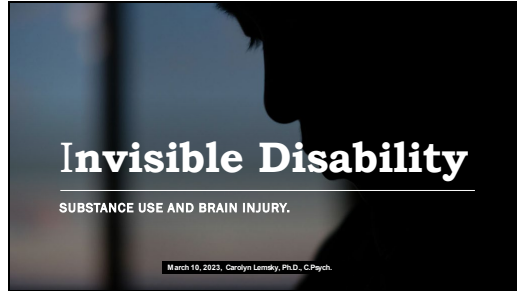
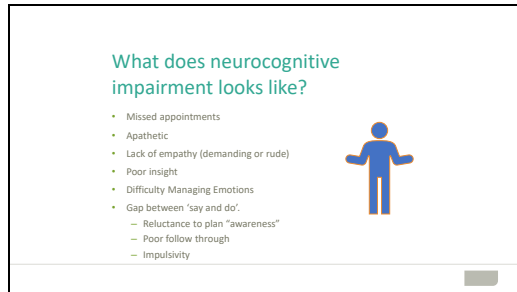


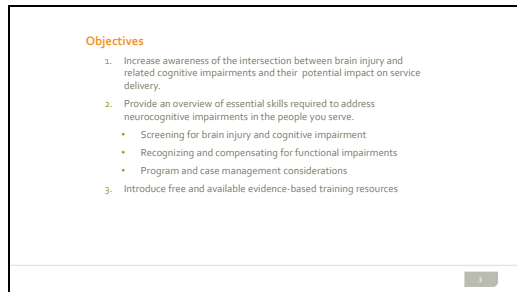
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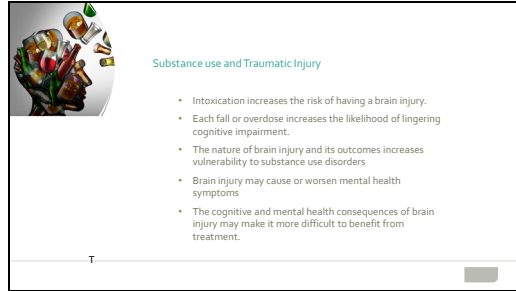
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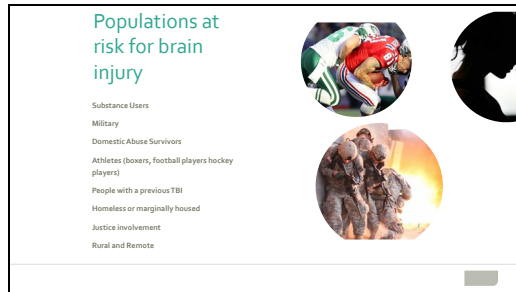
Slide 4



Substance use and Traumatic Injury

- Intoxication increases the risk of having a brain injury.
- Each fall or overdose increases the likelihood of lingering cognitive impairment.
- The nature of brain injury and its outcomes increases vulnerability to substance use disorders
- Brain injury may cause or worsen mental health symptoms
- The cognitive and mental health consequences of brain injury may make it more difficult to benefit from treatment.

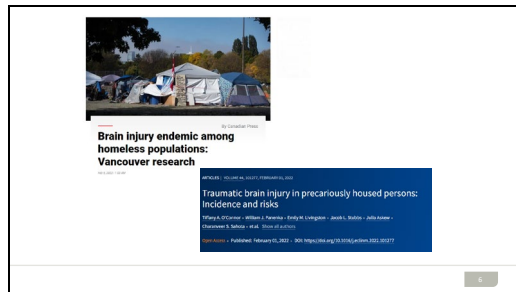
Slide 5



Populations at risk for brain injury

- Substance Users
- Military
- Domestic Abuse Survivors
- Athletes (boxers, football players hockey players)
- People with a previous TBI
- Homeless or marginally housed
- Justice involvement
- Rural and Remote

Slide 6



Brain injury endemic among homeless populations: Vancouver research

Traumatic brain injury in precariously housed persons: Incidence and risks

Journal of Clinical Neuroscience, Volume 18, Number 1, February 2005
Chatterjee & Mahajan, et al. • 100 • 10.1016/j.jocn.2004.11.017

Slide 7

Homelessness

- N=326, 100 participants had a total of 175 TBIs (61% more than one TBI)
- Annualized incidence rates of 20%, as compared to 1% in the general population (Nikoo, Daderman, Krauss, Hwang & Palepu, 2017).
- Opioid dependence and previous TBI were significant risk factors.
- 9.7% events were OD related
- 60.8% intoxication
- 18.3% LOC > 30 min.

