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Owensboro Health

QUALITY
KENTUCKY
Health Care Quality Improvement Continues

Objectives

- Link delirium with the IHI 4Ms Bundle
- Describe the impact of delirium on hospital outcomes
- Describe evidence based practice for prevention, identification, and management of delirium in the hospitalized patient
- Define delirium, encephalopathy, and coma

The 4Ms

A **bundle**
an essential <u>set</u> of
best practices

Holistic

Institute for Healthcare Improvement. Age-Friendly Health Systems: Guide to Using the 4Ms in the Care of Older Adults. April 2019

Mentation

Case Management Note

Patient is **<u>currently</u>** confused.

He does not recognize his spouse or daughter

What Matters

Case Management Note

Goals of post-acute care (per spouse)

"to get back **home**"

Mobility

Mentation

Case Management Note

- Anticipated <u>barriers</u> to discharge
    - Chronic disease
    - Decreased **mobility**
    - Decreased **mentation**

Mentation

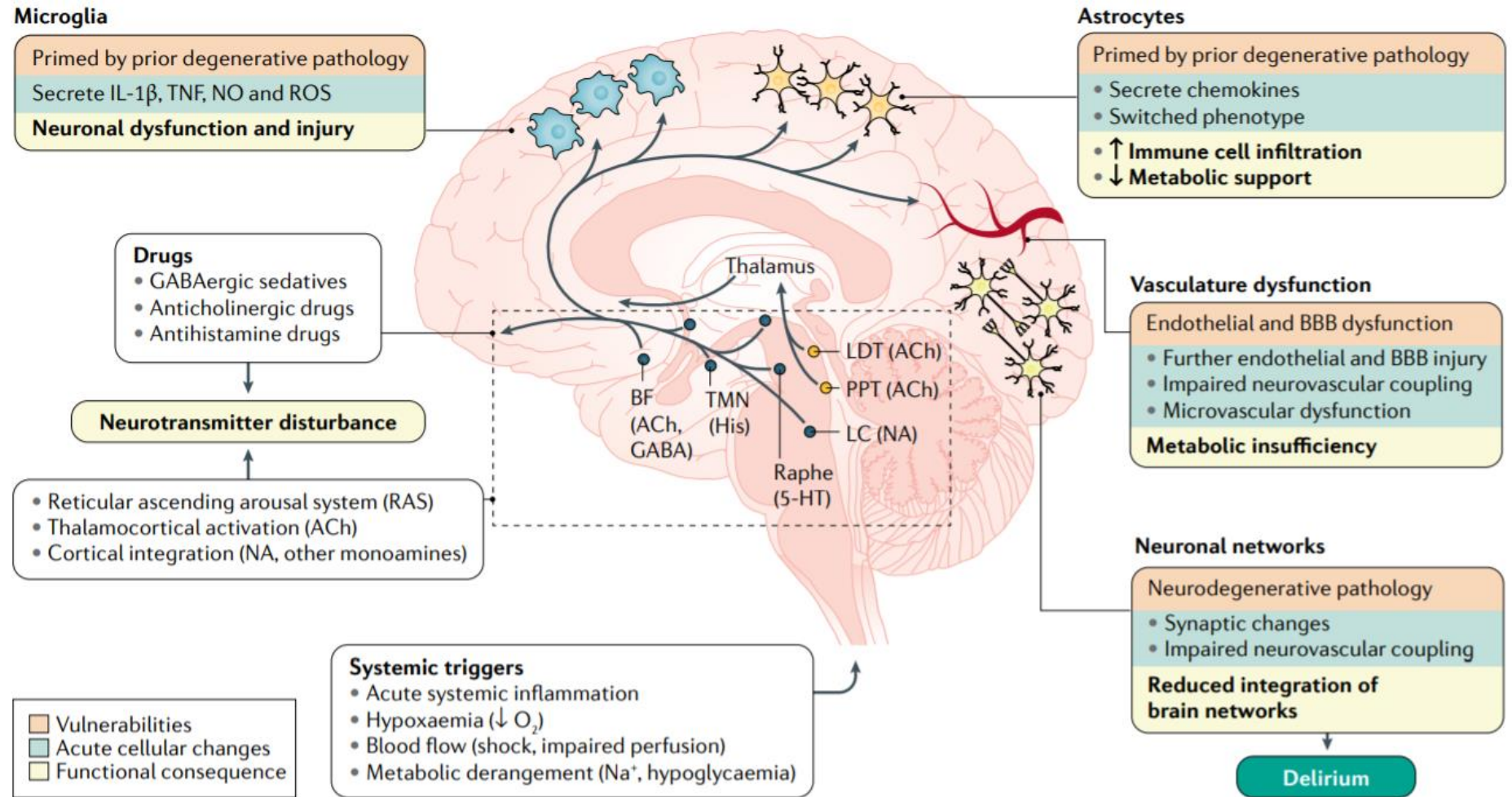I think he may have dementia.

Why do you say that?

Well the way he acts...picking at things...
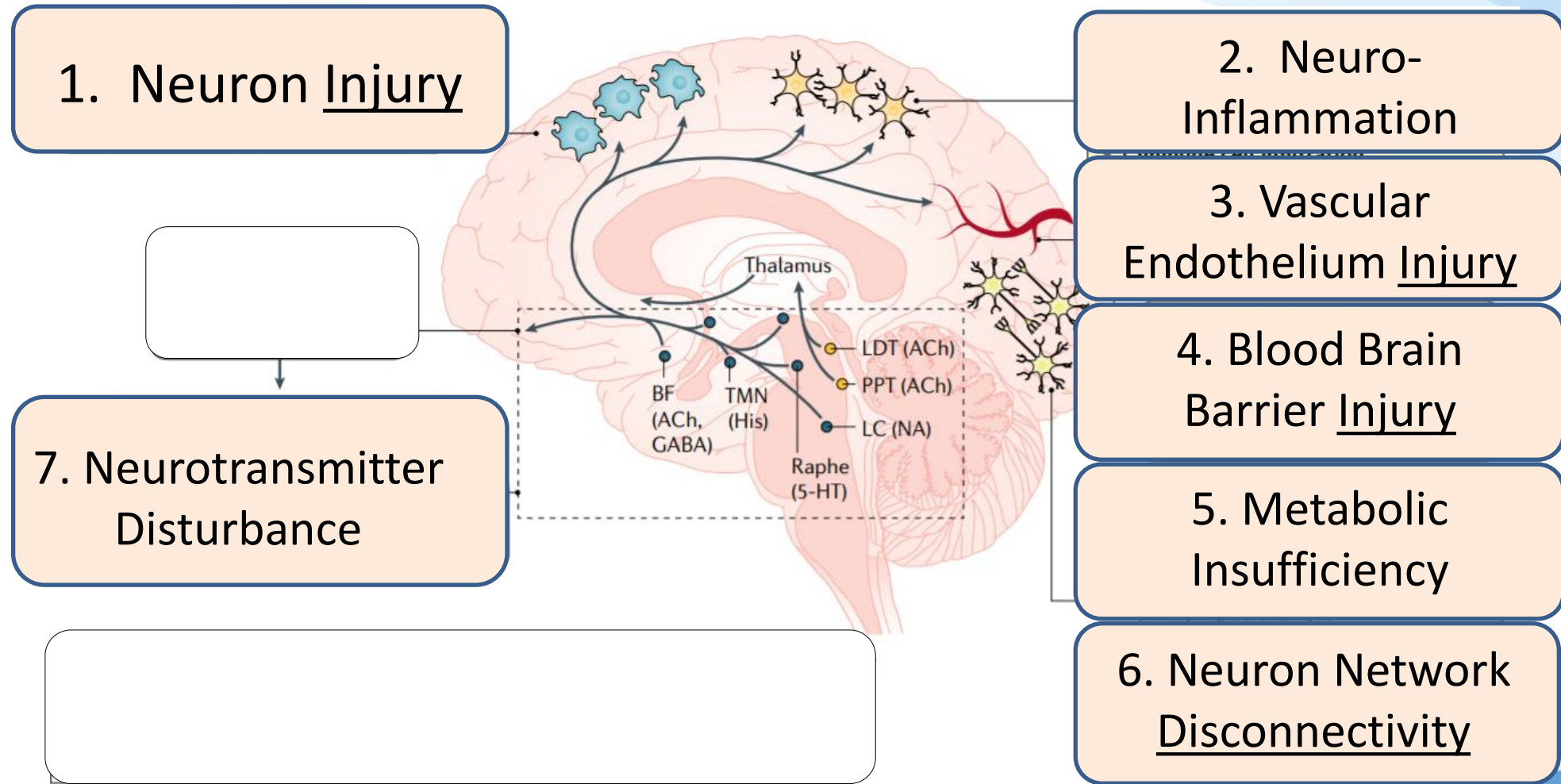he acts like someone with dementia

To Get Back Home?

