Neurologic Informed Care

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No Financial Conflicts of Interest

I receive funding from:

- National Institute on Disability Independent Living and Rehabilitation Research (NIDILRR)
- Administration on Community Living (ACL)
- National Institutes of Health (NIH)

With Jennifer Bogner, PhD, I created the Ohio State University TBI Identification Method.

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Objectives

At the completion of the training participants will be able to…

1. describe Neurologic Informed Care;
2. delineate types and causes of Neurocognitive Disorders;
3. recount why brain injury is so common among vulnerable populations.

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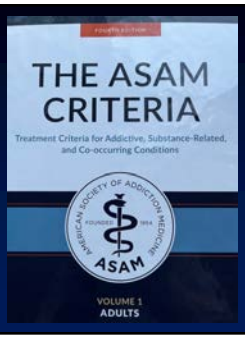
4th Edition ASAM Criteria

Chapter 19

Cognitive Impairment

"…cognitive impairment exacerbates barriers to care, complicates clinical management, and further limits treatment outcomes" (p. 457)



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Neurologic Informed Care

- "Neurologic informed care" results from a staff trained to recognize cognitive impairment and adapt care and servcies to accommodate those impairments.
- Addresses pronounced cognitive weaknesses as well as subtle weaknesses that may be misinterpreted by professionals.
- Neurologic informed care is not a specific treatment modality—it is knowledge and skills that are applied to whatever treatment modalities a professional employs.

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Neurologic Informed Care (continued)

- *Neurologic-responsive care* makes neurologic-based awareness, education and training a part of the fabric of a program or agency.
- *Neurologic-specific care* refers to the on-going process of using neurologic-based knowledge to improve the care and outcomes of each individual with cognitive impairment.

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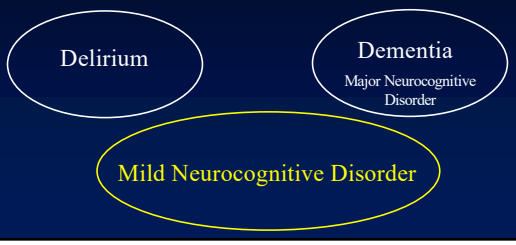
Types of Cognitive Impairment ICD-10



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Neurocognitive Disorders (NCD) in ICD-10

- The NCDs are conditions in which impaired cognition is present and is not the result of an intellectual or developmental disability.
- Major NCD will limit independence but Mild NCD allows independence despite effects on function
- Variety of causes
- Despite "major" and "mild" categories, cognitive impairment actually exists on a continuum
- Cognitive impairment shows in several domains of cognition

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Cognitive Domain	Major Neurocognitive Disorder	Mild Neurocognitive Disorder
Complex attention	Very limiting, cannot manage multiple stimuli	Less efficient but still functional, more tiring to manage effectively
Executive abilities	Abandons complex activities	Requires more effort, difficulty multi-tasking
Learning/memory	Limited episodic recall, poor antecedent memory, very limited new learning	Losses details of remote events, forgetful, new learning requires greater effort
Language	Anomia, paraphasias	Some difficulty naming and word finding
Perceptual-motor	Cannot navigate between places	Requires greater effort, repetition or visual cues (e.g., a map)
Social cognition	Unaware of social surroundings	Less sensitivity to social cues, reduced empathy

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Cognitive Domain	Mild Neurocognitive Disorder
Complex attention	Less efficient but still functional, more tiring to manage effectively
Executive abilities	Requires more effort, difficulty multi-tasking
Learning/memory	Losses details of remote events, forgetful, new learning requires greater effort
Language	Some difficulty naming and word finding
Perceptual-motor	Requires greater effort, repetition or visual cues (e.g., a map)
Social cognition	Less sensitivity to social cues, reduced empathy

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Have you ever heard it said…

"He pays attention to what he wants to pay attention to!"	Limited complex attention?
"She's in her own little world."	Poor auditory processing?
"He just wants all the attention."	Hyper-verbose with low sensitivity to social cues?
"She's just lazy."	Easily fatigues from cognitive tasks?

Can't versus Won't?

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What Causes Cognitive Impairment?

- Reversible causes
  - illness, metabolic disorders, infection, medications, intoxication, sleep deprivation, transient acquired brain injuries
- Persistent causes
  - intellectual and developmental disabilities
  - neurodegenerative diseases (i.e., dementias)
  - acquired brain injuries

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Acquired Brain Injury (ABI) vs Traumatic Brain Injury (TBI)

ABI

An injury to the brain that is not hereditary, congenital, induced by birth trauma or degenerative:

- Strokes/cva
- Infectious diseases
- Tumors
- Anoxia & hypoxia
- Traumatic brain injury

TBI

Disruption of brain function caused by an external force acting on the brain:

- Effects can be temporary or permanent
- A concussion is a TBI
- Vary greatly in severity

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Poll Question*

TBI is...

