NATIONAL HEALTH CARE for the HOMELESS COUNCIL

Adapting Your Practice

Recommendations for the care of Patients who are Homeless or Unstably Housed Living with the Effects of Traumatic Brain Injury.

Learning Lab June 24, 2017

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Disclaimer

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Specialized Program Recommendations:

Interdisciplinary Care Provided

Specific Program Recommendations:

Specific Supports Provided

Basic Recommendations

Reduce Barriers to Care

Levels of Care

Basic	Specific	Specialized
Services are offered in a manner that reduces barriers to care.	Services that provide specific accommodations are provided.	The team is able to provide specialized intervention

Screen for Brain Injury History

Recognize Cognitive and Functional Impairment

Accommodate Cognitive and Behavioral Symptoms

Integrate with Community Resources

Montior and Manage Co-Occuring Health and Mental Health Issues

Overview

Introduction to the Practice Recommendations

Very brief review of brain injury

Screening for TBI

Assessing functional impairments

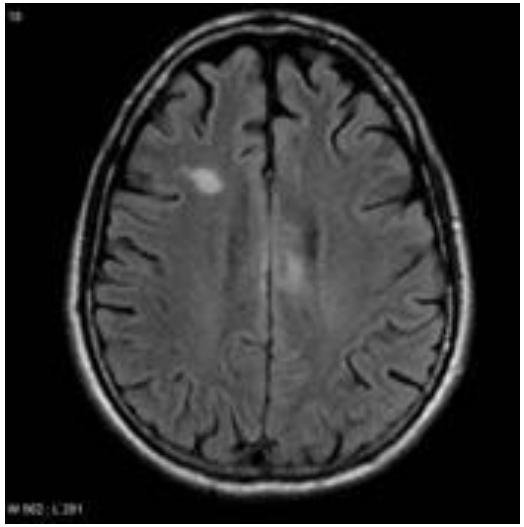
Basic Cognitive Compensation

Program recommendations

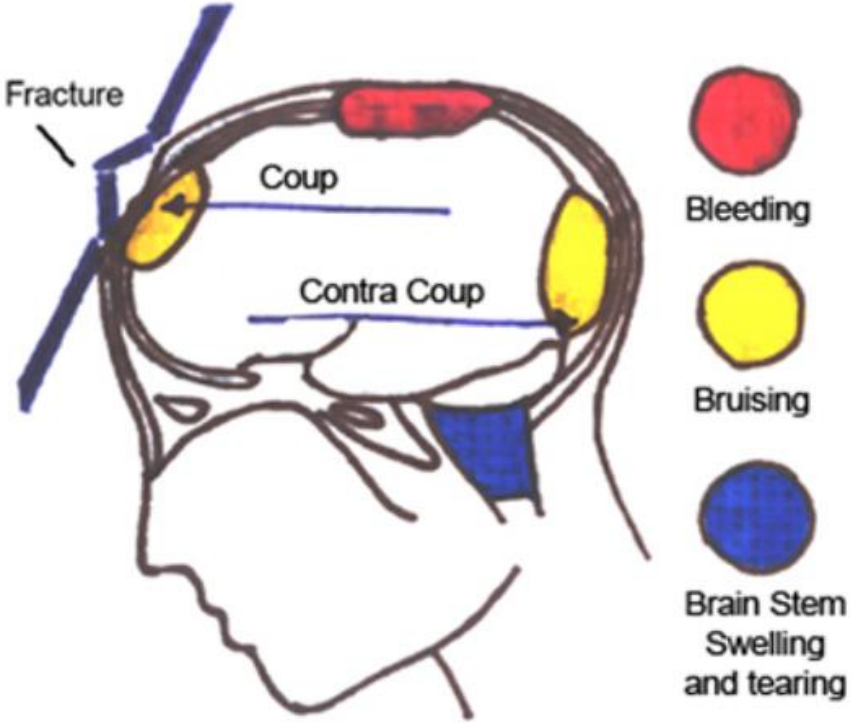
In the last section I'll review the online resources that physicians can use to address the common medical difficulties that are observed.

What is Acquired Brain Injury?

- An insult that occurs after birth and causes damage to brain tissue. Causes may include...
  - Trauma
  - Stroke
  - Infection
  - Tumor
  - Hypoxia
  - Exposure to Toxins



