



Delirium in Intensive Care

Final FRCA Teaching

April 2021

Elaine Yip ST5 dual ICM/anaesthetics

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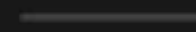
FOLLOWING

TITLE

PROGRESS



End of life care: The final frontier. SOA 2019: Ses...



Mar 12, 2020

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Rapid Response Teams. Can They Improve End of Life Care? Alex Psirides Completing a Life...

Show me the evidence. SOA 2019: Session 17



Mar 5, 2020

1:08:28

Fluids – Flood or Famine John Myburgh & Anders Perner Blood Pressure Targets in Critic...

Sedation, Delirium and Mobility. SOA 2019: Sessi...



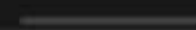
Feb 27, 2020



1:12:32

Life after SPICE – When Should We Use Alpha-2-Agonists in the ICU? Tim Walsh
Restraint on ICU: Rope, dope or hope. Nitin Arora
Psychologist-Led Interventions for Delirious Patients Dorothy Wade
Mind the Gap: Overcoming Barriers to Mobilisation in ICU Deena Costa
Panel Conversation and Questions. Tim Walsh, Nitin Arora, Dorothy

The Zen Intensivist: an interview with Prof Muhur



Feb 20, 2020

36:17

Sedation, Delirium and Mobility. SOA 20



The following are risk factors for delirium in the intensive care unit

Select true or false for each of the following statements.

	True	False
A. propofol	<input type="radio"/>	<input type="radio"/>
B. smoking	<input type="radio"/>	<input type="radio"/>
C. hypertension	<input type="radio"/>	<input type="radio"/>
D. depression	<input type="radio"/>	<input type="radio"/>
E. remifentanil	<input type="radio"/>	<input type="radio"/>

The CAM-ICU test

Select true or false for each of the following statements.

	True	False
A. is suitable for non-intubated patients	<input type="radio"/>	<input type="radio"/>
B. has a high specificity but a low sensitivity	<input type="radio"/>	<input type="radio"/>
C. requires the patient to have eyes open for more than 30 seconds	<input type="radio"/>	<input type="radio"/>
D. requires four criteria to be met before diagnosing delirium	<input type="radio"/>	<input type="radio"/>
E. can be performed by any members of staff	<input type="radio"/>	<input type="radio"/>

Patients with delirium

Select true or false for each of the following statements.

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B. should be allowed out of bed whenever possible	<input type="radio"/>	<input type="radio"/>
C. have a higher incidence of tracheal re-intubations	<input type="radio"/>	<input type="radio"/>
D. have a five times greater hospital mortality than those without delirium	<input type="radio"/>	<input type="radio"/>
E. typically suffer from auditory hallucinations	<input type="radio"/>	<input type="radio"/>

Delirium

Select true or false for each of the following statements.

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B. in ICU is most commonly the hyperactive type	<input type="radio"/>	<input type="radio"/>
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D. can be treated with benzodiazepines	<input type="radio"/>	<input type="radio"/>
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Which of the following CAM-ICU assessments indicate delirium

1. Current RASS -2; yesterday evening RASS 0; 2 errors on inattention score
2. Current RASS -4; yesterday RASS -1
3. Previously healthy; current RASS 0; overnight RASS +2; 3 errors on inattention score; 2 errors on disorganised thinking
4. Previously fit; current RASS -1; agitated overnight; inattention score of 4 errors
5. Current RASS 0; yesterday evening -3; inattention score 1 error; disorganised thinking 2 errors

Definition

- “an acute, fluctuating syndrome of inattention, impaired level of consciousness, and disturbed cognition”
- Cardinal feature: inattention
- Types: Hyperactive, hypoactive or mixed picture

Impact

- Incidence in up to 30% of general ICU patient population¹
- Prevalence may be higher, between 40-80%²
- Associated with double (or triple) risk of death in following 12 months
- Increases hospital stay
- Significant cognitive deficits for months to years afterwards

Causes

- Multifactorial
- Numerous risk factors

- “Triad of ICU”

