Cascading Vulnerabilities for Opioid Use & Consequences Following Traumatic Brain Injury: Implications for Addiction Treatment

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Agenda

- Introduction to Opioid Misuse and Disorder
- 3-Phase Model of Cascading Vulnerabilities for Opioid Use & Consequences following Traumatic Brain Injury
- Evidence for Phases I, II, and III of the Model
- Additional Resources
- Takeaway & Recommendations

Opioid Misuse & Opioid Use Disorder

- People who receive prescription opioids are at risk for opioid misuse, driven by increased opioid tolerance
- Some people who misuse opioids will progress to opioid use disorder (OUD)
  - OUD is a life-threatening substance use disorder characterized by misuse of opioids, unsuccessful efforts to cut down, craving, and social and functional impairments
- In 2024, nearly 8 million people misused opioids and nearly 5 million people had past year OUD
- Without treatment, OUD can lead to overdose and death
- Evidence-based medications for OUD exist and decrease risk for overdose and adverse outcomes
  - Yes, MOUD is underutilized → only 1 in 5 adults with OUD receive MOUD

➢ People with a history of traumatic brain injury (TBI) are at higher risk for development of substance use disorders including OUD

References: Centers for Disease Control and Prevention, 2024; National Survey on Drug Use and Health, 2025; NASEM, 2019; Dowell et al., 2024; Hoglund et al., 2026

Cascading Vulnerabilities for Opioid Use & Consequences following Traumatic Brain Injury

PERSONS WITH TBI MAY HAVE:

Phase I:
Greater exposure to opioids due to secondary conditions common after TBI (e.g., pain)

Phase II:
Greater likelihood of progression to LTOT, opioid misuse, or OUD

Phase III:
Greater barriers to successful OUD treatment

Potential Consequences:
Increased risk for overdose and suicide

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Short Communication

Opioid Use among Individuals with Traumatic Brain Injury: A Perfect Storm?

Rachel Sayko Adams,[1,2] John D. Corrigan,[3] and Kristen Dams-O'Connor[4,5]

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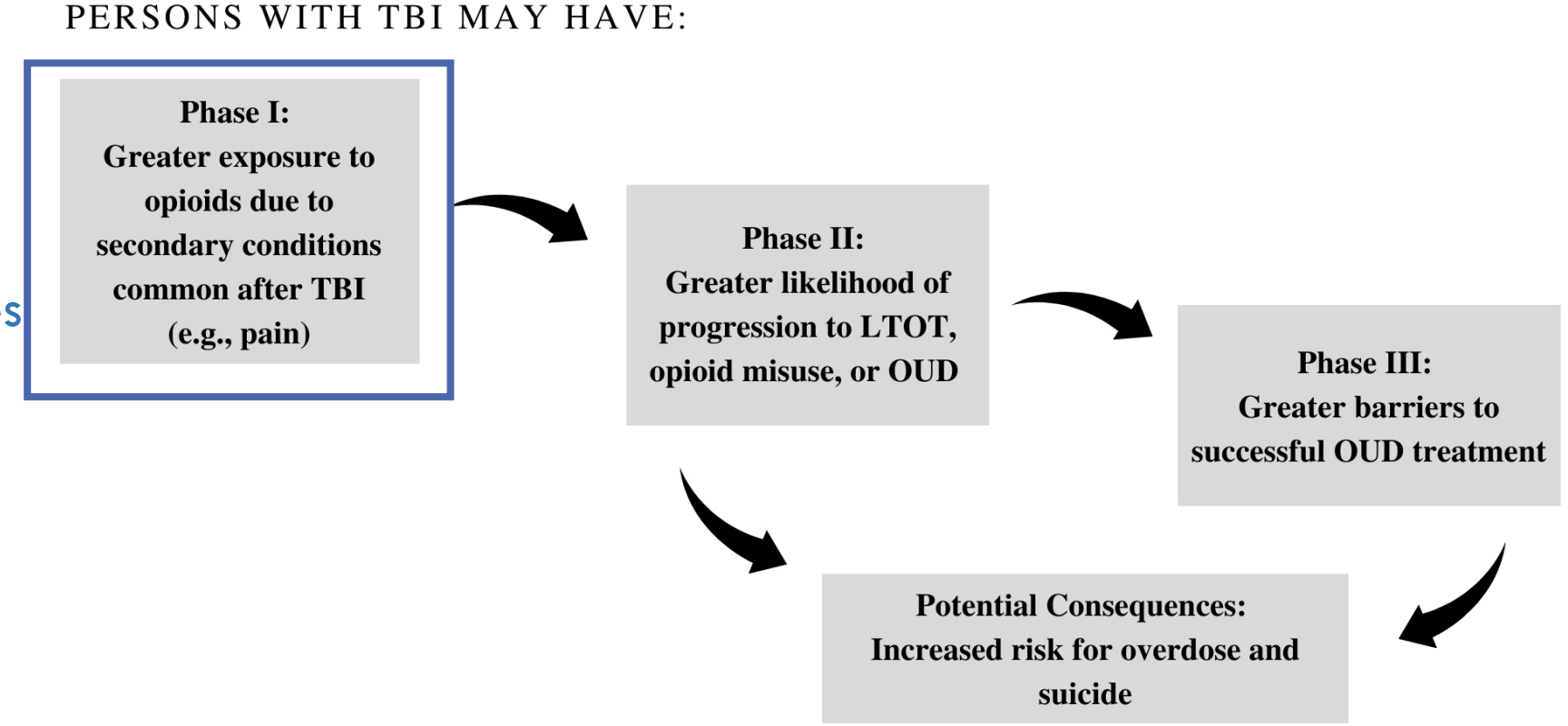
Preface

