

Identifying and Addressing Delirium: Confusion Assessment Measure-ICU

Geisinger

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Held Hostage Thousands of Miles Away: Delirium in Trauma Surgery Patients

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Disclosures

This speaker has nothing to disclose.

Objectives

- ✓ Define delirium and identify symptoms and risk factors
- ✓ Discuss the incidence of delirium and the relationship between trauma and delirium
- ✓ Identify strategies for assessment and management of delirium
- ✓ Review outcomes associated with delirium and special considerations for trauma patients
- ✓ Highlight delirium initiatives in place at Geisinger

What is Delirium and What Does it Look Like?

Define delirium and identify common symptoms and risk factors for delirium

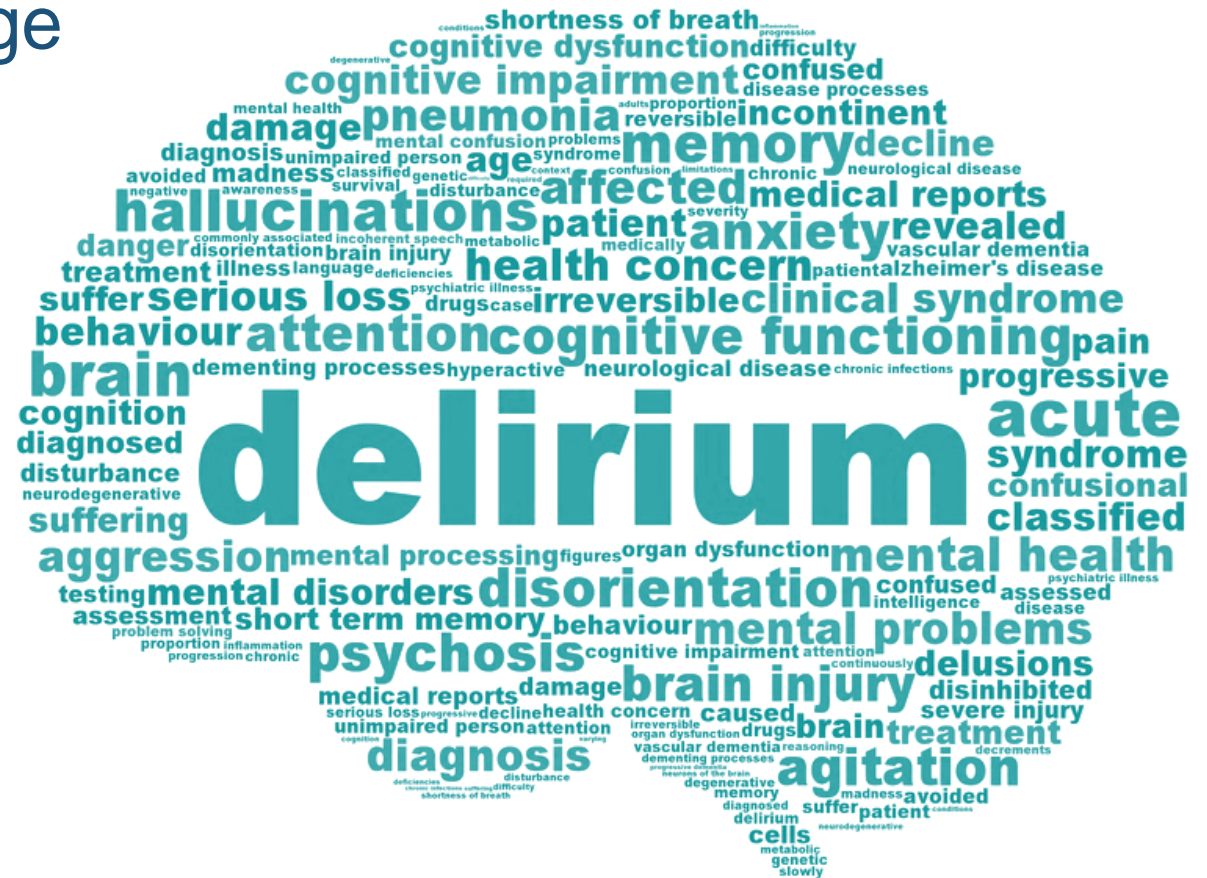


Latin: *de lira*

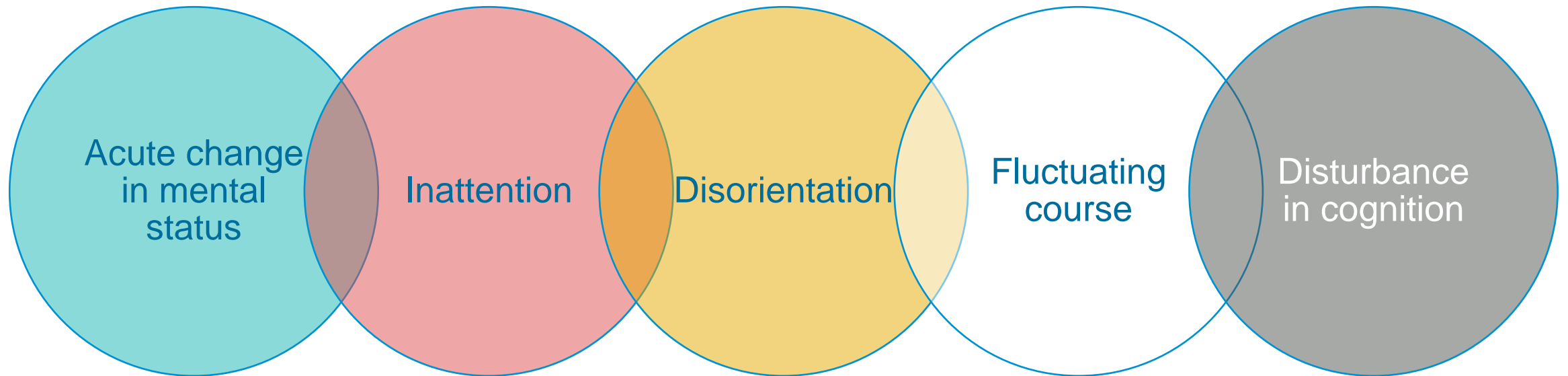
Meaning “Off the path” or “out of the furrow”

Delirium is Known By Many Names

- Acute mental status change
- Acute confusional state
- Altered mental status
- Sundowning
- Confusion
- Encephalopathy
- ICU psychosis
- Agitation



Delirium: According to the DSM-5



Delirium May Be Due To:

Substance intoxication

Substance withdrawal

Medication

A medical condition/organic pathology

*Multiple etiologies

Delirium is...

Agitation	Sleep disturbance	Hallucinations	Paranoia	Disorientation
Irritability	Anxiety	Memory problems	Lethargy	Purposeless movement
Incoherent speech	Depressed mood / dysphoria	Confusion	Illusions	Impulsivity
Self-extubation	Pulling at lines	Climbing out of bed	Difficult to rouse	Poor social awareness