A. A life altering injury for survivors and their families, profoundly impacting the patient's functional status.

B. A very common injury that is essentially inconsequential to the individual's functional status following recovery.

C. Both A and B and everywhere in between.

*Thanks D. Arciniegas & H. Wortzel for this slide

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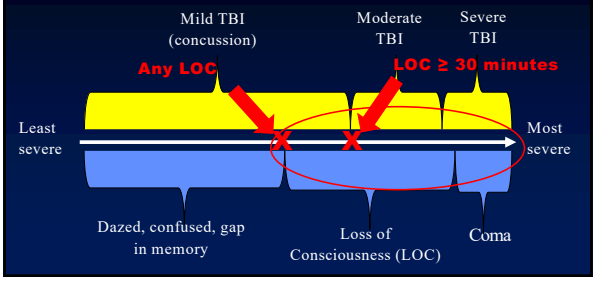
Continuum of TBI Severity



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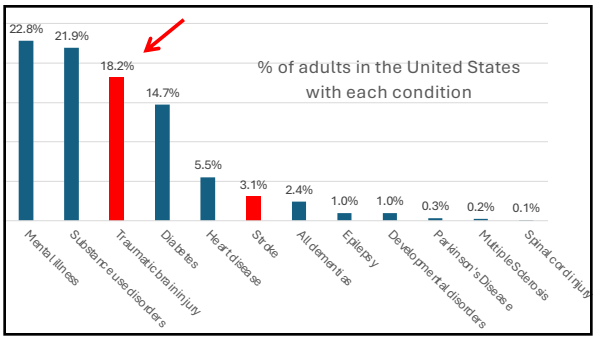

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Lifetime Prevalence of TBI in Select Populations

Lifetime History of TBI:	Any TBI	TBI with LOC	Mod/Sev TBI
General population of adults (*2-state; **3-state average)	33%*	22%**	5%**
SUD treatment (*Corrigan & Bogner; **Felde et al.)	65%*	40%**	17%*
Psychiatric inpatients (Burg et al.)	66%	43%	19%
Prisoners (*Shiroma et al; **Bogner & Corrigan)	60%*	50%*	14%**
Unhoused (*Stubbs et al.; **Bremner et al., Solliday-McRoy et al.)	53%*	47%**	25%*

LOC = loss of consciousness; Mod/Sev = moderate or severe

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Why is TBI so common among vulnerable populations?

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The "Fingerprint" of TBI

Frontal areas of the brain, including the frontal lobes, are the most likely to be injured as a result of TBI, regardless the point of impact to the head

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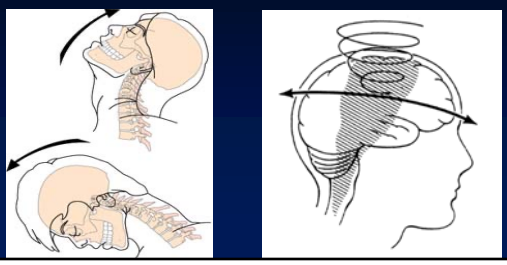
The brain is set into motion along multiple axial planes



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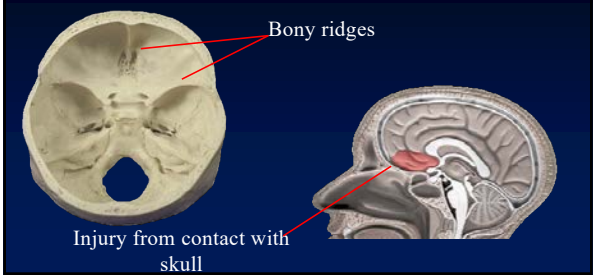
Interior Skull Surface



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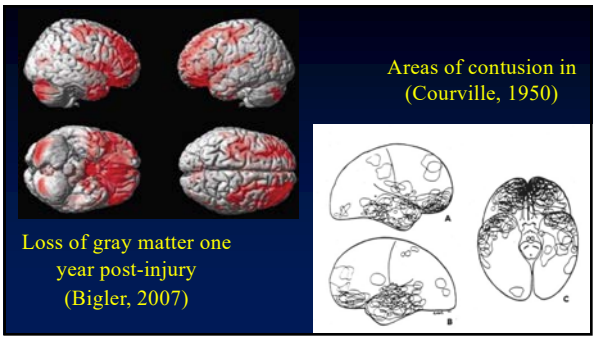
Areas of contusion in
(Courville, 1950)
Loss of gray matter one
year post-injury
(Bigler, 2007)

