Evaluation and Management of Delirium

Purpose

Provide guidance on the evaluation, diagnosis, and management of hospitalized patients who develop delirium.

Background/Definitions

Delirium is a neuropsychiatric disorder that is characterized by a disturbance in attention, consciousness and cognition with a reduced ability to focus, sustain or shift attention. It can develop over a short period of time, is a change from baseline, and fluctuates in severity. The clinical presentation varies but usually presents with psychomotor behavioral disturbances such as hyperactivity or hypoactivity and with impairment in sleep duration and quality.

Delirium is caused by an underlying medical condition that is not better explained by another preexisting, evolving, or established neurocognitive disorder. The underlying cause of delirium can vary widely and involve anything that stresses the baseline homeostasis of a vulnerable patient. Examples include: substance abuse intoxication and withdrawal, medication side effects, infection, surgery, metabolic derangements, pain, constipation, and urinary retention.

There are 3 subtypes of delirium:

1. Hyperactive: patients present with restlessness, purposeless and uncontrollable movements, agitation, hallucinations, and behaviors
2. Hypoactive: patients appear calm, lethargic, and have slowed mentation and slow/decreased movements.
3. Mixed: fluctuation between hyperactive and hypoactive states.

Delirium has consistently shown to be associated with higher mortality rates, longer ICU and hospital lengths of stay, increased morbidity, and cognitive and psychiatric sequelae that can persist weeks to months following hospital discharge.

The elderly, polytrauma patients and those critically ill in the ICU are all groups that have been identified as particularly susceptible to developing delirium. The incidence of delirium in trauma patients admitted to the ICU has been reported as up to 67%, with increased risk for elderly and those requiring mechanical ventilation.

In light of this, it is critical for trauma and critical care providers to be well versed in screening for and identifying delirium as well as implementing preventative strategies against delirium in order to optimize patient outcomes and reduce healthcare costs.

Guideline Inclusion Criteria

All admitted trauma patients

Guideline Exclusion Criteria

none

Diagnostic Evaluation

Risk factors for delirium development:

Each trauma patient should be assessed for nonmodifiable and modifiable risk factors that may contribute to the development of delirium.

Nonmodifiable Risk Factors	Modifiable Risk Factors
Increased age	Restraints
Depressed GCS on arrival	Ventilator days
Increased blood product transfusion	Increased sedation
Multisystem organ failure	Infection/sepsis
Traumatic brain injury (TBI)	Indwelling urinary catheters/lines
History of substance abuse	Medications
Frailty	
Comorbidities (hypertension, dementia)	
Nutritional impairment	

Medications known to be associated with increased delirium can include:

Drug Class	Examples
Central acting agents	Benzodiazepines, barbiturates
Antihistamines	Diphenhydramine, scopolamine
Promotility agents	Metoclopramide
Corticosteroids	Hydrocortisone
Opioids	Morphine, merperidine, oxycodone, etc.
Neuromuscular blocking agents	Rocuronium, cisatracurium
Miscellaneous	Certain antibiotics (fluoroquinolones, cefepime) Digitalis Tricyclic antidepressants Lithium

Patient care should be centered around optimizing modifiable risk factors as able in hopes of minimizing the risk of delirium development.

Delirium Detection and monitoring:

The most reliable method for detecting delirium is with the use of externally validated screening tools. One of the more widely used screening tool is the Confusion Assessment Method for ICU (CAM-ICU) which is applied primarily to patients in the ICU. Alternatively, a Brief Confusion Assessment Method (bCAM) is primarily used for delirium screening on floor patients. (see Figure 1)