- Longer hospitalization
- Higher rate of discharge to a skilled nursing facility
- Higher mortality
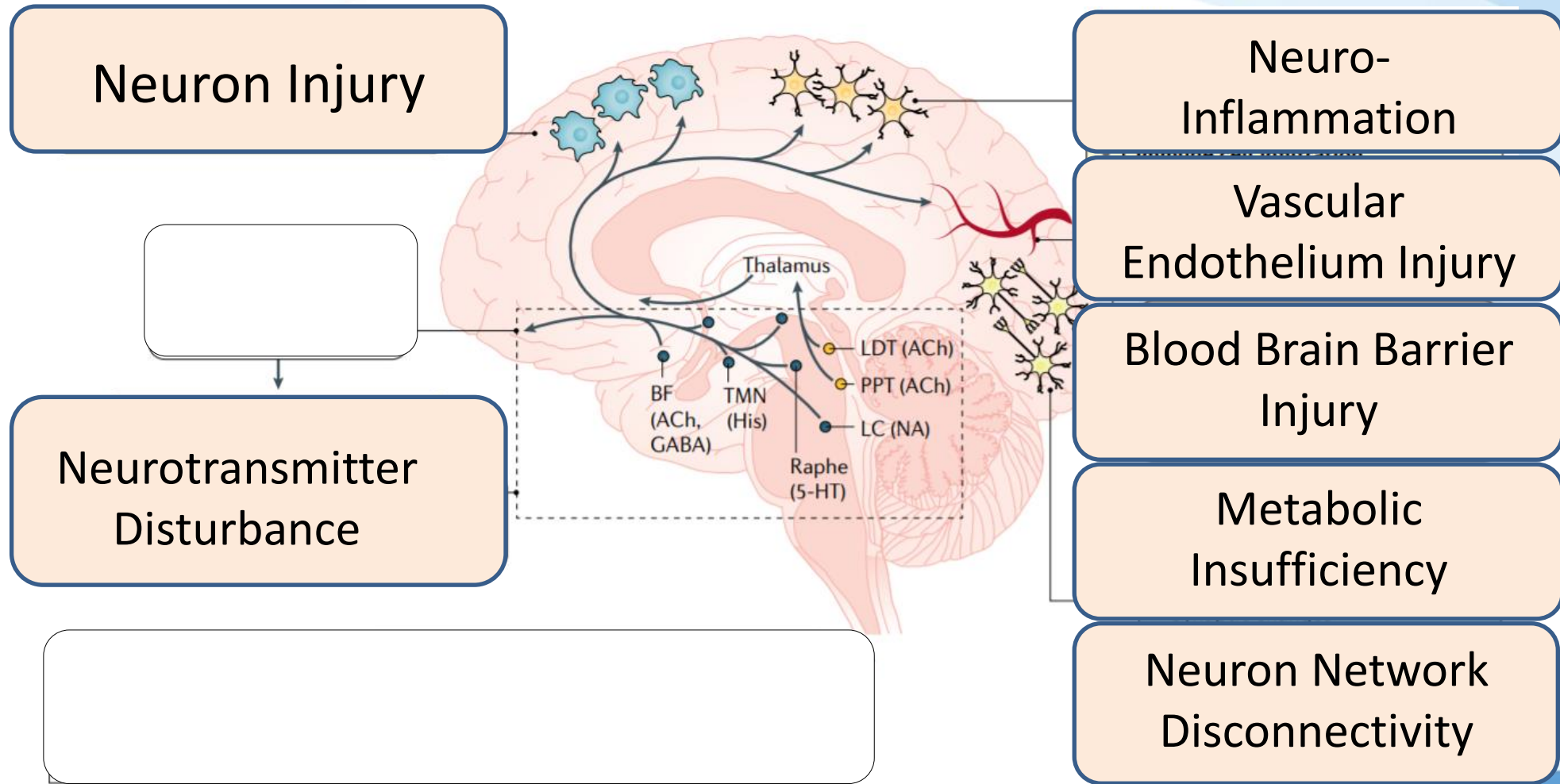- Worse physical, cognitive, and social outcomes

Responding to Ten Common Delirium Misconceptions with Best Evidence: An Educational Review for clinicians.
Mark A Oldham et al. J. Neuropsychiatry Clin Neurosci 30:1 Winter 2018

"Bad Things Happening"

"Bad Things Happening"

1. Neuron <u>Injury</u>

2. Neuro-Inflammation

3. Vascular Endothelium <u>Injury</u>

4. Blood Brain Barrier <u>Injury</u>

5. Metabolic Insufficiency

6. Neuron Network <u>Disconnectivity</u>

7. Neurotransmitter Disturbance

"Pleasantly Confused"

Neuron Injury

Neurotransmitter Disturbance

Neuro-Inflammation

Vascular Endothelium Injury

Blood Brain Barrier Injury

Metabolic Insufficiency

Neuron Network Disconnectivity

Delirium. Jo Ellen Wilson et al. Nature Reviews | Disease Primers (2020) 6:90

"He's just sun downing"

Neuron Injury

Neurotransmitter Disturbance

Neuro-Inflammation

Vascular Endothelium Injury

Blood Brain Barrier Injury

Metabolic Insufficiency

Neuron Network Disconnectivity

Delirium. Jo Ellen Wilson et al. Nature Reviews | Disease Primers (2020) 6:90
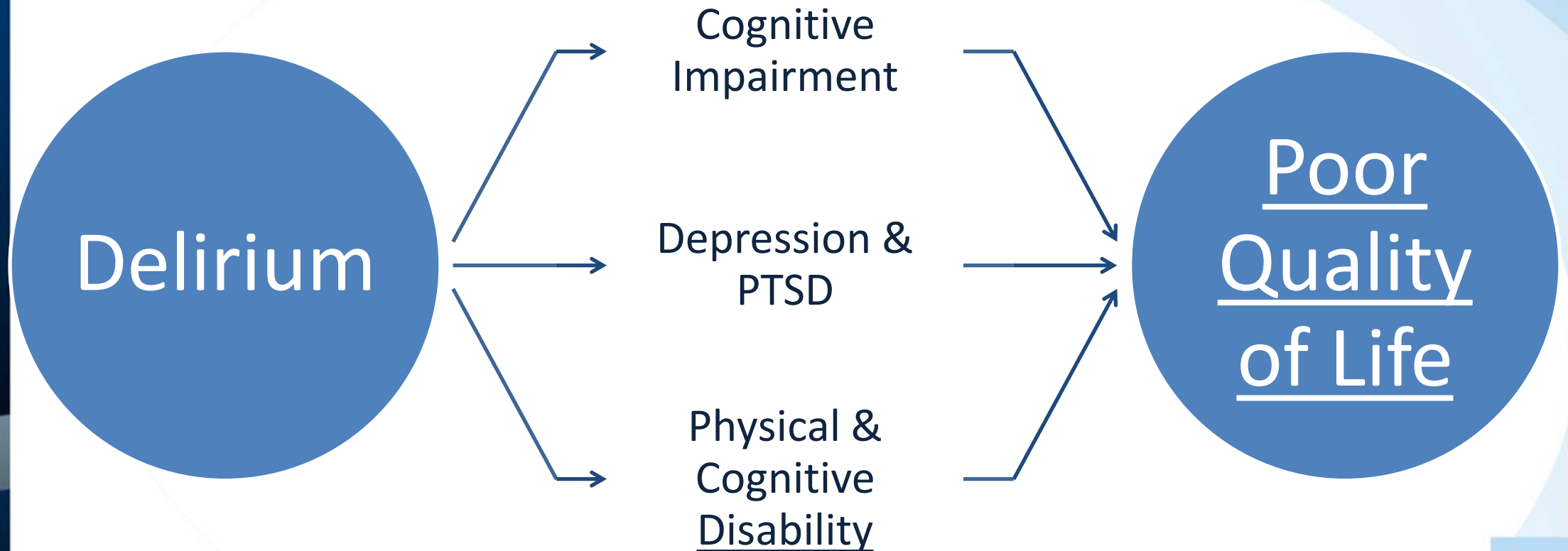
Strongly Associated with Multiple Short-term Adverse Outcomes
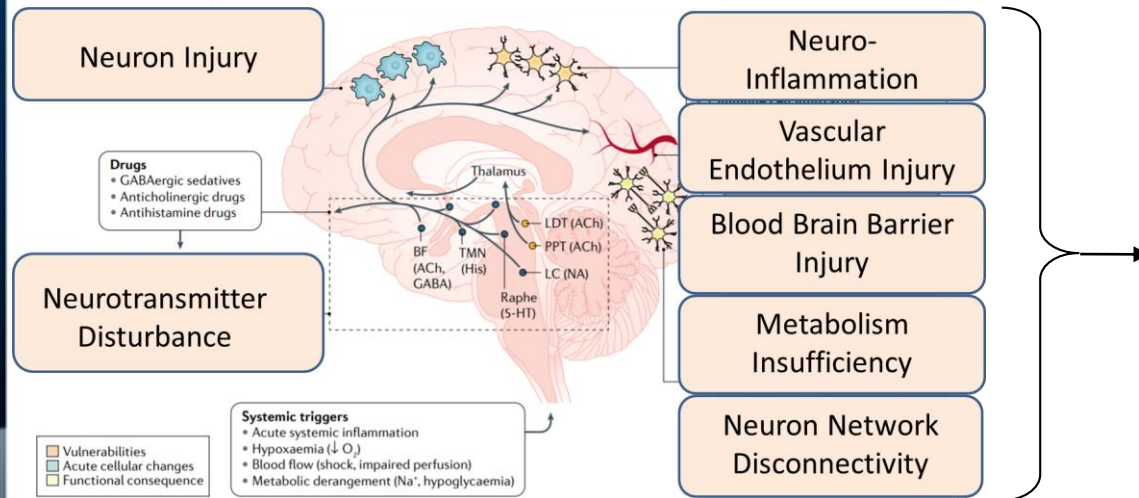
- Falls
- Aspiration pneumonia
- Distress
- Other events
- ↑ short-term mortality

Delirium. Jo Ellen Wilson et al. Nature Reviews | Disease Primers (2020) 6:90

Long-lasting Effects reach Beyond the Brain

Delirium

Cognitive Impairment

Depression & PTSD

Physical & Cognitive Disability

Poor Quality of Life

Post Intensive Care Syndrome (PICS)
Post Hospitalization Syndrome

Delirium. Jo Ellen Wilson et al. Nature Reviews | Disease Primers (2020) 6:90

What Matters

Delirium is <u>the most common</u> neuropsychiatric syndrome found in the general hospital setting

> 2/3 may go unrecognized

> 1/3 of cases are preventable

Maldonado. Delirium in the Critical Care Unit. CriticalCare.theclinics.com

Responding to Ten Common Delirium Misconceptions with Best Evidence: An Educational Review for clinicians. Mark A Oldham et al. J. Neuropsychiatry Clin Neurosci 30:1 Winter 2018

Background and Problem

Project focus:

Critical Care unit at Baptist Health Corbin

10 bed medical ICU

Assessment: Lack of formal training to identify, prevent and treat delirium. Providers and nursing staff unclear of treatment pathways and inconsistent use of screening tools.

Planning Phase

- A multi-disciplinary team was commissioned by the Clinical Leadership Council to review current state and implement solutions using Process Excellence Change Agent Tools, which includes Deming's four step process of Plan Do Check Act.

- The team conducted a review of the literature and developed an evidence table of best practices to adopt in the CCU.

- A gap analysis compared the CCU current state of delirium prevention to recent evidence-based practice (EBP), which revealed CCU Staff had limited resources for delirium prevention and lacked knowledge of current EBP prevention techniques.

Planning Phase

The CCU delirium intervention project started early January 2020 with a multi-disciplinary team that included nursing, hospital providers and the critical care intensivist. The team met to collaborate on protocols and prioritize interventions from the evidence table.

