



Department of Health | Office of Mental Health  
Office of Addiction Services and Supports

# Brain Injury Grand Rounds

**BRAIN INJURY TREATMENT: PSYCHOPHARMACOLOGY AND MEDICAL INTERVENTIONS**

April 21, 2026

# WELCOME

## Agenda:

- Introductions
- Guest speaker presentations
- Case discussion



Hosted by:



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# BRAIN INJURY TREATMENT: PSYCHOPHARMACOLOGY AND MEDICAL INTERVENTIONS



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# WEBINAR PARTICIPATION

- Please use the Q&A section for any questions and please send questions to “all panelists”
- To turn on/off the live transcription, use the closed captions option on the bottom bar
- This webinar is being recorded, and accreditation is only available for the live session



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State of New York Office of Mental Health (OMH) is recognized by the New York State Education Department's State Board for Social Work as an approved provider of continuing education for licensed social workers #SW-0227. Licensed Master Social Workers (LMSWs) and Licensed Clinical Social Workers (LCSWs) who attend this class in its entirety will receive one contact hour towards renewal of their social work license.

## **Psychology:**

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## **CASAC:**

This course is approved for CASAC/ CPP/ CPS Renewal clock hours.



# ACCREDITATION INFORMATION

## Nursing:

- This nursing continuing professional development activity was approved by VTL Center for Professional Development, an accredited approver by the American Nurses Credentialing Center's Commission on Accreditation.
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# OPENING REMARKS

Dr. Chinazo Cunningham  
Commissioner of NYS Office of  
Addiction Services and Supports



# LEARNING OBJECTIVES

## Learning Objectives:

Learners will be able to identify common neurobehavioral and psychiatric symptoms following brain injury

Learners will be able to describe appropriate medication management for brain injury in behavioral health and addiction settings

Please be advised that we will be making reference to off-label use of some medications.



# WHY THIS MATTERS

- Highly prevalent and underrecognized
- Common/Overrepresented in mental health and addiction populations
- Frequently un(der)recognized or undocumented
- Often unintentionally mislabeled as psychiatric illness, addiction, or “noncompliance”
- Drives disability, relapse, crisis utilization, ED utilization, care fragmentation



# QUICK REVIEW

Acquired brain injury (ABI): damage to the brain occurring after birth

\*Key Point: Effects may be **invisible, delayed, and persistent\***

Traumatic brain injury (TBI): caused by external physical force

Remember: Functional severity  $\neq$  radiographic severity

Non-traumatic brain injury (nTBI): all other ABIs

TBI	nTBI
Blunt trauma (closed injury)	Ischemic stroke
Penetrating trauma	Intracerebral hemorrhage
Blast injury	Cerebral hypoxia
Electrical injury	Brain tumors
	Demyelinating disease

**\*Principles discussed today apply broadly to ABI\***



# COMMON PROBLEMS AFTER BRAIN INJURY (from Part 1)

## Neurocognitive

- Attention/concentration
- Language
- Awareness
- Learning and Memory
- Visuospatial skills
- Executive skills
- Vision changes

## Somatic

- headaches,
- balance problems,
- sleep problems,
- dizziness,
- noise/light sensitivity,
- Fatigue
- Tinnitus
- Nausea
- Impaired taste/smell

## Psychological

- Mood changes
  - Irritability
  - Anxiety
  - Depression
- Personality changes
- Impulsivity
- Substance Use



# GENERAL MANAGEMENT PRINCIPLES

## Primary goals:

- Improve functional competence
- Reduce secondary harm
- Support participation in care, rehab, and recovery

## Medication Principles After A Brain Injury:

- Target symptoms, not diagnoses alone - Address the medical issues, rule out underlying causes of symptoms
- Expect increased sensitivity to side effects
- Avoid sedating cognition unless clearly necessary
- Brain Injury is not standard psychiatry prescribing, but we do extrapolate from it



# COMMON TREATMENT TARGETS

#Sleep

#Mood, anxiety/depression

#Emotional dysregulation (Irritability/Agitation)

#Attention and cognitive fatigue

#Headaches

#Dizziness



# #SLEEP

## First-line (non-pharmacological) interventions:

Sleep hygiene education

Behavioral therapies

Cognitive interventions

(next few slides go into more detail and are for your personal review)