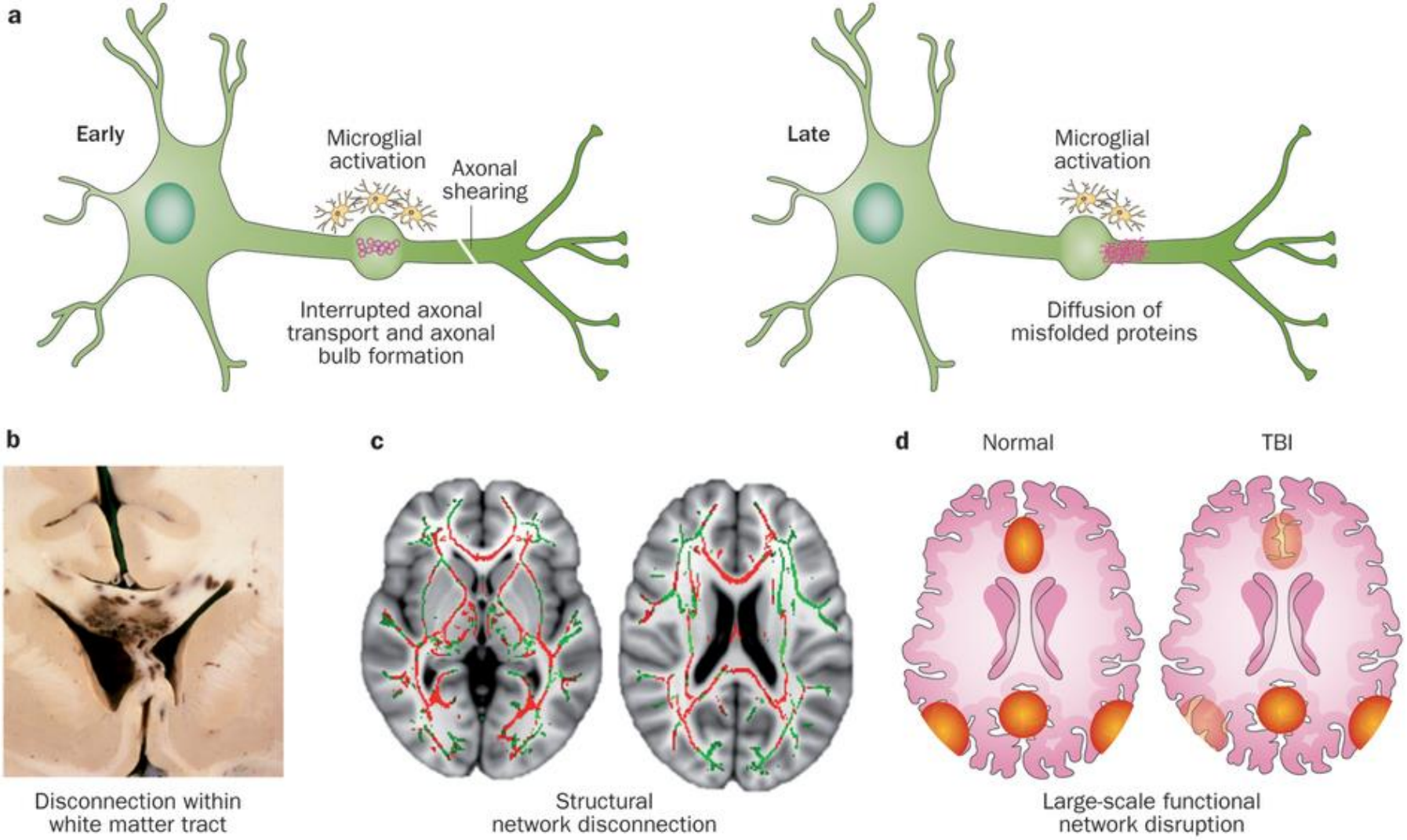
Traumatic Brain Injury

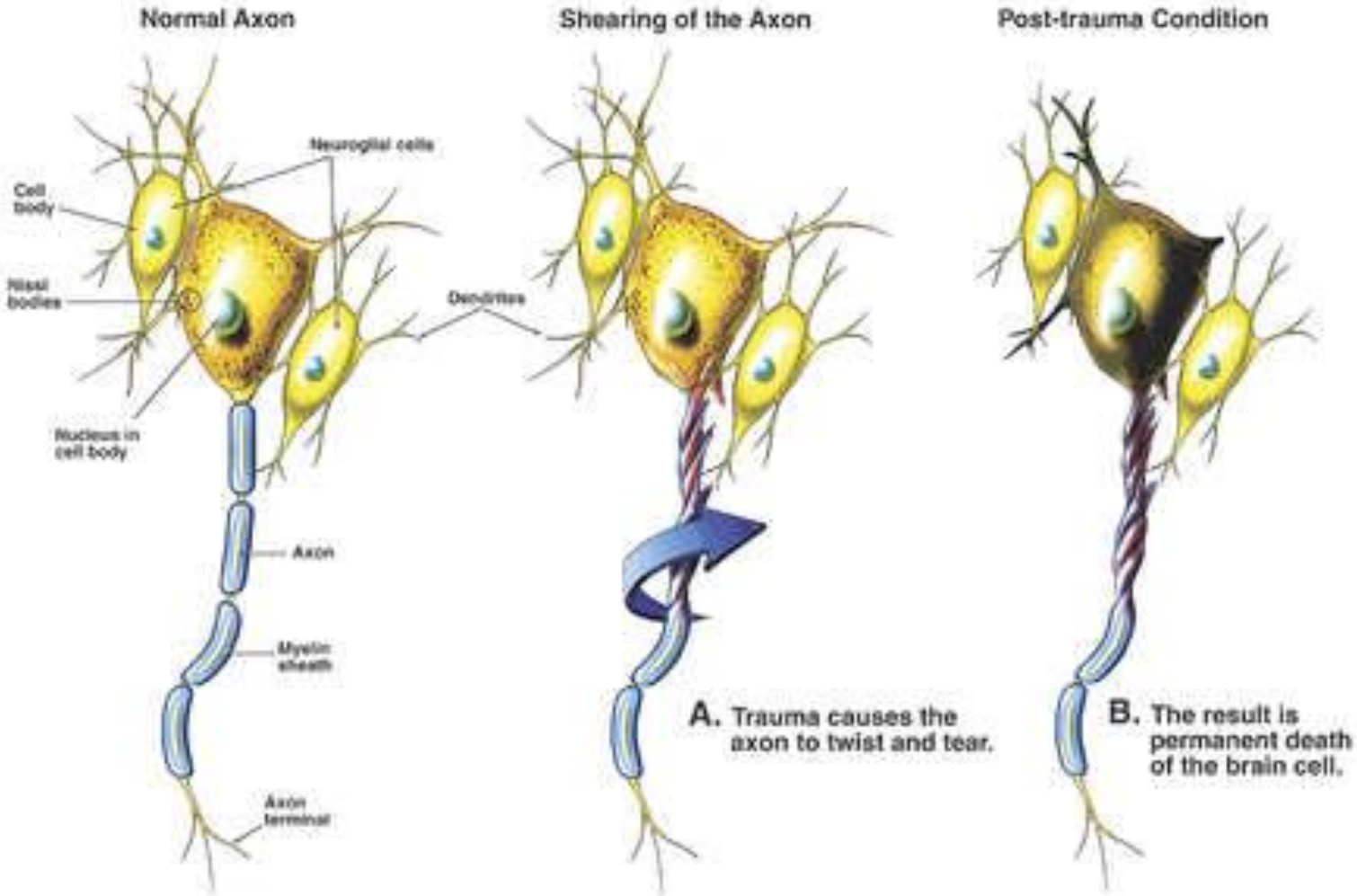


Contact Injuries

Diffuse Axonal

Penetrating Injuries


a
Early
Microglial activation
Axonal shearing
Interrupted axonal transport and axonal bulb formation
Late
Microglial activation
Diffusion of misfolded proteins
b
Disconnection within white matter tract
c
Structural network disconnection
d
Normal
TBI
Large-scale functional network disruption


Normal Axon
Shearing of the Axon
Post-trauma Condition
Neuroglial cells
Cell body
Nissl bodies
Dendrites
Nucleus in cell body
Axon
Myelin sheath
Axon terminal
A. Trauma causes the axon to twist and tear.
B. The result is permanent death of the brain cell.

Glasgow Coma Scale

13-15 → Mild
9-12 → Mod.
< 8 → Sev.

Glasgow Coma Scale
Version A.1

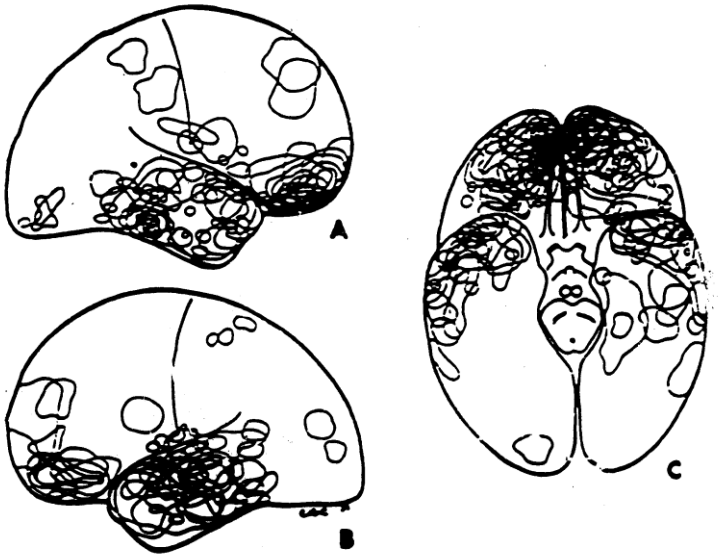
Scrubs and Stuff LLC
eScrubsAndStuff.com

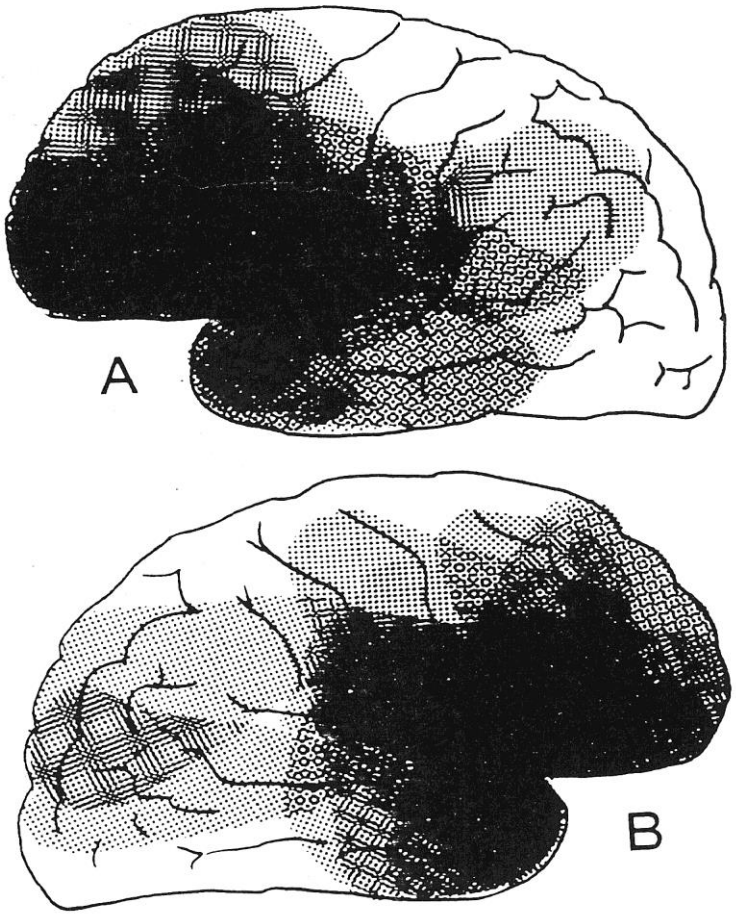
	Adult & 5yrs+	Pediatric	
Eye	Spontaneous	Spontaneous	4
	To speech	To speech	3
	To pressure	To pressure	2
	None	None	1
Verbal	Oriented	Alert, babbles, coos, words or sentences – normal for age	5
	Confused	Less than usual ability, irritable cry	4
	Words	Cries to pain	3
	Sounds	Moans to pain	2
	None	None	1
Motor	Obeying commands	Normal spontaneous	6
	Localizing	Withdraws to touch	5
	Normal flexion (withdrawal)	Normal flexion (withdrawal)	4
	Abnormal flexion	Abnormal flexion	3
	Extension	Extension	2
	None	None	1

Best documented as: GCS 13 - E3,V5,M5. If section is unable to be assessed, report as NT (not testable), don't score as 1.

The GCS is a quick & well recognized assessment tool but has limitations (intubation, language barrier, drugs/alcohol, injury, anesthetics/sedatives, etc.). Each patient's individual clinical situation & local protocol should always be taken into account with proper medical training. Author & Publisher intend reference to

Series of 40 patients
(Courville, 1950)



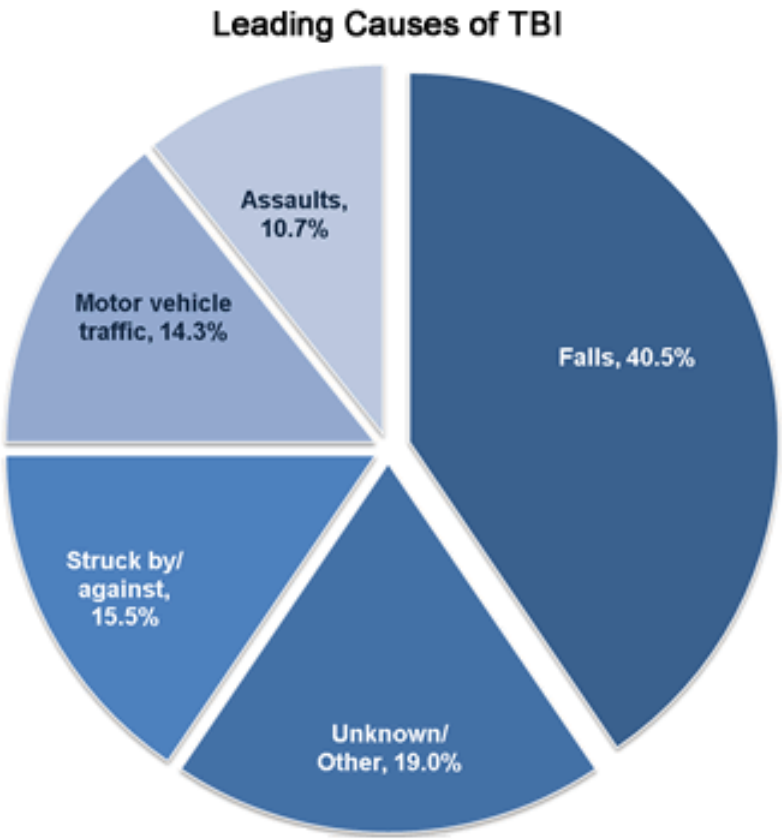


Series of 100 patients
(Bigler, 1984)