Practice Recommendations for Management

- All trauma patients should be assessed for delirium risk and development daily and as needed when a change in clinical status occurs and delirium is suspected. This includes optimizing modifiable risk factors and medication regimens as able and implementing delirium prevention strategies. (see Figure 2)
- If delirium is suspected, diagnosis should be confirmed by using the CAM-ICU or bCAM screening tools.
- Once delirium is confirmed, provider should examine/evaluate the patient for possible causes and contributing factors to delirium (i.e. infection, electrolyte abnormalities, medication side effects, substance intoxication/withdrawal, etc) and treat/correct as indicated by work-up (See FIGURE 3).
- In addition to correcting/treating contributing factors, provider should also implement delirium treatment interventions beginning with non-pharmacologic interventions first and escalating to pharmacologic interventions as needed. (see FIGURE 4)
    - There are currently no pharmacologic agents shown to prevent the development of delirium or shorten the course of delirium. Pharmacologic agents should be used as needed to treat symptoms of delirium and prevent harm to patient and/or staff.
    - If pharmacologic interventions are required, they should be preferentially used on an as needed basis with the minimal dose required to achieve the desired effect (i.e. not agitated or at risk to harm self/staff).
    - If scheduled pharmacologic interventions are used, medications should be assessed daily for need and weaned/discontinued once delirium has resolved.