## Common Generally Acceptable Med Options:

- Melatonin, Ramelteon
- *Magnesium glycinate (or oxide) 200-400mg*
- Trazodone
  - can also help with anxiety
- Quetiapine (or Olazapine)
  - if sundowning, combative behaviors
- Mirtazapine
  - also for mood, poor appetite at higher doses
- Nortriptyline or Amitriptyline
  - also for pain, headaches
  - Nortriptyline has a better side effect profile
  - Be mindful in the elderly because of anticholinergic properties
- *Prazosin*
  - *less common, but used if night terrors/PTSD*



## **In general, would AVOID:**

**Benzodiazepines**

Can slow cognitive recovery

Used in very select populations for very specific reasons

**Anticholinergics**

Side effects

**Potent antipsychotics (D2-Receptor antagonists)**

**AVOID. Bad for cognitive and motor recovery.**



# SLEEP MANAGEMENT STRATEGIES FOR THE BRAIN INJURY POPULATION

## Behavioral Therapies for Improving Sleep

- Block out a consistent time in your schedule for sleep. Stick to a regular nightly routine - this helps tell your body that it is time for sleep.
- If you don't fall asleep within 30 minutes, get up and go do something relaxing or boring until you feel sleepy.
- Avoid caffeine (and nicotine) after 4 or 5pm.
- Try to avoid watching TV or reading in bed.
- Try to avoid napping throughout the day, to ensure that you're tired at bedtime.
- Exercise daily.



# RESOURCES (not an exhaustive list)

- **Exercise:**

- Achilles NYC Chapter: Exercise Group: <https://www.achillesinternational.org/nyc-chapter>
- Local chapter of the YMCA: [YMCA NYC Locations: 23 YMCA Branches in 5 Boroughs](#). (5 boroughs)
- Local chapter of the JCC (throughout NYS) - has fitness centers and classes, can join regardless of denomination. Locations throughout NYS
- [2021 BIANC Webinar: Adaptive Fitness for Rehabilitation after Brain Injury \(youtube.com\)](#)

- **“Cognitive” Interventions:**

- <https://msktc.org/tbi/factsheets/sleep-and-traumatic-brain-injury>
- <https://msktc.org/tbi/infocomics/tbi-and-sleep-infocomic>
- Headspace App - for mindfulness, guided meditation.
- CBT-i Coach (phone app) - free and publicly available



# #ANXIETY/DEPRESSION

- Mood & Anxiety After Brain Injury:
  - Ask about talk therapy
    - *For patient\* and caregiver(s)*
      - *\*if patient is able to participate*
  - SSRIs/SNRIs often first-line (e.g., sertraline)
    - But are not the only option!
      - Some pearls:
        - If migraine-type headaches and depression, consider Venlafaxine
        - If migraine-type headaches and anxiety, consider Propranolol
        - If neuropathic pain, diffuse generalized muscle pains, consider Duloxetine
    - Can improve mood, irritability, and quality of life
    - Monitor for activation or agitation
- Important to note: Depression ≠ Apathy
  - **Apathy** after brain injury is a common, often misunderstood symptom characterized by a profound loss of motivation, interest, and goal-directed activity, *without sadness*, affecting up to 60% of survivors.
    - May be worsened by SSRIs



# #ATTENTION & COGNITION

## Cognitive Slowing & Fatigue

- Common and disabling
- Can worsen behavior & adherence
- *Need to distinguish fatigue from poor initiation/abulia*
  - *Treated differently*

## Frequently used medications:

- Amantadine
- Methylphenidate (classical neurostimulants)
- Modafinil (for daytime hypersomnolence)

## Also consider:

- OT and/or ST (for cognitive rehab)
- Neuropsychology (for neurocognitive assessment)



# #ATTENTION & COGNITION

## Abulia

- A neuropsychiatric syndrome characterized by a severe lack of will, initiative, and drive, often described as a state of reduced motivation and slowed thought
- Caused primarily by damage to the brain's frontal lobes or basal ganglia

### Patients often present with:

Reduced Initiative: Inability to start or follow through with plans.

Slowed Thought (Bradyphrenia): Delayed responses to questions or stimuli.

Emotional Indifference: Blunted emotional response to significant events.

Passive Behavior: Often complying with others but remaining passive, appearing akin to severe catatonia.