Discussed Delirium Prevention Interventions

- Strategies:
  - Improve Cognitive Simulation
  - Improve Orientation
  - Preserve Sleep-Wake cycle
  - Improve/Preserve Mobility
  - Avoid potentially "toxic" medications
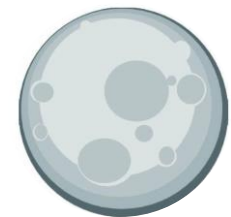 - Engage Patients & Family

Delirium Prevention
Preserve Sleep-Wake cycle

- Visual cues
  - Posters for day and night reference
  - Human-Centric lighting (Circadian Lighting)
- Minimize nighttime interruptions
  - Lights out/ Close Doors
- Daytime Stimulation- Minimize unnecessary noise/stimuli
  - Lights on
  - TV on (calming shows or preferred music only)
  - Upright or out of bed during day
  - Turn bed to face window, open blinds
  - Naps ok, but encourage awake during day to increase sleep at night
  - No caffeine after 3pm
- Non-Pharmacological Sleep Protocol

Day

Night

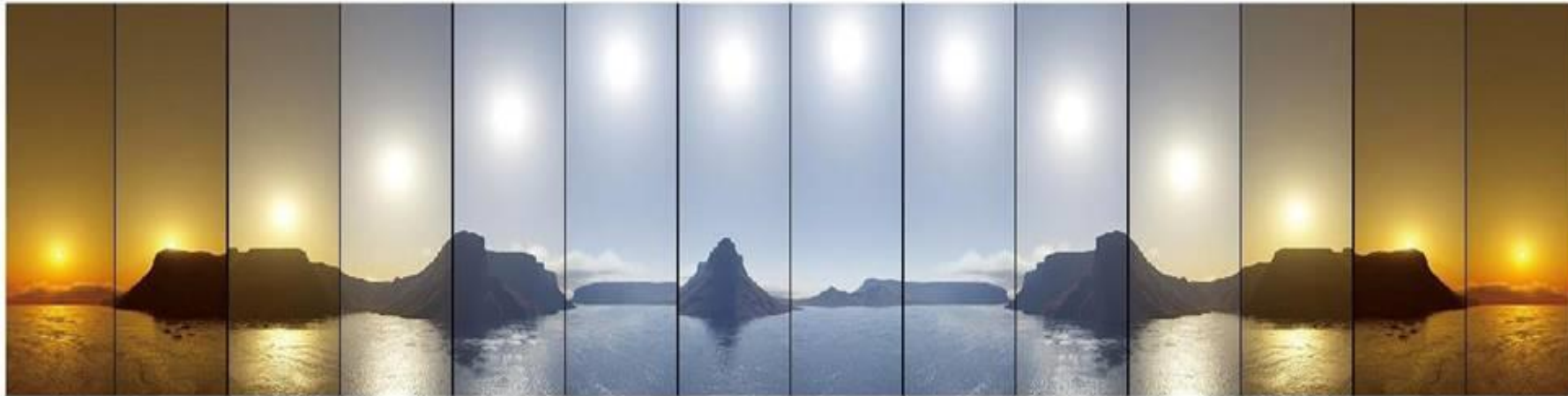# Human-Centric lighting (Circadian Lighting)

Sunrise	Morning	Noon	Afternoon	Sunset
<2000k	3500-4500K	5500-6500K	3500-4500K	<2000K

Determining ICU Patients Eligibility for Clustered Care

BHC Sleep/Wake Guideline

Eligibility Assessment

- Admitted to Critical Care Unit

Is exclusion criteria met?

- Patient acuity does not allow nighttime activities to be grouped (requires frequent bedside care throughout the night, as evaluated by the RN)

YES

Reassess CAM-ICU QShift and with a change in patient status.
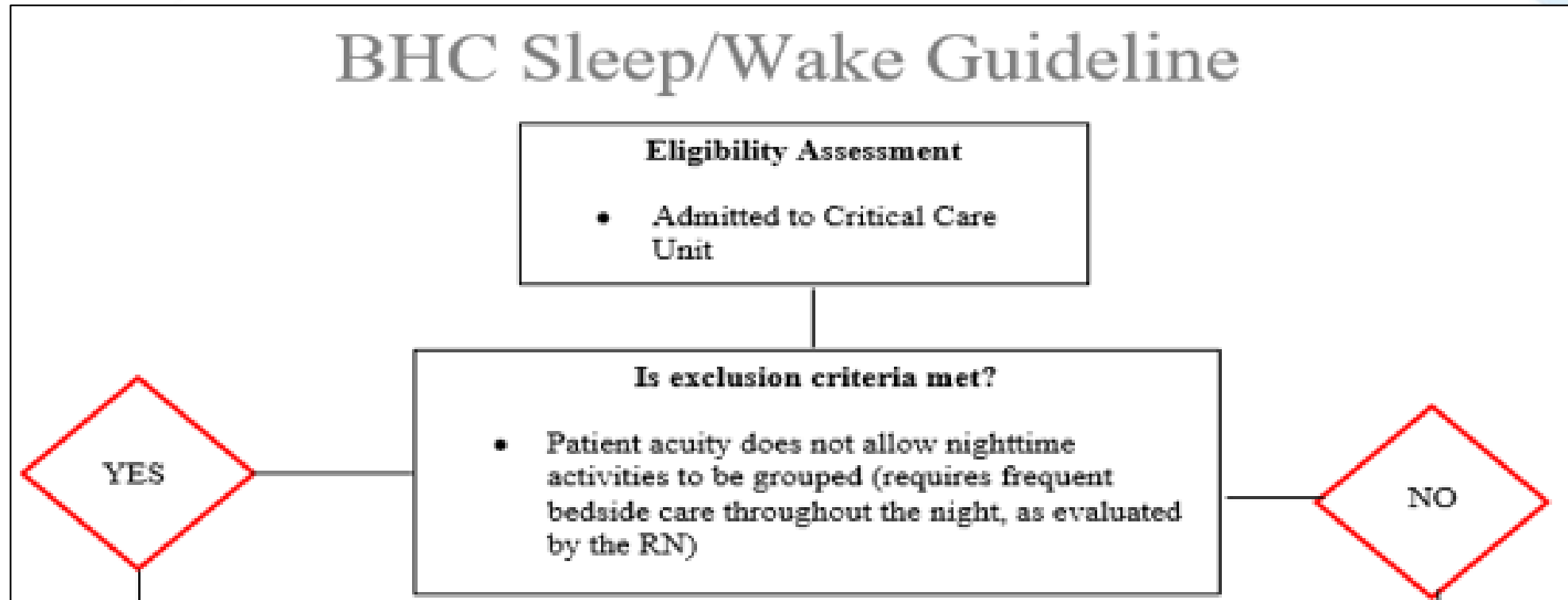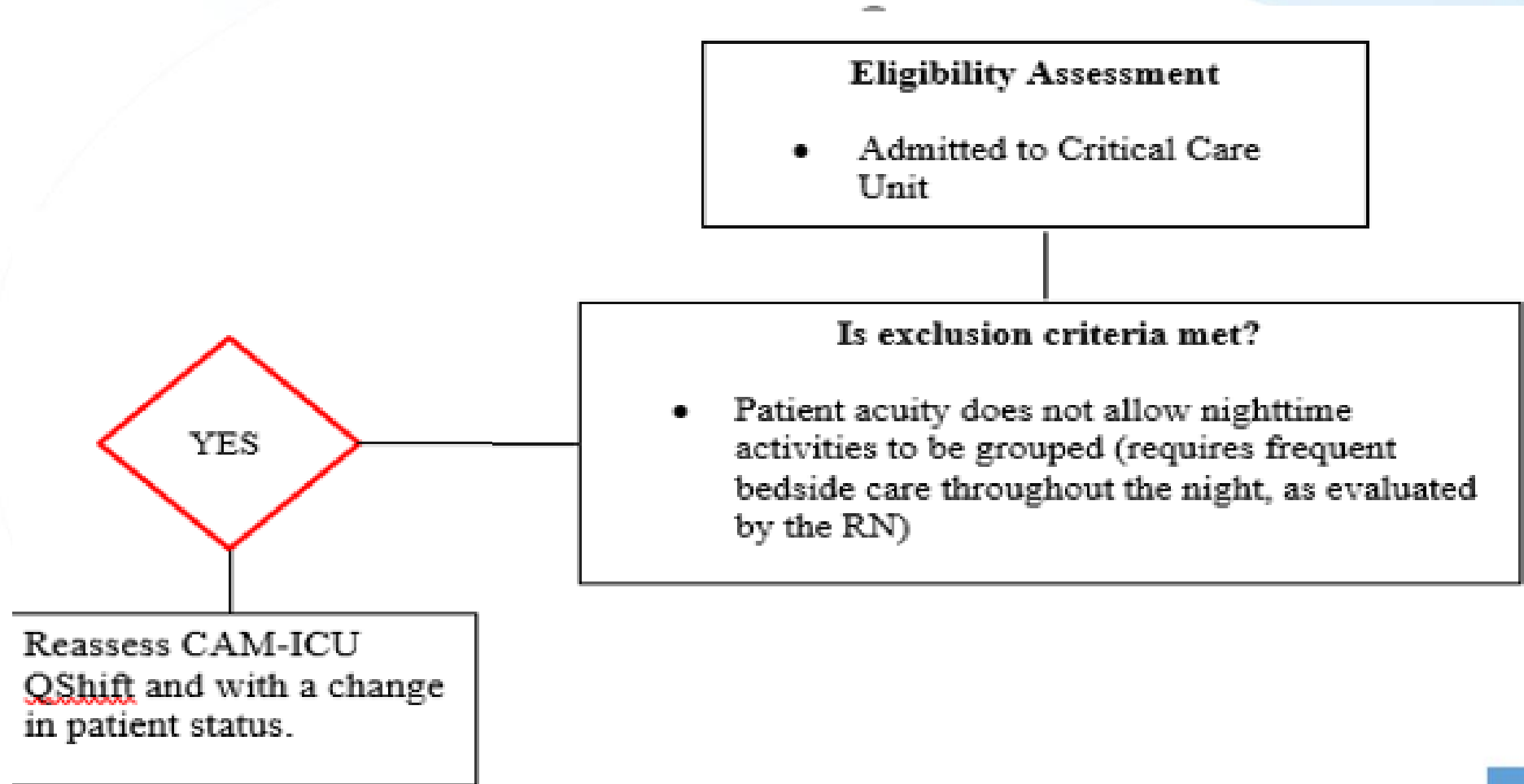
Sleep /Wake Guidelines for ICU patients who were Identified Appropriate