7

Slide 8

Childhood Brain Injury

- Early insults alter the future development of the brain.
- Apparently mild injuries may have long-term impacts
- Longitudinal data point to elevated risks of:
 - Mental health issues
 - Substance use disorders
 - Legal involvement
 - Reduced educational attainment
 - Homelessness

Proliferation: Grey Matter

8

Slide 9

History of brain injury is a marker for symptom complexity

- up to 15% of people attending programs for co-occurring disorders have a history of brain injury with loss of consciousness (Brigg et al., 2011).
- History of brain injury is associated with more and more severe psychiatric symptoms.
- History of brain injury increases the risk of suicide three-fold.
- Strongly associated with other social determinants of health including housing, poverty, social isolation.

9

Slide 10

A history of TBI with LOC is common among the clients you serve

Non-institutionalized adults	1 in 5
People seeking treatment for SUD	2 - 3 in 5
Psychiatric inpatients	2 - 3 in 5
Co-occurring Disorders	3-4 in 5

Slide 11

Pattern of Injury

Brain regions vulnerable to TBI and relationship to neurobehavioral sequelae

The Finger print of TBI

Neuroanatomy of Reward

Slide 12

Pattern of Injury

Brain regions vulnerable to TBI and relationship to neurobehavioral sequelae

Brain regions vulnerable to TBI and relationship to neurobehavioral sequelae

Frontal/ventrolateral cortex: Executive functions, working memory, attention, planning, and organization

Orbitofrontal cortex: Social and emotional regulation, impulse control, and decision-making

Temporal pole cortex: Social and emotional regulation, impulse control, and decision-making

Amygdala: Emotional regulation and processing, fear, and anxiety

Entorhinal/hippocampal gyri: Memory and learning

Small of brain stem: Motor and sensory functions

(A) Brain regions vulnerable to damage in a typical traumatic brain injury (TBI). (B) Relationship of vulnerable brain regions to common neurobehavioral sequelae associated with TBI. (A) Adapted from ref. 112. (B) Adapted from ref. 112. (C) Structural imaging by Silver J, Malhotra S, Yushkevich P, eds. Textbook of Traumatic Brain Injury. Washington DC: American Psychiatric Press, 2008. © Copyright © American Psychiatric Press, 2008. (D) Adapted from ref. 111. (E) Adapted from: Beaudry JF. Neuroimaging in Introductory Approach. Cambridge, UK: Cambridge University Press, 2015. © Copyright © Cambridge University Press, 2015.