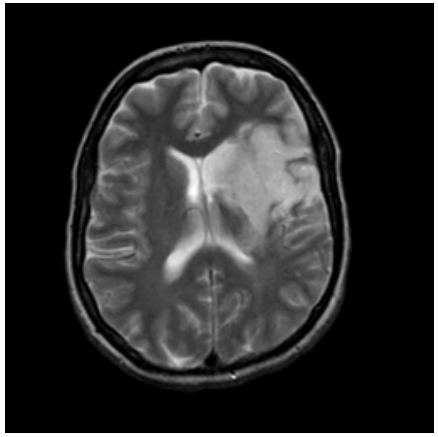
How many people have TBI?

- 500/100,000 (US)
- 166,455/year in Canada
- 5,000 (3%) die
- 27,000 (16%) are hospitalized
- 1.365 (76%) treated in ER
- Untreated ?
- 2% of the population is living with the chronic effects of ABI

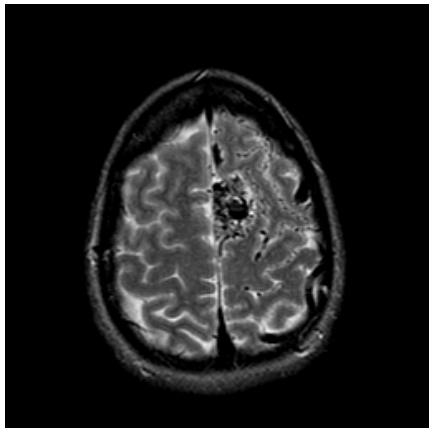
What causes TBI?



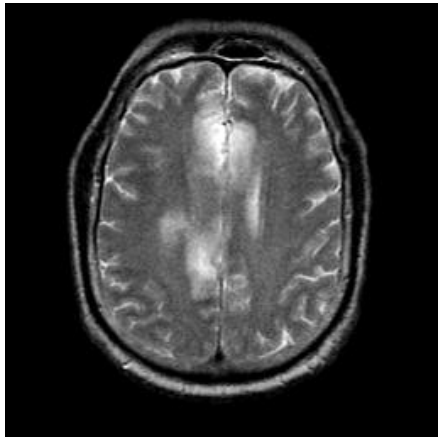
Non Traumatic Injury



Stroke



Tumor

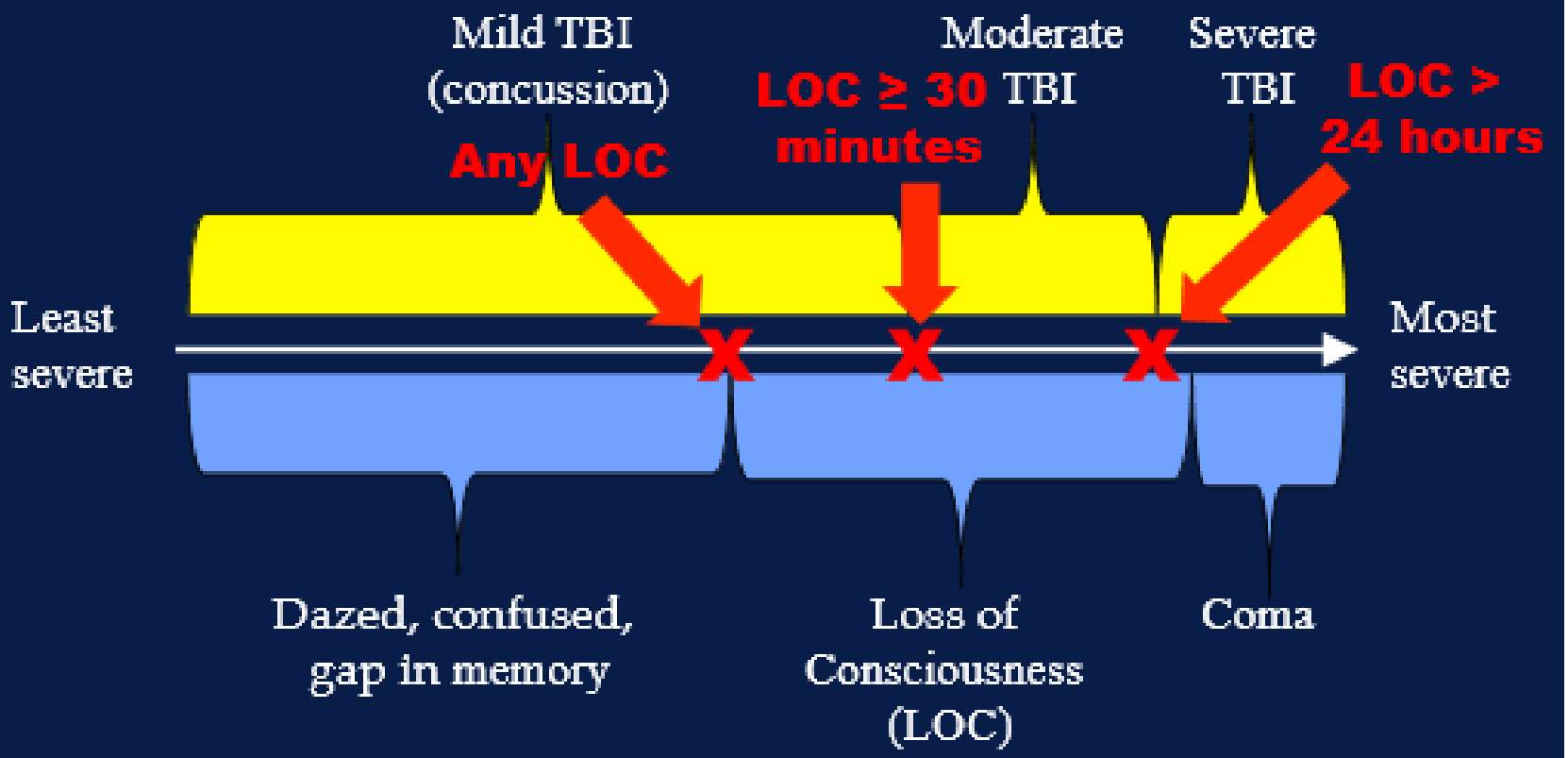


Infection

Who is at highest risk for TBI?

- Males are about 1.5 times as likely as females to sustain a TBI
- 0 to 4 year olds and 15 to 19 year olds
- Certain military duties (e.g., paratrooper)

Continuum of TBI Severity



Severity

Mild

LOC < 30 min.