Traumatic Brain Injury and Opioid Use: Additional Evidence Supporting the "Perfect Storm" of Cascading Vulnerabilities

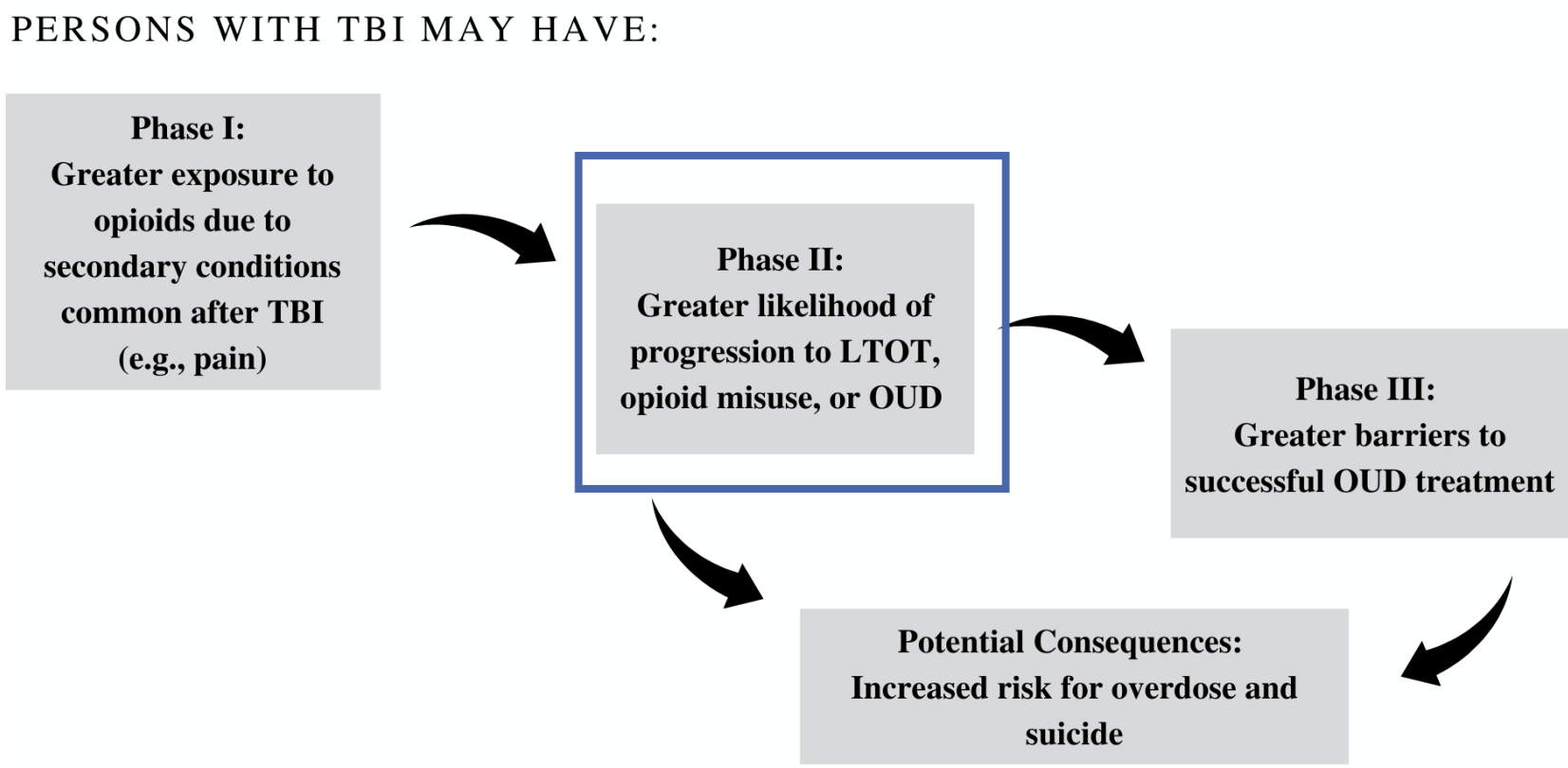
Rachel Sayko Adams, PhD, MPH

Cascading Vulnerabilities for Opioid Use & Consequences following Traumatic Brain Injury



Phase I: People with TBI have greater exposure to opioids due to secondary conditions common after TBI	
Evidence	
Acute and chronic pain are common following TBI, which can drive prescription opioid receipt	Nampiaparampil, 2008; Adams, Corrigan, Dams-O'Connor , 2019; Kumar et al., 2021; Starosta et al., 2021
Mental health conditions are also common following TBI, and increase risk for opioid receipt (with and without pain)	Adams et al., 2019; Howlett et al., 2022; Saadoun et al., 2021
➢ Studies have found that adults with TBI have 50% or higher odds of using prescription opioids than people without TBI	Kumar et al., 2021; Adams et al., 2021; Truitt et al., 2026; Adams et al., 2019