SLEEP

- Ensure appropriate pain control
- Optimize room temperature
- Warm bath before 2300
- TV off by 2300
- Prevent extra alarms after 2300
- Close Room curtain by 2300
- Dim room lights by 2300
- Family out by 2200
- Door half/fully closed after 2300
- Bundle care starting at 2200
  - RN care
  - Lab Draws
  - Medications (work with pharmacy to bundle)
- Offer ear plugs
- Dim hallway lights by 2300
- Nurses station quiet

WAKE

Follow Delirium Prevention Measures as appropriate:

- Improve Cognitive Simulation
  - Vision- Glasses
  - Hearing- Hearing Aids
  - Taste- Nutrition, early correction of dehydration
  - Touch- Preserve mobility, pain management
  - Thought- Provide cognitively simulating activities for patients multiple times per day. i.e. books, puzzles and games.
- Improve Orientation
  - Repeated reorientation- Introduce yourself, your role and location at every patient encounter.
  - Keep a clock and calendar in room and refer to time of day at patient encounter.
- Preserve Sleep-Wake Cycle (Controlled Daytime Stimulation)
  - Lights on
  - TV on (music or calming shows.
  - Upright or out of bed during day
  - Open blinds
  - No caffeine after 3pm
- Improve/Preserve Mobility
  - Early Activity Assessment
  - ROM
  - Ambulation
  - Up in chair
- Avoid potentially "toxic" medications
  - Consider Pharmacy consult.
- Engage Patient and Family
  - Encourage family visits
  - Communicate expectations
  - Use simplified speech, be concrete, take your time.

Delirium Prevention
Improve/Preserve Mobility

- Reduce Foley use, IVs, restraints, monitors
- Encourage ambulation!
  - PT/OT
  - Not only does early mobility prevent delirium, but it is the only intervention shown to result in a decrease in days of delirium
  - Functional outcomes are also improved with early mobility.
  - It consists of activities from passive range of motion to ambulation
  - Mobility also helps make sleep more restful

Delirium Prevention
Patient and Family Engagement and Communication

- Facilitate regular family visits (utilize family for reorientation and cognitively stimulating activities) within visitation guidelines.

- Encourage patient's family to bring personal items.

Delirium Identification & Assessment

- Confusion assessment Model (CAM- ICU):
  - On Admission
  - Every shift
  - With change in patient's status

Delirium Identification & Assessment
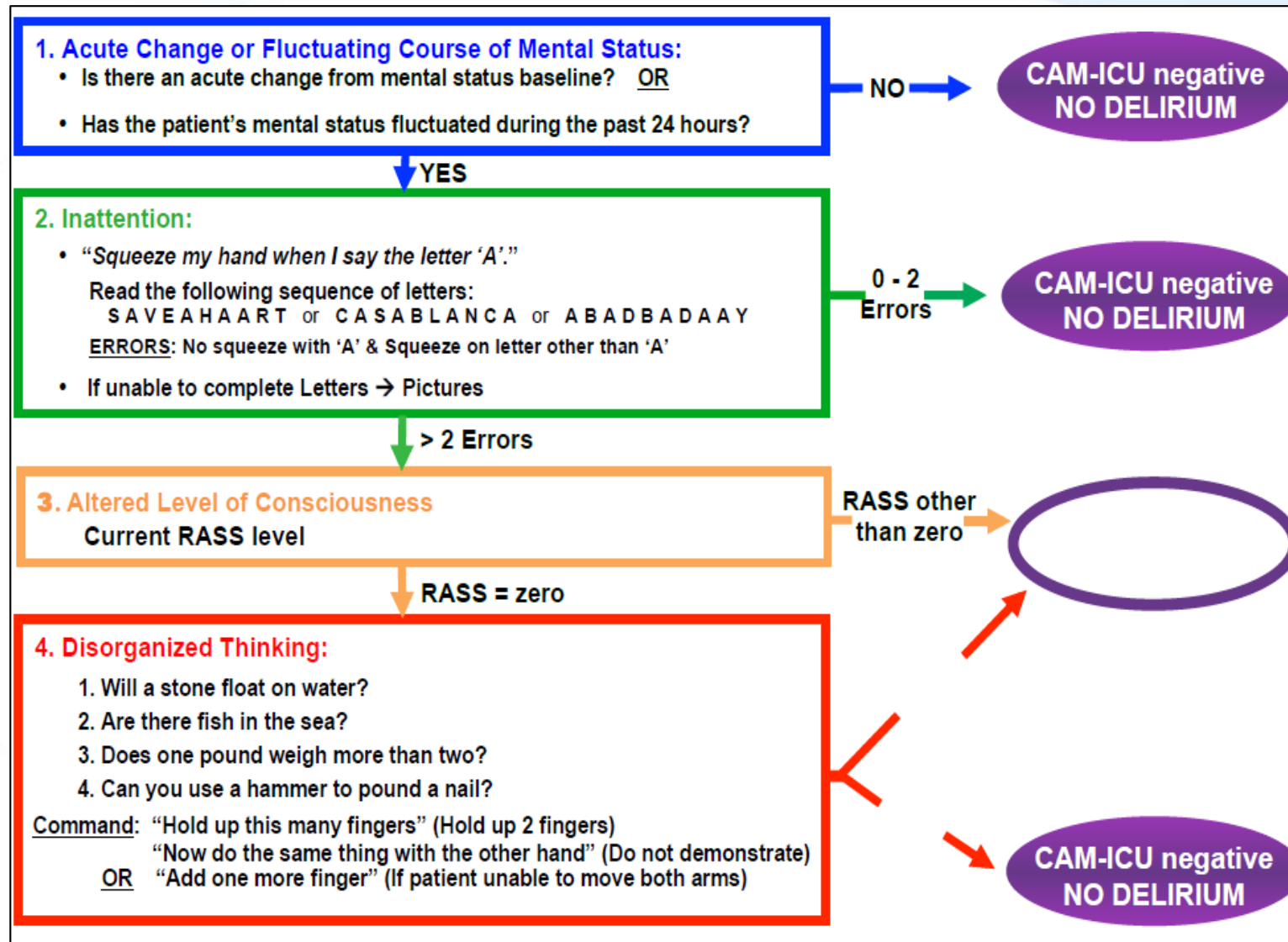
Delirium Prevention: CCU Workflow

Identification & Assessment Guidelines for Ventilator patients

Perform Delirium Assessment via CAM-ICU in PM and AM as you consider weaning trial.

Delirious (CAM-ICU positive)

Consider differential diagnosis (THINK)[1]

Remove deliriogenic drugs [2]
Non-pharmacological protocol [2]