Follow-up Care

- All patients diagnosed with delirium during his/her hospital stay should be assessed daily and as needed for ongoing signs and symptoms of delirium and potential opportunities to optimize delirium prevention and treatment.
- Diagnosis of delirium should be well documented in the patient’s hospital discharge summary so that post-discharge cognitive and psychiatric sequelae may be assessed at follow-up visits with either trauma providers or patient’s primary care providers.

Outcome Measure and Guideline Adherence

- Diagnosis of delirium is actively tracked through our trauma performance improvement initiatives.
    - Each case will be reviewed by our PI coordinators and TMD/aTMD at a primary and/or secondary review level to confirm diagnosis and assess for

opportunities for improvement.
    - If opportunities for improvement or trends identified, cases will be further examined at a secondary and/or tertiary review level in our weekly trauma performance improvement conference or monthly multi-disciplinary trauma meetings.

Related Policies

1. Pharmaceutical Management of Post-TBI Neuropsychiatric Symptoms, Acute Care Surgery Patient Pathway, Nebraska Medicine.

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Last Updated

February, 2024

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4. Ely EW, et al. Confusion Assessment Method for the Intensive Care Unit. *JAMA*. 2001; 286:2703-2710.
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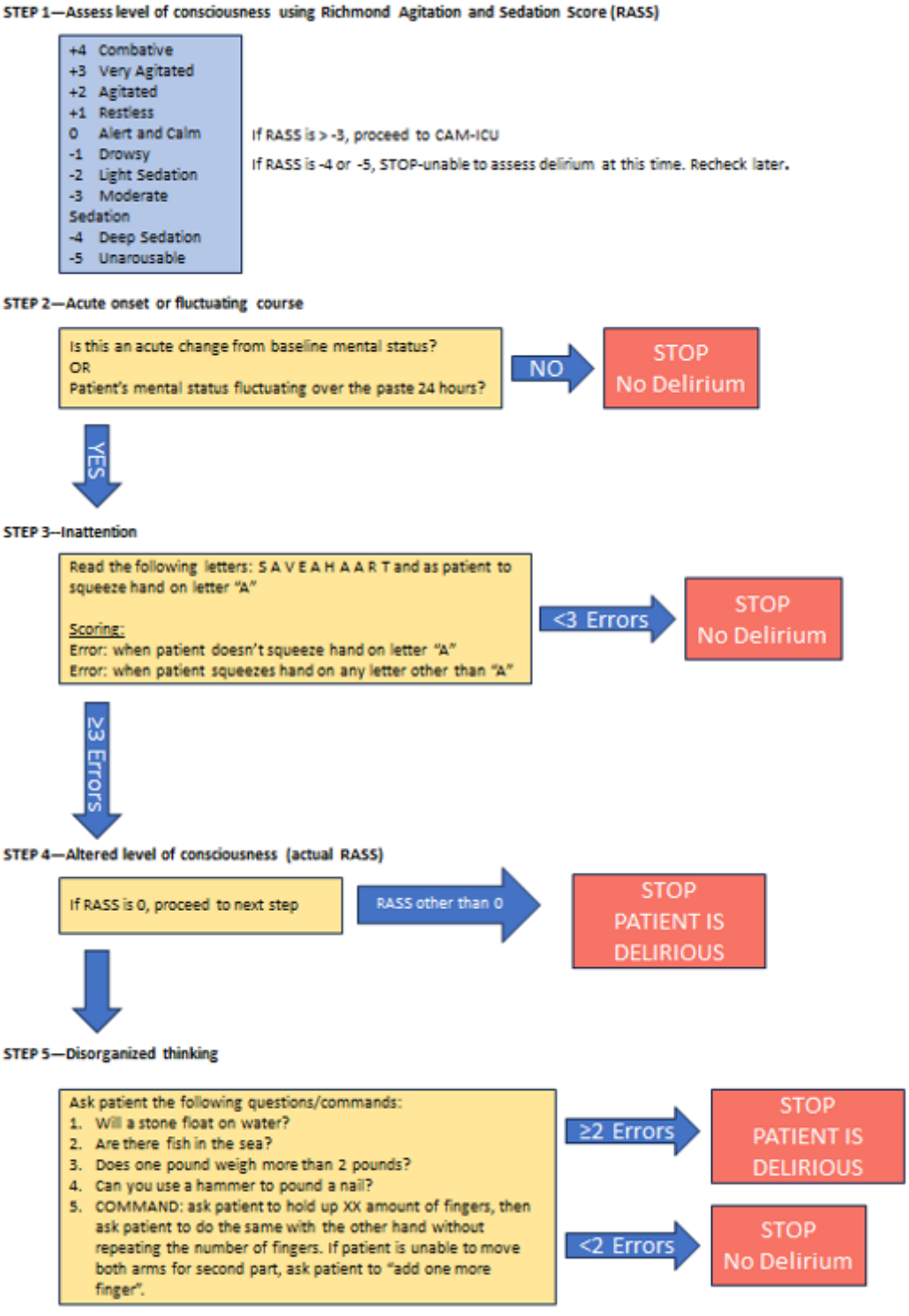
Appendix/Supplemental Materials