Associated Features

Disturbance in sleep-wake cycle

Emotional disturbances and lability

Generalized slowing on EEG

Using inappropriate words or incoherent, illogical speech

Inability to follow directions

Personality changes

Abnormal movements (e.g., tremors, picking, twitching)

Memory problems

Subtypes of Delirium

Hypoactive

- Decreased psychomotor activity
- Sluggishness or lethargy

Hyperactive

- Increased psychomotor activity
- Mood lability/ agitation
- Refusal to cooperate with care

Mixed

- Normal psychomotor activity
- Inattention/ problems with awareness
- **OR** fluctuating activity level

Etiology of Delirium

“I WATCH DEATH”



Potential causes	Differential diagnosis
Infectious	Sepsis, encephalitis, meningitis, syphilis, central nervous system abscess
Withdrawal	Alcohol, barbiturates, sedative-hypnotics
Acute metabolic	Acidosis, electrolyte disturbance, hepatic/renal failure, other metabolic disturbances (glucose, magnesium, calcium)
Trauma	Head, burns
CNS disease	Hemorrhage, cerebrovascular accident, vasculitis, seizures, tumor
Hypoxia	Acute hypoxia, chronic lung disease, hypotension
Deficiencies	Vitamin B ₁₂ , hypovitaminosis, niacin, thiamine
Environmental	Hypo/hyperthermia, endocrinopathies, diabetes, adrenal, thyroid
Acute vascular	Hypertensive emergency, subarachnoid hemorrhage, sagittal vein thrombosis
Toxins/drugs	Medications, street drugs, alcohols, pesticides, industrial poisons, carbon monoxide, cyanide, solvents, etc
Heavy metals	Lead, mercury

* The above table was adapted from Table 102–1 of Smith and Seirafi,¹⁶ which the authors modified from Wise MG.

