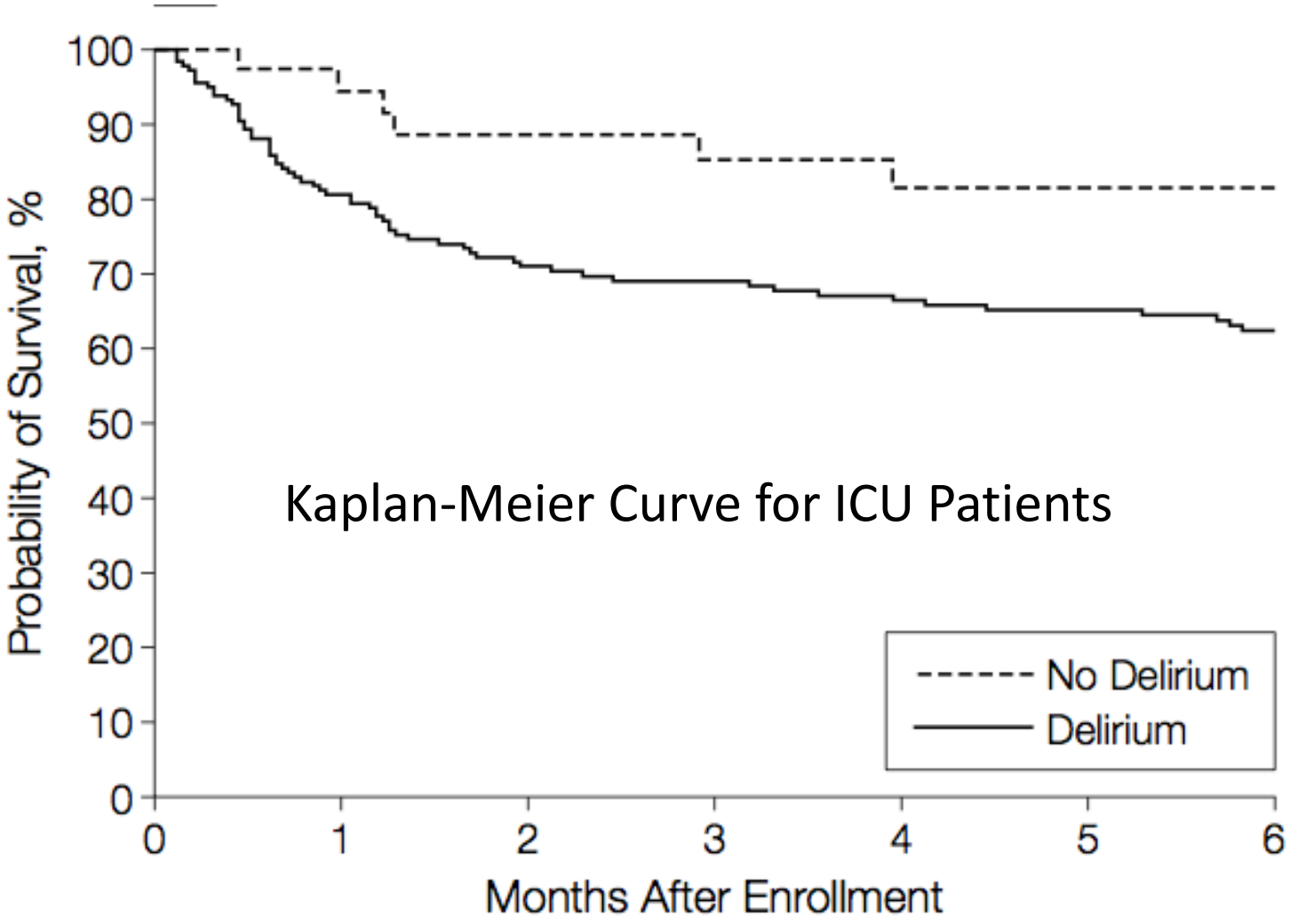
Increasing age and severity of illness increases the probability of progression to delirium





Parharandiande et al, 2008

Delirium associated with increased risk of death



Kaplan-Meier Curve for ICU Patients

Ely et al. JAMA, 2004

Days of Delirium Are Associated with 1-Year Mortality in an Older Intensive Care Unit Population

Margaret A. Pisani[1], So Yeon Joyce Kong[2], Stanislav V. Kasl[2], Terrence E. Murphy[3], Katy L. B. Araujo[3], and Peter H. Van Ness[2,3]

Am J Respir Crit Care Med Vol 180. pp 1092–1097, 2009

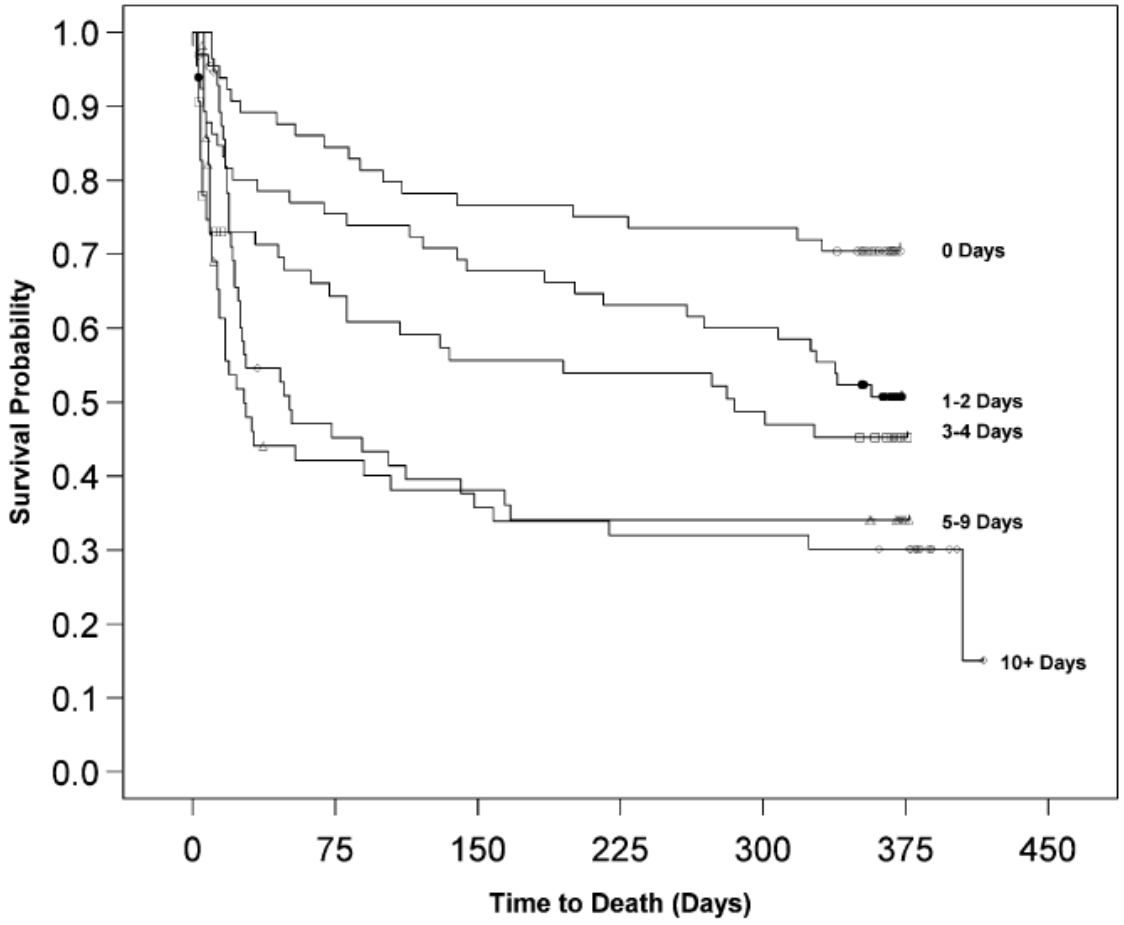
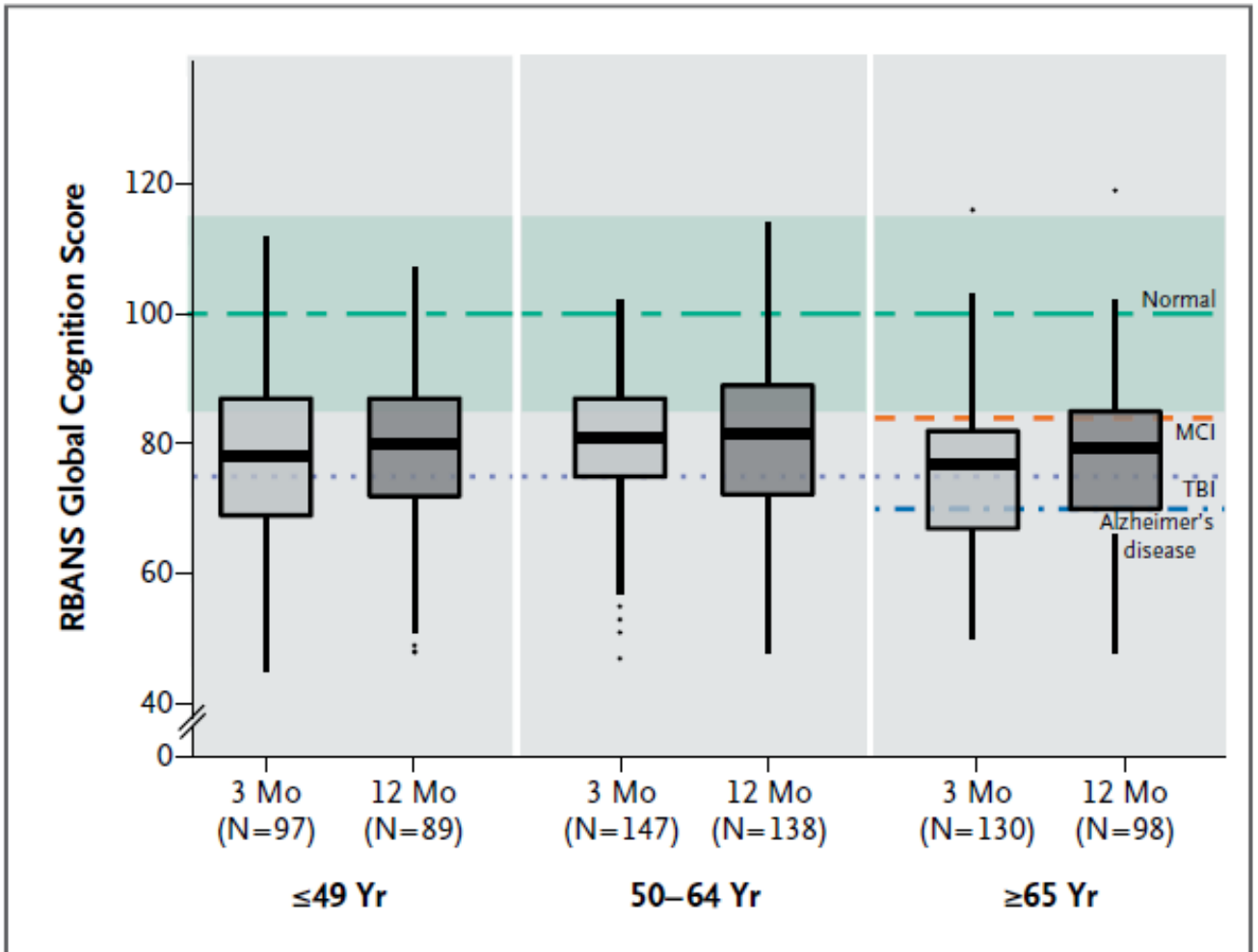