Non-delirious (CAM-ICU negative)
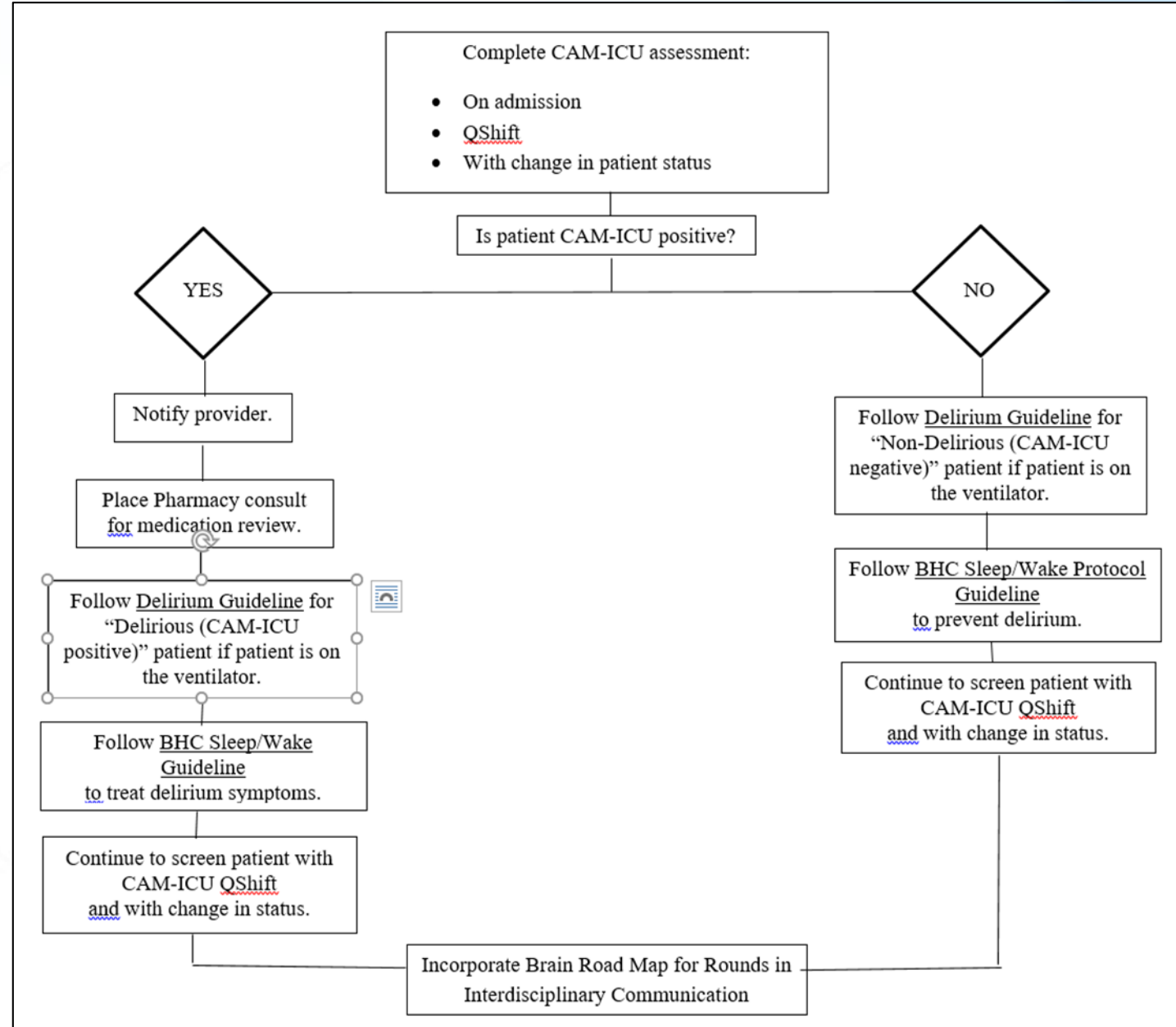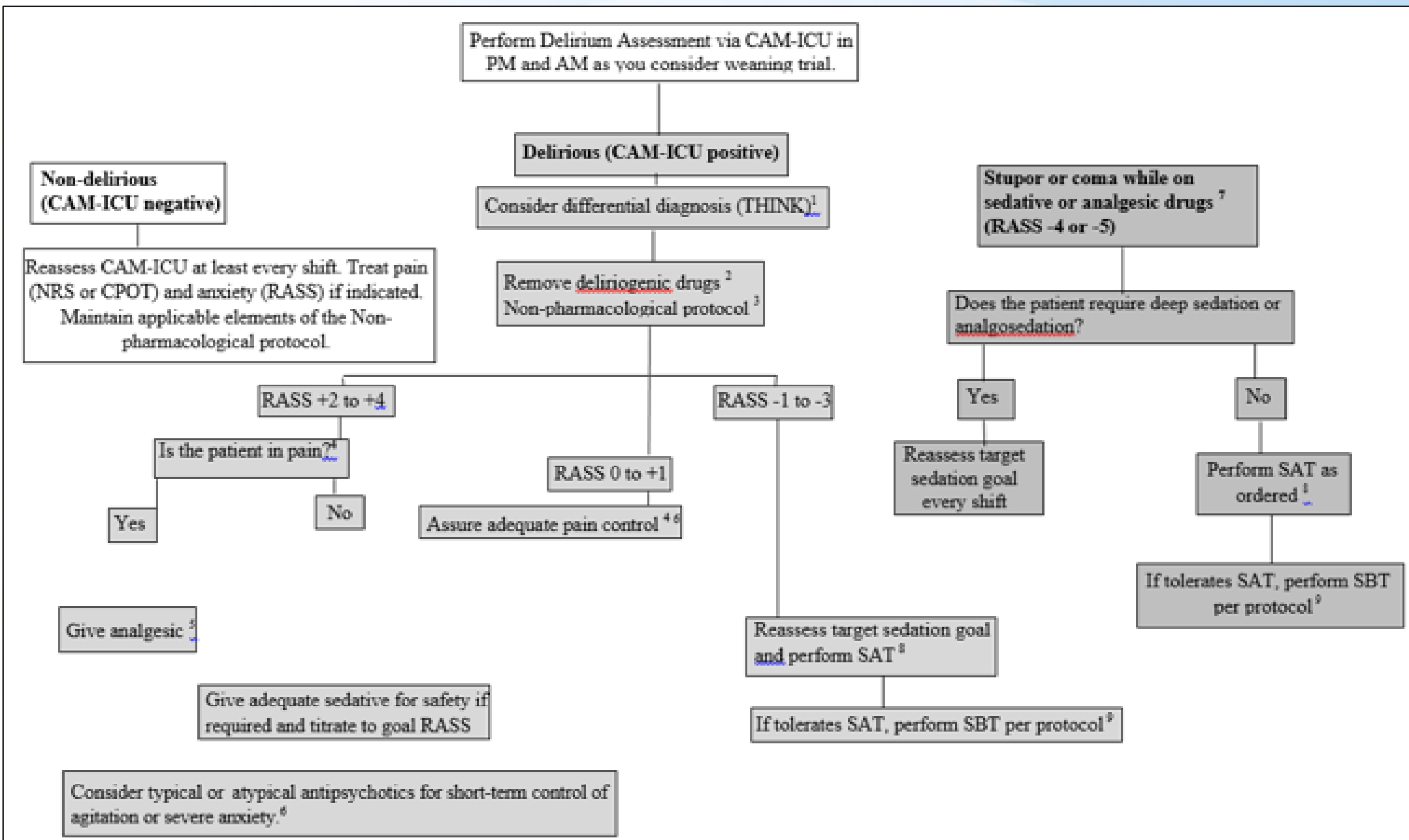
Reassess CAM-ICU at least every shift. Treat pain (NRS or CPOT) and anxiety (RASS) if indicated. Maintain applicable elements of the Non-pharmacological protocol.

Stupor or coma while on sedative or analgesic drugs [7] (RASS -4 or -5)

Does the patient require deep sedation or analgosedation?

RASS +2 to +4

Is the patient in pain?[4]

Yes

No

RASS 0 to +1

Assure adequate pain control [4,6]

RASS -1 to -3

Yes

No

Reassess target sedation goal every shift

Perform SAT as ordered [1]

Give analgesic [5]

Reassess target sedation goal and perform SAT [8]

If tolerates SAT, perform SBT per protocol [9]

Give adequate sedative for safety if required and titrate to goal RASS

If tolerates SAT, perform SBT per protocol [9]

Consider typical or atypical antipsychotics for short-term control of agitation or severe anxiety.[6]

Outcome Tracking

Monitoring

     Length of Stay in the ICU

     Restraint Days

     Ventilator Days

     Reintubations within 24 hours

Sustaining our Efforts

Monthly Audits of processes:

Staff utility of day/night poster

Chart review – CAM screenings

Staff understanding of prevention techniques

Continuing Improvement

- Identifying and knocking down barriers
- Post Intensive Care Syndrome (PICS)

Post- Intensive Care Syndrome

- ## What is it?
  - Health problems that remain after a critical illness
  - Can persist after the patient returns home
  - Can involve patient's body, thoughts, feelings or mind and can impact the patients family
  - Can present as ICU-acquired weakness and Cognitive (brain) dysfunction

Post Intensive Care Syndrome. Davidson et al. SCCM.org (2013)

ICU Acquired Weakness

Loss of muscle mass and reduced muscle strength

    33% of all patients on ventilators

    50% of all patients admitted with Sepsis,

    Up to 50% of patients who stay in the ICU for at least one week

Patients who develop ICU-Acquired Weakness can take up to a year to recover and can impact their ability to perform activities of daily living.

Post Intensive Care Syndrome. Davidson et al. SCCM.org (2013)

Cognitive (Brain) Dysfunction

Loss of intellectual functions such as thinking, remembering, and reasoning

- Experience difficulty with solving problems, organizing and working on complex tasks
- 30% to 80% of patients may have this problem after leaving the ICU
- Can experience PTSD, anxiousness and depression

Post Intensive Care Syndrome. Davidson et al. SCCM.org (2013)

Post-Intensive Care Syndrome Relationship with Delirium

- Practicing many of the interventions we use to prevent delirium can help prevent PICS

- Use family to help keep patient oriented

- Focus on occupational and physical therapy (Mobility, Mobility, Mobility)

- Treatment for anxiety and depression

- Provide support for caregivers

Post Intensive Care Syndrome. Davidson et al. SCCM.org (2013)

Owensboro Health
Bill Bryant MD, FAAFP, CPHQ, CPPS
Chief Quality & Patient Safety Officer

QUALITY KENTUCKY

Health Care Quality Improvement Continues

NuDESC: Nursing Delirium Screening Scale

Assesses
5 Categories
of Behavior

1. Disorientation

2. Inappropriate Behavior

3. Inappropriate Communication

4. Illusions/Hallucinations

5. Psychomotor Retardation

NuDESC Score =

For Each Behavior

Not Present = 0

Present (Less Severe) = 1

Present (More Severe) = 2

If total is ≥ 2 then patient screens positive for delirium

Misconception #1: Patient is oriented. There is no delirium

NuDESC

- Nurse assesses patient:
  1. Upon admission
  2. Every shift
     - Assessment is completed toward end of shift
     - Pulling from what has been occurring during the shift
     - Not dependent on prior knowledge of patient's cognition and/or behavior
  3. Anytime patient status changes

(Heidenreich & Gresbach, 2018).

AWOL Delirium Risk Predictor

A = Is the patient 80 years old or more?

  No = 0   **Yes = 1**

W = <u>Un</u>able to correctly spell WORLD backward

  No = 0   **Yes = 1**

O = <u>Not</u> oriented to city, state, county, hospital

  No = 0   **Yes = 1**

L = Illness Severity of Moderate, Severe, or Moribund

  No = 0   **Yes = 1**

Admission required documentation and populates for all patients.

If score is ≥ 2 then patient is at risk for delirium.

Implement Delirium Prevention Protocol

The AWOL tool: derivation and validation of a delirium prediction rule. Vanja C Douglas et.al. J Hosp Med . 2013 Sep; 8(9): 493-9.

Delirium Nurse Protocol (separate handout)

- Delirium Nursing Assessment every shift: NuDESC
- **Mobility** Assessment every shift: Mobility Protocol
- Fall Risk Assessment every shift
- Nutrition Assessment daily
- **Tether Assessment**
- Sensory and Orientation Assessment every shift
- Sleep Cycle Assessment daily
- Family Participation: Receive Delirium Guide
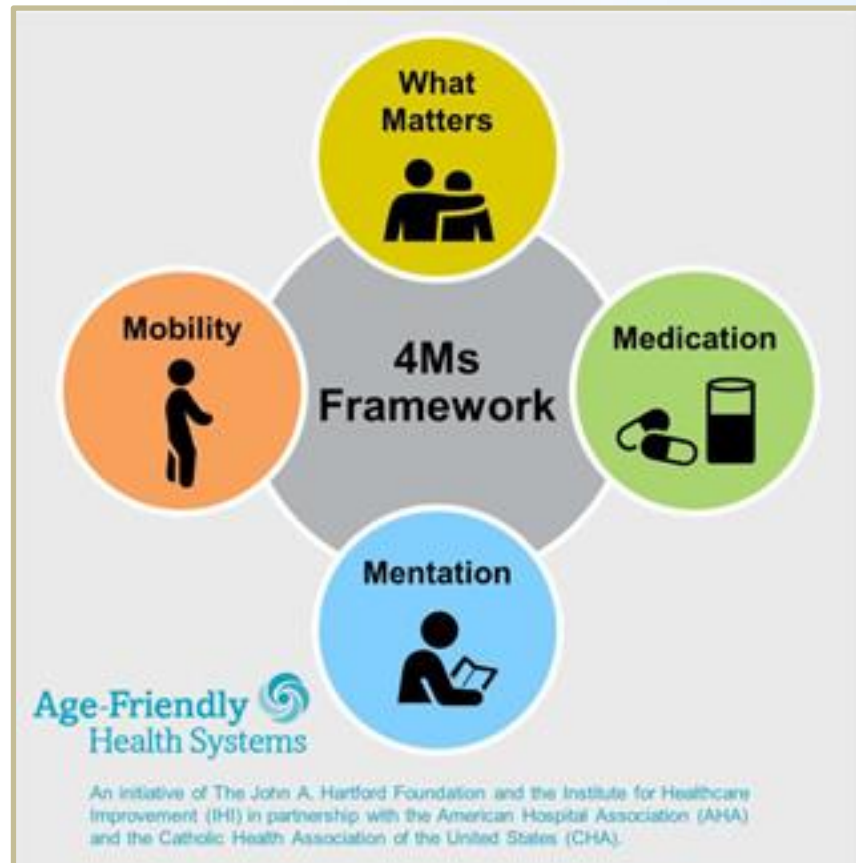 - Familiar **Anchoring Objects**
- **Medications**