Risk Factors for Delirium

Predisposing Factors

- Vulnerabilities (e.g., severe illness, frailty, cognitive impairment, sensory deficits)

Precipitating Factors

- Insults occurring during the hospitalization or associated with the illness/injury

Modifiable vs not modifiable

Risk Factors for Delirium

Modifiable risk factors with moderate or strong evidence of causing delirium

Nonmodifiable risk factors with moderate or strong evidence of causing delirium

- Benzodiazepine use
- Blood transfusions
- Use of psychoactive meds (e.g., antipsychotics)

- Greater age
- History of dementia
- Prior coma
- Pre-ICU emergency surgery or trauma
- Higher APACHE and ASA scores
- History of HTN
- Admission due to neurologic disease
- Admission due to trauma

Risk Factors for Delirium in Trauma

- Presence of ethanol on admission
- Lack of insurance
- Chronic ethanol use
- ICU admission
- Age \geq to 55
- Burns
- Medicare insurance
- Falls
- Previous history of cardiovascular disease



Risk Factors for Delirium in Trauma

- Lower GCS, age over 45, increased blood transfusions, and higher multiple organ failure score were strongest predictors in one study
- Another found age over 55 years, positive BAL on admission, and an increased MCV as risk factors
- Age, nutritional status, medical comorbidities, injury severity, blood loss, and other acute events associated with autonomic hyperactivity

Other predisposing factors include:

- Male gender, pre-existing dementia and depression, visual and hearing impairment, functional dependence, dehydration and malnutrition, polypharmacy, alcohol abuse, multiple medical comorbidities

Delirium in Trauma

Precipitating factors of delirium:

- Surgery (delirium is a common postop complication), UTI, constipation, pain, alcohol withdrawal, lower respiratory tract infection, electrolyte abnormality, neurological disorders, sleep deprivation, hypoxia, environmental
- Medication is the sole precipitant in 12-39% of cases
- Most common drug triggers are benzodiazepines, narcotic analgesics, and drugs with an anticholinergic effect
- In trauma ICUs, midazolam use significantly increased rates of delirium

How Common is Delirium and Why Are Trauma Patients Likely to Become Confused?

Discuss the incidence of delirium and describe the relationship between trauma and delirium

Prevalence of Delirium

- 10% - 30% in older individuals presenting to EDs
- 6% - 56% in general hospital patients
- 16% - 87% of ICU patients
- Higher rates seen in patients on mechanical ventilation (i.e., 60-80%)
- Estimated to occur in about half of individuals who have sustained significant physical trauma

Delirium in Trauma

- In elective and emergency surgery populations, incidence of delirium ranges from 4-53.3%
 - Looking at hip fracture data: incidence is 21% with patients with pre-existing cognitive impairment included and 12.5% when they are not
 - For a significant number, delirium precedes surgery for hip repair
- Another study of trauma patients in the ICU found the incidence of delirium to be 67%
- Large retrospective review of adult trauma patients whose admission was linked to ethanol, found an incidence of delirium to be 0.6%

Trauma and Delirium

- Patients with established delirium, where the delirium preceded or sometimes led to the trauma, and incident delirium, which develops as a reaction to the trauma and hospitalization process
- Delirium in the postinjury setting is likely associated with multiple causes, including physiologic stress, comorbidities, sedatives/analgesics, brain injury, and substance withdrawal
- Significant number of older adults represented in trauma
- High rates of substance use/abuse in the trauma population increasing risk for withdrawal-related delirium
- 50-70% of patients with TBIs develop delirium

How Do We Know and What Do We Do?

*Identify strategies for the assessment and
management of delirium*

Easy to Miss

- Delirium is commonly misdiagnosed or not recognized at all
- Detection rates are lower in surgical (vs medical) patients

If delirium is not screened for using a validated delirium screening tool it is missed ~75% of time.