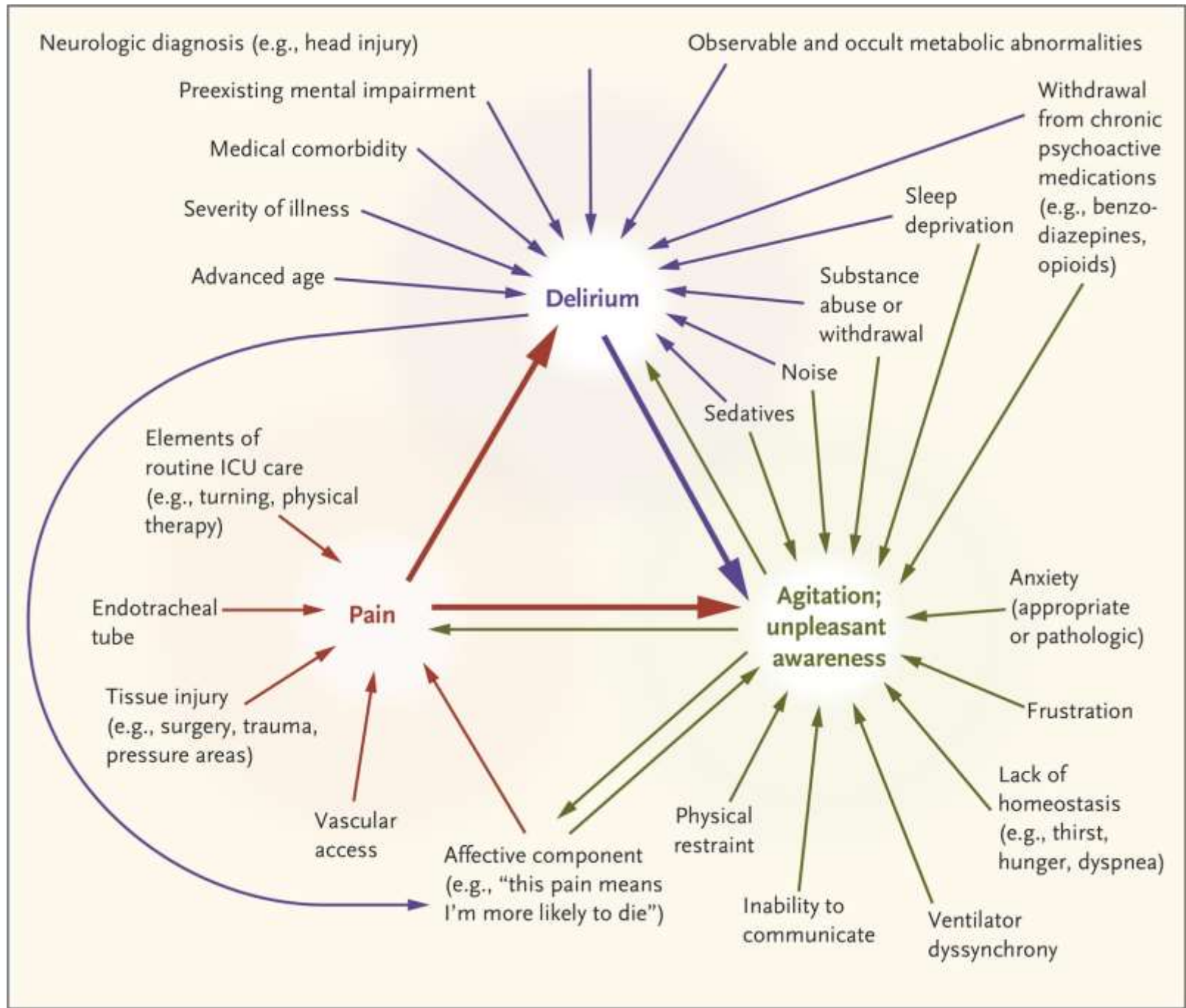
The NEW ENGLAND JOURNAL of MEDICINE

REVIEW ARTICLE

CRITICAL CARE MEDICINE

Sedation and Delirium in the Intensive Care Unit

Michael C. Reade, M.B., B.S., D.Phil., and Simon Finfer, M.D.