Tether Assessment
- **Foley Catheter**
- **Remote Telemetry**
- Sequential devices
- IV tubing
- Continuous pulse ox
- Oxygen tubing and devices
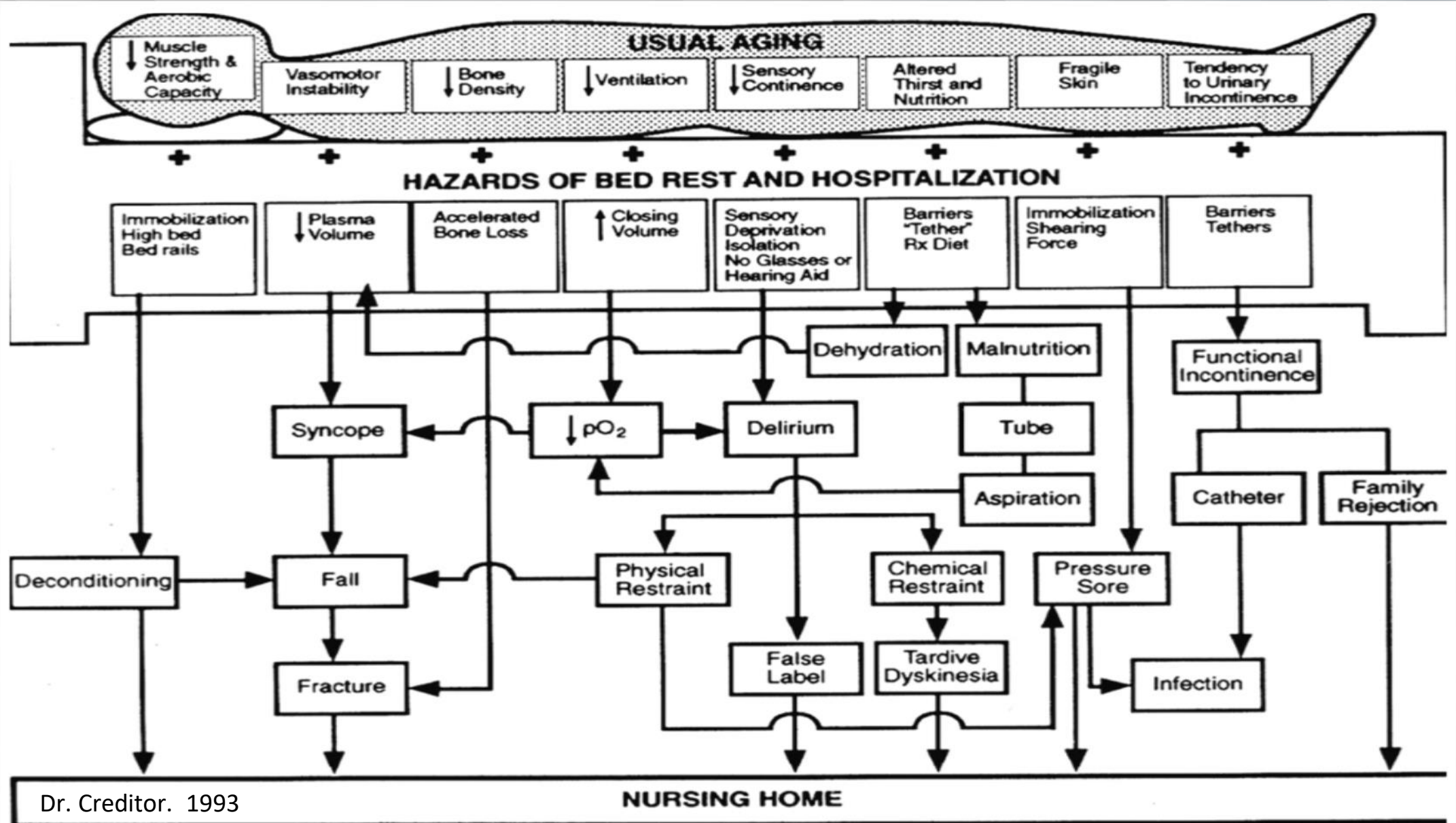- Excessive bedding/blankets
- More…

- In general, avoid use of meds including benzodiazepines for anxiety/restlessness.
- Continue pain medications for pain - Untreated severe pain can trigger delirium.
- Avoid use of meds for sleep - utilize only when all non-pharmacological interventions have been attempted.

Mobility

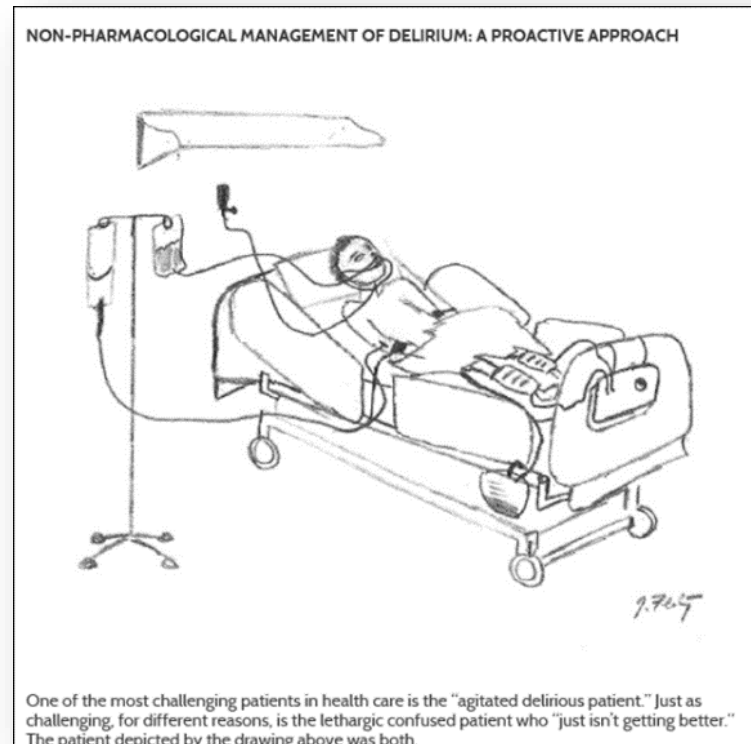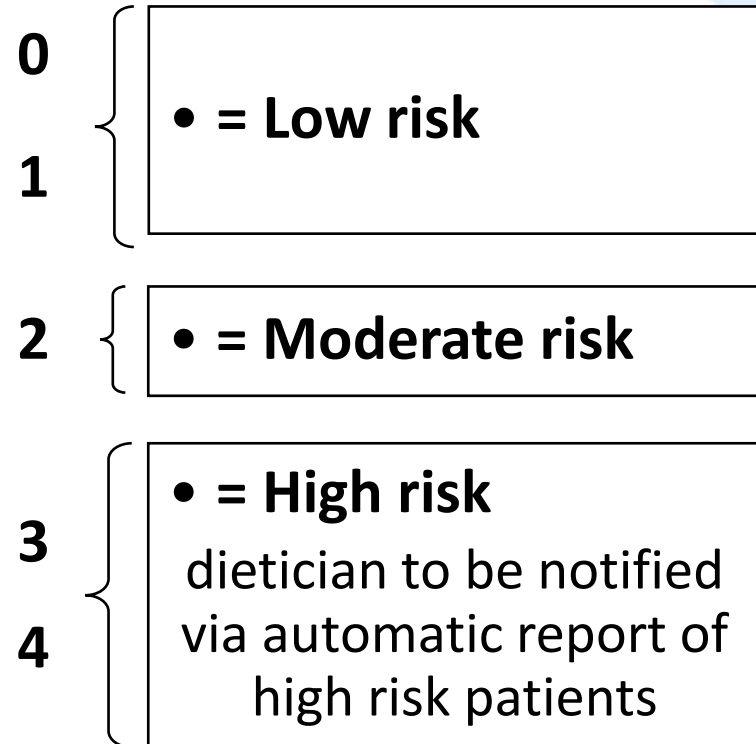Ensure that older adults move safely every day in order to maintain function and do What Matters.

Institute for Healthcare Improvement. Age-Friendly Health Systems: Guide to Using the 4Ms in the Care of Older Adults. April 2019

Mobility

Dr. Creditor. 1993

Mobility

Mentation

Delirium goes down as ambulation goes up
The brain works better in an upright position

NON-PHARMACOLOGICAL MANAGEMENT OF DELIRIUM: A PROACTIVE APPROACH

One of the most challenging patients in health care is the "agitated delirious patient." Just as challenging, for different reasons, is the lethargic confused patient who "just isn't getting better." The patient depicted by the drawing above was both.

