Delirium

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Definition of Delirium

Answer

- Standardized criteria for delirium in the DSM-5:

A. A disturbance in attention and awareness;

B. An acute onset and fluctuating course;

C. An additional deficit in cognition (such as memory, orientation, language, or visuoperceptual ability);

D. Impairments not better explained by dementia and do not occur in context of severely impaired level of consciousness or coma;

E. Evidence of an underlying medical etiology or multiple etiologies

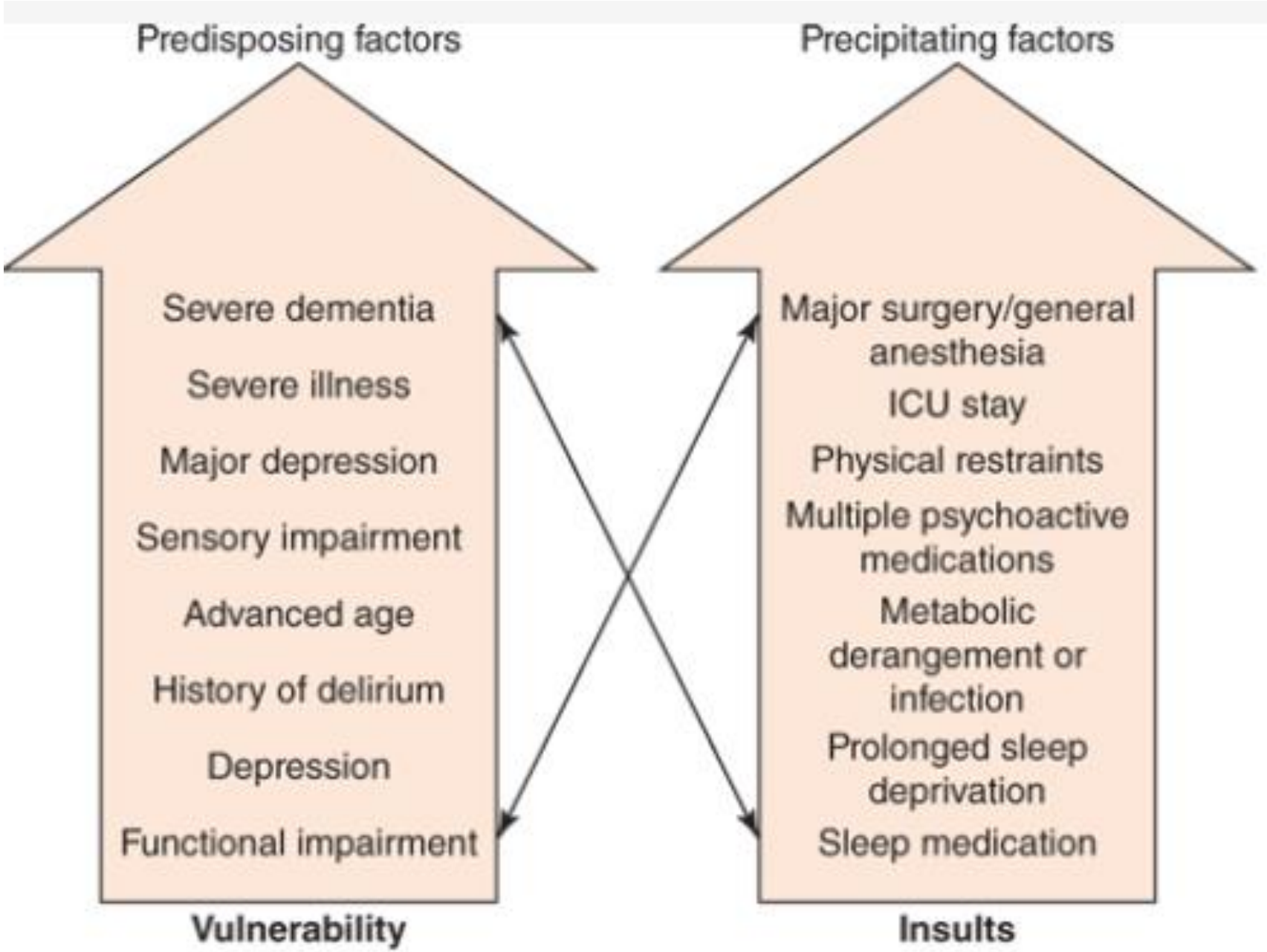
Epidemiology

- Prevalence of delirium (present at the time of hospital admission) at 7% to 80%.
- The incidence of delirium (new cases arising during hospitalization) at 8% to 82%.
- The highest prevalence and incidence rates occur among ventilated intensive care unit patients.
- ICU: 16% to 82%
- Surgical settings: 8% to 58%
- Nursing homes or postacute settings: 48%
- Patients at the end of life: 83%
- The emergency department: 8% to 27%

Why important?

- Clinicians fail to detect up to 70% to 85% of affected patients across all of these settings.
- Delirium in the ICU is associated with a fourfold increased risk of in-hospital mortality and a sixfold increased risk of mortality at 6 months.
- In the emergency department, delirium is associated with a sevenfold increased risk of mortality at 6 months.
- Longer lengths of stay
- Cognitive and functional sequelae lasting up to 1 year postoperatively
- Institutionalization are also consequences of delirium.

Etiology


Predisposing factors
Precipitating factors
Severe dementia
Severe illness
Major depression
Sensory impairment
Advanced age
History of delirium
Depression
Functional impairment
Major surgery/general anesthesia
ICU stay
Physical restraints
Multiple psychoactive medications
Metabolic derangement or infection