Figure 2. Kaplan-Meier survival curve for 1-year mortality post–intensive care unit (ICU) admission (ICU delirium days predictor). Log-rank chi-square statistic = 28.3; degrees of freedom = 3; $P < 001$.

ORIGINAL ARTICLE

Long-Term Cognitive Impairment after Critical Illness



Assessing patients

Organ failure and diagnosis

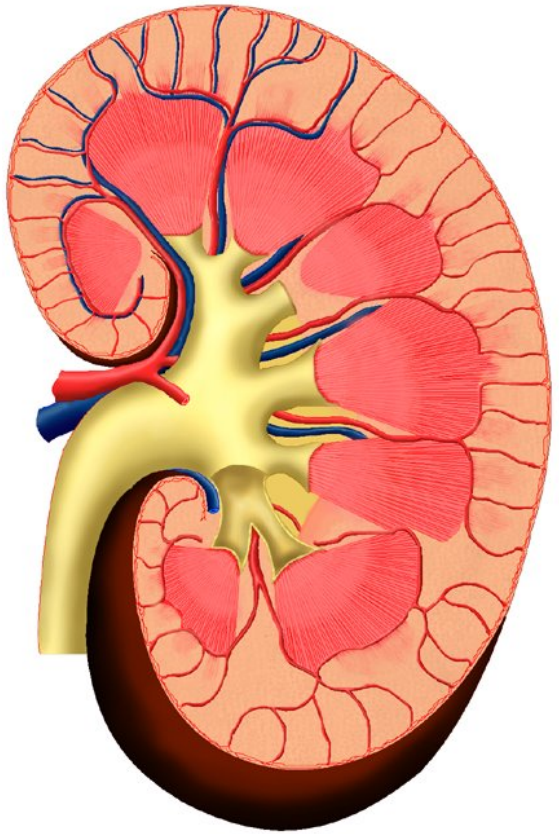
Cardiac dysfunction

- Clinical picture
  - SOB, chest pain, ECG
- Biomarker
  - CPK, Troponin
- Targeted treatment
  - Anti-platelets
  - ACE- Inhibitors, Statins
  - PCI

Organ failure and diagnosis

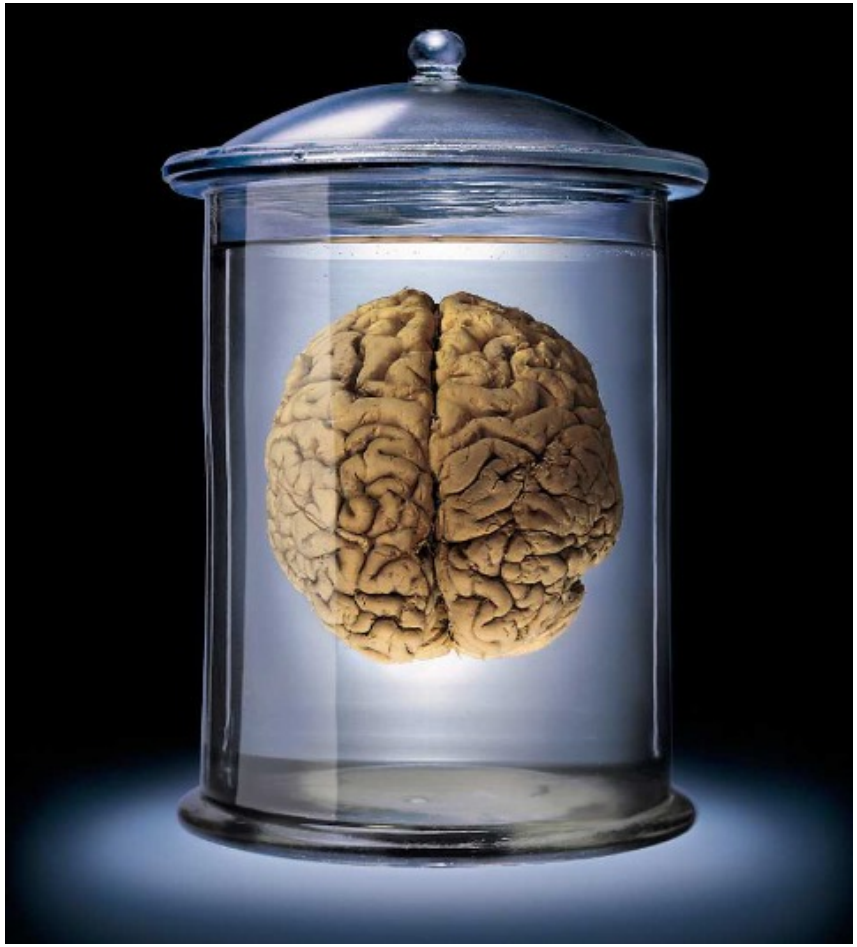
Acute kidney injury

- Clinical evidence
  - Urine output
- Biomarker
  - Creatinine, Urea
- Targeted treatment
  - Optimising fluids, blood pressure
  - Renal replacement therapy



Diagnosis of delirium

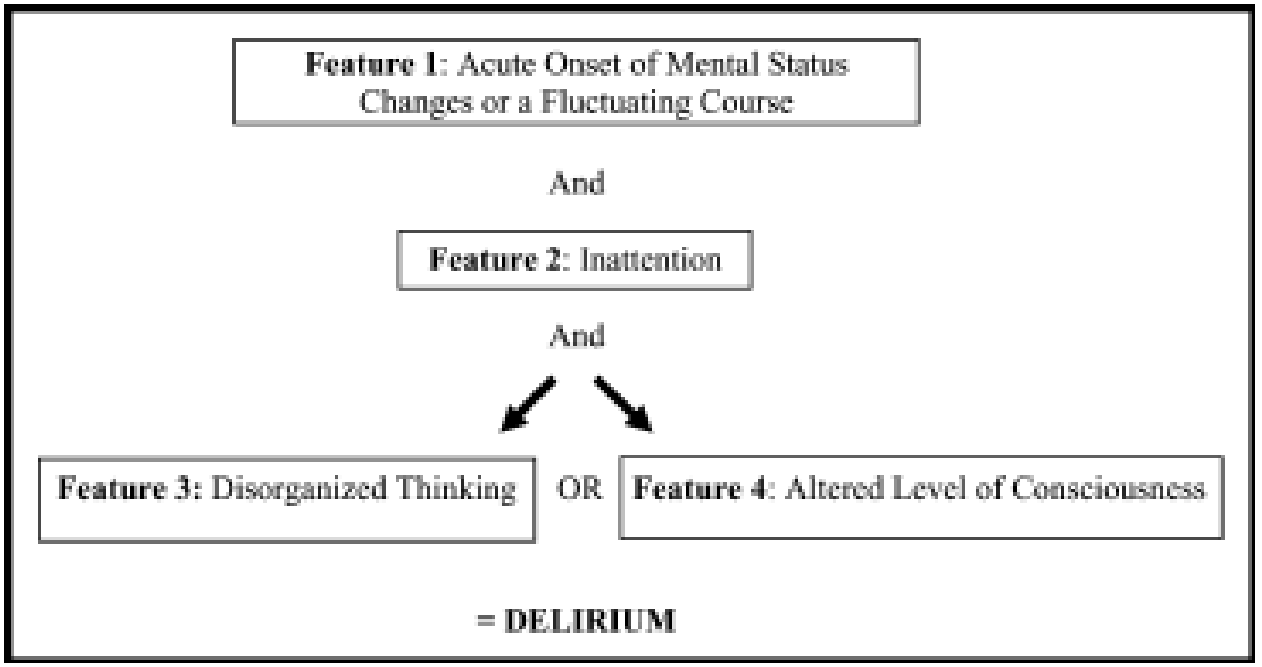
- End of bed-o-gram X
  - *29% pickup rate only*
- Blood Tests X
  - *S-100b, SAA linked to POCD & delirium*
- EEG or BIS X
  - *Slow wave activity, looks like sedation*
- Imaging X
  - *Unreliable and inconsistent*
- Screening Tools
  - *CAM-ICU or ICDSC*



Investigation & Diagnosis of delirium

Principles for assessment

Figure 1. Confusion Assessment Method for the intensive care unit



Step 1: Arousal (Sedation assessment)

Table 2. Sedation Scales for Patients in the ICU.