Joseph H. Flaherty, MD Professor and Associate Chair of Medicine Geriatrics Division Saint Louis University School of Medicine

Nutrition Screen

- Age: 65 y.o or older
  - **Yes = 1**   No = 0

- On Regular Diet
  - Yes = 0   **No = 1**

- PO Intake ≤50%
  - **Yes = 1**   No = 0

- Recent decrease in PO intake in past 12 hours
  - **Yes = 1**   No = 0

0
1
{ • **= Low risk**

2 { • **= Moderate risk**

3
4
{ • **= High risk**
dietician to be notified via automatic report of high risk patients

Nutrition Screen internally developed by dieticians at Owensboro Health

Pharmacy Acuity List
MAR Note for high risk delirium or delirium positive patients

BEERS List Medication – These medications are potentially inappropriate for older adults

- Zolpidem (Ambien)
- Zaleplon (Sonata)
- Eszopiclone (Lunesta)

- Temazepam (Restoril)
- Lorazepam (Ativan)
- Clonazepam (Klonopin)
- Alprazolam (Xanax)
- Diazepam (Valium)

- Hydroxyzine (Vistaril, Atarax)
- Amitriptyline (Elavil)
- Diphenhydramine (Benadryl)

- Meclizine (Antivert)
- Cyclobenzaprine (Flexeril)
- Methocarbamol (Robaxin)
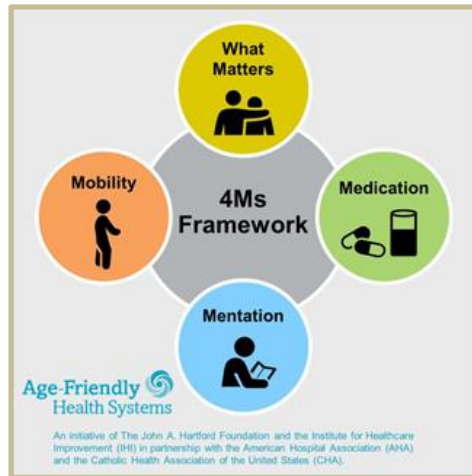
(with Beers List 2019 Link)
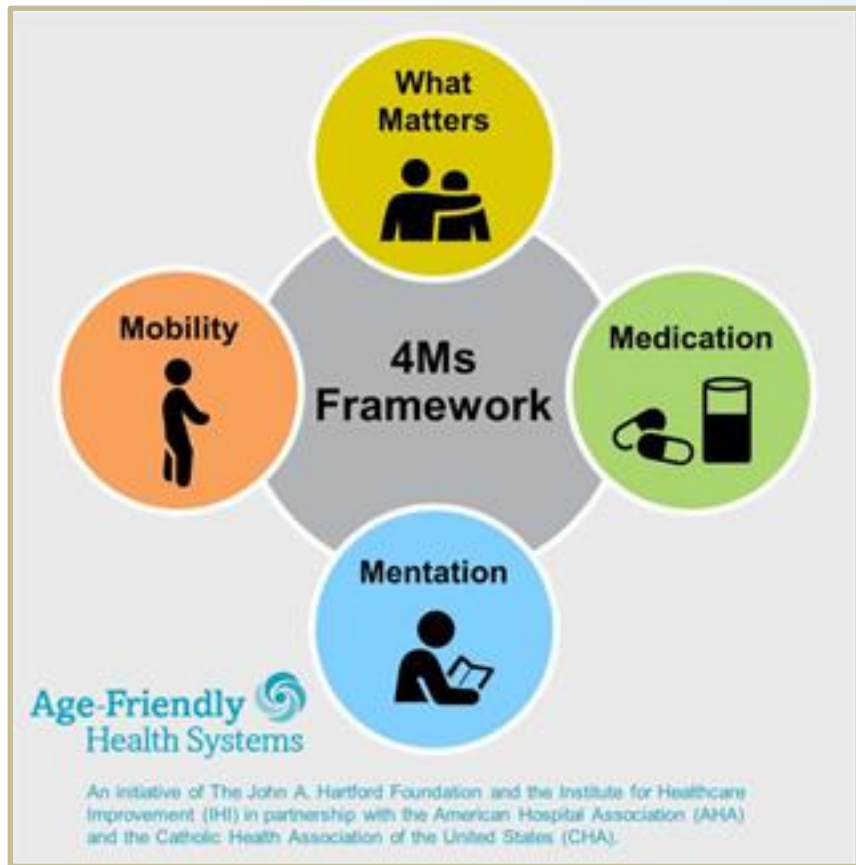
Medication

If medication is necessary, use Age-Friendly medication that does not interfere with 'What Matters' to the older adult, Mobility, or Mentation across settings of care.

Any symptom in an elderly patient should be considered a drug side effect until proven otherwise. J. Gurwitz

Institute for Healthcare Improvement. Age-Friendly Health Systems:Guide to Using the 4Ms in the Care of Older Adults. April 2019

IHI Age Friendly

IHI Age Friendly Health System, Committed to Care Excellence

Encourages us to assure we use the 4Ms in our daily practice

<u>N</u>urses <u>I</u>mproving <u>C</u>are for <u>H</u>ealth System <u>E</u>lders

Promotes programs and resources that help reduce <u>geriatric syndromes</u>

- We are a member
- Engage bedside nurses as **Geriatric Resource Nurses**
  - Curriculum

What Matters! Confusing Terms

He's confused

Acute mental status change

Acute confusional state

Altered mental status

"He's just sun-downing"
"She's pleasantly confused"
"He just acts like someone with dementia"

Updated Nomenclature of Delirium and Acute Encephalopathy: Statement of Ten Societies.
Arjen J. C. Slooter et al. Intensive Care Med (2020) 46: 1020-1022
Delirium. Jo Ellen Wilson et al. Nature Reviews | Disease Primers (2020) 6:90

Preferred Terms

What Matters!

|	
Acute Encephalopathy	A rapidly developing <u>patho</u>biological <u>process</u> in the brain (usually hours or few days / <4 weeks)
Delirium	A <u>clinical state</u> characterized by a combination of features (defined in the DSM-V)
Coma	A clinical state of severely depressed responsiveness defined by diagnostic systems such as the GCS or FOUR Score. (Reference slide)

Updated Nomenclature of Delirium and Acute Encephalopathy: Statement of Ten Societies.
Arjen J. C. Slooter et al. Intensive Care Med (2020) 46: 1020-1022

Encephalopathy ⟶ Delirium
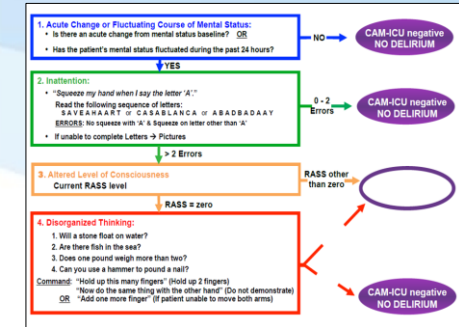
Underlying condition ⟶ Clinical manifestations

Underlying condition
- For example:
  - Metabolic Encephalopathy
  - Hepatic Encephalopathy
  - Toxic Encephalopathy
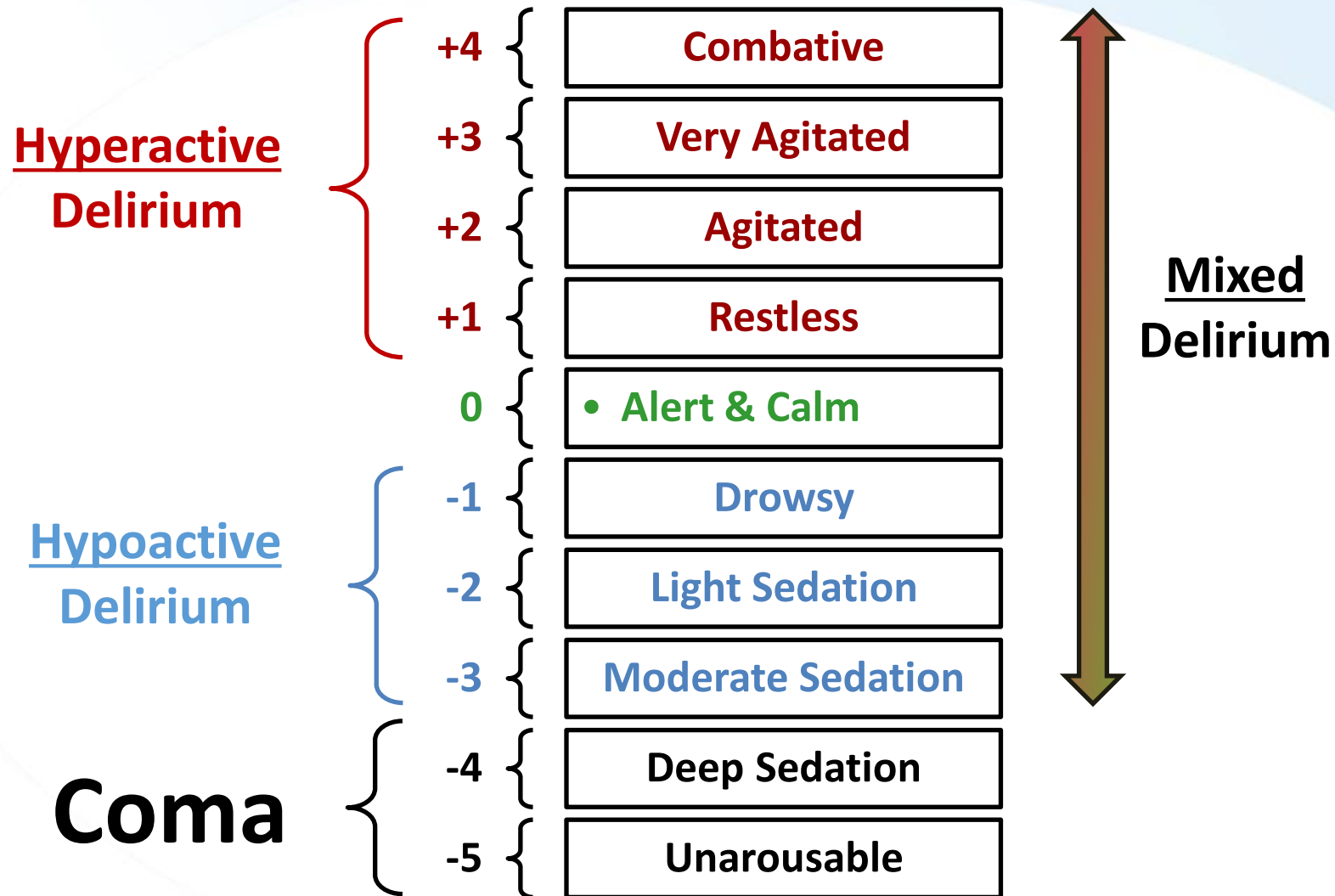
Clinical manifestations
- <u>Acute Change</u>
- Fluctuations
- <u>Inattention</u>**
- Altered Level of Consciousness
- Disorganized Thinking

RASS: Richmond Agitation & Sedation Scale

Hyperactive Delirium

- +4 { **Combative**
- +3 { **Very Agitated**
- +2 { **Agitated**
- +1 { **Restless**
- 0 { • **Alert & Calm**