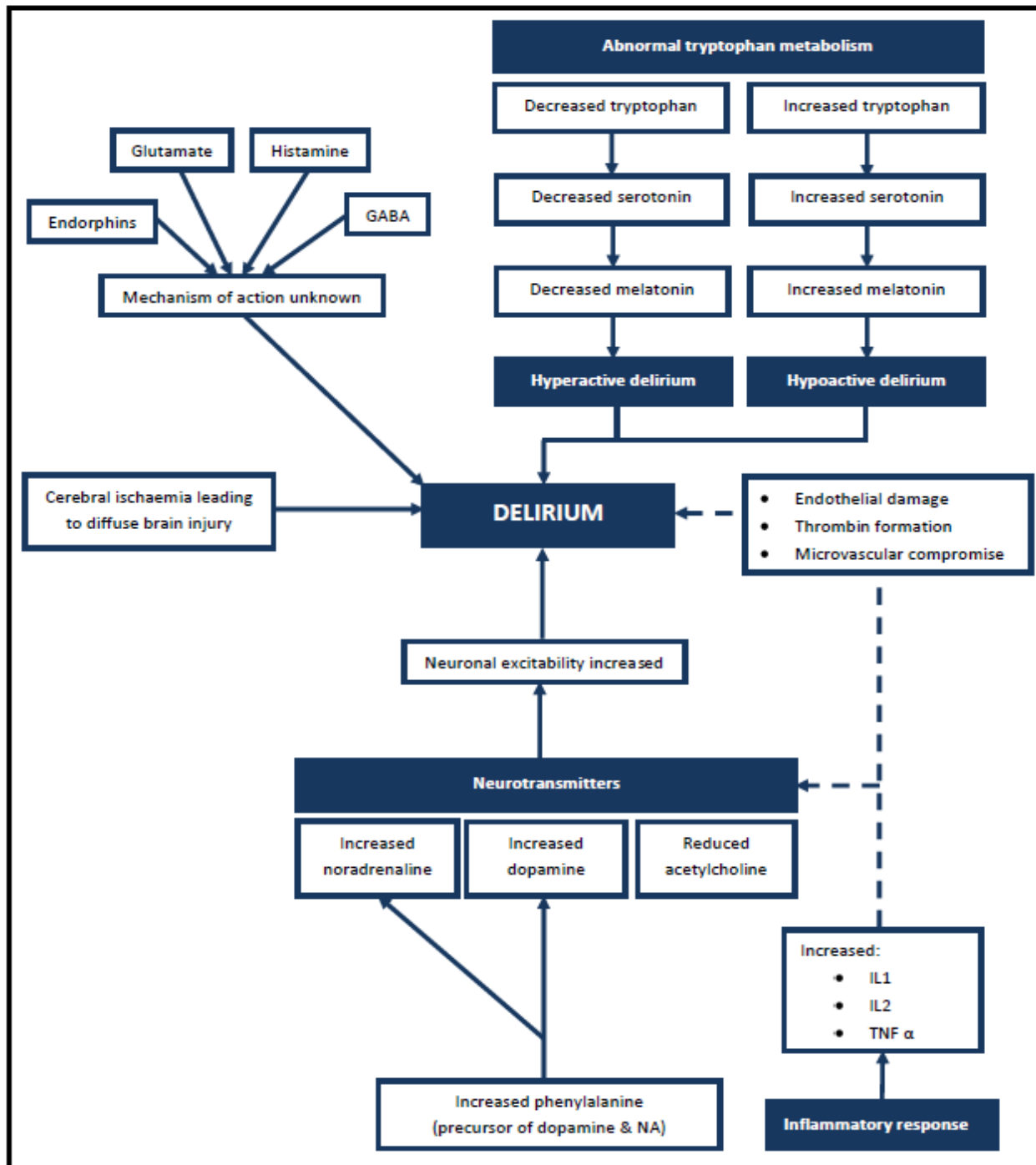


Clinical Features

- Hypoactive
 - Lethargy, unawareness, decreased alertness, slowed movements, staring, and apathy
 - sparse or slow speech if unintubated
- Hyperactive
 - hyper-vigilance, restlessness, combativeness, uncooperativeness, euphoria, anger, easy startling, fast motor responses, distractibility, nightmares, and persistent thoughts
 - fast or loud speech if unintubated
- Mixed
 - Combination of above

Pathophysiology

- Unclear
- GABAergic neurotransmitter systems play a contributory role
- Central cholinergic deficiency as a final common pathway
- Excess dopaminergic activity?
- Direct neurotoxic effects of inflammatory cytokines?