Prolonged sleep deprivation
Sleep medication
Vulnerability
Insults

Predisposing Factors

Dementia or cognitive impairment
Comorbidity/severity of illness
Depression
Vision and/or hearing impairment
Functional impairment
History of transient ischemia or stroke
History of alcohol abuse
History of hypertension
Carotid artery disease
History of delirium
Age > 70

Precipitating factors

- Drugs (polypharmacy, psychoactive medications, sedatives, hypnotics)
- Use of physical restraints
- Indwelling bladder catheter
- Physiologic
- Elevated BUN/creatinine ratio
- Elevated serum urea
- Abnormal serum albumin
- Abnormal sodium, glucose or potassium

Precipitating factors

- Metabolic acidosis
- Infection
- Iatrogenic complications
- Major surgical procedure (eg, aortic aneurysm repair, noncardiac thoracic surgery, and neurosurgery)
- Trauma admission
- Urgent admission
- Coma
- ICU stay > 10 days

Drugs----30%

- Anticholinergics including: 5-12 folds
  - Antihistamines
  - Antiparkinsonian agents
  - Skeletal muscle relaxants
  - Tricyclic antidepressants
  - Paroxetine
  - Antimuscarinics
  - Antispasmodics
  - Antiemetics including prochlorperazine and promethazine

Drugs...

- Antipsychotics (chronic and as-needed use)
- Benzodiazepines
- Corticosteroids (oral and parenteral)
- H2-receptor antagonists (cimetidine, famotidine, nizatidine, and ranitidine)
- Meperidine
- Nonbenzodiazepine benzodiazepine receptor agonist hypnotics, including zolpidem, eszopiclone, and zaleplon
- Tricyclic antidepressants

Causes

Drugs
Epilepsy
Low Oxygen (MI, PE)
Infection
Retention (Urinary, Fecal)
Intracranial
Uremia
Metabolism

Clinical Feature

- Acute onset and inattention are the central features of delirium.
- Another key feature is the fluctuating course of delirium; symptoms tend to wax and wane in severity over a 24-hour period.