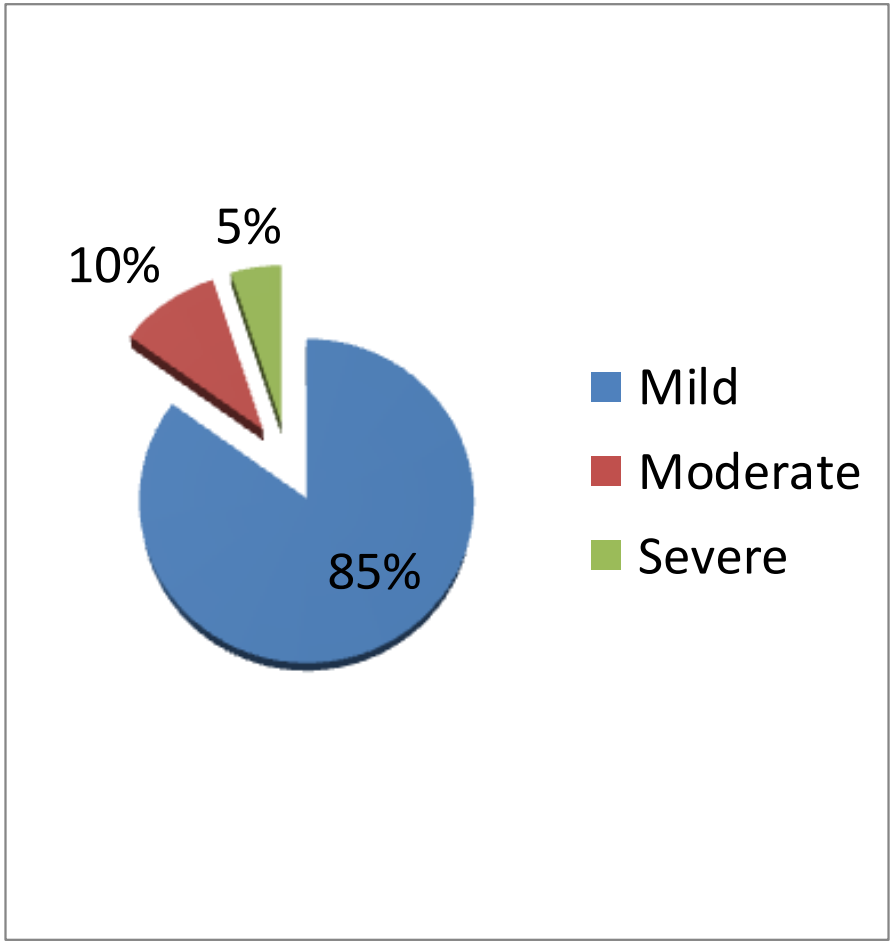
PTA /confusion resolves w/in 24 hrs

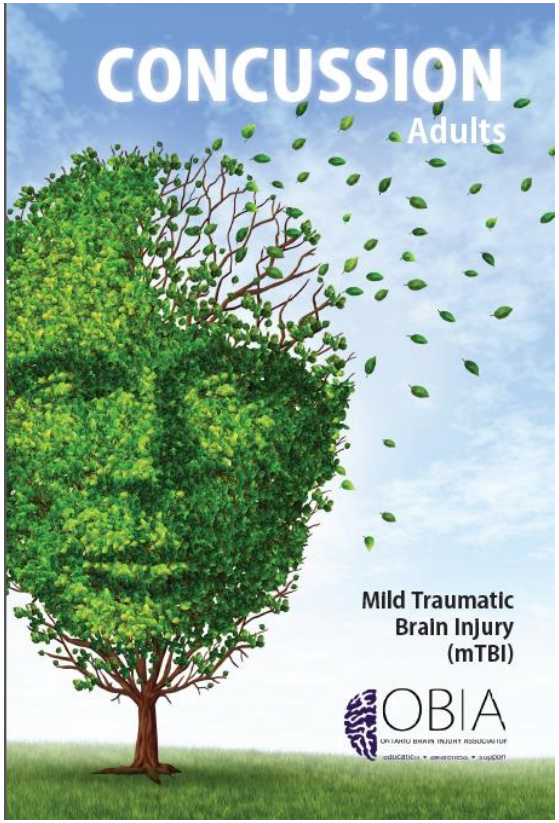
Moderate

LOC < 6 hrs. and/or changes on imaging

Severe

LOC > 6 hrs





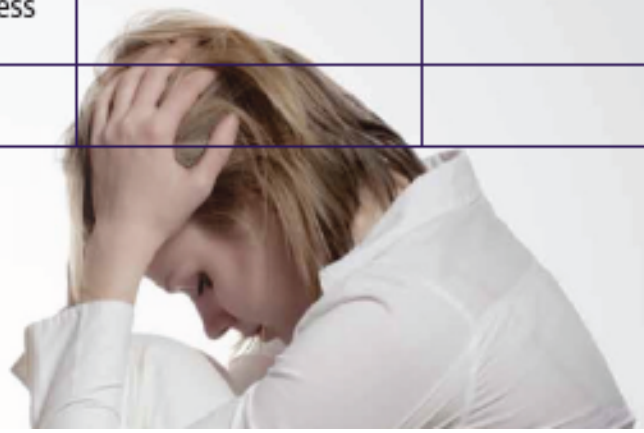
www.OBIA.org

WWW.Brainline.org

Symptoms

The following are some of the most common symptoms a person can experience with a concussion. NO two concussions are the same and you may experience some or all of these symptoms.

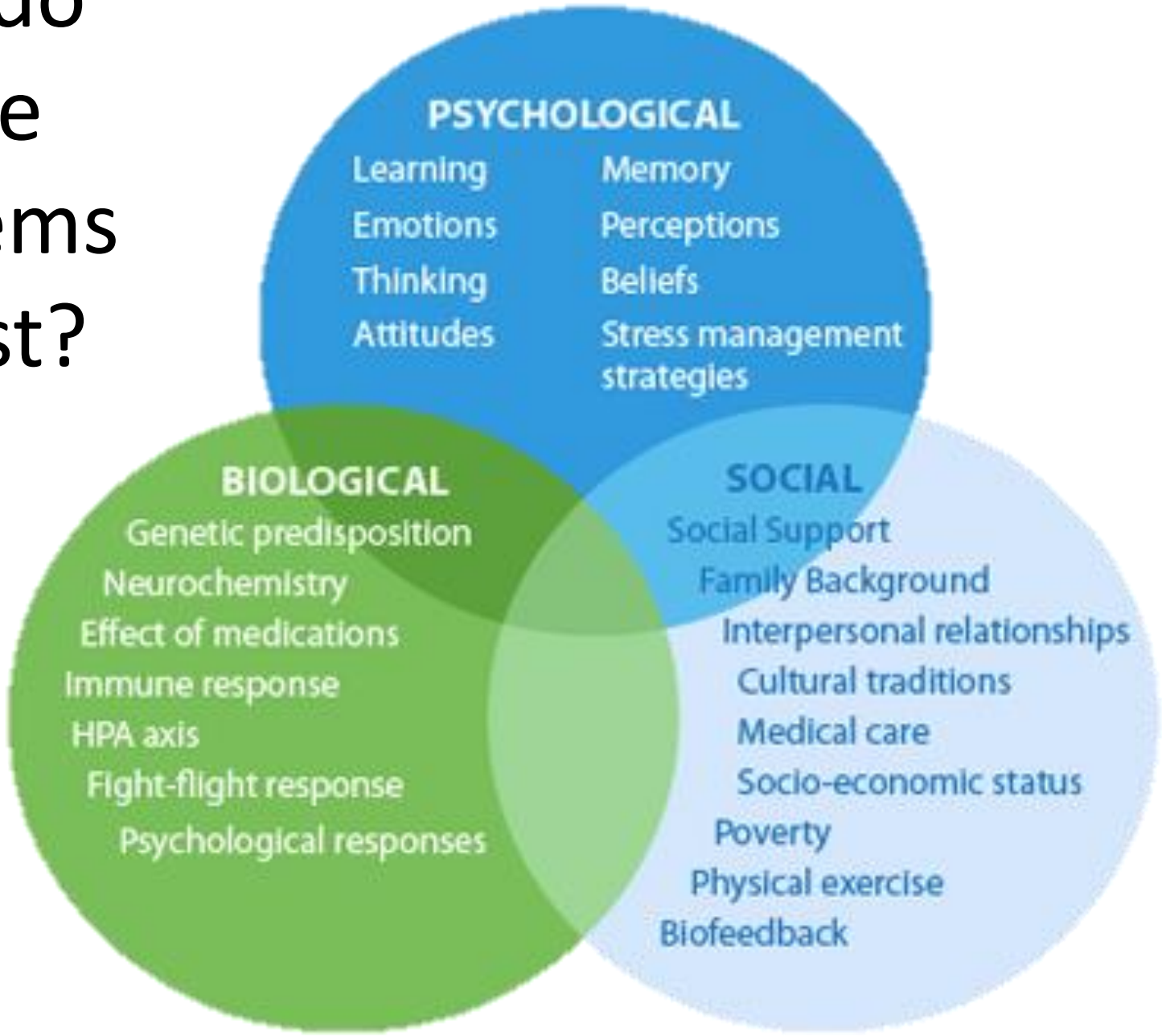
Physical	Cognitive	Emotional/ Behavioural
Dizziness or Balance problems	Concentration	Sad/Depressed
Headache	Memory problems	Anxious
Nausea or Vomiting	Confusion	Irritability
Fatigue/Sleep disturbances	Feeling like you are "in a fog"	
Blurry vision		
Sensitivity to light or sound		
Loss of consciousness (not always)		
Tinnitus (ringing in ears)		



Prognosis

- 85-90% of individuals with concussion/mTBI recover within 30-days
- A minority of patients experience longer-lasting signs and symptoms of concussion/mTBI.
- Failure to diagnose and treat concussion/mTBI may explain why signs and symptoms persist in some cases.
- Moderate to Severe injuries generally result in lasting impairments

Why do some problems persist?



Single vs multiple injuries

- There is an additive effect
- Multiple mild injuries:
  - abuse, sport, falls
- Timing: close together or far apart
- Mild injuries can have a greater effect after other injuries
- Does having a brain injury history make you more prone to subsequent injuries? more severe injuries?