Scale and Scoring Method	Description
Riker Sedation–Agitation Scale (SAS)*	
Dangerous agitation (score of 7)	Pulling at endotracheal tube, trying to remove catheters, climbing over bed rail, striking at staff, thrashing from side to side
Very agitated (score of 6)	Requiring restraint and frequent verbal reminding of limits, biting endotracheal tube
Agitated (score of 5)	Anxious or physically agitated, calming at verbal instruction
Calm and cooperative (score of 4)	Calm, easily rousable, follows commands
Sedated (score of 3)	Difficult to arouse but awakens to verbal stimuli or gentle shaking; follows simple commands but drifts off again
Very sedated (score of 2)	Arouses to physical stimuli but does not communicate or follow commands, may move spontaneously
Cannot be aroused (score of 1)	Minimal or no response to noxious stimuli, does not communicate or follow commands
Richmond Agitation–Sedation Scale (RASS)†	
Combative (score of 4)	Overtly combative, violent, immediate danger to staff
Very agitated (score of 3)	Pulls or removes tubes or catheters; aggressive
Agitated (score of 2)	Frequent nonpurposeful movement, fights ventilator
Restless (score of 1)	Anxious but movements not aggressive or vigorous
Alert and calm (score of 0)	Alert and calm
Drowsy (score of −1)	Not fully alert but has sustained awakening (eye opening or eye contact) to voice (≥10 sec)
Light sedation (score of −2)	Briefly awakens with eye contact to voice (<10 sec)
Moderate sedation (score of −3)	Movement or eye opening to voice but no eye contact
Deep sedation (score of −4)	No response to voice but movement or eye opening to physical stimulation
Cannot be aroused (score of −5)	No response to voice or physical stimulation

* Data are from Riker et al.[37]
† Data are from Sessler et al.[38]

Step 2: Content (Delirium assessment)

Table 3. Scoring Systems for the Diagnosis of Delirium in Critically Ill Patients.*

System, Scoring Method, and Criteria

Confusion Assessment Method for the ICU (CAM-ICU)†

Scoring is positive or negative according to the presence or absence of criteria listed

Patient must be sufficiently awake (RASS score, –3 or more) for assessment according to the following criteria:

- An acute change from mental status at baseline or fluctuating mental status during the past 24 hr (must be true to be positive)
- More than 2 errors on a 10-point test of attention to voice or pictures (must be true to be positive)
- If the RASS is not 0 and the above two criteria are positive, the patient is delirious
- If the RASS is 0 and the above two criteria are positive, test for disorganized thinking using 4 yes/no questions and a 2-step command; >1 error means the patient is delirious; ≤1 error excludes delirium

Intensive Care Delirium Screening Checklist (ICDSC)‡

A score of ≥4 is positive for delirium (with scores of 1 to 3 termed "subsyndromal delirium")

Patient must show at least a response to mild or moderate stimulation. Then score 1 point for each of the following features, as assessed in the manner thought appropriate by the clinician:

- Anything other than "normal wakefulness"
- Inattention
- Disorientation
- Hallucination
- Psychomotor agitation
- Inappropriate speech or mood
- Disturbance in sleep or wake cycle
- Fluctuation in symptoms

CAM ICU features

- C = Change in mental status
- A = Attention is impaired

Both required

- A = Altered level of consciousness
- M = Muddled (disorganised) thinking

One required

CAM ICU features

- C = Change in mental status
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One required

Inattention

Management

Evolution of sedation practice in ICU over past 2 decades

Evolution of sedation practice in ICU over past 2 decades

- Daily interruption of sedation

TABLE 3. THE DURATION OF MECHANICAL VENTILATION, LENGTH OF STAY IN THE INTENSIVE CARE UNIT AND THE HOSPITAL, AND DOSES OF SEDATIVE DRUGS AND MORPHINE, ACCORDING TO STUDY GROUP.*

VARIABLE	INTERVENTION GROUP (N= 68)	CONTROL GROUP (N= 60)	P VALUE
	median (interquartile range)		
Duration of mechanical ventilation (days)	4.9 (2.5–8.6)	7.3 (3.4–16.1)	0.004
Length of stay (days)			
Intensive care unit	6.4 (3.9–12.0)	9.9 (4.7–17.9)	0.02
Hospital	13.3 (7.3–20.0)	16.9 (8.5–26.6)	0.19
Midazolam subgroup (no. of patients)	37	29	
Total dose of midazolam (mg)	229.8 (59–491)	425.5 (208–824)	0.05
Average rate of midazolam infusion (mg/ kg/ hr)	0.032 (0.02–0.05)	0.054 (0.03–0.07)	0.06
Total dose of morphine (mg)	205 (68–393)	481 (239–748)	0.009
Average rate of morphine infusion (mg/ kg/ hr)	0.027 (0.02–0.04)	0.05 (0.04–0.07)	0.004
Propofol subgroup (no. of patients)	31	31	
Total dose of propofol (mg)	15,150 (3983–34,125)	17,588 (4769–35,619)	0.54
Average rate of propofol infusion (mg/ kg/ hr)	1.9 (0.9–2.6)	1.4 (0.9–2.4)	0.41
Total dose of morphine (mg)	352 (108–632)	382 (148–1053)	0.33
Average rate of morphine infusion (mg/ kg/ hr)	0.035 (0.02–0.07)	0.043 (0.02–0.07)	0.65

*Average rates of infusion were calculated as milligrams of drug per kilogram of body weight divided by the number of hours from the start of the infusion to its termination.

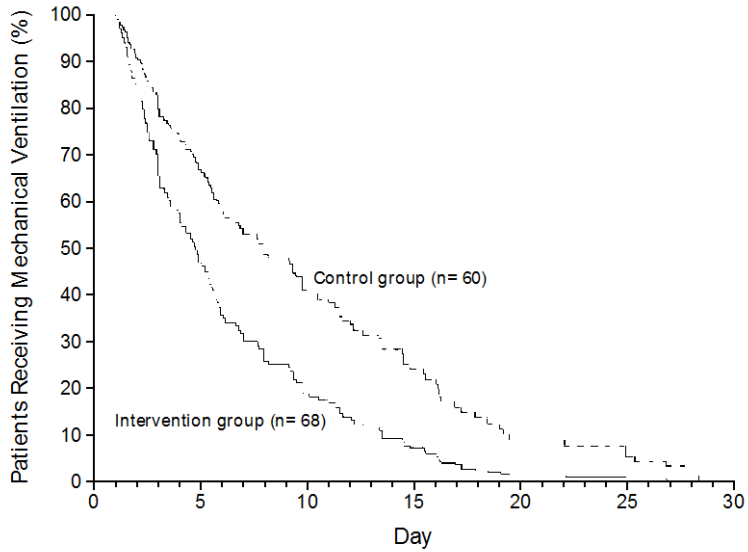


Figure 1. Kaplan–Meier Analysis of the Duration of Mechanical Ventilation, According to Study Group. After adjustment for base-line variables (age, sex, weight, APACHE II score, and type of respiratory failure), mechanical ventilation was discontinued earlier in the intervention group than in the control group (relative risk of extubation, 1.9; 95 percent confidence interval, 1.3 to 2.7; P< 0.001).