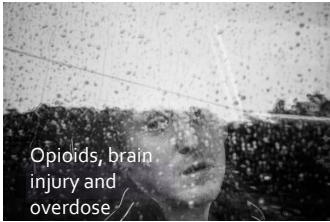
Slide 13

SUBSTANCE	NEUROLOGICAL EFFECTS	COGNITIVE EFFECTS
ALCOHOL**	Alcohol is an odoriferous psychoactive that impairs judgment and coordination. It is a central nervous system depressant. It causes relaxation, drowsiness, and loss of inhibitions. It is a neurotoxin and can cause brain damage. It causes liver damage and can lead to cirrhosis. It causes heart disease and can lead to stroke. It causes kidney disease and can lead to kidney failure. It causes pancreatitis and can lead to pancreas failure. It causes osteoporosis and can lead to bone density loss. It causes cancer and can lead to various types of tumors. It causes reproductive problems and can lead to infertility.	Memory Loss and Poor Memory • Slower reaction times
CANNABIS**	It is a psychoactive drug that is derived from the cannabis plant. It causes relaxation, euphoria, and loss of inhibitions. It causes increased heart rate and can lead to heart problems. It causes dry mouth and can lead to dehydration. It causes increased appetite and can lead to weight gain. It causes impaired judgment and can lead to accidents. It causes impaired memory and can lead to memory loss. It causes impaired coordination and can lead to falls and injuries. It causes impaired concentration and can lead to decreased productivity. It causes impaired decision-making and can lead to poor choices. It causes impaired learning and can lead to decreased educational attainment.	Memory Decline and Learning • Impaired attention
METAMPHETAMINE**	It is a powerful stimulant that increases the release of dopamine and norepinephrine. It causes increased energy, alertness, and focus. It causes decreased appetite and can lead to weight loss. It causes increased heart rate and can lead to heart problems. It causes increased blood pressure and can lead to hypertension. It causes increased body temperature and can lead to heatstroke. It causes decreased sleep and can lead to fatigue. It causes impaired judgment and can lead to accidents. It causes impaired memory and can lead to memory loss. It causes impaired coordination and can lead to falls and injuries. It causes impaired concentration and can lead to decreased productivity. It causes impaired decision-making and can lead to poor choices.	Memory Decline and Learning • Impaired attention • Impaired learning • Impaired decision-making
COCAINE**	It is a powerful stimulant that increases the release of dopamine and norepinephrine. It causes increased energy, alertness, and focus. It causes decreased appetite and can lead to weight loss. It causes increased heart rate and can lead to heart problems. It causes increased blood pressure and can lead to hypertension. It causes increased body temperature and can lead to heatstroke. It causes decreased sleep and can lead to fatigue. It causes impaired judgment and can lead to accidents. It causes impaired memory and can lead to memory loss. It causes impaired coordination and can lead to falls and injuries. It causes impaired concentration and can lead to decreased productivity. It causes impaired decision-making and can lead to poor choices.	Memory Decline and Learning • Impaired attention • Impaired learning • Impaired decision-making
OPIODS**	It is a class of drugs that bind to and activate opioid receptors in the brain and body. It causes relaxation, pain relief, and euphoria. It causes decreased respiratory rate and can lead to respiratory failure. It causes decreased heart rate and can lead to heart problems. It causes decreased blood pressure and can lead to hypotension. It causes decreased body temperature and can lead to hypothermia. It causes decreased alertness and can lead to accidents. It causes impaired memory and can lead to memory loss. It causes impaired coordination and can lead to falls and injuries. It causes impaired concentration and can lead to decreased productivity. It causes impaired decision-making and can lead to poor choices.	Memory Decline and Learning • Impaired attention • Impaired learning • Impaired decision-making

Cognitive Impact of Substance Use

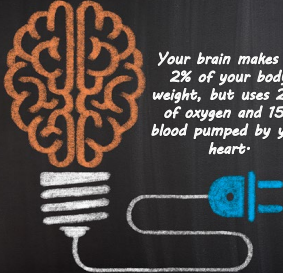
The amount/period of time of use is related to severity of impairments
Use during development can have increased effects.

Slide 14



Opioids, brain injury and overdose

Slide 15



Your brain makes up 2% of your body weight, but uses 20% of oxygen and 15% blood pumped by your heart.

Slide 16

Impact of Damage to pre-frontal cortex and reward system

Effects of hypoxia and opioid use

- Opioid use limits the growth of connections in the hippocampus.
- Changes how pleasure and reward are perceived.
- Damage to frontal lobes where information about emotion is processed and planning and problem-solving take place.

Neuroanatomy of Reward

The diagram illustrates the neuroanatomy of the reward system. It shows a cross-section of the brain with several key areas highlighted. The prefrontal cortex is shown in blue, the nucleus accumbens in red, and the hippocampus in green. The diagram also shows the connections between these areas, including the dopamine pathway. The text below the diagram lists the functions of these areas: Prefrontal cortex (Executive functions, Planning, Working memory, Decision-making, Problem-solving, Attention), Nucleus accumbens (Pleasure, Reward, Motivation, Learning, Habit formation), and Hippocampus (Memory, Learning, Spatial navigation, Emotion, Stress response).