Somatosensory	Motor	Cognitive	Emotional and Behavioural
Headaches	Hemiparesis	Impaired Attention	Depression
Fatigue	Spasticity	Impaired Concentration	Anxiety
Dizziness	Slowed performance	Impaired Memory	Emotional Dysregulation
Blurred vision	Poor coordination	Slowed Information processing	Impulsivity
Visual field cuts	Dysarthria	language impairments	Aggression/ Irritability
Sensitivity to light/noise		Impaired visuospatial	Poor Initiation
Anosmia (lost sense of smell)		Impaired executive functioning	
Aguesia (lost sense of taste)			

Cognitive Impairment After TBI

- Degree of neuropsychological impairment is greater soon after injury with recovery occurring over time
- At one year post-injury, there is a dose response relationship between length of coma and cognitive outcome
- More severe injury, more severe cognitive impairment

Predictors of lasting disability

Deeper Loss of Consciousness (lower GCS)

Longer Loss of Consciousness (past 3 months is considered irreversible)

Longer Post-traumatic Amnesia (longer than 14 days)

Prognostic Indicators

Positive Indicators

- Initial GCS>9 (Responsive)
- PTA<24 hours
- LOC<6 hours
- Limited imaging findings
- No dural penetration
- No pupillary response abnormalities
- No hypoxia
- No systemic complications

Negative Indicators

- GCS<9 (non-responsive)
- PTA>24 hours
- LOC>24 hours
- CT / MRI findings
- Pupillary response abnormalities
- Hypoxia
- Ocular motor abnormalities
- Secondary systemic complications

Education

- Cognitive Reserve Theory (Satz et al, 1993; Stern 2006)
  - Higher levels of education and intellectual functioning protect against functional impairment as a result of neurological insult.
- Educational level has a moderating effect on memory functioning after severe TBI
- One of the strongest predictors of social integration and outcome after TBI

Childhood Brain Injury

- Early insults alter the future development of the brain.
- Apparently mild injuries may have devastating long-term impacts

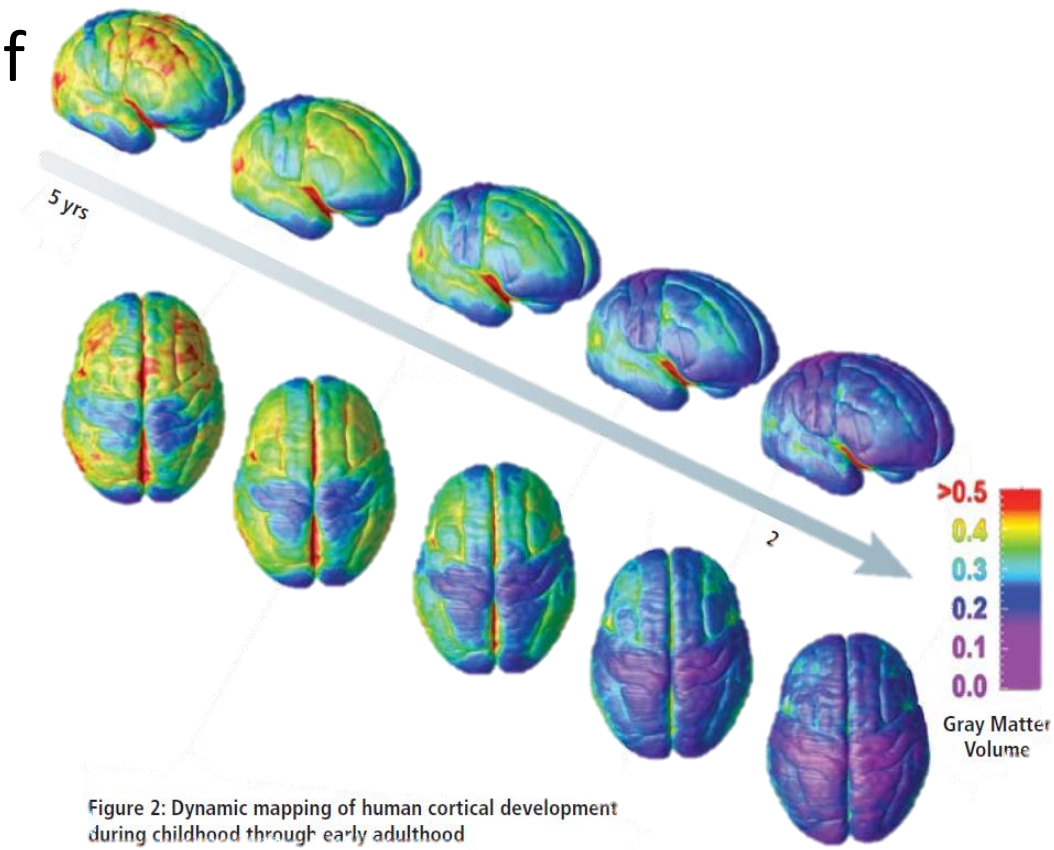


Figure 2: Dynamic mapping of human cortical development during childhood through early adulthood

Increase in general risk with brain injury

- psychological distress 52%
- attempting suicide 239%
- prescribed medication for anxiety, depression, or both 145%

Outcomes of Childhood Injury

Gabriella Illie (2015), St. Michael's Hospital

Childhood TBI as a risk factor for SUD

Birth cohorts: Christchurch NZ (McKinlay & colleagues), Northern Finland (Winqvist, Timonen & colleagues)

Lifetime exposure: TBI Model Systems (Corrigan et al., 2013), TRACK-TBI (Dams-O'Conner et al., 2013)

Age and gender effects in animal models (Lowing et al. 2014; Mayeux et al., 2015; Teng et al., 2015; Weil et al., 2015)

Christchurch Birth Cohort

(McKinlay et al., 2008, 2009, 2014)

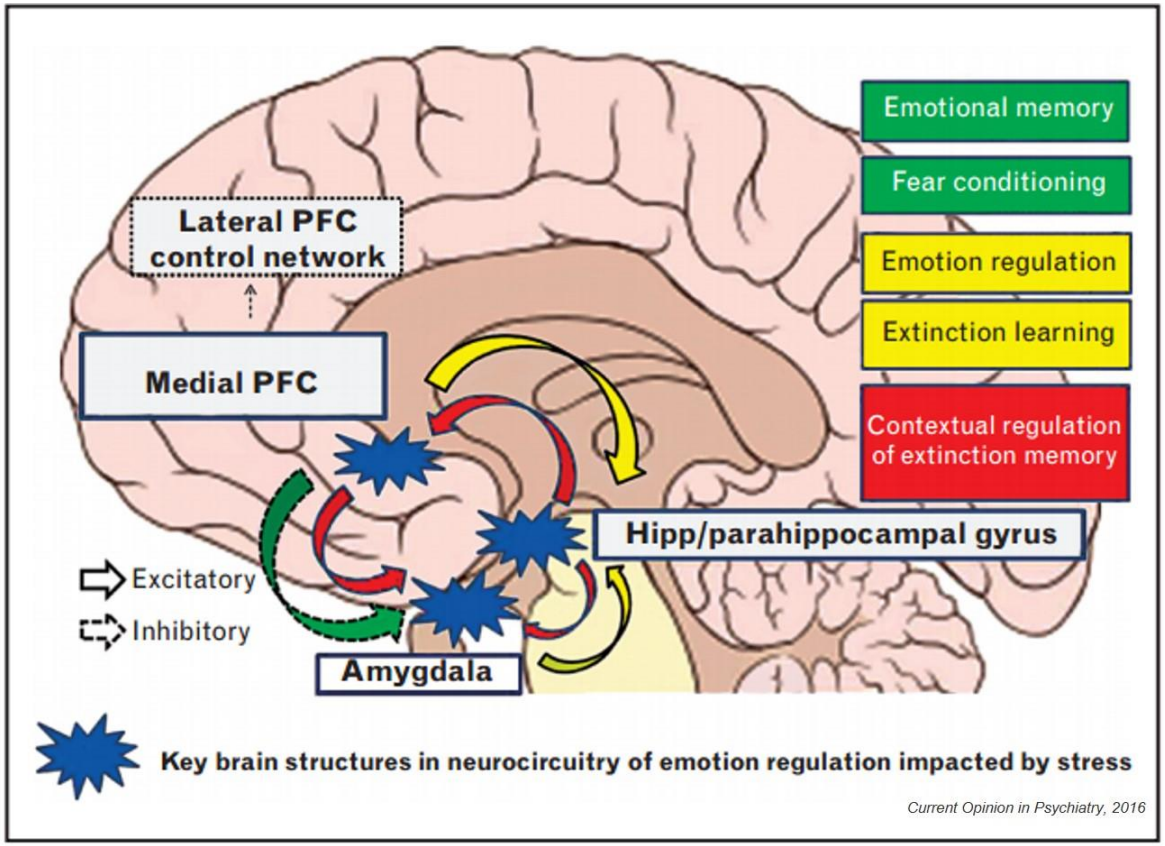
By late teens/early adulthood (16-25 y.o.)