FIGURE 1--Delirium Screening Tools

(a) Confusion Assessment Method for ICU (CAM-ICU)



(b) Brief Confusion Assessment Method (bCAM) Flow Sheet

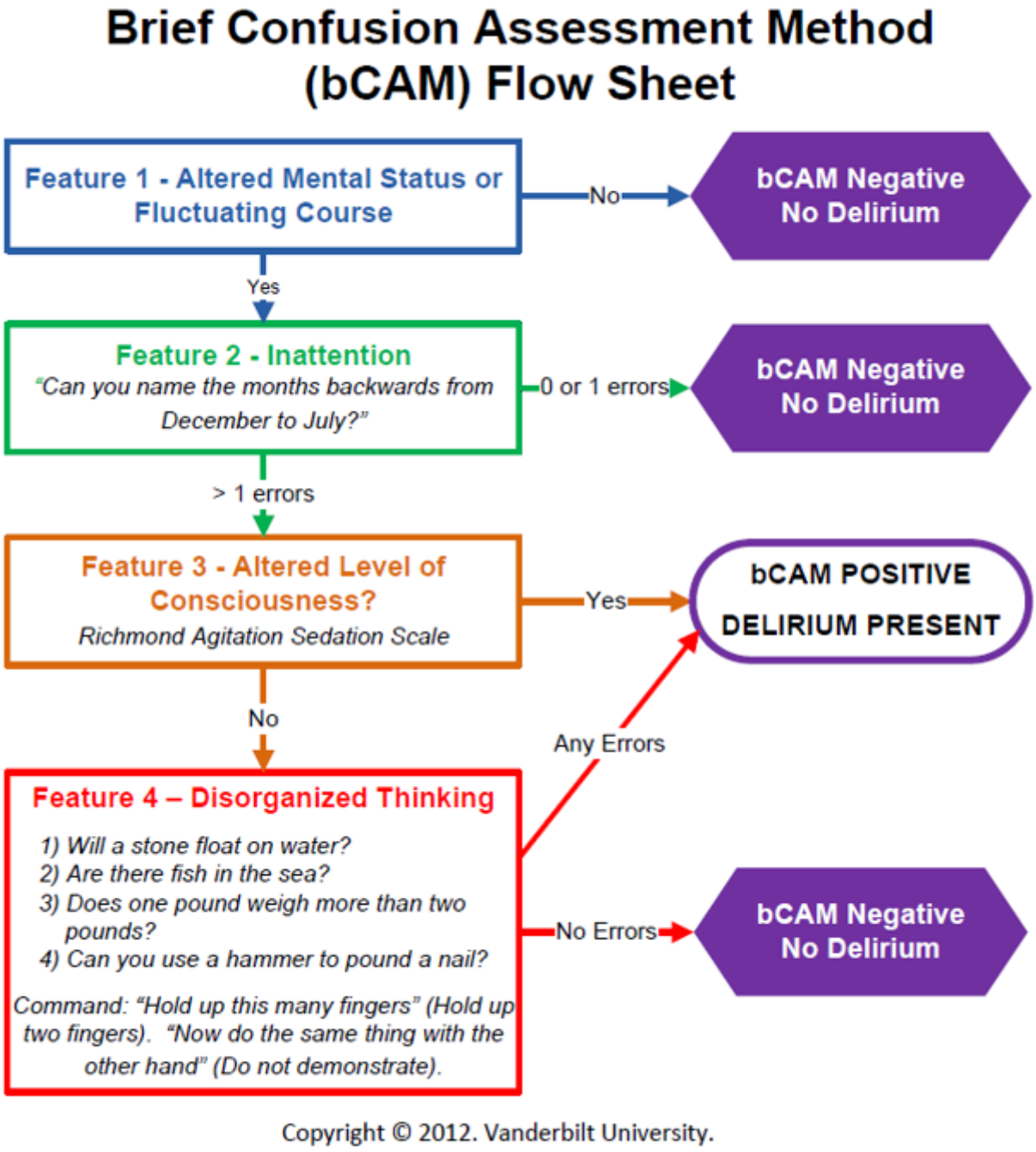


FIGURE 2-- Delirium Prevention Strategies

Delirium Prevention Strategies:
• Assess, prevent, and manage pain – minimizing narcotic use when able
• Avoid/minimize duration of deep sedation (RASS -3 or greater) when possible
• Perform spontaneous awakening and spontaneous breathing trials on all intubated patients at least daily
• Review medication list daily – minimize medications known to be associated with delirium as able
• Review vital signs frequency, use of telemetry, and lab draws and minimize/discontinue where appropriate
• Mobilize patients early and often
• Assess indwelling lines and catheters for possible removal daily
• Avoid use of restraints whenever possible
• Engage and empower family members to be involved in patient care and recovery
• Promote good sleep hygiene – maintain day-night cycles, minimize noise/stimulation at night
• Utilize pre-existing personal devices such as glasses, hearing aids, dentures, etc. routinely
• Avoid malnutrition
• Keep environment calm and uncluttered; avoid overstimululation
• Consider “camouflaging” catheters/tubes
• Provide cognitively stimulating activities adapted for patient
• Assess for cognitive impairment/disorientation frequently and re-orient as needed
• Avoid dehydration and constipation
• Prevent hypoxia
• Monitor for infections or complications of an infection as clinically indicated
• Speak softly and use simple words/phrases
• Talk about family and friends
• Decorate room with family photos, calendars and other home items patient may recognize
• Play music
• Avoid sensory impairment