Slide 17

Impact of respiratory suppression

Hypoxia: Reduction in oxygen available to the brain.

- Temporary memory loss
- Reduced coordination
- Inattentiveness
- Poor judgement

Anoxia: Complete lack of oxygen to the brain.

- Coma
- Seizure
- Brain death

Slide 18

Many factors may contribute to cognitive impairment in people who use opioids

The screenshot shows the title page of a research paper. The title is "Neurocognitive impairments and brain abnormalities resulting from opioid-related overdose: A systematic review". The authors are listed as "Baker, A., Hester, C., Jones, J., Johnson, B., Jones, G., Jones, H., Jones, I., Jones, J., Jones, K., Jones, L., Jones, M., Jones, N., Jones, O., Jones, P., Jones, Q., Jones, R., Jones, S., Jones, T., Jones, U., Jones, V., Jones, W., Jones, X, Jones, Y, Jones, Z". The paper is published in "Journal of Clinical Pharmacy and Therapeutics".

- Neurotoxic impact of opioids and other drugs on memory and executive functioning.
- Cognitive impact of chronic/infectious disease including HIV, Hepatitis.
- Risk of traumatic brain injury
- Possible additive effects of multiple overdoses

Slide 19

Effects of brain injury and substance use

- Cognitive Changes
 - Attention
 - Memory
 - Problem-solving/planning communication
 - Poor social cognition (reading and responding to emotion, social cues and behaviours)
- Changes in self-regulation
 - A reward system that is tilted toward immediate reward (discounting the value of delay)
 - Less active 'executive functioning': Behavior is guided by "habit" or compulsion.
 - Less self-reflection

Click Insert > Header & Footer > to change footer text globally

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Slide 20

Cognitive Impairment in Addictions Services

- 20 to 70% screen positive for cognitive impairment
 - Higher in programs serving more complex clients
 - 20-50% in programs serving people with alcohol use disorders

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Slide 21

What will help?








- Screening for TBI history (including OI)
- Functional Assessment (Cognitive and ADL)
- Accommodations
- Intervention/Referral

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Slide 22

Recommendations for service providers

-  Routine Screening for brain injury and other sources of neurocognitive impairment
-  Learning to recognize when behaviors are the result of neurological challenges
-  Making programs more accommodating
-  Viewing complexity as a rule and develop programming accordingly
-  Care plans that include long-term supports

Slide 23

Brief Screening Questions – Brain Injury

OSU TBI-ID Quick Screen

Please think about injuries you have had during your entire lifetime, especially those that affected your head or neck. It might help to remember from your visit to the hospital or emergency room. Think about injuries you may have received from a car or motorcycle accident, bicycle crash, being hit by something, falling, being hit by someone, playing sports, or during military service.

a. Thinking about any injuries you have had in your lifetime, were you ever knocked out, or did you lose consciousness?
 _____ Yes
 _____ No (If NO, STOP HERE)

b. What was the longest time you were knocked out or unconscious? If longer just one, if you are not sure, please make your best guess.
 _____ Knocked out or lost consciousness for less than 10 min
 _____ Knocked out or lost consciousness between 10 min and 24 hours
 _____ Knocked out or lost consciousness for 24 hours or longer

c. How old were you the first time you were knocked out or lost consciousness?
 _____ years old

Slide 24

Ohio State University TBI Identification Method - Interview Form

Step 1

1. Respondent was present for the interview.

2. Respondent was able to provide a verbal response.

3. Respondent was able to read and understand the form.

4. Respondent was able to provide a written response.

5. Respondent was able to provide a signature.

6. Respondent was able to provide a date.

Step 2

1. Respondent was able to provide a verbal response.

2. Respondent was able to provide a written response.

3. Respondent was able to provide a signature.

4. Respondent was able to provide a date.

Step 3

1. Respondent was able to provide a verbal response.

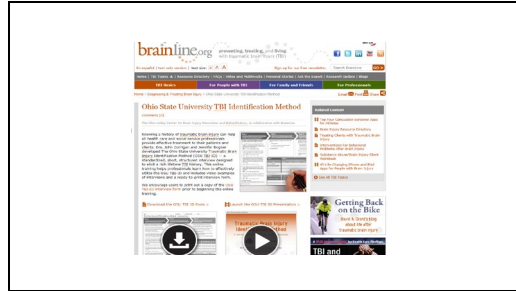
2. Respondent was able to provide a written response.