- Those hospitalized with 1st mTBI < 6 y.o.: 3 times more likely to have a diagnosis of either alcohol or drug dependence by age 25
- Those hospitalized with 1st mTBI 16-21 y.o.: 3 times more likely to be diagnosed with drug dependence

Stress and Development

Early adversity leads to differences in brain development

- Maladaptive vigilance
- Risk taking
- Limited social development



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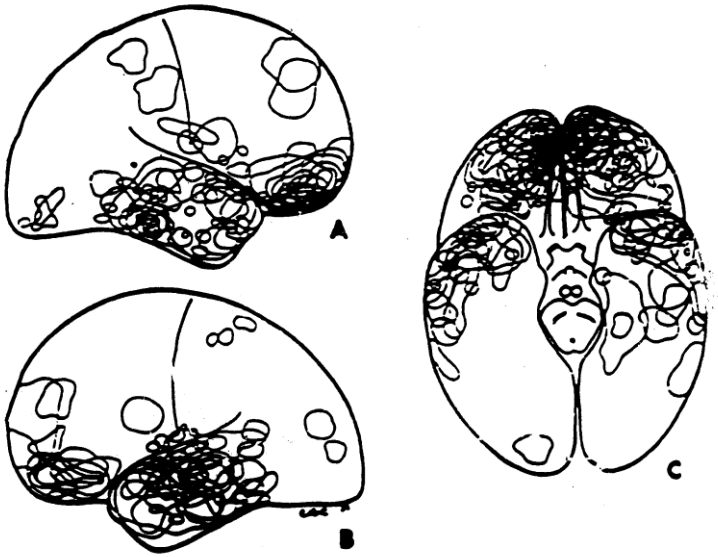
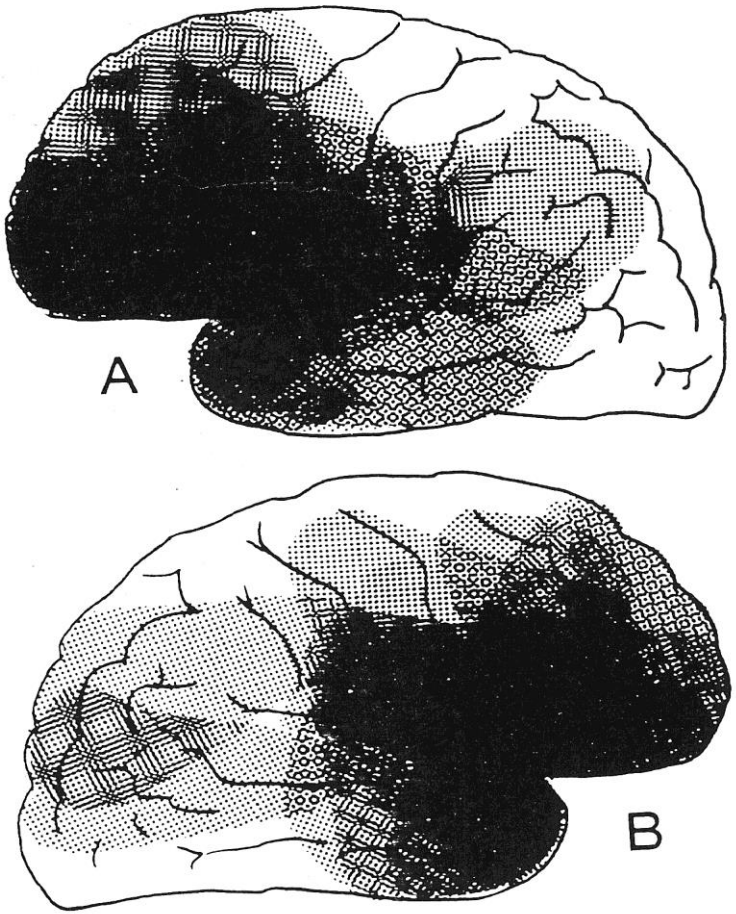


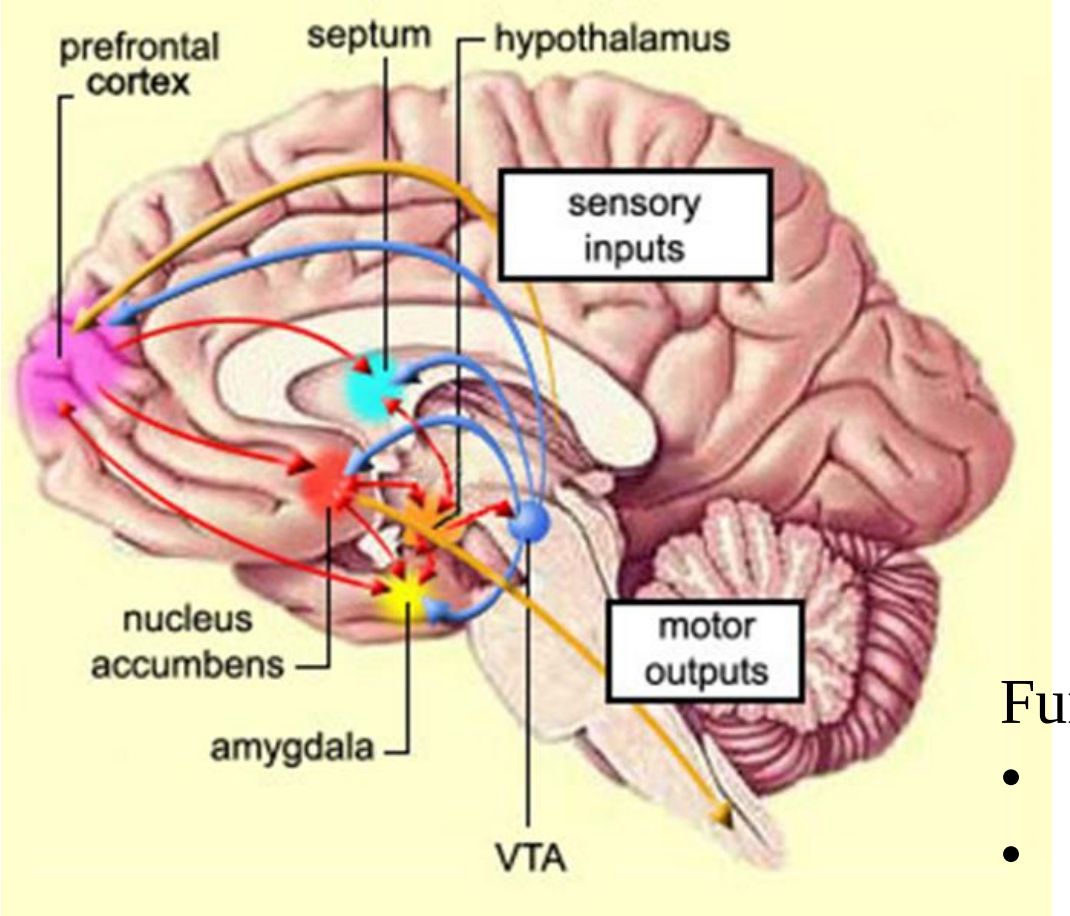


Series of 100 patients
(Bigler, 1984)

- Attention
- Memory
- Reasoning

- Language
- Pragmatics

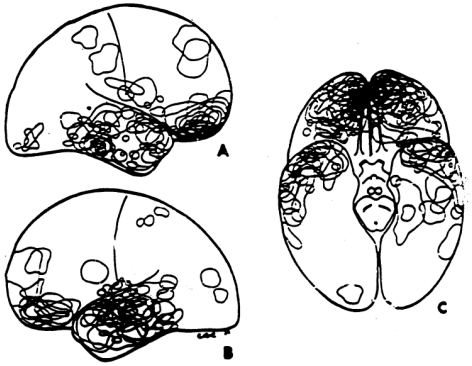
- Affective Processing
- Behavioural Planning
- Cognitive Resource Allocation



Ventral Tegmental Area –

Monitors the state of pleasure/pain

Sends Dopamine to excite Nucleus Accumbens and Amygdala



Functional correlates

- Memory
- Processing of
  - emotions
  - rewards
  - social cues
- Focusing attention

The "A-B-C's" of Self-Regulation

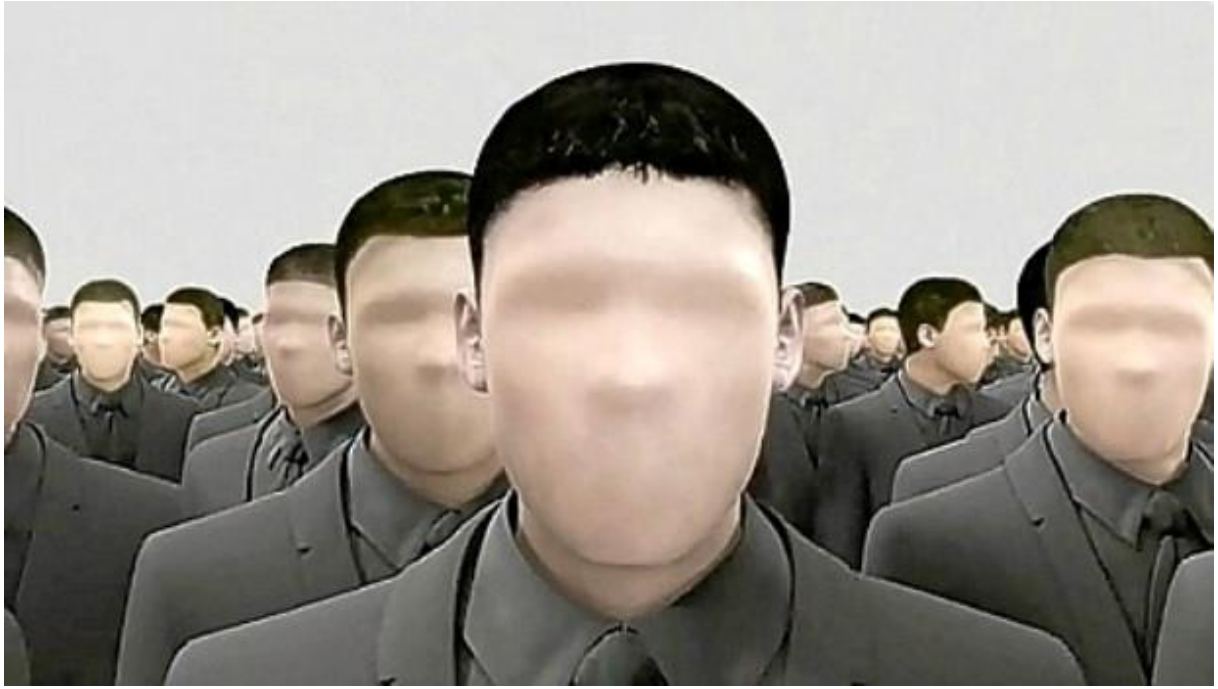
- **Affective modulation**
- Behavioral planning
- Cognitive resource allocation

What is the impact of being blind to others' emotions?