Evolution of sedation practice in ICU over past 2 decades

- Awakening and breathing co-ordination trial

Efficacy and safety of a paired sedation and ventilator weaning protocol for mechanically ventilated patients in intensive care (Awakening and Breathing Controlled trial): a randomised controlled trial

Girard TD, Kress JP, Fuchs BD, et al.Lancet 2008;371:126-134

Patients in the intervention vs control group:

- Spent more days breathing without assistance

  (15 days *vs* 12 days; p=0·02)

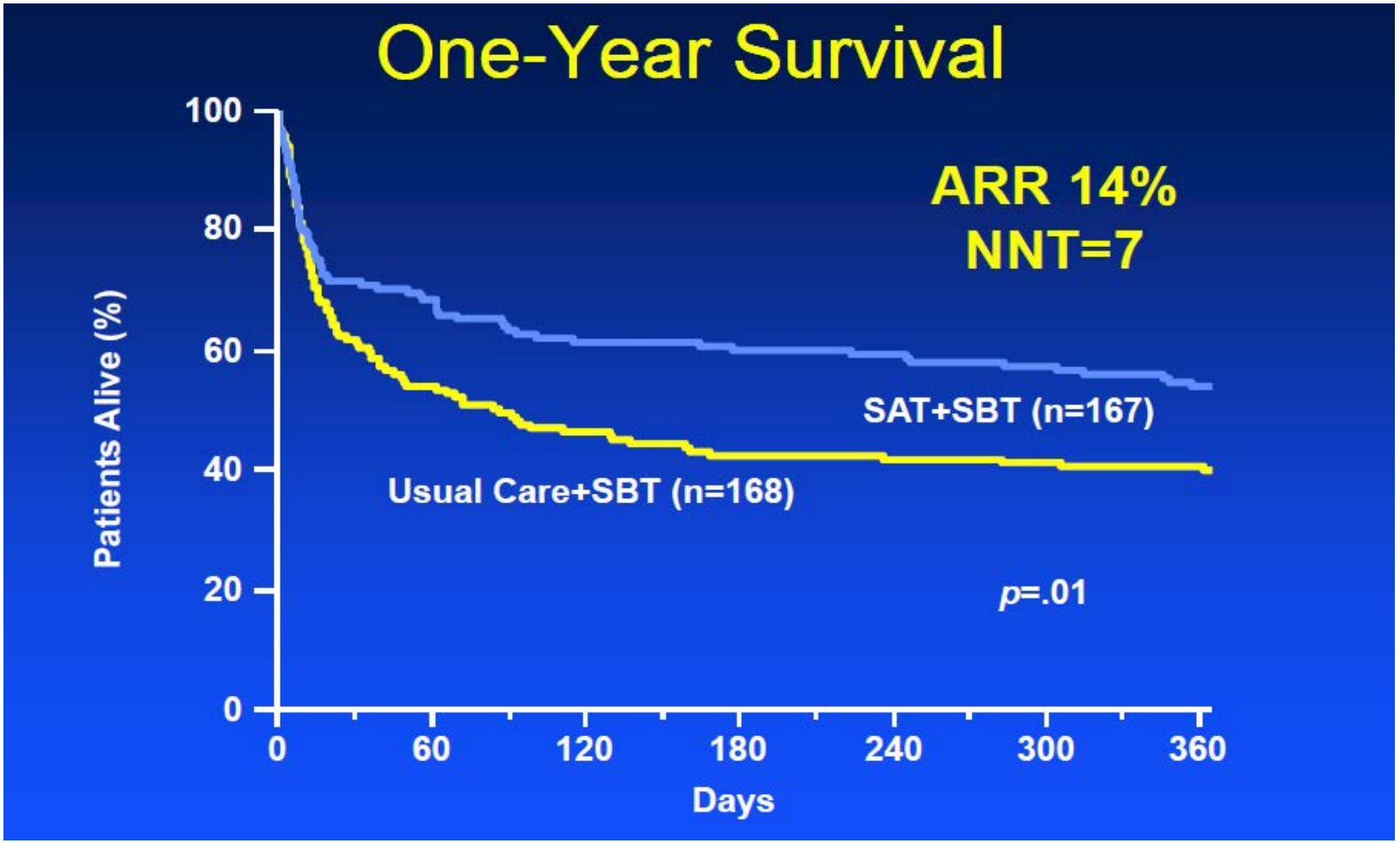
- Intensive care discharge:

  (9 days *vs* 13 days; p=0·01)

- Hospital discharge

  (15 days *vs* 19 days; p=0·04).

ABC trial - One year survival

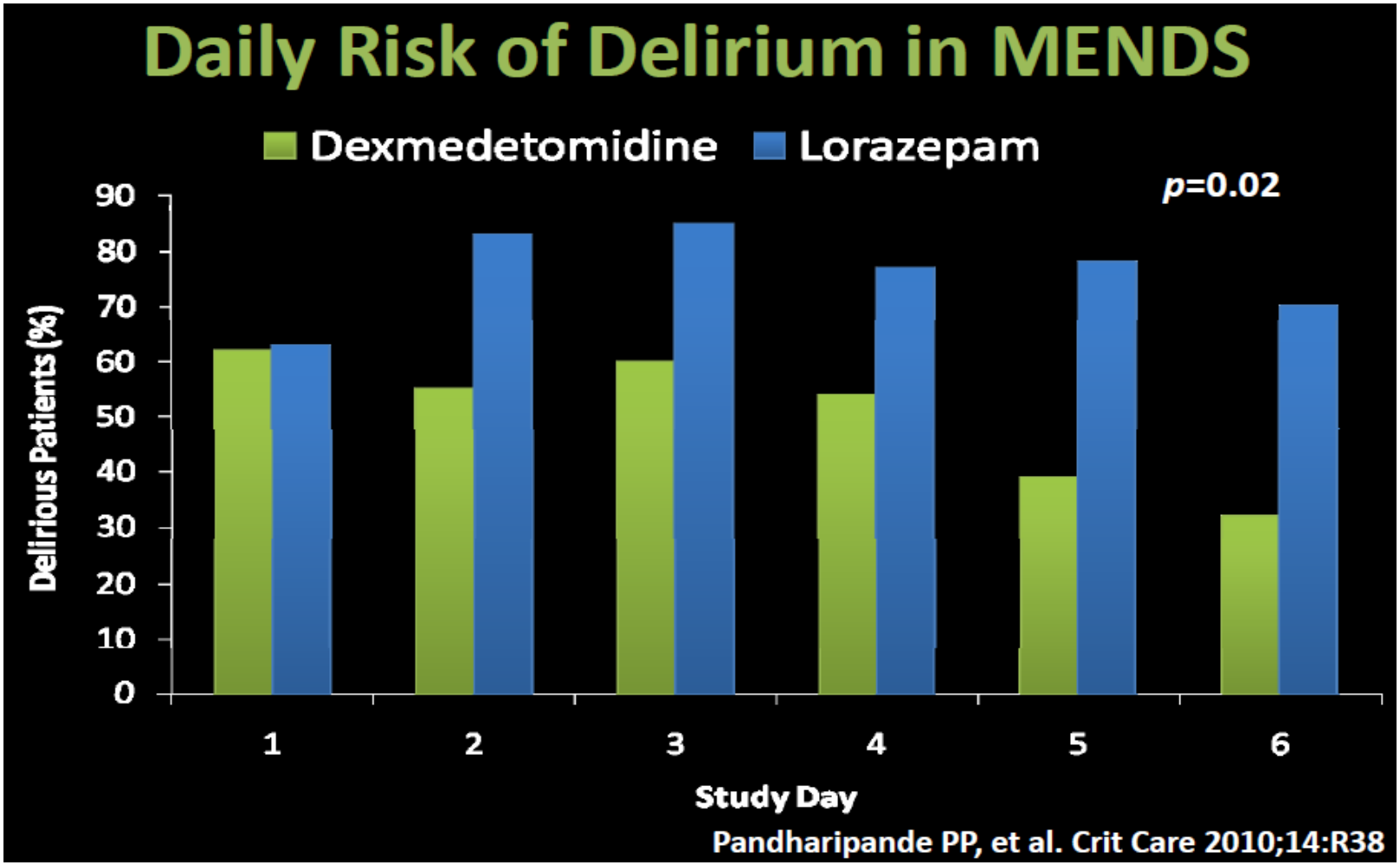


Girard TD, Kress JP, Fuchs BD, et al.Lancet 2008;371:126-134

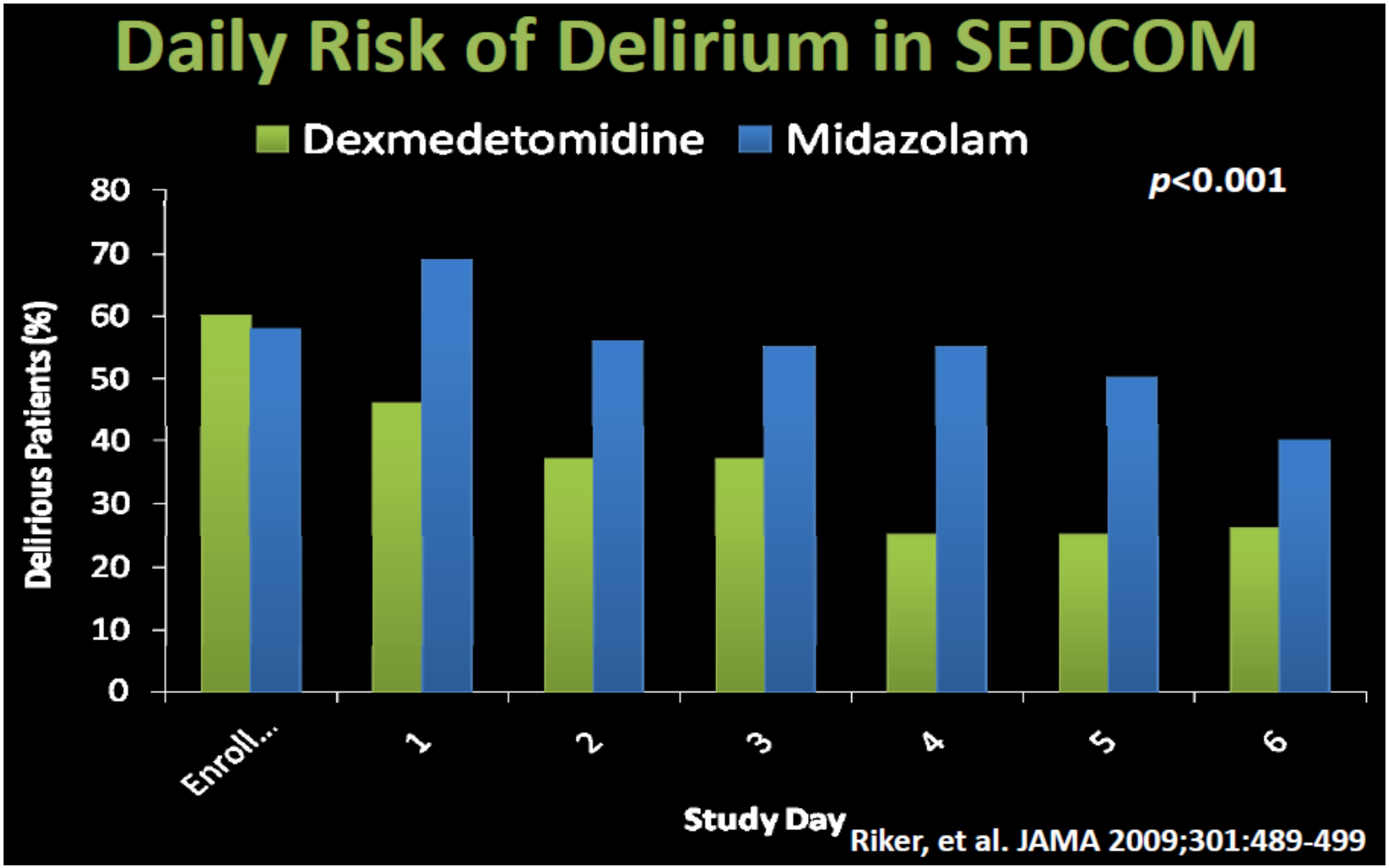
Evolution of sedation practice in ICU over past 2 decades