3. Respondent was able to provide a signature.

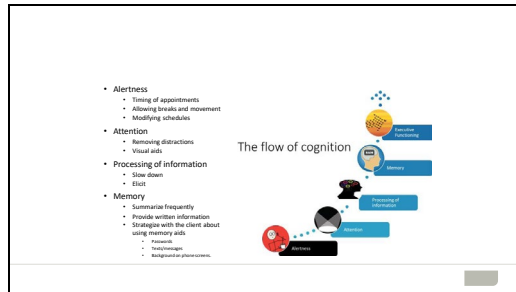
4. Respondent was able to provide a date.

Step 1	Step 2	Step 3	Response	Date
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Slide 25

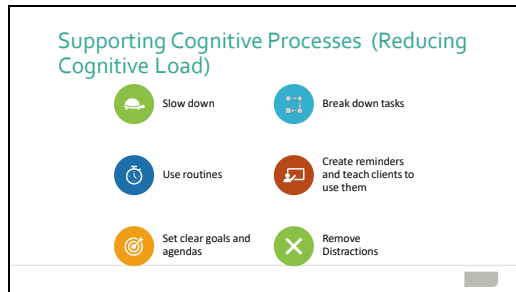


Slide 26



- **Alertness**
 - Timing of appointments
 - Allowing breaks and movement
 - Modifying schedules
- **Attention**
 - Minimizing distractions
 - Visual aids
- **Processing of information**
 - Slow down
 - Elicit
- **Memory**
 - Summarize frequently
 - Provide written information
 - Strategize with the client about using memory aids
 - Posters
 - Reminders
 - Background on phone calls

Slide 27



Slide 28

The three brains

Reptilian Brain - Present

What should I do based on what is happening **right now**?

Limbic System - Past

What should I do based on what is happening **right now** and on what happened in the **past**?

Neocortex - Future

What should I do based on what is happening **right now**, what happened in the **past** and what I want in the **future**?

Module 1 Alcohol and Drug Cognitive Enhancement (ACE) Program 28

Slide 29

The Executive team

- Self-reflector - Task monitoring, self awareness
- Inhibitor - Stop and Think
- Visualiser - Considering time Horizons
- Self-talker - Self Coaching
- Emotion regulator - Monitoring, thinking, responding
- Player - Problem-solving and Planning

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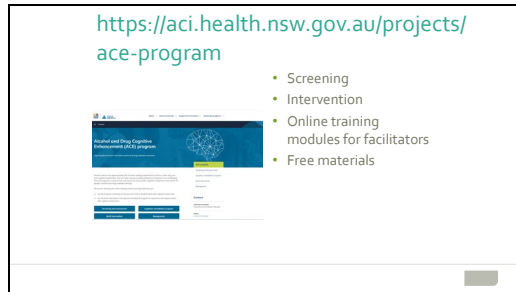
Slide 30

Community Head Injury Resource Services of Toronto

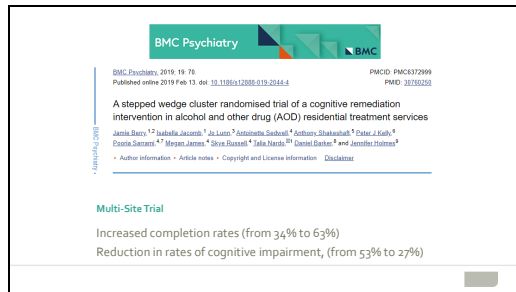
Slide 31



Slide 32



Slide 33



Slide 34

<https://attnetwork.org/centers/mid-america-attnet/traumatic-brain-injury-sud-series>

- Brain Basics
- Brain Injury and Outcomes
- Screening for Brain Injury
- Screening for Functional Impairments
- Recognizing and Accommodating Cognitive Impairments
- Recommendations for Service Delivery
- Resources

Slide 35

Patterns of Injury

The Fingerprints of TBIs

The pattern of the underlying brain and spinal cord injury is unique to each individual. This is why a person's brain injury is often described as their "fingerprint." The brain is a complex organ, and the way it is injured can vary significantly. This is why it is important to understand the unique patterns of brain injury for each individual.