Problems with theory of mind….

Meeting the social contract…

Sociopathy…



Emotional Regulation

- Reading others' emotion
- Emotional reactivity
  - Lability
  - Anger management
- Recognizing one's own emotional state

Social communication mediates the relationship between emotion perception and externalizing behaviors in young adult survivors of pediatric traumatic brain injury (TBI)

Nicholas P. Ryan[a,c,*], Vicki Anderson[a,b,c], Celia Godfrey[a,d,1], Senem Eren[a,1], Stefanie Rosema[a,d,1], Kaitlyn Taylor[a,c,1], Cathy Catroppa[a,b,c,1]

16 year follow up study of - N=34 Young adults
Mean age 20
10 severe, 24 mild-mod
Vs 16 matched non TBI controls

Severe TBI significantly worse on: **affect naming** and **prosody-face naming**

TBI group had greater social communication problems assoc with more externalising behaviour and poorer emotion processing

"poorer emotion perception creates social misunderstandings that lead to generation of ineffective or inappropriate responses ..[leading to] rejection [by peers and] elicit psychological distress reflected in externalizing behaviors that include aggression, rule breaking and intrusive conduct (Beauchamp and Anderson, 2010; Yeates et al., 2007)" Ryan et al, 2013

Somatic marking

- Using emotion to inform behaviour by marking memories with the appropriate feelings

The "A-B-C's" of Self-Regulation

- Affective modulation
- **Behavioral planning**
- Cognitive resource allocation

Planning and Goal Setting and Multi-tasking

- Recognize when a plan would be helpful
- Analyze the steps that are required
- Pull together the resources
- Initiate the plan
- Monitor several activities simultaneously

What it looks like

- Disorganization
- Difficulty in completing tasks
- Failing to make a plan
- Grandiose planning
- Jumping to conclusions
- Failure to initiate activity
- Repeating the same mistakes
- Failing to follow a plan
- Stubbornness

Neuroprediction of future rearrest

Eyal Aharoni[a,b,1,2], Gina M. Vincent[c], Carla L. Harenski[a], Vince D. Calhoun[a,d], Walter Sinnott-Armstrong[e], Michael S. Gazzaniga[f], and Kent A. Kiehl[a,b,2]
www.pnas.org/cgi/doi/10.1073/pnas.1219302110

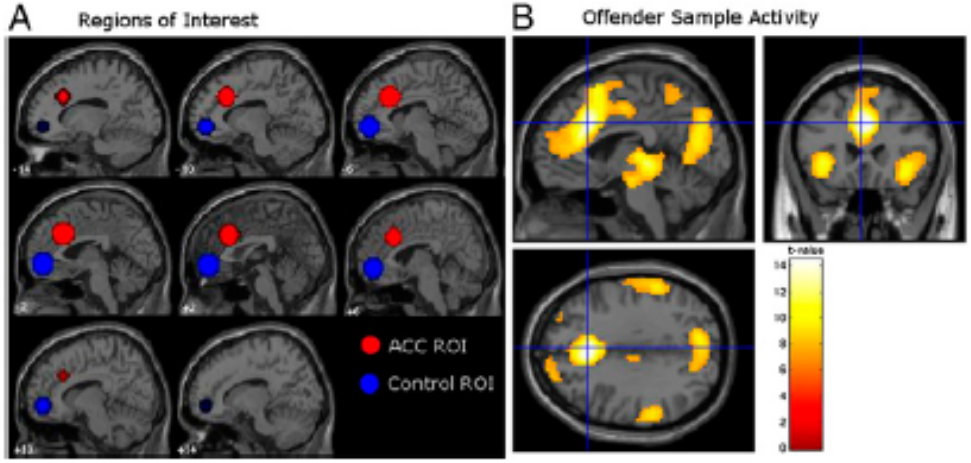


Fig. 2. (A) A priori seed region (red) for BOLD response to commission errors vs. correct hits in anterior cingulate from a GNG task with an independent sample of 102 healthy adult nonoffenders; peak voxel x = −3, y = 24, z = 33; radius = 14 mm sphere; t(94) = 13.38, P < 0.0001, FWE. A priori control region (blue) embodying anterior portion of the medial prefrontal cortex (peak voxel: 0, 51, −6; radius = 14 mm sphere). (B) Mean hemodynamic response change in offender sample (n = 96) during commission errors vs. correct hits from sagittal (Upper Left), coronal (Right), and axial (Lower Left) orientations. Peak activation located at x = 3, y = 24, z = 33 within the ACC ROI (P < 0.00001, FWE).

Identification of factors that predict recurrent antisocial behavior is integral to the social sciences, criminal justice procedures, and the effective treatment of high-risk individuals. Here we show that error-related brain activity elicited during performance of an inhibitory task prospectively predicted subsequent rearrest among adult offenders within 4 y of release (*N* = 96). The odds that an offender with relatively low anterior cingulate activity would be rearrested were approximately double that of an offender with high activity in this region, holding constant other observed risk factors. These results suggest a potential neurocognitive biomarker for persistent antisocial behavior.

Could dysfunction in ACC be caused by TBI??

see Bonnelle V, *et al. (2012) Proc Natl Acad Sci U.S.A 109:4690-4695.*

The "A-B-C's" of Self-Regulation

- **Affective modulation**
- Behavioral planning
- Cognitive resource allocation

Cognitive Resource Allocation

Inattention

Sensory Flooding

Perseveration in Problem solving

Neuro-fatigue

What it looks like

- Difficulty with filtering out distraction and concentration
- Unable to tolerate busy/noisy environments
- Continues to use unsuccessful strategies
- Greater difficulty breaking from habit (capture errors)
- Derailing from tasks

Brain Injury and Homelessness

42% of Women

58% of Men

70% of TBIs occurred before homelessness

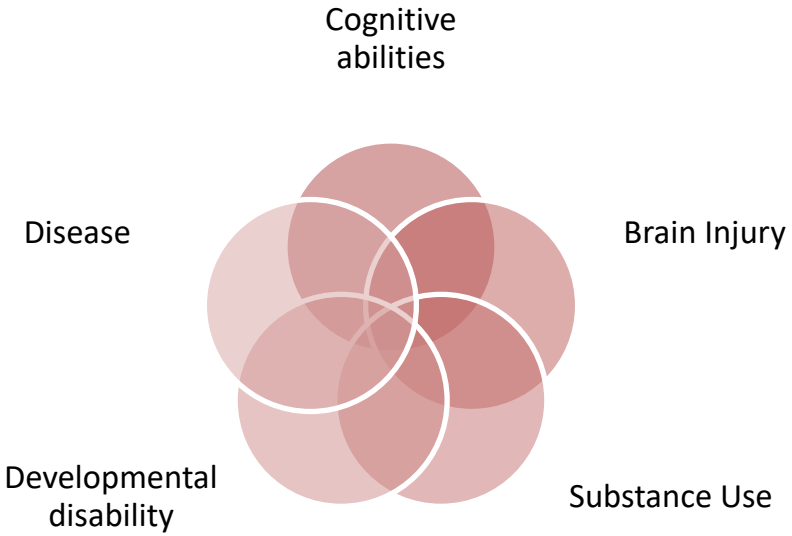
Topolovec-Vranic, J., Ennis, N., Ouchterlony, D., Cusimano, M. D., Colantonio, A., Hwang, S. W., . . . Brenner, L. (2013).

Cognitive Impairment

Up to 80% of people who access services may have some form of cognitive impairment

(Burra, 2009).

Most will have interacting causes for their impairment



Brain Injury is a signal for complexity

- Mental Health diagnoses
- Substance use Disorders
- Risk of arrest and incarceration
- Behavioural difficulties
- Victimization
- Increased risk for subsequent injury
  - E.g.To et al., 2015

Brain Injury and Homeless Share Common Risk Factors

- Raised in low income homes
- Victims of domestic abuse
- Substance use disorders
- Serious Mental Illness
- Veterans


Brain Injury
Just because you can't see it doesn't mean it's not there
www.brainworksrehab.com

Screen for Brain Injury History

Recognize Cognitive and Functional Impairment

Accommodate Cognitive and Behavioral Symptoms

Integrate with Community Resources

Montior and Manage Co-Occuring Health and Mental Health Issues

Screening

BASIC

TBI questions

Specific

Ohio Valley Brain Injury ID

Specialized

Ohio Valley Brain Injury ID

SCREEN FOR BRAIN INJURY

Basic	Brief Screening Questions
Specific	**The Ohio Valley Brain Injury Identification Method** (Corrigan and Bogner, 2007). In the public domain. Online training is available.
Specialized	**The Ohio Valley Brain Injury Identification Method** (Corrigan and Bogner, 2007). In the public domain. Online training is available.
Resource:	http://www.brainline.org/content/2013/08/new-tbi-screening-tool.html and http://ohiovalley.org/tbi-id-method/

Case Study - Alex

42 year old single man

Seizure witnessed at the Shelter and he was referred to ER.