- Choice of sedation & effect on risk of developing delirium

Choice of sedation



Choice of sedation



Evolution of sedation practice in ICU over past 2 decades

- Choice of sedation and its effect on duration of mechanical ventilation

CARING FOR THE
CRITICALLY ILL PATIENT

Dexmedetomidine vs Midazolam or Propofol for Sedation During Prolonged Mechanical Ventilation

Two Randomized Controlled Trials

JAMA, March 21, 2012—Vol 307, No. 11

Dexmedetomidine versus

1. Midazolam (**MIDEX**)
2. Propofol (**PRODEX**)

MIDEX and PRODEX

- Dexmedetomidine was:
  - Not inferior to Midazolam or Propofol in maintaining light or moderate sedation
  - Time to extubation was reduced for both
  - But, reduced duration of ventilation wrt to Midazolam but not Propofol
  - Improved communication with the nursing staff esp. wrt pain

Pharmacological management of delirium

- Pharmacological management of delirium and its effect in duration of delirium

Effect of intravenous haloperidol on the duration of delirium and coma in critically ill patients (Hope-ICU): a randomised, double-blind, placebo-controlled trial

Valerie J Page, E Wesley Ely, Simon Gates, Xiao Bei Zhao, Timothy Alce, Ayumi Shintani, Jim Jackson, Gavin D Perkins, Daniel F McAuley

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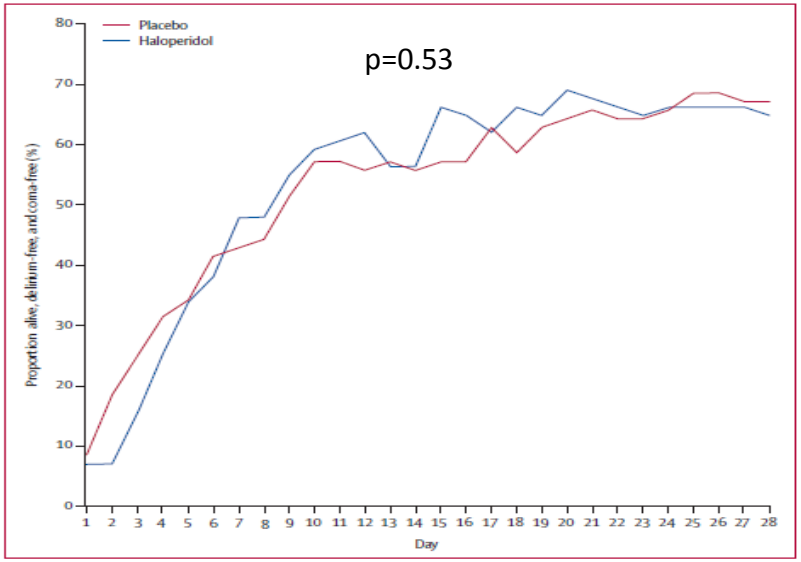
	Haloperidol (n=71)	Placebo (n=70)	Difference (95% CI)* or RR (95% CI)*	p value
Alive, delirium-free, and coma-free days in first 14 days	5 (0–10)	6 (0–11)	−0·48 (−2·08 to 1·21)	0·53
Days in delirium in first 14 days†	5 (2–8)	5 (1–8)	0·01 (−1·31 to 1·33)	0·99
Days in coma in first 14 days†	0 (0–2)	0·5 (0–2)	0·00 (−0·68 to 0·67)	0·99
Alive, delirium-free, and coma-free days in first 28 days	19 (0–24)	19·5 (0–25)	−0·26 (−3·72 to 3·46)	0·57
Days in delirium in first 28 days†	5 (2–10)	5 (1–9)	−0·38 (−2·37 to 1·62)	0·71
Days in coma in first 28 days†	0 (0–2)	1 (0–2)	−0·05 (−0·82 to 0·72)	0·90
Ventilator-free days in first 28 days	21 (0–25)	17 (0–25)	0·25 (−3·26 to 4·16)	0·88
Mortality at 28 days	20 (28·2%)	19 (27·1%)	RR 1·04 (0·61 to 1·77)	..
Length of critical care stay (days)‡	9·5 (5–14)	9 (5–18)	−1·45 (−5·42 to 2·52)	0·47
Length of hospital stay (days)§	18·5 (12–31)	26 (15–40)	−5·13 (−21·75 to 11·48)	0·54

Data are number (%), median (IQR), unless otherwise specified. RR=risk ratio. *CI bootstrapped. †Including patients who died within study period. ‡Excluding patients who died in ICU: n=52 for haloperidol, n=51 for placebo. §Excluding patients who died in hospital: n=42 for haloperidol, n=47 for placebo.

Table 3: **Outcomes**



Proportional of study patients with resolution of delirium with time

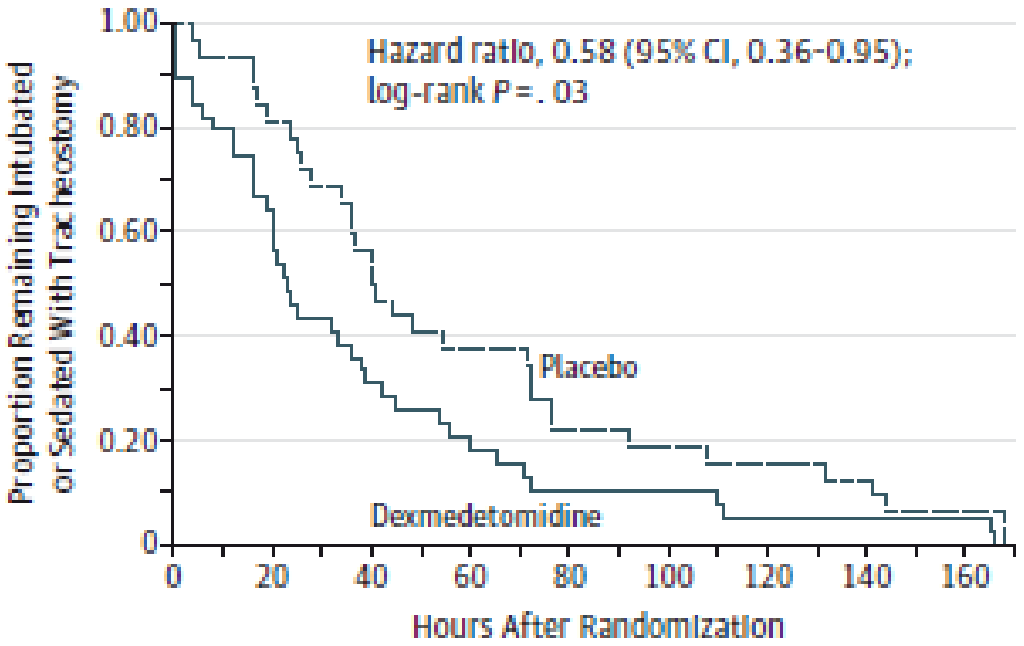
Preliminary Communication | CARING FOR THE CRITICALLY ILL PATIENT

Effect of Dexmedetomidine Added to Standard Care on Ventilator-Free Time in Patients With Agitated Delirium