### Treatment Approaches:

Psychotherapy

Amantadine/neurostimulant

Carbidopa/Levodopa

Bromocriptine

Bupropion

Atomoxetine

SSRI/SNRI



# #IRRITABILTY & EMOTIONAL DYSREGULATION

- Common
- Often triggered by overstimulation

## Treatment Approaches:

- Address sleep, pain, environment
- **Common medications include:**
  - SSRIs
  - Mood stabilizers (eg, Depakote)
  - Stimulants (if attention/concentration deficit driven)
- **Also consider:**
  - Psychotherapy
  - OT, ST for cognitive rehab



# #IRRITABILITY & EMOTIONAL DYSREGULATION

- Pseudobulbar Affect (PBA)
  - Severe emotional lability
  - Characterized by inappropriate outbursts of sudden, uncontrollable laughing and/or crying following some brain injury
  - Due to damage to specific neurological pathways that modulate emotion:
    - particularly disrupting the connection between the **frontal lobes (PFC)** and the **cerebellum** or **brainstem**.
- Diagnosis: **CNS-LS**
- Treatment:
  - Psychotherapy
  - SSRIs
  - Dextromethorphan / Quinidine

**Center for Neurologic Study-Lability Scale (CNS-LS) for pseudobulbar affect (PBA)**

The CNS-LS is a short (seven-item), self-administered questionnaire, designed to be completed by the patient, that provides a quantitative measure of the perceived frequency of PBA episodes. The CNS-LS can help physicians accurately diagnose PBA. A CNS-LS score of 13 or higher may suggest PBA.

Patient's name: \_\_\_\_\_

Date of assessment: \_\_\_\_\_

Using the scale below, please write the number that describes the degree to which each item applies to you DURING THE PAST WEEK. Write only 1 number for each item.

Applies never	Applies rarely	Applies occasionally	Applies frequently	Applies most of the time
1	2	3	4	5

Assessment questions	Answers
1 There are times when I feel fine 1 minute, and then I'll become tearful the next over something small or for no reason at all.	
2 Others have told me that I seem to become amused very easily or that I seem to become amused about things that really aren't funny.	
3 I find myself crying very easily.	
4 I find that even when I try to control my laughter, I am often unable to do so.	
5 There are times when I won't be thinking of anything happy or funny at all, but then I'll suddenly be overcome by funny or happy thoughts.	
6 I find that even when I try to control my crying, I am often unable to do so.	
7 I find that I am easily overcome by laughter.	

Total Score: \_\_\_\_\_

Image source: [https://www.researchgate.net/figure/CNS-LS-for-PBA-CNS-LS-Center-for-Neurologic-Study-Lability-Scale-PBA-pseudobulbar\\_fig1\\_299421783](https://www.researchgate.net/figure/CNS-LS-for-PBA-CNS-LS-Center-for-Neurologic-Study-Lability-Scale-PBA-pseudobulbar_fig1_299421783)



# # AGITATION

- Expected in some recovery phases
- Description and context matter
- Management Pearls:
  - **Start With:**
    - Sleep regulation
    - Pain control
    - Environment and overstimulation
    - Caregiver/patient education
  - **Medication Considerations:**
    - Beta Blockers (Propranolol)
    - Mood stabilizers (eg, Divalproex sodium)
    - Alpha blockers (eg, Clonidine)
    - SSRIs
    - Neurostimulants
    - Atypical antipsychotics (Quetiapine, Olanzapine) only when necessary (combative)
  - **Also consider:**
    - Psychotherapy
    - OT, ST, PT IF functional deficits are a trigger
    - Educating caregivers, loved ones about brain injuries
    - Having caregivers, loved ones creating a “Trigger log”



## **Avoid When Possible:**

- Typical antipsychotics
- Diphenhydramine
- Benzodiazepines



# #HEADACHES

Post-traumatic headaches are **phenotype-driven** — treat based on the *headache pattern*, not the injury mechanism.

## Common Post-Traumatic Headache Types

### Migraine-like (most common)

- Throbbing, unilateral or bilateral
- Photophobia, phonophobia, nausea
- Often worsened by poor sleep, stress

### Tension-type

- Pressure or tight band sensation
- Neck/scalp tenderness
- Often associated with muscle tension and posture

### Cervicogenic

- Occipital or posterior neck pain
- Worse with neck movement
- Often coexists with dizziness

### Neuropathic / Neuralgia

- Sharp, electric, stabbing quality
- Occipital or facial distribution

### Medication-overuse headache

- Daily or near-daily headaches
- Frequent analgesic use (NSAIDs, acetaminophen, caffeine, )



# #HEADACHES

## Management Pearls

### Start with foundation

Sleep optimization (crucial)  
Hydration, nutrition, activity pacing  
Treat mood, anxiety, and cervical pain  
Neck stretches for cervicogenic or tension phenotypes

### Vitamins/Supplements

Vitamin B2 (riboflavin) 400mg daily  
Magnesium glycinate (or oxide) 400mg nightly  
COQ10 150-200mg daily