Risk Factors

- **Medical Hx:** Age >70, Hypertension, CCF, Stroke, Dementia, Renal or hepatic impairment, visual or hearing impairment
- **Social Hx:** Smoker, Alcohol abuse, Malnutrition
- **Environmental:** Catheterisation (urinary or central venous), Sleep deprivation
- **Medications:** Benzodiazepines, Opiates, Anticholinergics
- **Acute presentation:** Disease severity, metabolic derangement, sepsis, hypoxaemia, pain

Assessment

- Sedation Scores
- Delirium scales
 - CAM-ICU
 - ICDSC

SCORE	BEHAVIOUR	DESCRIPTIVE	
+4	Combative	Violent, immediate danger to staff.	
+3	Very agitated	Aggressive. Pulls or removes tube(s) or catheter(s).	
+2	Agitated	Frequent non purposeful movements. May fight ventilator/ventilation.	
+1	Restless	Anxious, apprehensive but movements are not aggressive or vigorous.	
0	Alert & Calm		
A	Asleep	REM/Natural sleep can only be scored if the patient's previous hourly RASS was -1 to +1 before natural sleep has commenced.	
-1	Drowsy	Not fully alert, but has sustained awakening to voice (eye opening & eye contact (>10 sec).	VOICE
-2	Light Sedation	Briefly awakens to voice (eye opening & eye contact (<10 sec).	VOICE
-3	Moderate Sedation	Movement or eye opening to voice (no eye contact).	VOICE
-4	Deep Sedation	No response to voice, but movement or eye opening to physical stimulation.	PHYSICAL STIMULATION
-5	Unroutable	No response to voice or physical stimulation.	PHYSICAL STIMULATION

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

1. Acute Change or Fluctuating Course of Mental Status:

- Is there an acute change from mental status baseline? OR
- Has the patient's mental status fluctuated during the past 24 hours?

NO

CAM-ICU negative
NO DELIRIUM

YES

2. Inattention:

- "Squeeze my hand when I say the letter 'A'."
Read the following sequence of letters: S A V E A H A A R T
ERRORS: No squeeze with 'A' & Squeeze on letter other than 'A'
- If unable to complete Letters → Pictures

0 - 2
Errors

CAM-ICU negative
NO DELIRIUM

> 2 Errors

3. Altered Level of Consciousness

Current RASS level

RASS other
than zero

CAM-ICU positive
DELIRIUM Present

RASS = zero

4. Disorganized Thinking:

1. Will a stone float on water?
2. Are there fish in the sea?
3. Does one pound weigh more than two?
4. Can you use a hammer to pound a nail?

Command: "Hold up this many fingers" (Hold up 2 fingers)
"Now do the same thing with the other hand" (Do not demonstrate)
OR "Add one more finger" (If patient unable to move both arms)

> 1 Error

0 - 1
Error

CAM-ICU negative
NO DELIRIUM

	Day 1	Day 2	Day 3
Altered level of consciousness *			
Inattention			
Disorientation			
Hallucinations, psychosis			
Psychomotor agitation or retardation			
Inappropriate speech, mood			
Altered sleep / wake cycle			

- A. No response
- B. Response only to intense and repeated stimuli
- C. Response to mild / moderate stimuli
- D. Normal wakefulness
- E. Exaggerated response to normal stimuli

NOTE: If A or B, the evaluation is not completed.