A Randomized Clinical Trial

Michael C. Reade, DPhil, FCICM; Glenn M. Eastwood, RN, PhD; Rinaldo Bellomo, MD, FCICM; Michael Bailey, PhD; Andrew Bersten, MD, FCICM; Benjamin Cheung, MBBS, FCICM; Andrew Davies, MBBS, FCICM; Anthony Delaney, PhD, FCICM; Angaj Ghosh, MBBS, FCICM; Frank van Haren, PhD, FCICM; Nerina Harley, MD, FCICM; David Knight, MBBS, FCICM; Shay McGuiness, MBChB, FCICM; John Mulder, MBChB, FCICM; Steve O'Donoghue, MBChB, FCICM; Nicholas Simpson, MBBS, FCICM; Paul Young, MBChB, FCICM; for the DahLIA Investigators and the Australian and New Zealand Intensive Care Society Clinical Trials Group

Figure 2. Kaplan-Meier Analysis of the Proportion of Patients Remaining Intubated During the First 7 Days of the Study



No. at risk				
Dexmedetomidine	39	10	4	2
Placebo	32	13	6	2

Non- pharmacological management of delirium

Early mobilisation

Early intensive care unit mobility therapy in the treatment of acute respiratory failure*

Peter E. Morris, MD; Amanda Goad, RN; Clifton Thompson, RN; Karen Taylor, MPT; Bethany Harry, MPT; Leah Passmore, MS; Amelia Ross, RN, MSN; Laura Anderson; Shirley Baker; Mary Sanchez; Lauretta Penley; April Howard, RN; Luz Dixon, RN; Susan Leach, RN; Ronald Small, MBA; R. Duncan Hite, MD; Edward Haponik, MD

Crit Care Med 2008 Vol. 36, No. 8

Early Mobilisation = Better outcomes

Table 3. Outcomes (survivors)

	Usual Care (n = 135)	Protocol (n = 145)	*p*
Days to first out of bed	13.7 (11.7–15.7)	8.5 (6.6–10.5)	<.00
Days to first out of bed (adjusted[a])	11.3 (9.6–13.4)	5.0 (4.3–5.9)	<.00
Ventilator days	9.0 (7.5–10.4)	7.9 (6.4–9.3)	.29
Ventilator days (adjusted[a])	10.2 (8.7–11.7)	8.8 (7.4–10.3)	.16
ICU LOS days	8.1 (7.0–9.3)	7.6 (6.3–8.8)	.08
ICU LOS days (adjusted[a])	6.9 (5.9–8.0)	5.5 (4.7–6.3)	.02
Hospital LOS days	17.2 (14.2–20.2)	14.9 (12.6–17.1)	.04
Hospital LOS days (adjusted[a])	14.5 (12.7–16.7)	11.2 (9.7–12.8)	.00

Data are presented as means (confidence intervals).

Adjusted[a], adjusted for body mass index, Acute Physiology and Chronic Health Evaluation II, an vasopressors.

ICU, intensive care unit; LOS, length of stay.

Have we really improved our pratice?

Perceived v Actual Sedation Practices in Adult ICU's receiving Mechanical Ventilation

- "We do daily interrupted sedation?" 65%
- "We do delirium screening ?" 25%
- Daily interrupted sedation 36%
- Delirium screening 10%

The Annals of Pharmacotherapy 2012;46:1331-1329

Perceived v Actual Sedation Practices even in clinical trials!

CARING FOR THE
CRITICALLY ILL PATIENT

Dexmedetomidine vs Midazolam or Propofol for Sedation During Prolonged Mechanical Ventilation
Two Randomized Controlled Trials

Spontaneous awakening and breathing trial was

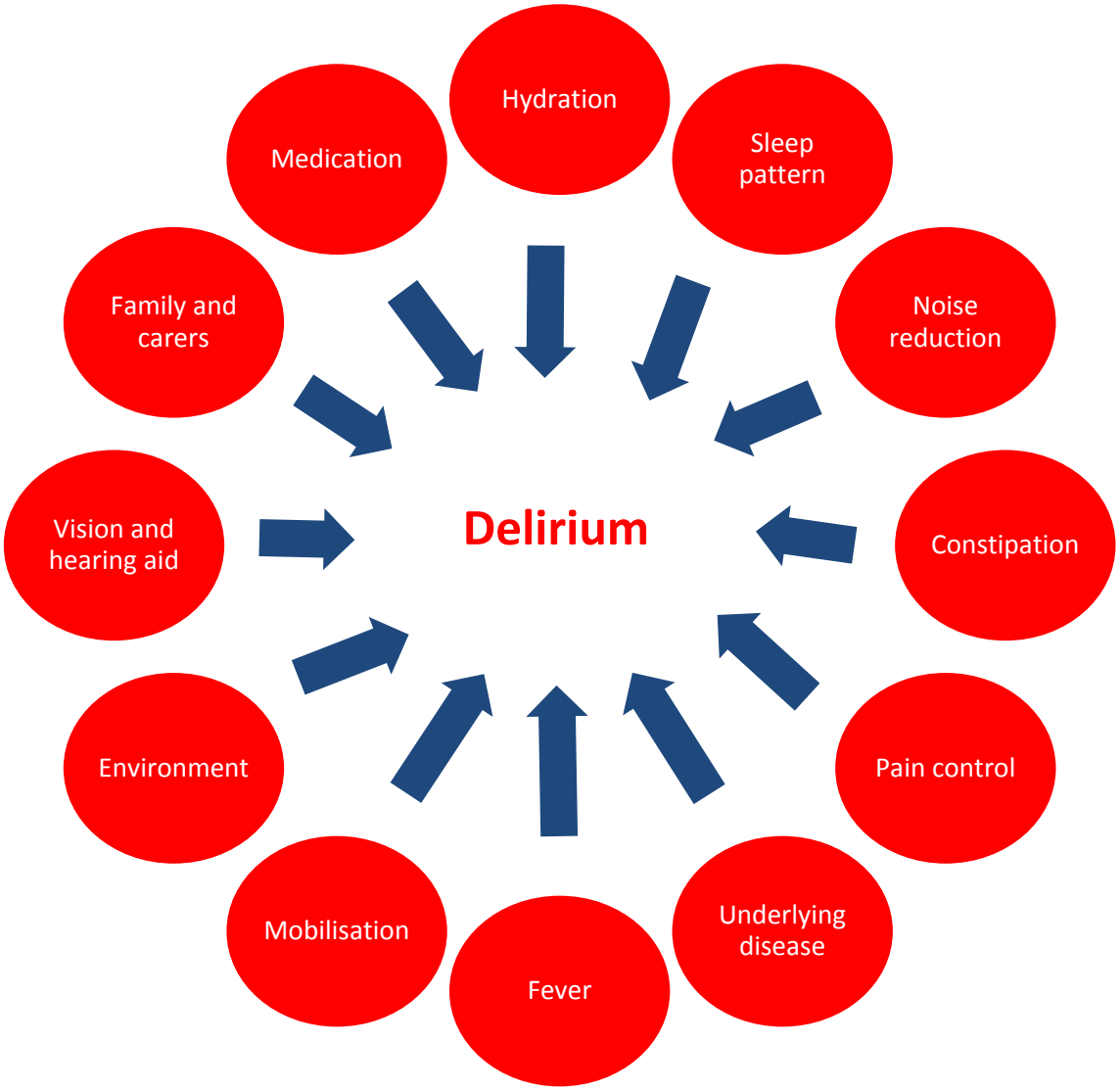
< 50% as compared to the ABC trial (>60%)

Sir David Brailsford

Principle of 'marginal gains‘

‘if you broke down everything you could think of that goes into improving an outcome and then improved it by 1%, you will get a significant increase when you put them all together – Sir Dave Brailsford (2012)

Multimodal and multi-disciplinary approach



Management

Identifying high risk patients

THINK!

- **T** = Toxic situations
- **H** = Hypoxemia
- **I** = Infections, Immobilisation
- **N** = Noise, dehydration, sleep
- **K** = K^+ or electrolyte dysfunction

Management

Do the basics very well!