FIGURE 3--Suggested algorithm for management of delirium

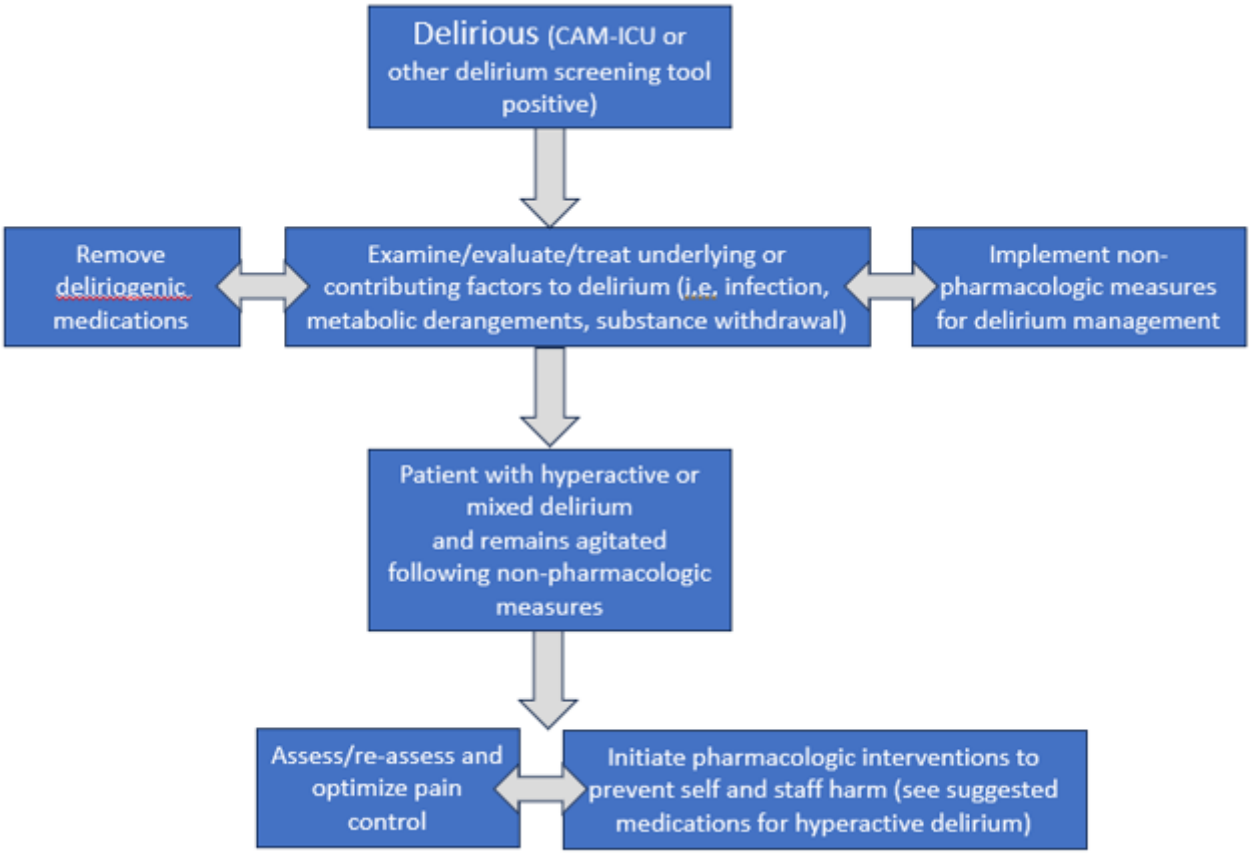


FIGURE 4--Non-pharmacologic and pharmacologic interventions for delirium

Non-Pharmacologic Interventions for Delirium	
Intervention	**Example**
Mobilize early and often	• Out of bed for all meals • Ambulate in halls daily • PT/OT consultation
Maintain good sleep hygiene • **Maintain day night cycle** • **Minimize night time stimulation and noise**	• Keep patient awake/active during the day; sleep at night • Adjust timing of lab draws, medication administration, vitals frequency
Create a stable environment	• Avoid room changes • Limit staff changes
Frequent re-orientation	• Inform patient of date/time/day of week/current location/etc daily and as needed
Provide cognitive stimulation/aids during day	• Provide patient with books, magazines, newspapers, puzzles/games, coloring or other activities
Avoid constipation or urinary retention	• Ensure patient is on scheduled and as needed bowel regimen; adjust daily as needed • Consider timed/scheduled toileting • In&out catheterization as needed
Ensure adequate hydration/nutrition	• Monitor oral intake • IV hydration as indicated • Nutrition consultation • Provide enteral/parenteral nutrition as needed
Treat hypoxia/hypercarbia	• Supplemental oxygen as needed • Utilize home CPAP • Bedside respiratory therapies (incentive spirometry, aerobica, etc)
Treat pain	• Ensure multi-modality pain regimen, minimizing narcotics as able • Acute pain service (APS) consultation
Encourage family involvement	• Promote family visitation • Encourage assistance with patient's meals and hygiene
Play music	• Utilize personal devices (phone, tablet, etc) or TV in room to play calming music or music of patient's choice
Remove unnecessary devices as able	• Assess all lines, tubes, catheters, restraints, etc for removal daily
Utilize personal aid devices	• Ensure patient is wearing hearing aids, glasses, dentures, and other personal aid devices while awake.