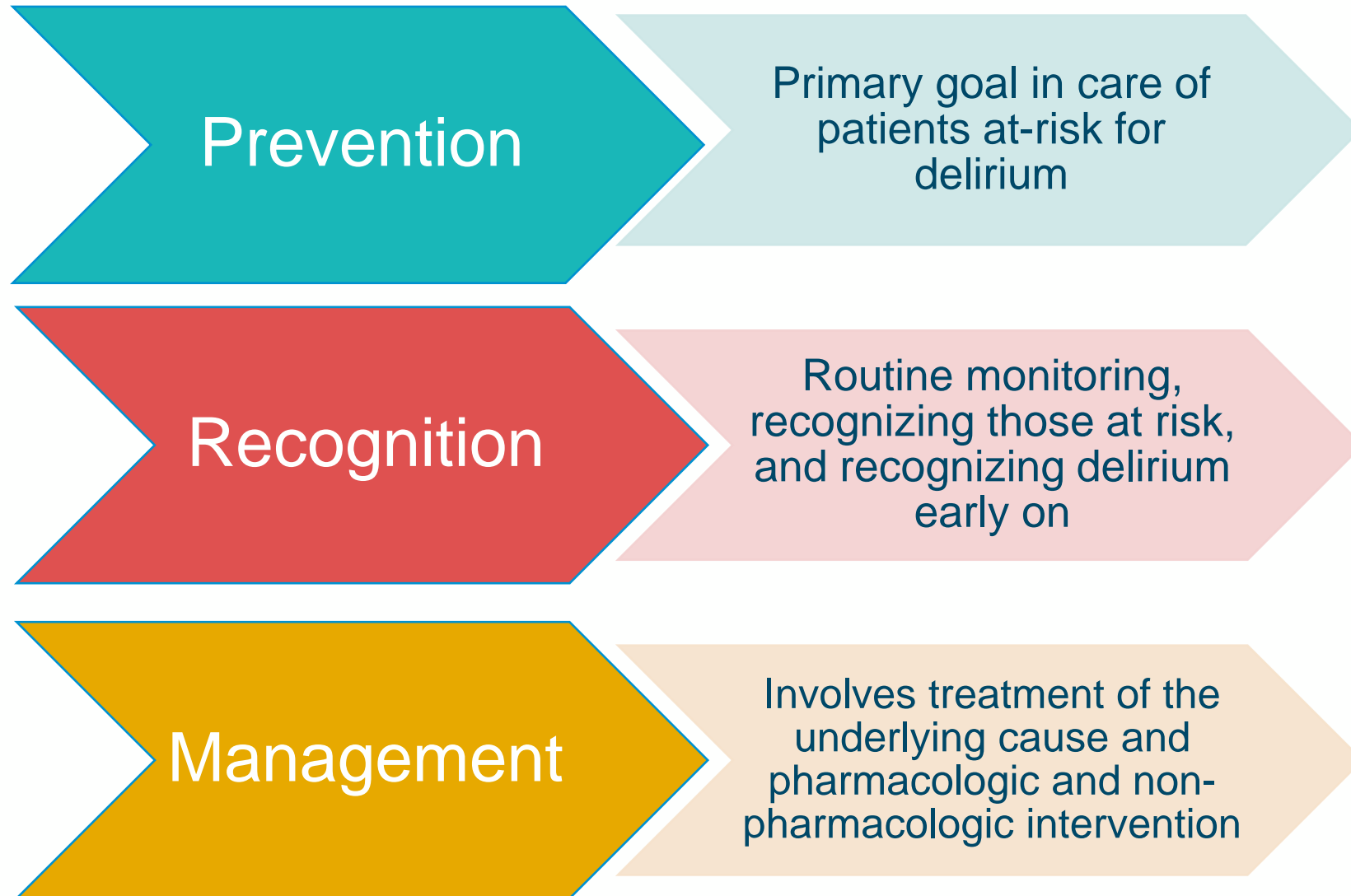
Inouye SK *Arch Intern Med.* 2001;161:2467-2473.