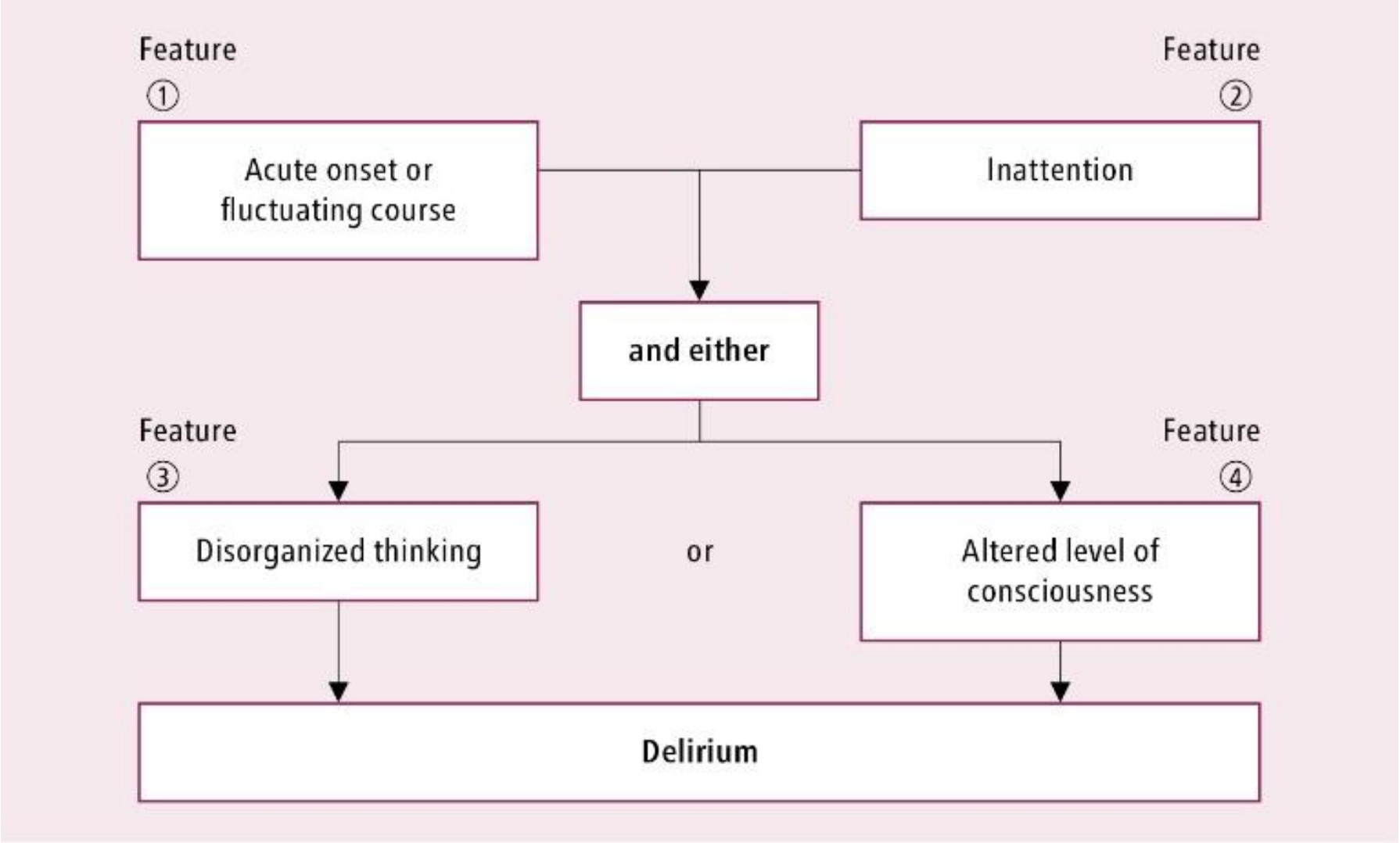
Classification of Delirium

Classification of Delirium

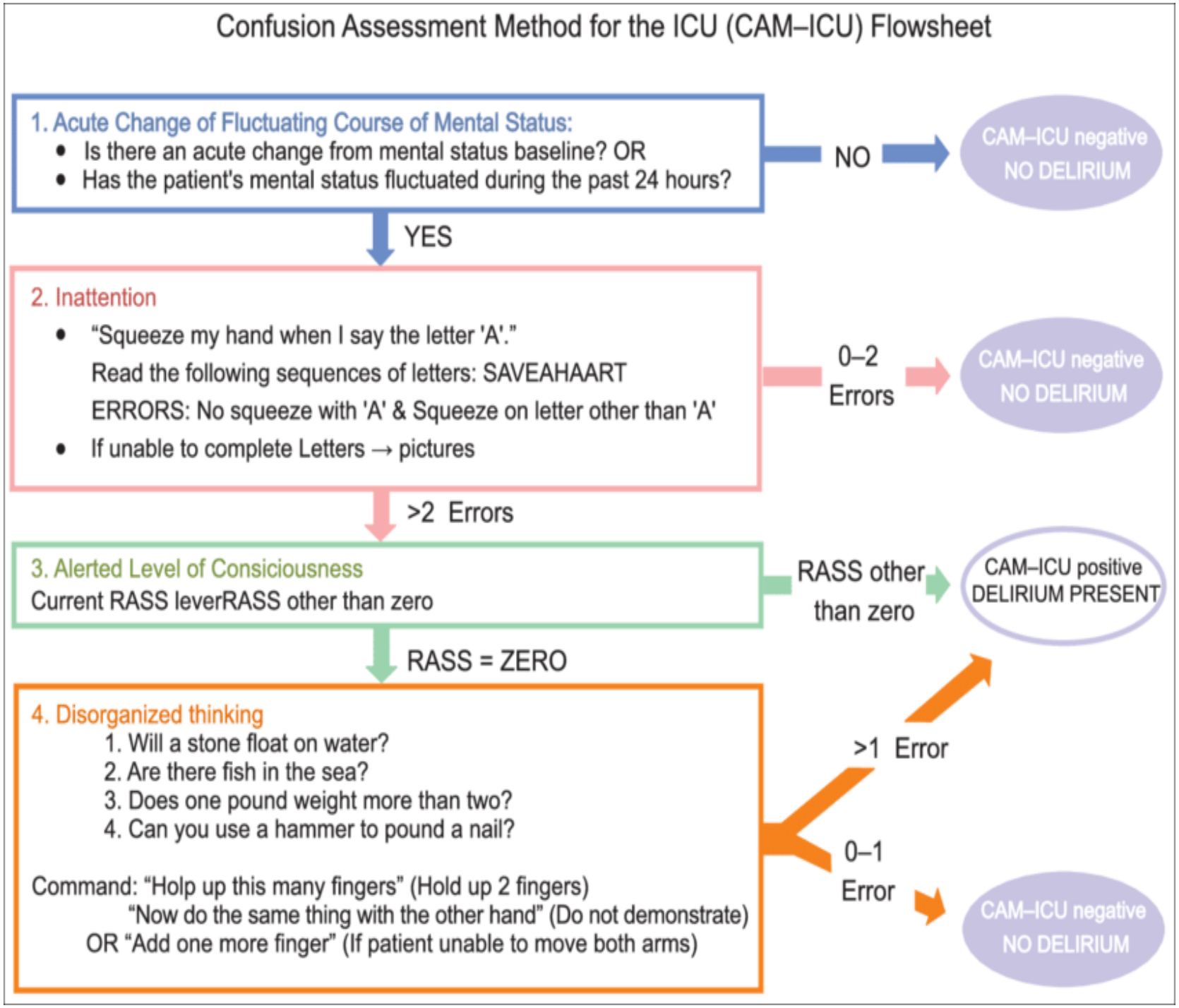
Hypoactive Delirium	Hyperactive Delirium	Mixed Delirium
• More common • Presentation: Slowed down, lethargic • Affect: Flat, withdrawn, lack of attention	• Less common • Presentation: Psychomotor agitation, restlessness • Affect: Disinhibition, aggressiveness	• Features consistent with both hypoactive and hyperactive delirium • Presentation: Variable with periods of lethargy and aggitation • Affect: Flat and alternating with impulsivity, and aggressive behavior

Evaluation

Cognitive Assessment Method (CAM)