Pain control

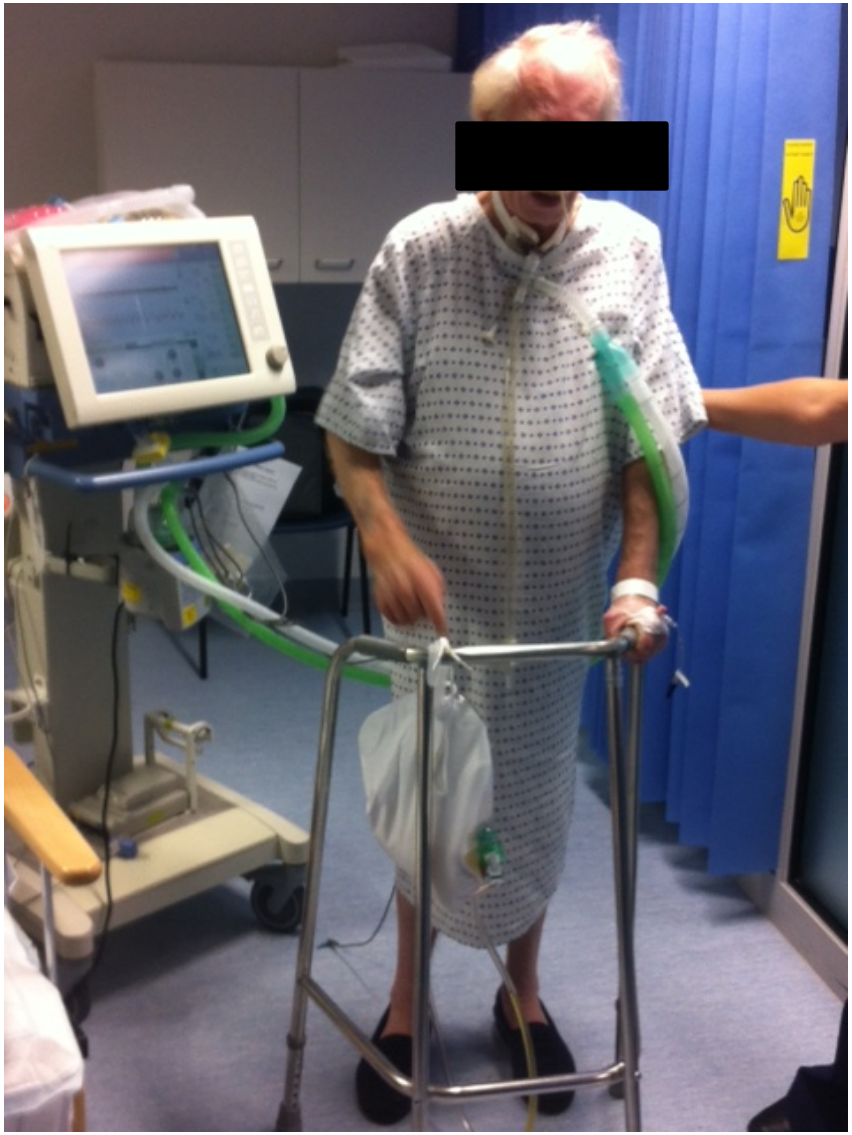
Prevent dehydration

Treat constipation

Noise reduction

Day / Night reorientation

Early mobilisation



Review drug chart

- Steroids
- Antibiotics
  - Quinolones
- Drugs affecting the CNS
  - Tricyclic antidepressants
  - Lithium
- Cardiac medication
  - Warfarin
  - Furosemide
  - Betablockers,
  - Digoxin

Bristol delirium care pathway

Delirium prevention care bundle

Targets Intensive Therapy Unit environmental issues!

5 components

- Noise levels
- Music therapy (MT)
- Reorientation therapy-
- Screen for delirium
- Early mobilisation

PAD guidelines – SCCM, 2013

Clinical Practice Guidelines for the Management of Pain, Agitation, and Delirium in Adult Patients in the Intensive Care Unit

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MANAGEMENT OF DELIRIOUS PATIENT ON INTENSIVE CARE

CAM-ICU positive (delirious)

5 → Refer to Psychiatry Liason Team

1 → REVERSIBLE FACTORS

- **Physiology**: Hypoxia, hypotension, pyrexia, constipation
- **Pain**: Assess pain & optimise analgesia
- **Pharmacology**: Review drug chart- STOP/START CHART

2 → MODIFIABLE FACTORS

- **Patient:** **BEDspace**
- **1. *Belongings+ Care Bundle*** (Hearing aids, glasses, dentures, own clothes)
- **2. *Environment*** (Review surroundings, access to music, radio, TV, reading)
- **3. *Day routine*** (Orientation, EM, white boards/Daily goals, "This is me")
  Sleep bundle (BLT, care clusters, evening melatonin)

3 → TREATMENT OPTIONS

4 →

Withdrawal (significant etoh, smoking or drug history)

- NICOTINE → Nicotine patch
- ALCOHOL → (i) Pabrinex I & II iv for 3/7.
  (ii) Chlordiazepoxide 20mg qds po/ng + PRN
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Hyperactive delirium (RASS > 0)

1) QUETIAPINE 25mg bd po/ng *(increase up to 200mg bd until symptoms controlled)*
2) HALOPERIDOL 2-10mg iv over 30 mins to gain control, then give total dose regularly in 4 divided doses over 24 hours (max 18mg/24 hours)
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Hypoactive delirium (RASS < 0)

NO SPECIFIC TREATMENT
Review reversible & modifiable factors
Consider Methylphenidate 5-10mg morning & midday

Version 1.1, Author – K Rooney, February 2017


.. maybe we should try to think out of the box?
Innovation Department
www.cartooncreator.nl

Can we modifying risk factors before ICU admission?

Original Investigation

Effect of Delirium and Other Major Complications on Outcomes After Elective Surgery in Older Adults

Lauren J. Gleason, MD; Eva M. Schmitt, PhD; Cyrus M. Kosar, MA; Patricia Tabloski, PhD; Jane S. Saczynski, PhD; Thomas Robinson, MD; Zara Cooper, MD; Selwyn O. Rogers Jr, MD, MPH; Richard N. Jones, ScD; Edward R. Marcantonio, MD, SM; Sharon K. Inouye, MD, MPH

JAMA Surgery December 2015 Volume 150, Number 12

Major Complications, Excluding Delirium	Patients, No. (%)
Unstable arrhythmia[a]	23 (4.1)
New heart block[b]	1 (0.2)
NSTEMI	4 (0.7)
Respiratory failure[c]	11 (1.9)
Pulmonary embolism	5 (0.9)
Pneumonia	2 (0.4)
Sepsis	2 (0.4)
New renal failure[d]	2 (0.4)
Stroke	2 (0.4)
Surgical complications[e]	8 (1.4)
Any complication	47 (8.3)

Delirium was associated with:

- increased rates of all adverse outcomes while
- major postoperative complications were associated with prolonged LOS.

Highest risk of all adverse outcomes was seen in the presence of both delirium and postoperative complications.

Given its high prevalence and negative effect, delirium should be considered as the leading postoperative complication contributing to adverse outcomes.

Pre-operative assessment of at risk patients

POAC clinic

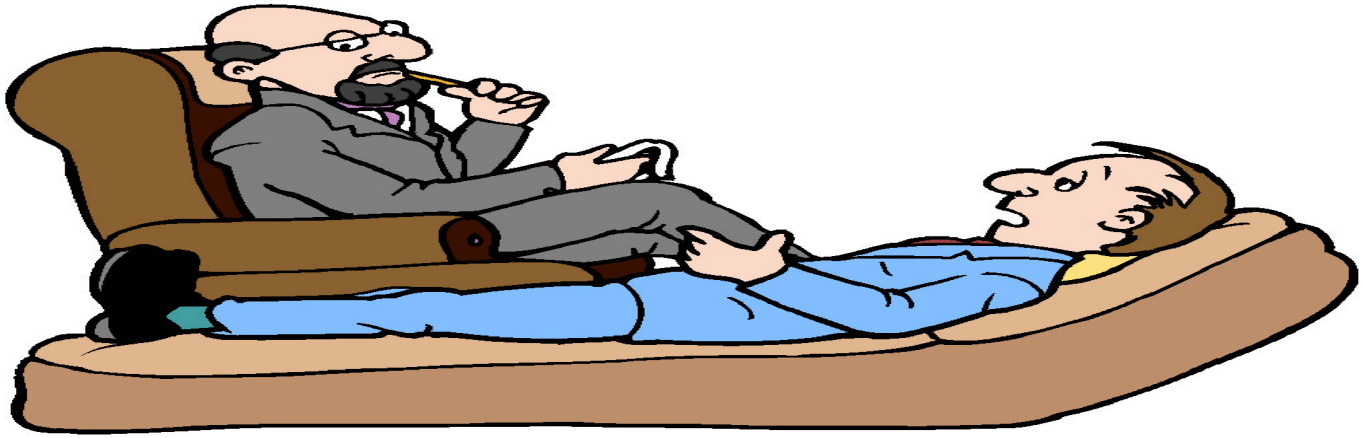
- Dementia screening
- Alcohol and smoking assessment
- Smoking cessation
- Alcohol and drug support service
  - Hospital based
  - Community support