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Detecting and Managing Delirium



Assessment of Delirium

- Confusion Assessment Measure (CAM-ICU)
- Delirium 4As Assessment
- Intensive Care Delirium screening checklist (ICDSC)

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:
SAVEAHAART or CASABLANCA or ABADBADAAY
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

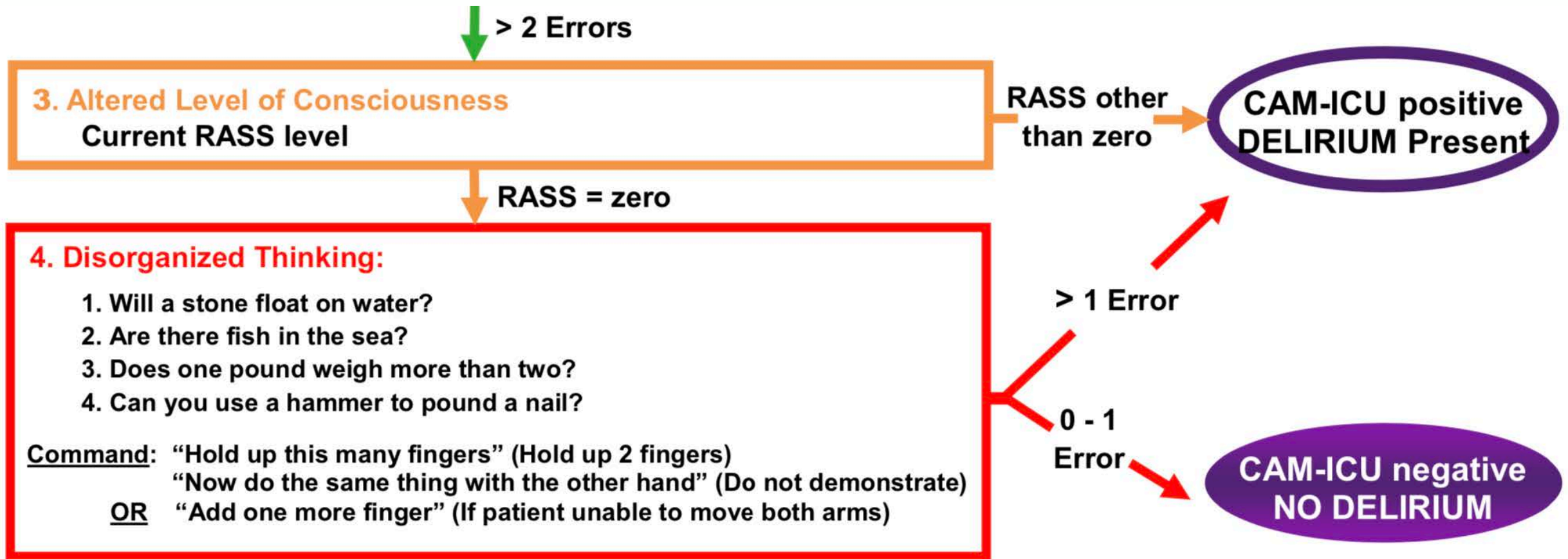
3. Altered Level of Consciousness

Current RASS level

RASS other
than zero

CAM-ICU positive
DELIRIUM Present

RASS = zero



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<https://www.icudelirium.org/medical-professionals/delirium/monitoring-delirium-in-the-icu>



(label)

Patient name:

Date of birth:

Patient number:

Date:

Time:

Tester:

**Assessment test
for delirium &
cognitive impairment**

CIRCLE

[1] ALERTNESS

This includes patients who may be markedly drowsy (eg. difficult to rouse and/or obviously sleepy during assessment) or agitated/hyperactive. Observe the patient. If asleep, attempt to wake with speech or gentle touch on shoulder. Ask the patient to state their name and address to assist rating.

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

Ask the patient: "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.

Months of the year backwards	Achieves 7 months or more correctly	0
	Starts but scores <7 months / refuses to start	1
	Untestable (cannot start because unwell, drowsy, inattentive)	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

4 or above: possible delirium +/- cognitive impairment
1-3: possible cognitive impairment
0: delirium or severe cognitive impairment unlikely (but delirium still possible if [4] information incomplete)

4AT SCORE

Intensive Care Delirium Screening Checklist (ICDSC)

Give a score of “1” to each of the 8 items below if the patient clearly meets the criteria defined in the scoring instructions. Give a score of “0” if there is no manifestation *or* unable to score. If the patient scores ≥ 4 , notify the physician. The diagnosis of delirium is made following clinical assessment; document in the Assessment and Intervention record (RN) and progress note (MD).