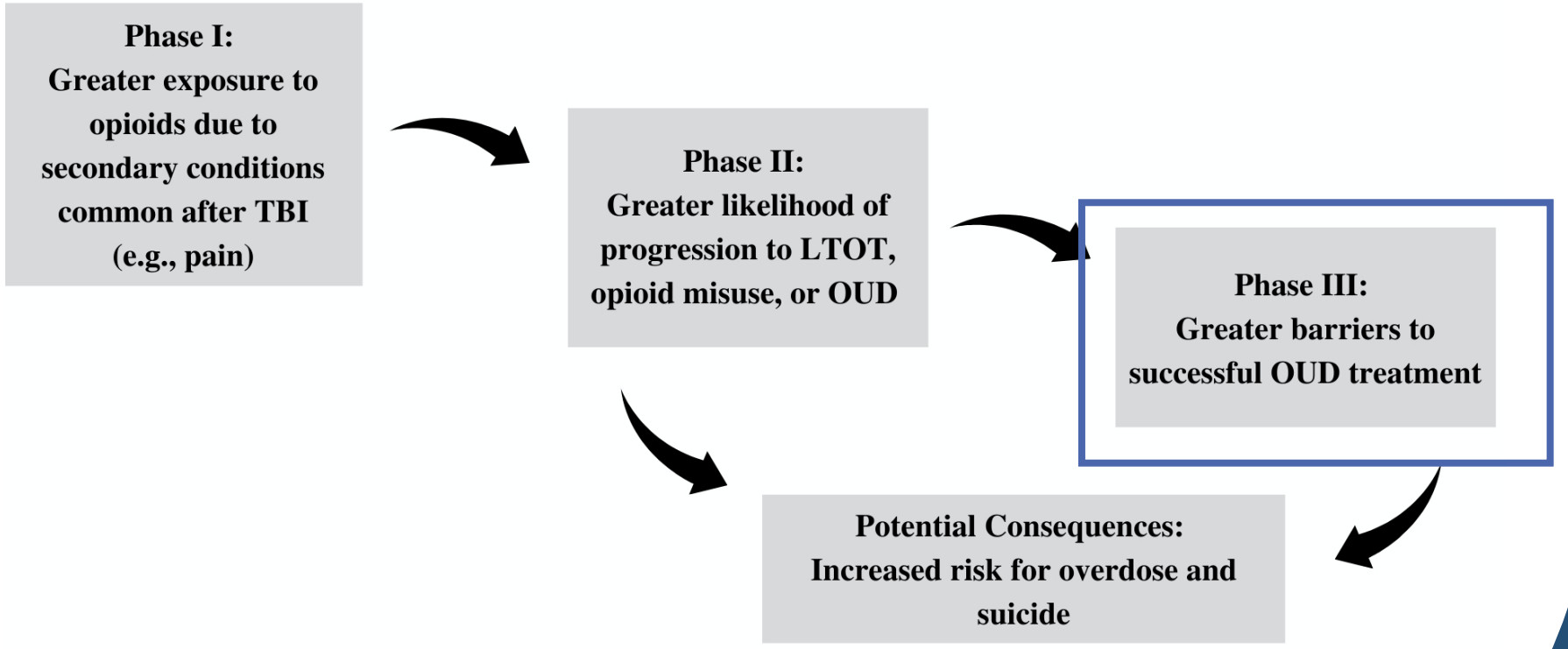
Cascading Vulnerabilities for Opioid Use & Consequences following Traumatic Brain Injury



Phase II: Given opioid exposure, people with TBI have a greater risk for advancing to long-term opioid therapy, opioid misuse, and OUD	
Neurobehavioral changes may contribute to risk for substance use problems: • memory problems, executive functioning limitations → medication mismanagement and poor adherence to prescribed dosing • prefrontal cortex damage → impulsivity → difficulty self-regulating substance use	Dams-O'Connor et al., 2018; Ashman et al., 2006; Adams et al., 2019
Evidence	
Military members with TBI were more likely to advance to LTOT than those without TBI	Adams et al., 2019
Adults (65%) and adolescents (50%) with a lifetime history of TBI are at increased risk for past year prescription opioid misuse	Adams et al., 2021; Tham et al., 2021
Veterans with a deployment-related TBI diagnosis in the VHA have higher rates of OUD compared to those without TBI	Fonda et al., 2025

Cascading Vulnerabilities for Opioid Use & Consequences following Traumatic Brain Injury

PERSONS WITH TBI MAY HAVE:



Phase III: People with a history of TBI have greater barriers to successful OUD treatment	
Evidence	
Among adults with OUD, those with a TBI were 23% less likely to receive evidence-based medications for OUD → **reduced access**	Thomas et al., 2023
Among adults with OUD who started medications for OUD, those with a TBI were less likely to be retained on these medications → **reduced retention and quality care**	Thomas et al., 2023; Morgan et al., 2024
➢ **These inequities in MOUD use and retention** cannot be explained clinically and may reflect limited access or bias in treatment approaches for patients with TBI	
People with disabilities and opioid misuse/OUD reported experiencing barriers to care and stigma when trying to access OUD treatment → **lack of accommodations and strategies**	Ledingham et al., 2022