CAM-ICU


Confusion Assessment Method for the ICU (CAM–ICU) Flowsheet
1. Acute Change of 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 sequences of letters: SAVEAHAART
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. Alerted Level of Consiciousness
Current RASS leverRASS other than zero
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 weight more than two?
4. Can you use a hammer to pound a nail?
Command: "Holp 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

Following steps

- **History and Physical Examination**
- **Laboratory Tests and Imaging**

Differential Diagnosis

CHARACTERISTIC	DELIRIUM	DEMENTIA	DEPPRESION	ACUTE PSYCHOSIS
Onset	Acute (hours to days)	Progressive, insidious (weeks to months)	Either acute or insidious	Acute
Course over time	Waxing and waning	Unrelenting	Variable	Episodic
Attention	Impaired, a hallmark of delirium	Usually intact, until endstage disease	Decreased concentration and attention to detail	Variable
Level of consciousness	Altered, from lethargic to hyperalert	Normal, until end-stage disease	Normal	Normal
Memory	Impaired commonly	Prominent short- and/or long-term memory impairment	Normal, some short-term forgetfulness	Usually normal

Differential Diagnosis

CHARACTERISTIC	DELIRIUM	DEMENTIA	DEPPRESION	ACUTE PSYCHOSIS
Orientation	Disoriented	Normal, until end-stage disease	Usually normal	Usually normal
Speech	Disorganized, incoherent, illogical	Notable for parsimony, aphasia, anomia	Normal, but often slowing of speech (psychomotor retardation)	Variable, often disorganized
Delusions	Common	Common	Uncommon	Common, often complex
Hallucination	Usually visual	Sometimes	Rare	Usually auditory and more complex
Organic etiology	Yes	Yes	No	No

Risk Factors And Preventative Interventions

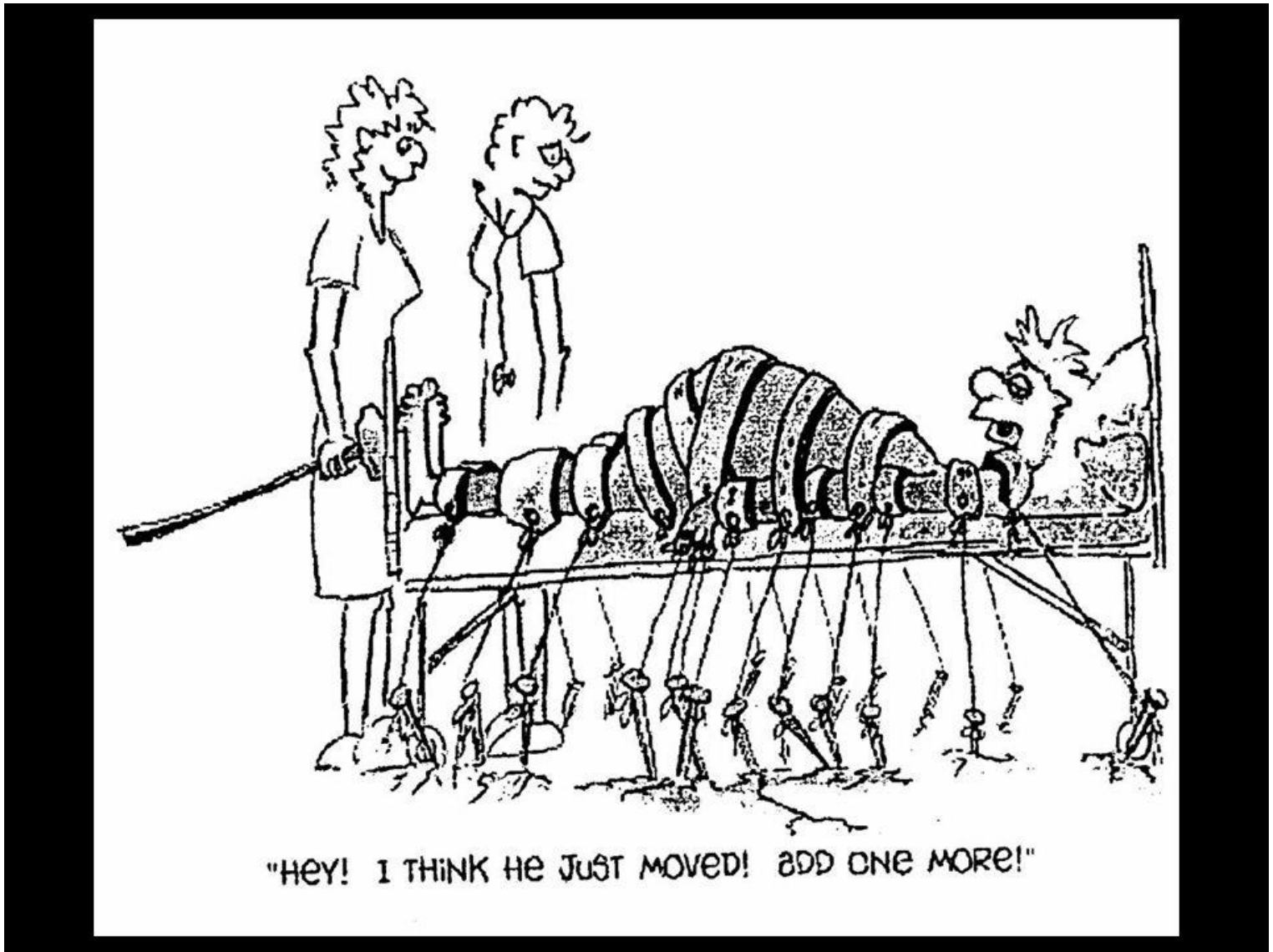
RISK FACTOR	INTERVENTION PROTOCOL
Cognitive impairment	Orienting communication, including orientation boardTherapeutic activities program
Immobilization	Early mobilization (eg, ambulation or bedside exercises)Minimizing immobilizing equipment (eg, restraints, bladder catheters)
Psychoactive medications	Restricted use of PRN sleep and psychoactive medications (eg, sedativehypnotics, narcotics, anticholinergic drugs)Nonpharmacologic protocols for management of sleep and anxiety