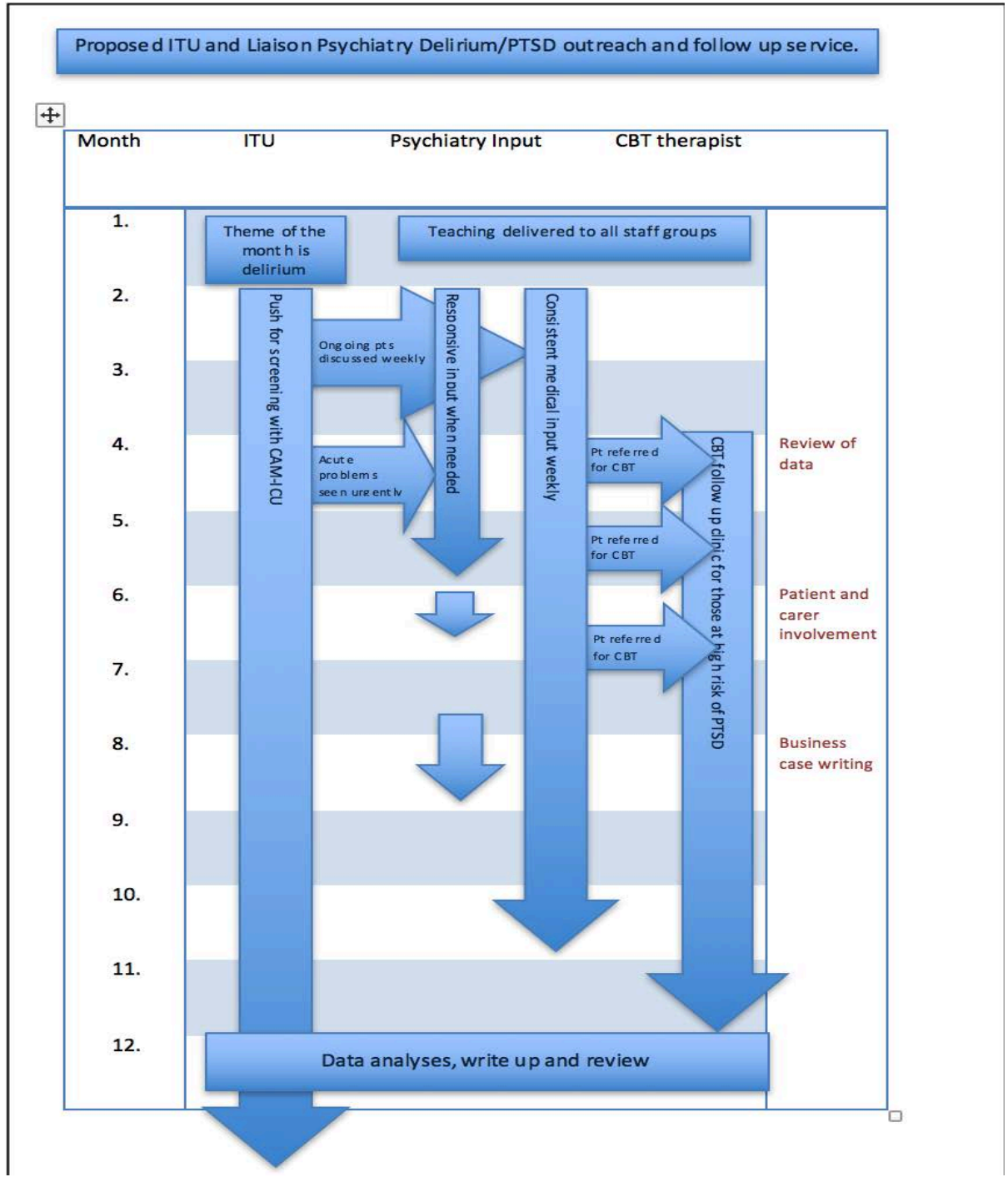
Modifying anaesthesia

- Intra-operative factors
  - Depth of anaesthesia
  - Hydration

Can we manage patients better once they are discharged from ICU?

Psychiatrist follow-up




Proposed ITU and Liaison Psychiatry Delirium/PTSD outreach and follow up service.
Month
ITU
Psychiatry Input
CBT therapist
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
Theme of the month is delirium
Teaching delivered to all staff groups
Push for screening with CAM-ICU
Ongoing pts discussed weekly
Acute problems seen urgently
Responsive input when needed
Consistent medical input weekly
Pt referred for CBT
Pt referred for CBT
Pt referred for CBT
CBT follow up clinic for those at high risk of PTSD
Review of data
Patient and carer involvement
Business case writing
Data analyses, write up and review

How are we doing?

Timeline 2011 onwards

- **2011**
  - start using CAMICU (reactive approach)
- **2012**
  - delirium project group,
  - nursing scholarship- investigating MT,
- **2013**
  - project work on hearing & visual aids, dentures
- **2014**
  - treatment algorithm adopted
- **2015 -16**
  - Active day/ night re-orientation programme
  - SAD lights
  - Long-term cognitive and psychiatric follow-up being investigated for delirium survivors

Delirium incidence – May 2016-Feb. 2017

- Rolling reports from the computer information system
- Every positive CAM-ICU test that week.
- Duration of delirium for every patient.

Total patients		1093
Patients with delirium		159
Total bed days		4694
Days with delirium		717.0
Prevalence of delirium		14.5%
Average duration of delirium(days)		4.5

Future

- Outcome measures
  - Long term outcomes
  - Patient and relative related
- Clinical
  - Greater compliance with ventilator and sedation bundles
  - Multi-disciplinary working
- Research
  - Biomarkers for the diagnosis
  - Pharmacological & non-pharmacological interventions

Behavioural interventions

Provision Of Psychological support
to People in Intensive care

Conclusion

Early identification

T = Toxic situations

H = Hypoxemia

I = Infections, Immobilisation

N = Noise, dehydration, sleep

K = K^+ or electrolyte dysfunction

Better assessment

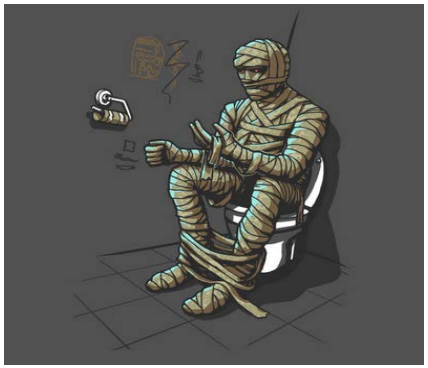
Delirium monitoring

- Step 1: Arousal (Sedation assessment)
  - SAS
  - RASS
- Step 2: Content (Delirium assessment)
  - Intensive Care Delirium checklist
  - CAM-ICU scoring

Doing simple things well

Pain control

Treat constipation



Reorientation

Prevention dehydration

Noise reduction

Review medication

Delirium bundle

The ABCDE Bundle

- **ABC** — Awakening and Breathing Coordination
- **C** — Choice of Sedative
- **D** — Delirium Identification and Management
- **E** — Early Mobility

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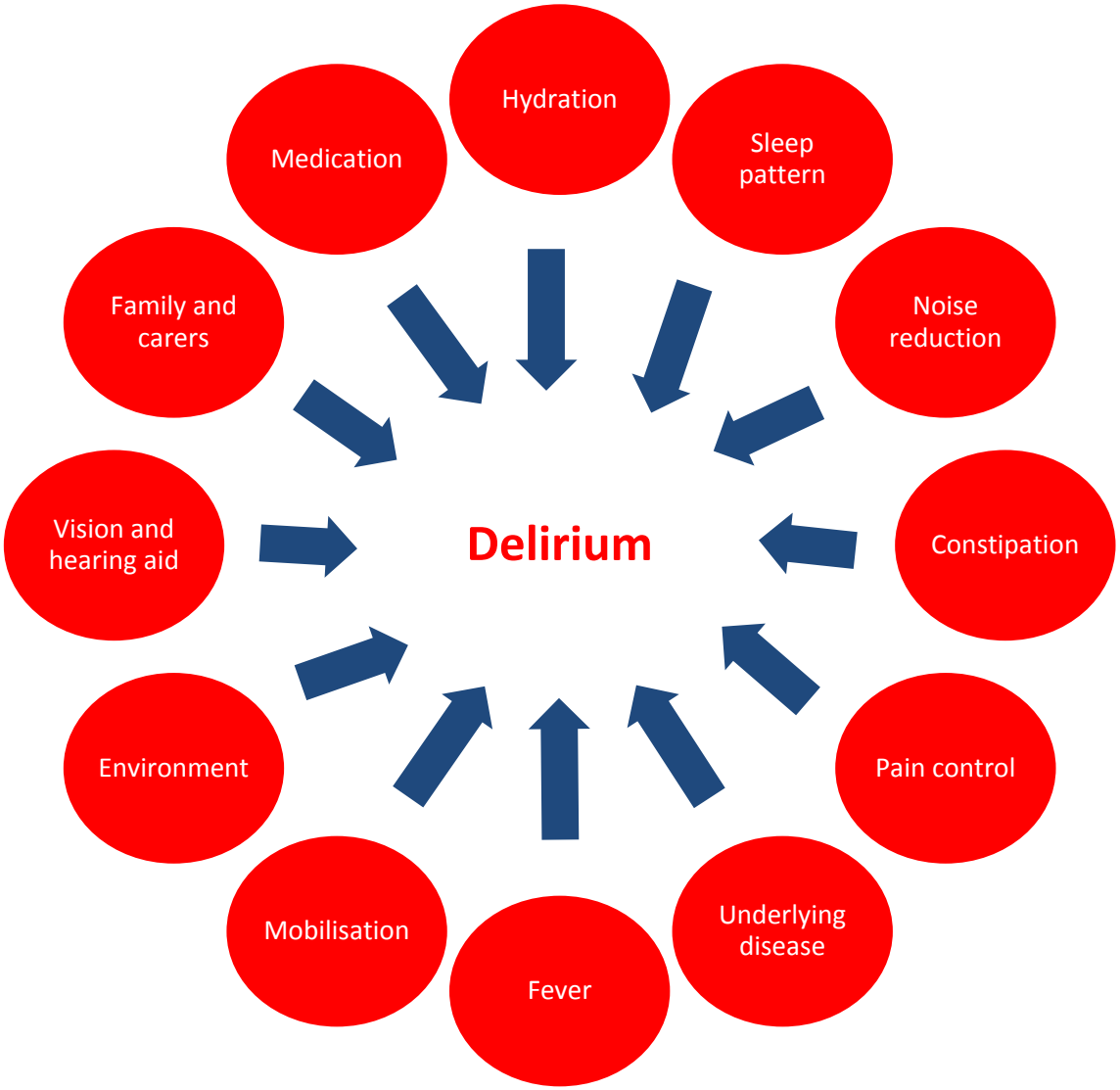
Multimodal & Multi-disciplinary



Delirium in the critically ill:

A Multi-modal and Multi-disciplinary approach

Wednesday, 10th May, 2017

South-West Critical Care Network

Dr Sanjoy Shah

Consultant and Honorary Senior Lecturer in ICM

University Hospitals Bristol NHS

NHS Foundation Trust