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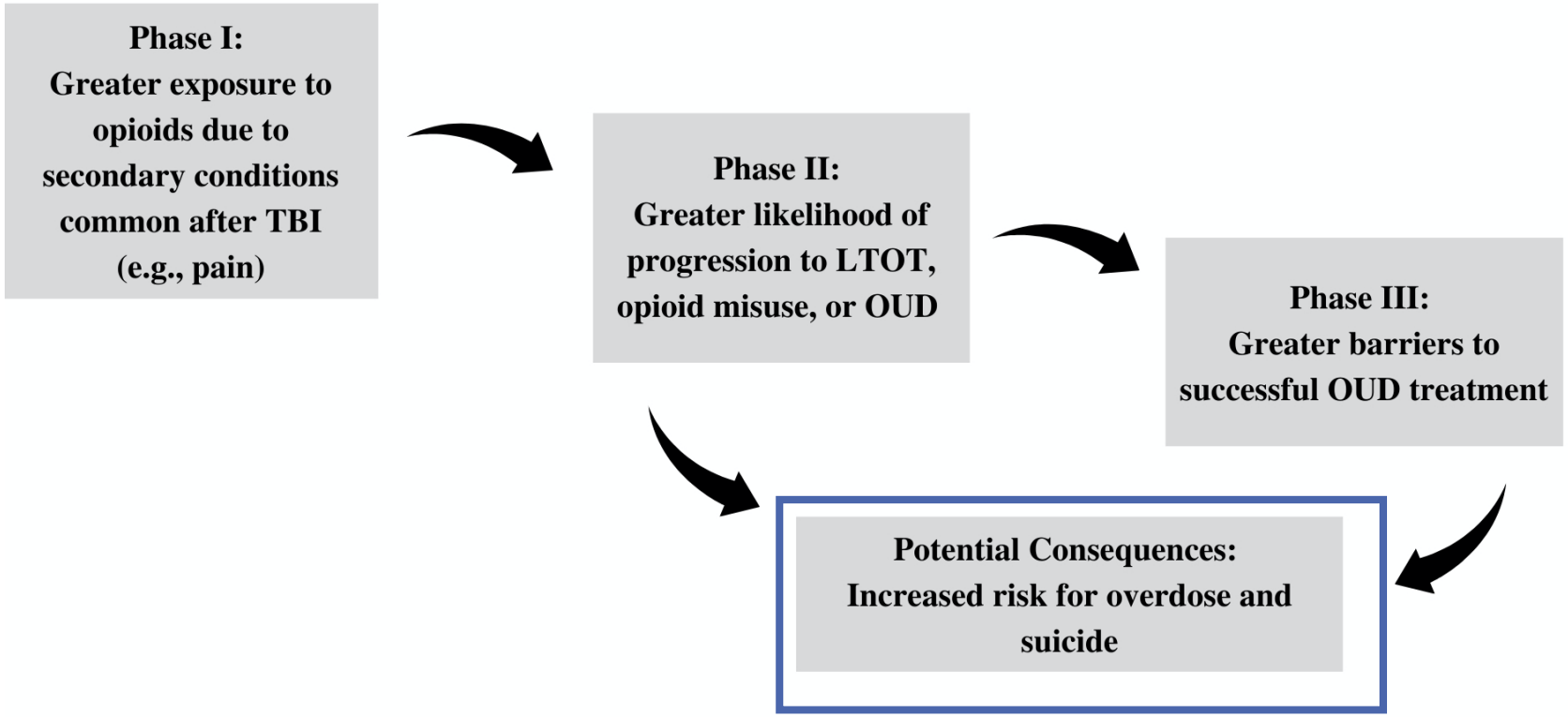
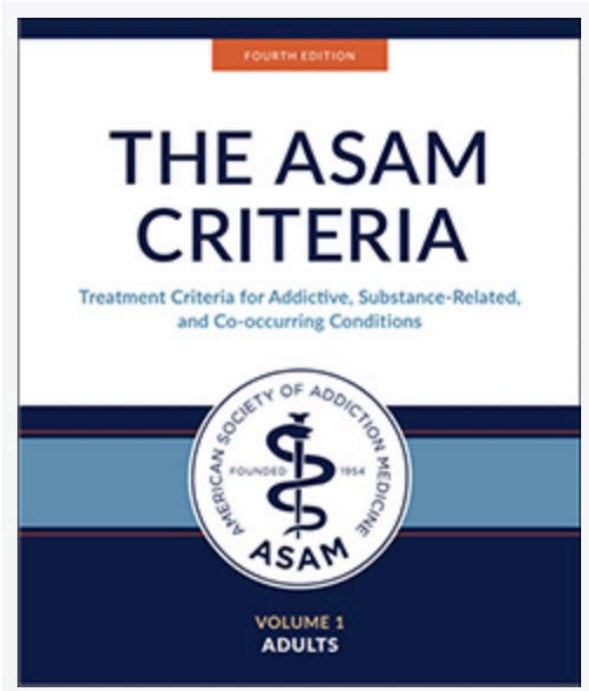
PERSONS WITH TBI MAY HAVE:

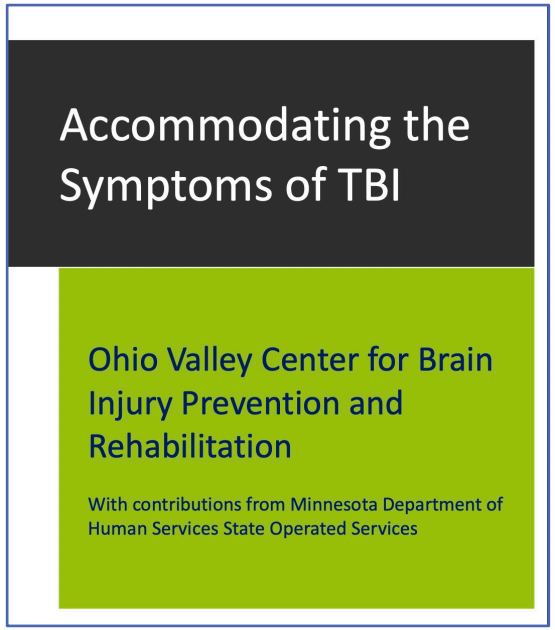


Consequences of being in either Phase II or Phase III	
Evidence	
People with TBI have increased risk for non-fatal and fatal overdose	Fonda et al., 2020; Hammond et al., 2020; Byers et al., 2019; Fonda et al., 2025
TBI increases risk for death by suicide	Hostetter et al., 2019; Madsen et al., 2018; Adams, Corrigan and Dams-O'Conner, 2020
Long-term opioid therapy and OUD following TBI may confer additional risk for death by suicide	Im et al., 2015; Brenner et al., 2023

Additional resources



Chapter 19 on addressing cognitive impairment in substance use treatment which proposes the concepts of neurologic-informed, neurologic-responsive care, and neurologic-specific care



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Addiction Science & Clinical Practice

CASE REPORT

Open Access

Grayken Lessons: a patient who developed opioid use disorder after traumatic brain injury

Gabriela Reed[1*], Hansel Lugo[2], Rachel Sayko Adams[3] and Alexander Y. Walley[4]

Takeaway Message & Recommendations

Takeaway Message. Opioid use is common following TBI and there is heightened risk for development of addiction and devastating consequences

Recommendations.

1. Substance use treatment providers should have a high clinical suspicion for TBI and screen for lifetime history of TBI
2. Substance use treatment providers should be trained to use strategies to address cognitive impairments and executive functioning limitations common following TBI
3. More research is needed to understand the unique experiences that people with both TBI and OUD have when they seek addiction treatment

Recovery from OUD is possible

- People do recover from OUD, and live successful lives - as they define it
- Recovery is a process of change through which individuals improve their health and wellness, live a self-directed life, and strive to reach their full potential (SAMHSA, 2024)
- Treatment engagement and recovery supports are essential to help individuals with TBI and addiction move towards recovery

Thank you!

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