Brain Injuries and Overdose

Brain injuries and overdose are often linked. The use of substances, particularly opioids, can lead to brain injuries. This is because these substances can cause the brain to become oxygen-starved, leading to damage. Understanding the link between brain injuries and overdose is crucial for providing effective care.

Slide 36

Toxic Effects of Substance Use

Substance	Neurological Effects	Cognitive Effects
Alcohol	Impaired judgment, coordination, and reaction time.	Memory impairment, slowed thinking, and poor decision-making.
Drugs	Altered perception, mood, and behavior.	Attention deficits, memory loss, and executive dysfunction.
Prescription Medications	Sedation, drowsiness, and impaired coordination.	Confusion, slowed processing, and memory issues.
Overdose	Respiratory depression, loss of consciousness, and potential death.	Severe cognitive impairment and long-term brain damage.


Other sources of cognitive difficulties

History of Substance Use
Overdose



Slide 37

Screening

- When
- Stigma
- Trauma-informed Care
- Methods
- Interpretation



Slide 38



Country	Prevalence	Source
USA	7.8%	DSM-5
UK	6.7%	DSM-5
Canada	6.7%	DSM-5
Australia	6.7%	DSM-5
France	6.7%	DSM-5
Germany	6.7%	DSM-5
Italy	6.7%	DSM-5
Japan	6.7%	DSM-5
South Korea	6.7%	DSM-5
Spain	6.7%	DSM-5
Sweden	6.7%	DSM-5
Switzerland	6.7%	DSM-5
Taiwan	6.7%	DSM-5
Thailand	6.7%	DSM-5
USA (Military)	15.9%	DSM-5

Slide 39

Self Awareness

- Self-Awareness Defined
- Assessment of Self-Awareness
- Impact on Programming



Slide 40

Addressing the Gap between "Say" and "Do" with Environmental Supports

As clients with a range of cognitive and behavioral challenges, they may struggle to understand and act on verbal instructions. Environmental supports can help bridge this gap by providing visual cues and prompts that are consistent and predictable. These supports can be used to help clients understand and follow directions, manage their behavior, and complete tasks. Environmental supports can be used in a variety of settings, including the home, school, and community. They can be used to help clients understand and follow directions, manage their behavior, and complete tasks. Environmental supports can be used in a variety of settings, including the home, school, and community. They can be used to help clients understand and follow directions, manage their behavior, and complete tasks.

Area	Goal of Intervention	Concrete Ideas to Use
Attention	Help clients stay focused on the task at hand.	Use visual cues (e.g., arrows, checkmarks) to draw attention to the task. Use verbal prompts to remind clients of the task. Use physical prompts (e.g., hand over the task) to guide clients through the task.
Memory	Help clients remember instructions and directions.	Use visual cues (e.g., arrows, checkmarks) to draw attention to the task. Use verbal prompts to remind clients of the task. Use physical prompts (e.g., hand over the task) to guide clients through the task.
Organization	Help clients organize their thoughts and actions.	Use visual cues (e.g., arrows, checkmarks) to draw attention to the task. Use verbal prompts to remind clients of the task. Use physical prompts (e.g., hand over the task) to guide clients through the task.
Behavior	Help clients manage their behavior and complete tasks.	Use visual cues (e.g., arrows, checkmarks) to draw attention to the task. Use verbal prompts to remind clients of the task. Use physical prompts (e.g., hand over the task) to guide clients through the task.

Slide 41

Clients are likely to need some support in...