Assessment	Scoring Instructions	Score
1. Altered Level of Consciousness*	<ul style="list-style-type: none"> • If MAAS portion of VAMAAS is 0 (no response) or 1 (response to noxious stimulus only), record “U/A” (unable to score) and do not complete remainder of screening tool. • Score “0” if MAAS score is 3 (calm, cooperative, interacts with environment without prompting) • Score “1” if MAAS score is 2, 4, 5 or 6 (MAAS score of 2 is a patient who only interacts or responds when stimulated by light touch or voice – no spontaneous interaction or movement; 4, 5 and 6 are exaggerated responses). 	
If MAAS \neq 0 or 1, screen items 2-8 and complete a total score of all 8 items.		
2. Inattention	<p>“1” for any of the following:</p> <ul style="list-style-type: none"> • Difficulty following conversation or instructions • Easily distracted by external stimuli • Difficulty in shifting focuses 	
3. Disorientation	“1” for any obvious mistake in person, place or time	

4. Hallucination/ delusions/ psychosis	<p>“1” for any one of the following:</p> <ul style="list-style-type: none"> • Unequivocal manifestation of hallucinations or of behaviour probably due to hallucinations (e.g. catching non-existent object) • Delusions • Gross impairment in reality testing 	
5. Psychomotor agitation or retardation	<p>“1” for any of the following:</p> <ul style="list-style-type: none"> • Hyperactivity requiring additional sedatives or restraints in order to control potential dangerousness (e.g. pulling out IV lines, hitting staff) • Hypoactivity or clinically noticeable psychomotor slowing. Differs from depression by fluctuation in consciousness and inattention. 	
6. Inappropriate speech or mood	<p>“1” for any of the following (score 0 if unable to assess):</p> <ul style="list-style-type: none"> • Inappropriate, disorganized or incoherent speech. • Inappropriate display of emotion related to events or situation. 	
7. Sleep wake/cycle disturbance	<p>“1” for any of the following:</p> <ul style="list-style-type: none"> • Sleeping less than 4 hours or waking frequently at night (do not consider wakefulness initiated by medical staff or loud environment). • Sleeping during most of day. 	
8. Symptom fluctuation	<p>“1” for fluctuation of the manifestation of any item or symptom over 24 hours (e.g., from one shift to another).</p>	
TOTAL SCORE (0-8/8):	<p>A score ≥ 4 suggests delirium. A score > 4 is not indicative of the severity of the delirium.</p>	

Management of Delirium

2018 SCCM Clinical Practice Guidelines for the Prevention and Management of Pain, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption in Adult Patients in the ICU

- No medications should be used to prevent delirium (i.e., Haldol, an atypical antipsychotic, dexmedetomidine, statin, or Ketamine)
- Typical and atypical antipsychotics are not associated with a shorter duration of delirium, reduced duration of mechanical ventilation, ICU LOS, or mortality
- Suggest not using a pharmacologic agent to treat subsyndromal delirium

Management of Delirium

- Patients who experience significant distress secondary to symptoms of a delirium, or who are agitated and may be physically harmful to themselves or others, may benefit from short-term use of Haldol or atypical antipsychotic
- Suggest using dexmedetomidine for delirium in mechanically ventilated adults where agitation is precluding weaning/extubation
- Recommend using multicomponent, nonpharmacologic intervention that is focused on reducing modifiable risk factors
- Suggests using a sleep-promoting, multicomponent protocol