### Abortive treatment

NSAIDs\* or acetaminophen (limit frequency)  
Triptans for clear migraine phenotype\*  
CRPG inhibitor (Rimegepant) for clear migraine phenotype  
Gabapentin for neuropathic and/or migraine type  
Low dose muscle relaxer for cervicogenic or tension phenotypes  
Antiemetics as needed

*\*avoid if +imaging findings (blood)*



### Preventive treatment (if frequent or disabling)

Tricyclic antidepressants (e.g., nortriptyline)  
SNRIs (venlafaxine)  
Anticonvulsants: Topiramate or Divalproex sodium  
Beta blockers (selected patients)

Consider OT/PT for cervicogenic or tension-type headaches

### Avoid

Escalating opioids

Benzodiazepines

Daily abortive use → rebound headaches



# #DIZZINESS

- Vertigo? Or Dizzy?
- Rule out other causes (cardiac, med side effects)
- Consider referral to PT, OT for vestibular therapies
- Meclizine
  - Sedating, can be cognitively inhibiting
  - Typically only effective for true BPPV
- *Mint or ginger may soothe the stomach if nausea is present*



# WHEN TO REFER OR COLLABORATE WITH A BRAIN INJURY REHABILITATION MEDICINE DOCTOR

- Consider referral when:
  - **You are concerned someone has or may have had a brain injury**
  - Safety concerns or aggression
  - Cognitive impairment affects care adherence
  - Diagnostic and/or prognostic uncertainty
  - Polypharmacy
  - Poor response to first-line strategies

Collaboration improves outcomes →

## What This Looks Like:

Improved retention in care

Reduced crisis utilization

Safer, more effective prescribing

Better functional outcomes



# SYSTEMS & POLICY RELEVANCE

- Brain Injury = Disability
  - Often invisible
  - Often mislabeled
  - Requires accommodation when indicated, not punishment
  
- Broader Implications on our Health Care System
  - Misdiagnosis → poor outcomes
  - Fragmented care worsens disability
  - Early recognition improves function, outcomes and costs



# ALTERNATIVE MEDICATIONS

- Just because it is herbal or OTC, does not mean it can be dismissed (both from efficacy and side effect aspects)
- Often the wild west of medications because of decreased regulation and control of these compounds



# KNOW YOUR SIDE EFFECTS

- Only difference between side effects and desired effect is the fact that you want the desired effect (also need to worry about too much desired effect- too much of a good thing not good)
- Anticholinergics can induce delirium and cause cognitive impairment in high doses
- Dopamine antagonists impair recovery early on
- Dopamine agonists, antiepileptics, SSRI's can lower seizure threshold
- Stimulants can cause agitation and restlessness (also addictive)
- Antipsychotics can cause lethargy
- Anticonvulsants can cause seizures as well as endocrine abnormalities (hyperinsulin leading to reproductive ca w/ long term use) besides their individual side effects
- Warn patients and family regarding even non-life threatening side effects (even though not dangerous, may be devastating for family and patient) (ie: baldness and depakote)



# CASE DISCUSSION



# CASE DISCUSSION

- 36 yo M polysubstance abuse history, found down with difficulty breathing, EMS called.
- MRI with diffuse injury, concerning for anoxia.
- s/p trach and PEG.
- Brain Injury rehab followed patient from acute care through discharge home from acute inpatient rehab.
- High yield management issues/considerations:
  - -significant behavioral issues
  - -significant mood issues - anger, depression
  - -risks vs. benefits of starting neurostimulant agents given addiction history



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# RESOURCES

[NYS DOH Traumatic Brain Injury](#)

[Behavioral Health Guide: Considerations for Best Practices for Children, Youth, and Adults with TBI](#)

[The Brain Injury Association of New York State](#)

[TBI Medicaid Waiver Program](#)

[Brainline](#)

[Take Charge of Your Brain Health!](#)

[Model Systems Knowledge Translation Center](#)

[Living with TBI: A Roadmap for Individuals with Traumatic Brain Injury](#)



# Next Session

## Brain Injury: Practical Strategies for Engagement

- **May 19, 2026 10AM**
- Presenters: Karen Thomas, CBIST and Lottie Dunbar MS, CCC -SLP

Register here: [https://meetny.gov/webex.com/weblink/register/r63172f5f1029cd\\_e366726d125d5cc020](https://meetny.gov/webex.com/weblink/register/r63172f5f1029cd_e366726d125d5cc020)





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