Key Considerations in Designing Environmental Supports

- Supports should be designed to be consistent and predictable.
- Supports should be designed to be clear and easy to understand.
- Supports should be designed to be motivating and encouraging.
- Supports should be designed to be flexible and adaptable.
- Supports should be designed to be safe and secure.
- Supports should be designed to be respectful and dignifying.

Slide 42

Recommendations for Service Delivery

- Outreach groups
- Intake
- Community Linkages
- Motivational Interviewing
- Community Reinforcement and Family Approach (CRAFT)
- Specialized Referrals

Adaptation for Outreach Services

Outreach services are designed to provide support and assistance to clients in their own homes and communities. This approach is often used for clients who have difficulty attending to services in a traditional setting. Outreach services can be used to help clients understand and follow directions, manage their behavior, and complete tasks. Outreach services can be used in a variety of settings, including the home, school, and community. They can be used to help clients understand and follow directions, manage their behavior, and complete tasks.

Adaptation for Intake Services

Intake services are designed to help clients understand and follow directions, manage their behavior, and complete tasks. Intake services can be used to help clients understand and follow directions, manage their behavior, and complete tasks. Intake services can be used in a variety of settings, including the home, school, and community. They can be used to help clients understand and follow directions, manage their behavior, and complete tasks.

Slide 43

Putting it All Together (worked example)

Using the ABCs and the client health and history to inform the development of the treatment planning process, the nurse practitioner (NP) and the client work together to develop a personalized and individualized client plan.

Component	Assessment	Client's History	Client's Goals	Client's Values	Client's Preferences	Client's Needs	Client's Resources	Client's Strengths	Client's Challenges
Assessment	Review the client's medical history, including any previous hospitalizations, surgeries, and medications.	Obtain a comprehensive history of the client's current health status, including symptoms, duration, and impact on daily life.	Identify the client's short-term and long-term goals for managing their condition.	Understand the client's cultural beliefs, values, and preferences regarding treatment.	Identify the client's preferences for the type of care and support they receive.	Assess the client's current functional status and any limitations.	Identify the client's social support system, including family and friends.	Recognize the client's strengths, such as their ability to learn and adapt.	Identify the client's challenges, such as limited resources or lack of knowledge.

Client Plan

Client's Goals

- Reduce the frequency of hospitalizations by 50% within 6 months.
- Improve the client's quality of life by 20% within 3 months.
- Increase the client's knowledge of their condition and management options by 80% within 2 months.
- Establish a strong support system for the client within 4 months.

Client's Values

- Minimize the use of medication and surgery.
- Focus on natural and holistic approaches to health.
- Value the client's autonomy and involvement in decision-making.
- Respect the client's cultural beliefs and preferences.

Client's Preferences

- Prefer to receive care in a home setting.
- Prefer to work with a female healthcare provider.
- Prefer to receive care in a language that is comfortable for them.

Client's Needs

- Need for education about the condition and management options.
- Need for emotional support and coping strategies.
- Need for a strong support system.
- Need for resources and referrals to appropriate services.

Client's Strengths

- Strong motivation to manage their condition.
- Ability to learn and adapt to new information.
- Strong family support system.

Client's Challenges

- Limited financial resources.
- Lack of knowledge about the condition and management options.
- Limited social support system.

Care planning

- Encouraging specific goals related to managing ABI symptoms.

Slide 44

Introducing SUBI workbook 2.0

CLIENT WORKBOOK
Substance Use and Brain Injury
Second Edition


- Introduction
- How to Use This Workbook
- Client Information and Background Information
- Substance Use and Brain Injury: What You Need to Know
- Treatment Options
- Support and Recovery
- Relapse Prevention
- Relapse Response Plan
- Additional Resources
- Appendix

Slide 45

- Mi adapted approach
- Inclusive Language
- Brief readings to encourage discussion and reflection

Slide 46

- MI adapted approach
 - Goals
 - Information
 - Tips
 - Check-in
 - Plan



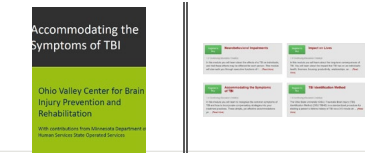
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Slide 47

www.ohiovalley.org

Accommodating the symptoms of TBI

Ohio Valley Center for Brain Injury Prevention and Rehabilitation



What is a Concussion?