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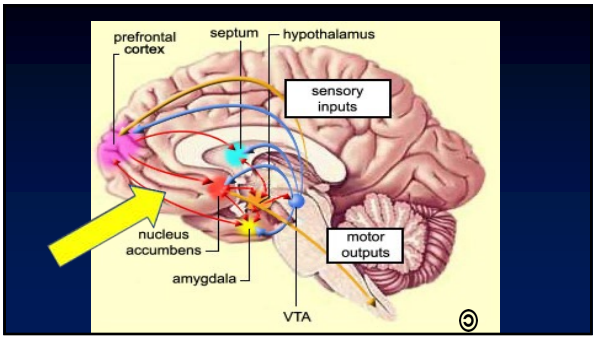
prefrontal
cortex
septum
hypothalamus
sensory
inputs
nucleus
accumbens
amygdala
motor
outputs
VTA

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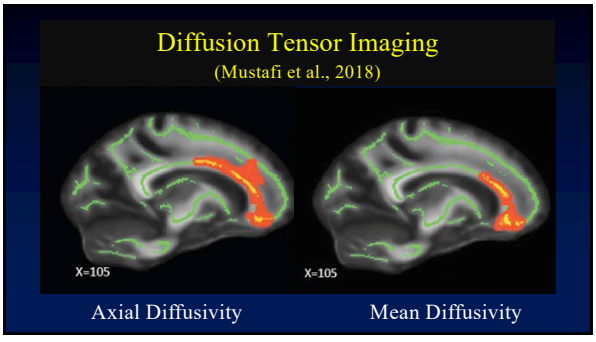
Diffusion Tensor Imaging
(Mustafi et al., 2018)
X=105
X=105
Axial Diffusivity
Mean Diffusivity

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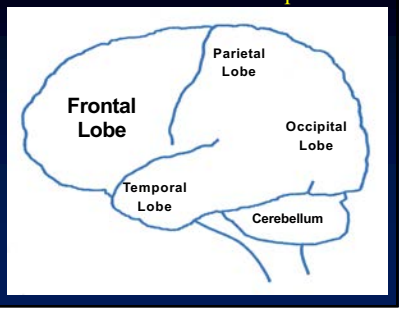
Simplified Brain Behavior Relationships

Frontal Lobes

- Initiation
- Problem solving
- Judgment
- Inhibition of impulse
- Planning/anticipation
- Self-monitoring
- Motor planning
- Personality/emotions
- Awareness of self
- Organization
- Concentration
- Mental flexibility
- Speaking



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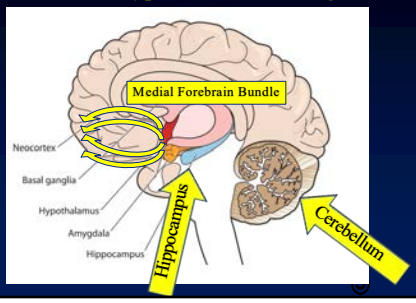
Anoxic/Hypoxic Brain Damage



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Brain Injury and the Criminal Justice System

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Prevalence of TBI in Justice-Involved Populations
(Hunter et al., 2023)

- Among persons in prison/jail or under community supervision:
  - Approximately 45% have history of TBI in their lifetime
  - Approximately 32% have had a moderate-severe TBI
- TBI equally common among women as men (versus in general public)

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Gender Differences
(McGinley and McMillan, 2019)

- Assault most common cause of TBI among women
- Females with history of childhood and adult abuse more likely to have TBI exposure than those without
- Substance misuse, mental health problems, and cognitive difficulties more commonly reported among women than men

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TBI and Violence among Prisoners

- Violent offenders with TBI self-report greater impulsivity, irritability and anger, assaultive behavior, suicidal ideation and attempts, alcohol use disorder (Ramaswamy et al, 2023)
  - Greater number of TBIs associated with greater effects.
- Executive functioning deficits associated with TBI increases risk for bullying other prisoners (Trajtenberg et al., 2023)
- Incarcerated women with TBI more likely to have history of violent offenses than women without TBI (McMillan et al, 2021)
  - remained significant after adjusting for PTSD