Prevention and Treatment

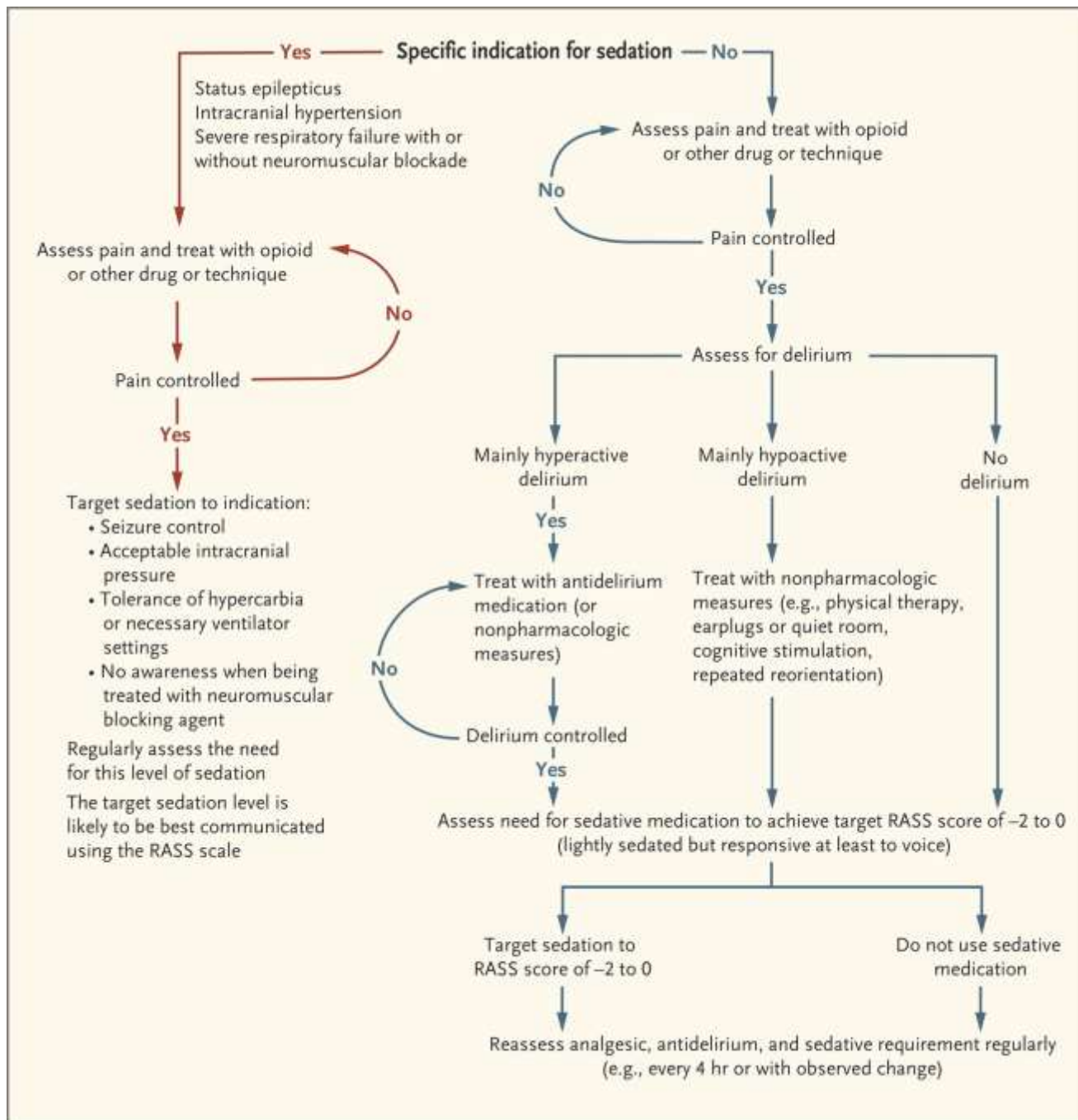
- Prevention often the best cure
- General principles for all inpatients:
 - Repeated reorientation
 - Noise reduction
 - Cognitive stimulation
 - Diurnal rhythm
 - Vision and hearing aids

Prevention and Treatment – evidence?

- ICU the duration of delirium was cut in half with early mobilisation during interruptions in sedation
- SPICE III trial – promising?
 - Dexmedetomidine vs Propofol/Midazolam/Other
 - No difference in mortality
 - Possible improvement in delirium

Treatment

- little evidence for specific pharmacological methods
- Haloperidol
- Quetiapine
- Treat cause, stop offending agents, analgesia
- Sedation hold again!



Take Home Messages

- Identify high risk patients
- Prevention is the key
- Avoid benzos!
- Sedation hold – Sedation hold – Sedation hold



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References

1. Salluh JI et al. Delirium Epidemiology in Critical Care Study Group: Delirium epidemiology in critical care (DECCA): an international study. *Crit Care* 2010,14(6):R210. 10.1186/cc9333
2. Cavallazzi, R., Saad, M. & Marik, P.E. Delirium in the ICU: an overview. *Ann. Intensive Care* 2, 49 (2012).
3. Reade and Finfer. Sedation and Delirium in the Intensive Care Unit *N Engl J Med* 2014; 370:444-454
4. Ely EW, Margolin R, Francis J, et al. Evaluation of delirium in critically ill patients: validation of the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU). *Crit Care Med* 2001,29(7):1370–1379.