What is a Stroke?

Slide 48

CRA/CRAFT

ARCR | ALCOHOL RESEARCH
COMMUNITY REINFORCEMENT

The Community Reinforcement Approach
An Update of the Evidence

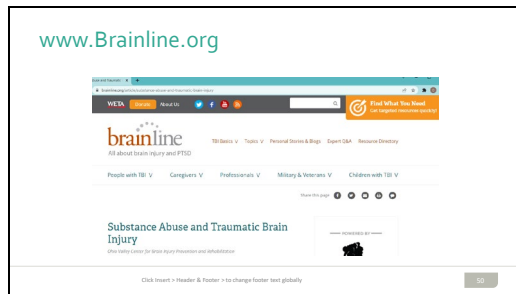
Building a life that is more reinforcing than using

"Multiple research reviews and meta-analyses of the treatment outcome literature have shown CRA to be among the most strongly supported treatments by the field." (Gutierrez, 2017)
GUTIERREZ, JAVIER, 2017. CRA/CRAFT. ARCR.

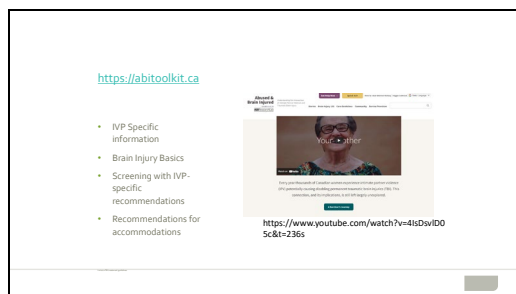
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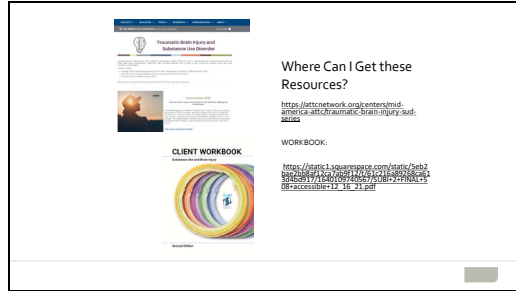
Slide 50



Slide 51



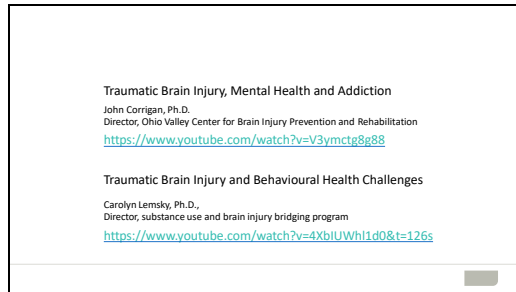
Slide 52



The slide contains the following text and images:

- Top left: Logo for "Traumatic Brain Injury and Addiction Help Center" with the URL www.tbihc.org.
- Top right: Title "Where Can I Get these Resources?" followed by the URL <https://attnetwork.org/centers/mid-america-2012/traumatic-brain-injury-add-2015>.
- Middle left: "CLIENT WORKBOOK" with a colorful circular graphic and the URL <https://attnetwork.org/centers/mid-america-2012/traumatic-brain-injury-add-2015>.
- Middle right: "WORKBOOK" with the URL <https://attnetwork.org/centers/mid-america-2012/traumatic-brain-injury-add-2015>.

Slide 53



The slide contains the following text:

- Section: "Traumatic Brain Injury, Mental Health and Addiction"
- Name: "John Corrigan, Ph.D."
- Title: "Director, Ohio Valley Center for Brain Injury Prevention and Rehabilitation"
- Link: <https://www.youtube.com/watch?v=V3ymctg8g88>
- Section: "Traumatic Brain Injury and Behavioural Health Challenges"
- Name: "Carolyn Lemsky, Ph.D."
- Title: "Director, substance use and brain injury bridging program"
- Link: <https://www.youtube.com/watch?v=4XbiUWhl1d0&t=126s>