Hypoactive Delirium

- -1 { **Drowsy**
- -2 { **Light Sedation**
- -3 { **Moderate Sedation**

Coma

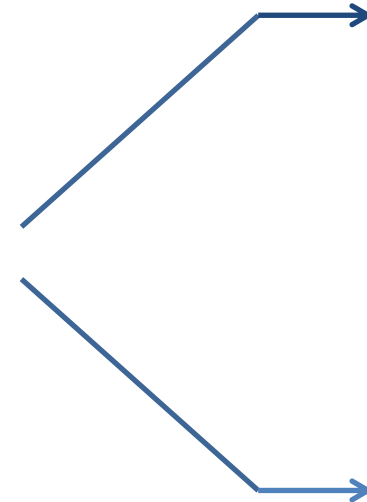- -4 { **Deep Sedation**
- -5 { **Unarousable**

Mixed Delirium

Underlying Pathobiologic Process → Resulting Clinical State

Acute Encephalopathy

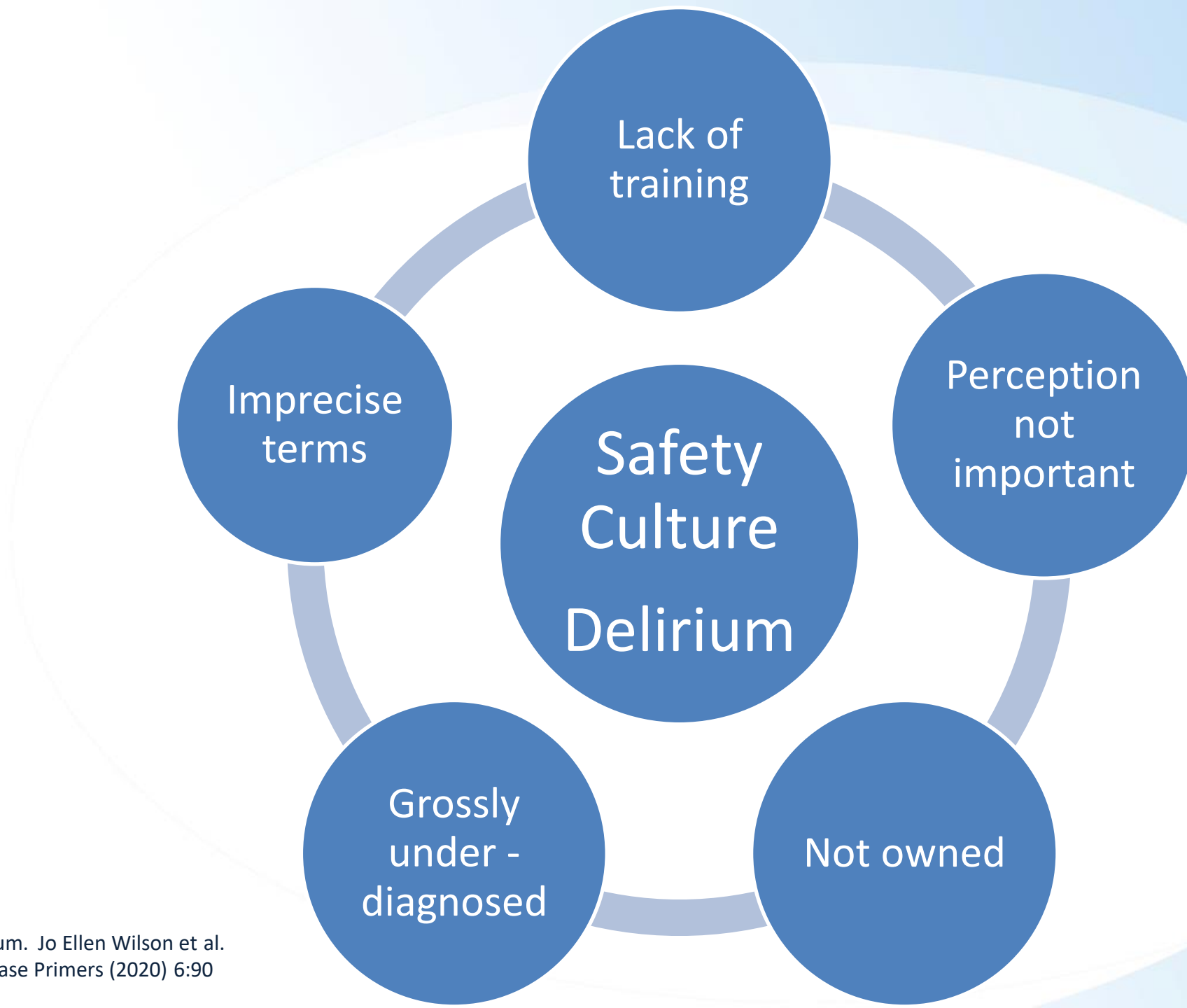Example: Hepatic Encephalopathy

Delirium
Subsyndromal Delirium

Combative
Very Agitated
Agitated
Restless
• Alert & Calm
Drowsy
Light Sedation
Moderate Sedation
Deep Sedation
Unarousable

Coma -4 { -5 {

severely depressed responsiveness

Updated nomenclature of delirium and acute encephalopathy: statement of ten Societies. Arjen J. C. Slooter et al. Intensive Care Med (2020) 46: 1020-1022
Delirium. Jo Ellen Wilson et al. Nature Reviews | Disease Primers (2020) 6:90

These Terms should not be Used

- Altered mental status
  - **Not** synonymous with delirium

- Acute confusional state

- Acute brain dysfunction

- Acute brain failure

Updated nomenclature of delirium and acute encephalopathy: statement of ten Societies.
Arjen J. C. Slooter et al. Intensive Care Med (2020) 46: 1020-1022

Modified from: Delirium. Jo Ellen Wilson et al.
Nature Reviews | Disease Primers (2020) 6:90

This extraordinary gap is surprising given the high prevalence of delirium in older hospitalized patients

Holistic Bundle

Delirium. Jo Ellen Wilson et al. Nature Reviews | Disease Primers (2020) 6:90
Institute for Healthcare Improvement. Age-Friendly Health Systems: Guide to Using the 4Ms in the Care of Older Adults. April 2019

Additional Reference Slides
Will not be covered during presentation

Updated Nomenclature: Ten Societies

- American Academy of Neurology (AAN)
- American Delirium Society (ADS)
- European Academy of Neurology (EAN)
- European Delirium Association (EDA)
- European Geriatric Medicine Society (EuGMS)
- European Society of Anaesthesiology (ESA)
- European Society of Intensive Care Medicine (ESICM)
- Neurocritical Care Society (NCS)
- Society of Critical Care Medicine (SCCM)
- Società Italiana di Anestesia Analgesia Rianimazione e Terapia Intensiva (SIAARTI)

Ten Delirium <u>Misconceptions</u>

1. This patient is oriented to person, place, and time – they're not delirious.
2. Delirium always resolves.
3. We should expect frail, older patients to get confused at times, especially after receiving pain medication.
4. The goal of a delirium work-up is to find the main cause of delirium.
5. New-onset psychotic symptoms in late life likely represent primary mental illness.
6. Delirium in patients with dementia is less important because these patients are already confused at baseline.
7. Delirium treatment should include psychotropic medication.
8. The patient is delirious due to a psychiatric cause.
9. It is often best to let quiet patients rest.
10. Patients become delirious just from being in the ICU.

References

- Delirium.   Jo Ellen Wilson et al. Nature Reviews | Disease Primers (2020) 6:90
- Responding to Ten Common Delirium Misconceptions with Best Evidence: An Educational Review for clinicians. Mark A Oldham et al. J. Neuropsychiatry Clin Neurosci 30:1 Winter 2018
- Updated Nomenclature of Delirium and Acute Encephalopathy: Statement of Ten Societies. Arjen J. C. Slooter et al. Intensive Care Med (2020) 46: 1020-1022
- NuDESC. The "Nu" Way for Nurses to Screen for Delirium. Heidenreich & Gresbach. American Nurse. May, 2018
- The AWOL tool: derivation and validation of a delirium prediction rule. Vanja C Douglas et.al. J Hosp Med . 2013 Sep; 8(9): 493-9.
- Institute for Healthcare Improvement. Age-Friendly Health Systems:Guide to Using the 4Ms in the Care of Older Adults. April 2019

DSM-5: Five Features of Delirium

1.   Disturbance in **attention** (reduced ability to direct, focus, sustain, and shift attention) and awareness.

2.   The disturbance <u>develops over a short period of time</u> (usually hours to days), represents a <u>change from baseline</u>, and <u>tends to fluctuate</u> during the course of the day.

3.   An <u>additional disturbance in cognition</u> (memory deficit, disorientation, language, visuospatial ability, or perception).

4.   The disturbances are not better explained by another preexisting, evolving, or established neurocognitive disorder, and do not occur in the context of a severely reduced level of arousal, such as coma.

5.   There is evidence from the history, physical examination, or laboratory findings that the disturbance is <u>caused by a medical condition, substance intoxication or withdrawal, or medication side effect</u>.

The American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM):   Delirium

FOUR Score

Eye response
4 = eyelids open or opened, tracking, or blinking to command
3 = eyelids open but not tracking
2 = eyelids closed but open to loud voice
1 = eyelids closed but open to pain
0 = eyelids remain closed with pain

Motor response
4 = thumbs-up, fist, or peace sign
3 = localizing to pain
2 = flexion response to pain
1 = extension response to pain
0 = no response to pain or generalized myoclonus status

Brainstem reflexes
4 = pupil and corneal reflexes present
3 = one pupil wide and fixed
2 = pupil or corneal reflexes absent
1 = pupil and corneal reflexes absent
0 = absent pupil, corneal, and cough reflex

Respiration
4 = not intubated, regular breathing pattern
3 = not intubated, Cheyne-Stokes breathing pattern
2 = not intubated, irregular breathing
1 = breathes above ventilator rate
0 = breathes at ventilator rate or apnea

Glasgow Coma Scale

Eye opening	
Spontaneous	4
Response to verbal command	3
Response to pain	2
No eye opening	1
Best verbal response	
Oriented	5
Confused	4
Inappropriate words	3
Incomprehensible sounds	2
No verbal response	1
Best motor response	
Obeys commands	6
Localizing response to pain	5
Withdrawal response to pain	4
Flexion to pain	3
Extension to pain	2
No motor response	1
Total	