Pharmacologic Interventions for Delirium			
/Drug	**Suggested Use**	**Dosing**	**Adverse Effects**
l Antipsychotic: **eridol** (Haldol)	Controlling acute severe agitation	2.5-10 mg (usual dose 5 mg) IV/IM. May repeat Q15min (up to 20 mg) until calm achieved	Oversedation, QT prolongation, arrythmia, extrapyramidal symptoms, dopaminergic antagonism (avoid in Parkinsons), may lower seizure threshold
	Controlling intermittent (or breakthrough) agitation	2.5- 5 mg Q4H PRN agitation	

al Antipsychotics:			
apine quel)	Maintaining control of agitation associated with hyperactive/ mixed delirium	Typical start: 50 mg PO/perFT Q8-12hr. If effect not achieved at 24 hours, may increase dose (max 400 mg/day).	Oversedation, QT prolongation (less than IV haloperidol), extrapyramidal symptoms (less than haloperidol)
apine exa)		Typical start: 5 mg PO/perFT daily. If effect not achieved at 24 hours, may increase dose (max of 20 mg/day).	
ridone rdal)	Controlling acute agitation	1-2 mg PO/per FT. May repeat dose in 1-2 hours, up to 6mg in 24 hours.	
al Alpha-2 Agonist: **edetomidine** dex)	Maintaining control of agitation associated with delirium	If intubated: 0.2-1.5 mcg/kg/hour continuous infusion If extubated: 0.2-0.7 mcg/kg/hour continuous infusion, order expires at 24-hours, must reassess and reorder if still indicated.	Restricted to ICU and SDCC. No bolus dosing allowed. Hypotension, bradycardia, withdrawal (if use prolonged)
diazepine: **epam** n)	Controlling severe acute agitation—not typically used as 1st line	0.5-1 mg IV/PO/perFT, may repeat in 15 min	AVOID if able as BZDs causes/exacerbate delirium. Oversedation
	Acceptable option for alcohol withdrawal, agitation in patient with chronic benzo use, agitation in Parkinson's	0.25-1 mg IV/PO/perFT Q4-6H PRN agitation	
nvulsant: **oic Acid** kote)	For agitation refractory to other agents (ie adequate analgesia/ sedation, antipsychotics). May be especially useful when associated with substance withdrawal or untreated mood (ie bipolar) disorder	Typical start: 250 mg IV/PO/perFT Q8H. If effect not achieved at 24 hours, may increase by 250 mg increments. May use loading dose for acute control: 15 mg/kg (~ 1000 mg)	Hepatotoxicity, hyperammonemia, thrombocytopenia, drug interaction with carbapenems Safe therapeutic range: 50-125 mcg/mL
enous Hormone: **onin**	Consider if insomnia is contributing to delirium	3 mg PO/perFT QHS, may increase to 9 mg	Daytime drowsiness, limited side effects
done	Potentially useful if insomnia is contributing to delirium (2nd line)	25-50 mg PO/perFT QHS	Daytime drowsiness, antihistamine effects, sensory distortion, sleep walking

l added medications for delirium/agitation:

- **Start at lowest (or a 50% reduced dose) in elderly (ie >65 yoa).**
- **These medications are not for long-term use, reassess daily. Delirium often resolves/improves over several days and the agents should be weaned/discontinued if no longer indicated.**

Revision #2
Created 20 February 2024 17:19:50 by Emily Cantrell
Updated 12 February 2026 15:49:40 by Emily Cantrell