Risk Factors And Preventative Interventions

RISK FACTOR	INTERVENTION PROTOCOL
Sleep deprivation	Noise-reduction strategiesScheduling of nighttime medications, procedures, and nursing activities to allow uninterrupted period of sleep
Vision impairment	Provision of vision aids (eg, magniıers, special lighting)Provision of adaptive equipment (eg, illuminated phone dials, large-print books)
Hearing impairment	Provision of amplifying devices; repair hearing aidsInstruct staʃ in communication methods
Dehydration	Early recognition and volume repletion

Restrain and immobilization

Restrain and immobilization



Management

- **Nonpharmacologic Management**
- **Nonpharmacologic Sleep Protocol**
  (1) a glass of warm milk or herbal tea, (2) relaxation music or tapes, and (3) back massage

- **Pharmacologic management**
  - Interruption of needed medical therapies (eg, mechanical ventilation, central lines) or
  - May endanger the safety of the patient or other persons

Antipsychotics

- What antipsychotic?
- What route?
- How much?

Pharmacological treatment

- The recommended starting dose is 0.25 mg of haloperidol orally or parenterally.
- The dose may be repeated every 30 minutes after vital signs have been rechecked.
- The clinical end point should be an awake but manageable patient.
- Most older patients naïve to prior treatment with an antipsychotic should require a total loading dose of no more than 2.5 mg of haloperidol.

Pharmacological treatment

- The intravenous route should be reserved for monitored settings due to the risk of torsades and sudden death.
- Parenteral administration is required in cases where rapid onset of action is required with short duration of action, whereas oral or intramuscular use is associated with a more optimal duration of action.
- Doses tapered over the ensuing 48 hours as the agitation resolves.

Other pharmacological treatment

- Benzodiazepines (eg, lorazepam) are not recommended as first-line agents in the treatment of delirium because of their propensity to cause oversedation and to exacerbate acute mental status changes.
- However, they remain the treatment of choice for delirium caused by seizures and alcohol- and medication-related withdrawal syndromes.