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TBI and Recidivism

- Recently released prisoners with TBI at greater risk for depression, stress, trauma-related flashbacks (Fahmy et al, 2023)
- TBI associated with post-release violent arrests (Lattimore et al, 2022).
  - TBI co-occurring with PTSD more predictive than sex, age, age at first arrest, total prior arrests, etc.
- Veterans with TBI 1-5 yrs. post-release (Logan et al, 2021):
  - 49% more likely arrested
  - 44% more likely reconvicted
  - 85% more likely revocation of supervised release
  - PTSD also increased risk

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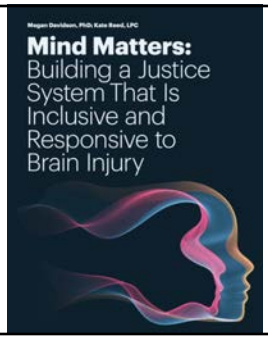

The Council of State Governments Justice Center

www.csgjusticecenter.org

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Brain Injury and Substance Use Disorder Treatment

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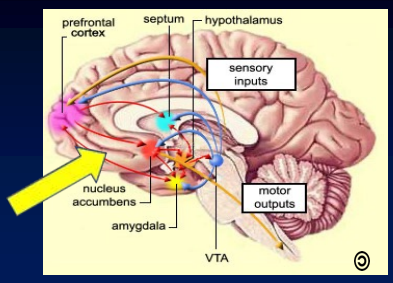
Pathophysiology



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Two Consistent Clinical Observations from SUD Treatment

- Compared to others in SUD treatment there is an even *greater* disconnect between TBI clients' intentions and their behavior.
- Clients with TBI are more likely to prematurely discontinue treatment, often after being characterized as non-compliant.

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People with TBI face additional challenges seeking substance abuse treatment

- It's easy to see behavior as intentionally disruptive, particularly when there are no visible signs of disability:
  - –Frontal lobe damage affects regulation of thoughts, feelings & behavior–promoting disinhibition.
  - –Social "rules" may not be observed and interpersonal cues not perceived, creating consternation for fellow clients and staff.

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People with TBI face additional challenges …(cont'd)

- Cognitive impairments may affect a person's communication or learning style, making participation in didactic training and group interventions more difficult.
- Misinterpretation of neurological problems as resistance to treatment undermines treatment relationships.

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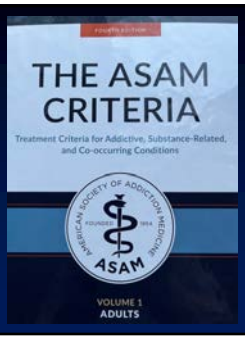
4th Edition ASAM Criteria

Chapter 19
Cognitive Impairment

Neurologic Informed Care



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Neurologic Informed Care approach

- Screening for history of brain injury and/or elicitation of self-reported symptoms
- Accommodations for cognitive and behavioral impairments

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Issues Detecting a Lifetime History of TBI

- Capture from medical encounters
  - medical treatment often may not be sought
  - lifetime records not available
  - mild TBI often missed in Emergency Departments
- Biomarkers
  - imaging, neuropsych assessment specific but not sensitive
  - proteomics very acute only and sensitive but not specific
- Retrospective self-report
  - cannot self-diagnose
  - not aware of injury ("telescoping," poor memory, too young)

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Selected Methods of Eliciting Self-report

- DVBIC Brief TBI Screen (BTBIS; Schwab et al.)
- TBI Questionnaire (TBIQ; Diamond et al.)
- Brain Injury Screening Questionnaire (BISQ; Gordon et al.)
- OSU TBI Identification Method (OSU TBI-ID; Corrigan & Bogner)
- Boston Assessment of Traumatic Brain Injury Lifetime (BAT-L; Fortier et al.)

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The Online Brain Injury Screening and Support System

- Online screening system to determine lifetime exposure to brain injury and associated cognitive and behavioral impairments
- Clients can use a computer to take the screener themselves, independently or with help of the provider
- Takes an average of 20 minutes
- If positive, identifies related challenges and shares strategies
- Treatment staff provided same information

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What does it mean to "ACCOMMODATE"?

- Accommodate: Provide services in a manner that takes into consideration the cognitive needs of an individual.
- Providing accommodations creates an opportunity to address potential barriers to treatment success.

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People as their own experts

Ask "What helps you with _____ ?"