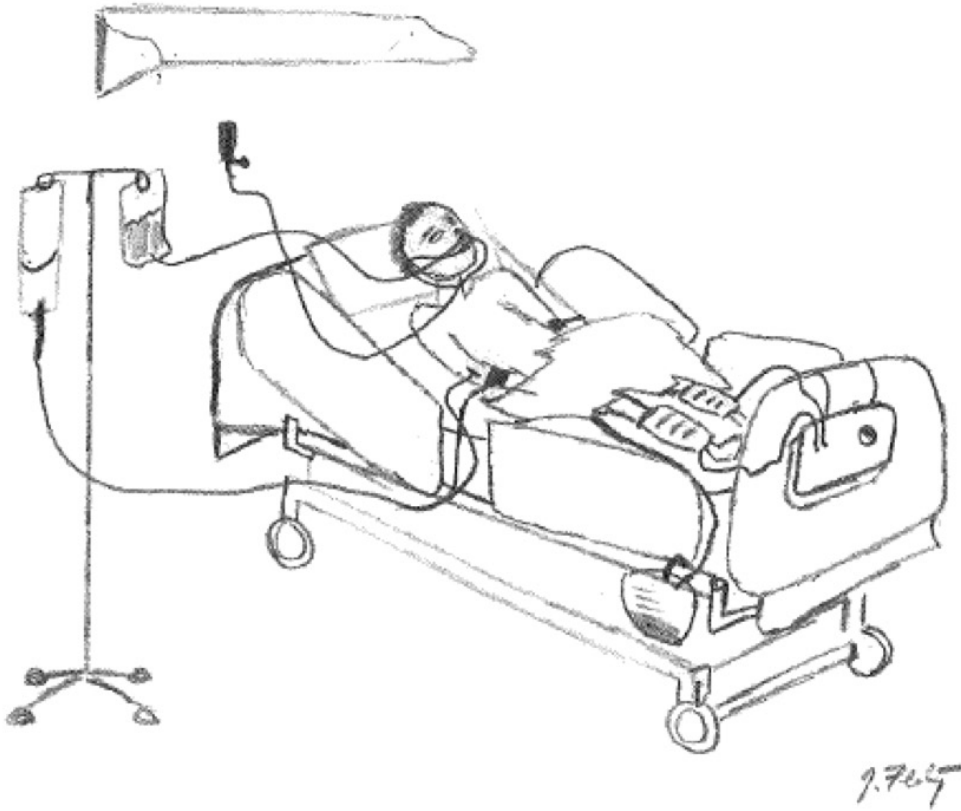
Non-Pharmacologic Management of Delirium

- Avoid physical restraints
- Provide 1:1 care
- Frequent reorientation
- Call bell in close proximity
- Mobilize early and often
- D/c unnecessary lines/tubes/equipment
- Adequate lighting during the day and keep patients awake
- Reduce noise
- Have a clock and calendar visible
- Encourage family to bring in pictures and familiar objects
- Provide glasses, hearing aids, and other assistive devices

Delirium is a Precursor for Long- Term Troubles

Review outcomes associated with delirium and special considerations for trauma patients

Delirium and Adverse Medical Outcomes



- Increased hospital and ICU mortality
- Increased overall mortality at 1 year
- Increased time on mechanical ventilation
- Increased hospital and ICU LOS
- 3x higher rates of functional decline and institutional placement

Cost of Delirium

Increased healthcare cost and expenditure

- Higher estimated ICU costs
- Higher 1-year healthcare costs
- Total \$143 - \$152 billion nationally

Psychological and Neurocognitive Outcomes



1/3 of patients experience depression



10-30% of patients experience PTSD



1/3 to 2/3 of patients experience lasting cognitive impairment

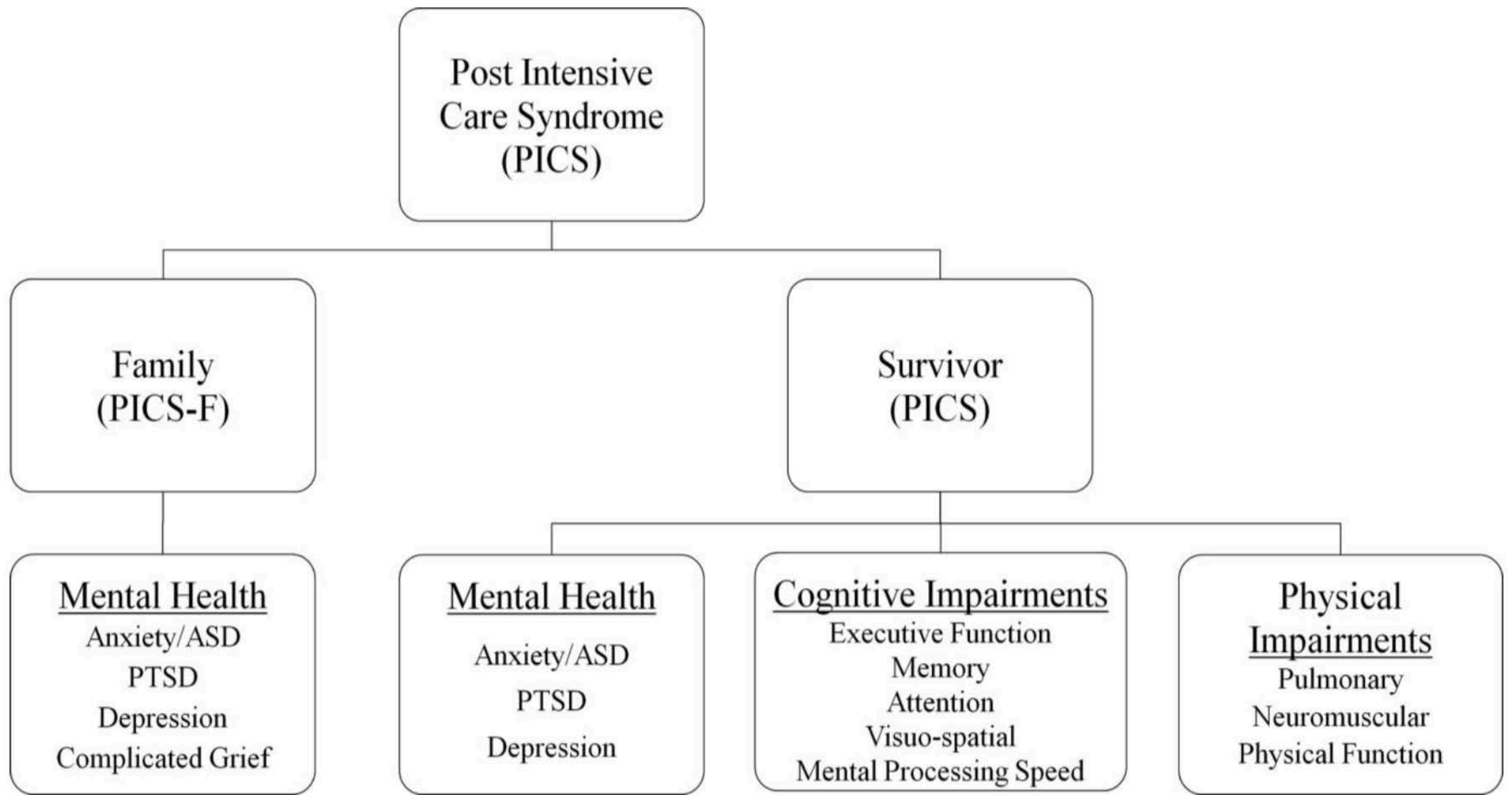


Figure 1. Postintensive care syndrome (PICS) conceptual diagram. *ASD*, acute stress disorder; *PTSD*, posttraumatic stress disorder. (Needham et al., 2012)

Delirium Care at Geisinger Medical Center

Highlight delirium initiatives currently in place

Delirium Care at Geisinger

- CAM-ICU screening of all patients in the ICU
- Additional screening provided by trauma psychology
- Recommendations provided to trauma team (e.g., management of ETOH withdrawal, medications, etc)
- Provide psychoeducation to family/caregivers about delirium and recovery
- Provide reorientation and recommendations regarding environmental modifications, pharmacologic and non-pharmacologic management

Delirium Care at Geisinger

- Decrease use of deliriogenic medications
- Target better understanding of contributors to delirium
- Increase ambulation and daytime wakefulness of patients
- Recommendations to decrease physical restraint use and time on mechanical ventilation
- Follow throughout hospitalization
- Provide resources, as needed

Post-Intensive Care Survivor Clinic

- Select patients invited for participation
- Clinic case manager follows patients
- Attend visit approximately 4 weeks after hospital discharge
- Evaluation and referral for appropriate follow up

“I was tied down by 2 drunk hookers working as nurses in the ICU. They were taunting me and said they were not going to give me oxygen. Friends of the devil’s cult were sharpening their axes and knives. I'm lucky to be alive.”

Former ICU patient

Thank you

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