- learning new things
- remembering names
- remembering to do assignments
- finishing your work
- staying on track
- paying attention

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Good General Strategies

- Make sure expectations are *understood*
- Encourage routines and being organized
- Slow down/check in
- Use advance organizers
- Present information using multiple learning channels
- Do not assume functional literacy
- Do not ignore sleep patterns

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wexnermedical.osu.edu/TBIguide

Accommodating the Symptoms of TBI

Presented by:

Ohio Valley Center for Brain Injury Prevention and Rehabilitation

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Neurocognitive Functions

- Attention
- Processing
- Memory
- Executive Function
  - Initiation
  - Impulsivity
  - Planning & Organization
  - Mental Flexibility
  - Self-Awareness

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Problem = Processing

The time is takes to think through and understand new information or concepts can be affected when a person has had a TBI. This does not mean they cannot understand – they may just need more time to understand.

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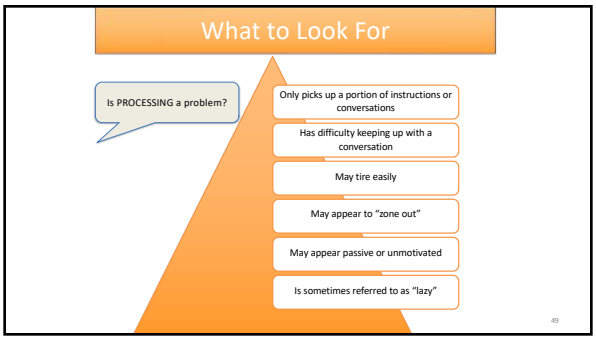
What to Look For
Is PROCESSING a problem?
Only picks up a portion of instructions or conversations
Has difficulty keeping up with a conversation
May tire easily
May appear to "zone out"
May appear passive or unmotivated
Is sometimes referred to as "lazy"
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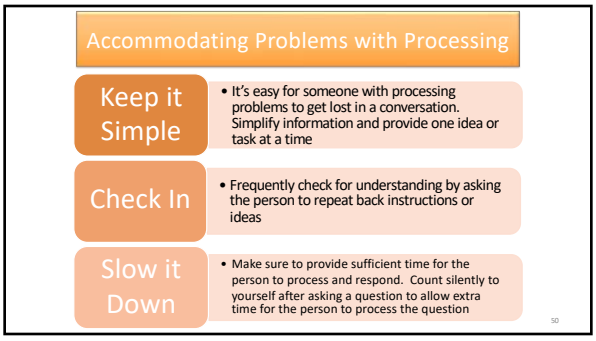
Accommodating Problems with Processing
Keep it Simple
• It's easy for someone with processing problems to get lost in a conversation. Simplify information and provide one idea or task at a time
Check In
• Frequently check for understanding by asking the person to repeat back instructions or ideas
Slow it Down
• Make sure to provide sufficient time for the person to process and respond. Count silently to yourself after asking a question to allow extra time for the person to process the question
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Accommodations in Groups
Making Groups Effective for Clients with Cognitive Impairments
Ohio Brain Injury Program
Ohio Domestic Violence Network
ODVN

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Accommodations in Group Structure

- Shorter group length and/or greater frequency of breaks can allow a person susceptible to cognitive fatigue to benefit from the entire group session.
- Use routine ways of starting the group such as reviewing purpose, ground rules and the agenda.
- Participatory activities will work better than just presenting information.
- Make sure written material is easy to read and the page is not too cluttered.
- Combine written material with pictures and graphics.
- Reducing the ambient noise and visual distractions in the group room will help a person with concentration and attention problems.
- Softer lighting and comfortable seating will also reduce distractions.

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CONNECTING YOU TO THE RESOURCES YOU NEED

OHIO BRAIN INJURY CONNECTION

OBIC@OSUMC.EDU

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Ohio Brain Injury Connection

Assisting individuals with brain injuries and/or their family members to:

- Navigate resources and supports responsive to their needs
- Identify the nature and extent of their history of brain injury
- Develop skills and knowledge for self-advocacy
- Identify opportunities for optimizing their brain health
- Articulate their long-term plan for achieving their goals

More than I & R but not as long-term as Case Management

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Brain Injury Association of Ohio

Helpline: (800) 444-6443 (toll-free)

Website: www.biaoh.org

Other Informative Websites

Ohio Brain Injury Program: ohiobraininjury.org

WETA Brainline: www.brainline.org

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Final Re-cap

- Brain injuries are common–VERY common in vulnerable populations.
- Many brain injuries affect the frontal areas of the brain making self-awareness, self-regulation and/or self-management more difficult.
- We should know whether a person we are working with has a history of brain injury.
- Simple accommodations that any professional can implement can make a big difference.
- For assistance contact the Ohio Brain Injury Connection or BIA-Ohio Helpline.

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THANK YOU

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