24 ER admissions in the last 2 years.

- Seizures
- Threats of suicide
- Disoriented and Intoxicated

Alex…

- Rotated among ERS when distressed.
- Questioned if some complaints were feigned.
- Poor historian
- At 18 he was diagnosed with schizophrenia.

Alex…

Left supported housing in another city after fighting with a co-resident

Challenges

Multiple co-morbid conditions require integrated care

Cognitive impairment

- Impulsivity
- Memory
- Impaired Awareness

Psychotic Disorder

Opioid use disorder

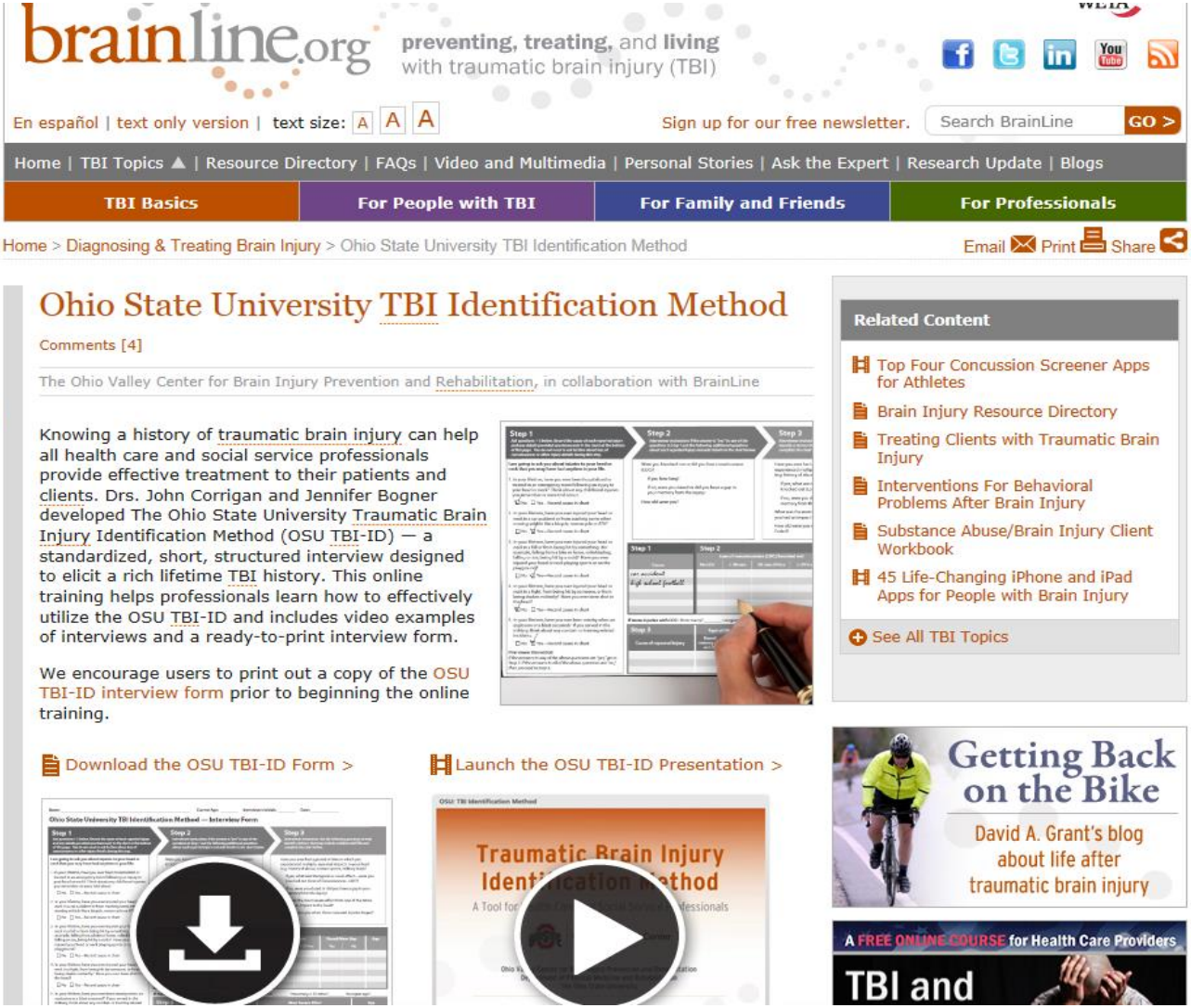
History of incarceration for assault and theft

Screening

Why screen?

- Brain Injuries may be invisible.
- Some clients may be unaware of their brain injury
- Many injuries are documented in the medical record.

http://www.brainline.org/content/2013/08/new-tbi-screening-tool.html



Ohio State Brain Injury ID Method

3-5 minute interview

Designed to detect traumatic injury, not injuries due to other causes.

Self-report history, not a 'test'.

Found to be valid and reliable

Ohio Valley Center for Brain Injury Prevention and Rehabilitation

Cuing to Elicit Injuries

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

Injury With Loss of Consciousness

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)

Worst Injury

b. What was the longest time you were knocked out or unconscious? (Choose just one; if you are not sure please make your best guess.)

____ knocked out or lost consciousness for *less than 30 min*

____ knocked out or lost consciousness *between 30 min and 24 hours*

____ knocked out or lost consciousness for *24 hours or longer*

First Injury

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

_____ years old

This question allows 3 indicators of lifetime history of TBI to be computed:

- Positive for a lifetime history for TBI with loss of consciousness (yes/no)
- Worst TBI with loss of consciousness (LOC) was mild, moderate or severe (no TBI with LOC, mild TBI with LOC, moderate TBI, severe TBI)
- Age at first TBI with loss of consciousness (in years)

Name: _____ Current Age: _____ Interviewer Initials: _____ Date: _____

Ohio State University TBI Identification Method — Interview Form

Step 1

Ask questions 1-5 below. Record the cause of each reported injury and any details provided spontaneously in the chart at the bottom of this page. You do not need to ask further about loss of consciousness or other injury details during this step.

I am going to ask you about injuries to your head or neck that you may have had anytime in your life.

1. In your lifetime, have you ever been hospitalized or treated in an emergency room following an injury to your head or neck? Think about any childhood injuries you remember or were told about.

   ☐ No ☐ Yes—Record cause in chart

2. In your lifetime, have you ever injured your head or neck in a car accident or from crashing some other moving vehicle like a bicycle, motorcycle or ATV?

   ☐ No ☐ Yes—Record cause in chart

3. In your lifetime, have you ever injured your head or neck in a fall or from being hit by something (for example, falling from a bike or horse, rollerblading, falling on ice, being hit by a rock)? Have you ever injured your head or neck playing sports or on the playground?

   ☐ No ☐ Yes—Record cause in chart

4. In your lifetime, have you ever injured your head or neck in a fight, from being hit by someone, or from being shaken violently? Have you ever been shot in the head?

   ☐ No ☐ Yes—Record cause in chart

5. In your lifetime, have you ever been nearby when an explosion or a blast occurred? If you served in the military, think about any combat- or training-related incidents.

   ☐ No ☐ Yes—Record cause in chart

Interviewer instruction:
If the answers to any of the above questions are "yes," go to Step 2. If the answers to all of the above questions are "no," then proceed to Step 3.

Step 2

Interviewer instruction: If the answer is "yes" to any of the questions in Step 1 ask the following additional questions about each reported injury and add details to the chart below.

Were you knocked out or did you lose consciousness (LOC)?

If yes, how long?

If no, were you dazed or did you have a gap in your memory from the injury?

How old were you?

Step 3

Interviewer instruction: Ask the following questions to help identify a history that may include multiple mild TBIs and complete the chart below.

Have you ever had a period of time in which you experienced multiple, repeated impacts to your head (e.g. history of abuse, contact sports, military duty)?

If yes, what was the typical or usual effect—were you knocked out (Loss of Consciousness - LOC)?

If no, were you dazed or did you have a gap in your memory from the injury?

What was the most severe effect from one of the times you had an impact to the head?

How old were you when these repeated injuries began? Ended?

Step 1	Step 2						
	Loss of consciousness (LOC)/knocked out				Dazed/Mem Gap		Age
Cause	No LOC	< 30 min	30 min-24 hrs	> 24 hrs	Yes	No	

If more injuries with LOC: How many?_____ Longest knocked out?_____ How many ≥ 30 mins.?_____ Youngest age? _____

Step 3	Typical Effect		Most Severe Effect				Age	
Cause of repeated injury	Dazed/ memory gap, no LOC	LOC	Dazed/ memory gap, no LOC	LOC < 30 min	LOC 30 min - 24 hrs.	LOC > 24 hrs.	Began	Ended

Adapted with permission from the Ohio State University TBI Identification Method (Corrigan, J.D., Bogner, J.A. (2007). Initial reliability and validity of the OSU TBI Identification Method. J Head Trauma Rehabil, 22(6):318-329.

- WORST —30 minutes or more LOC

- FIRST — TBI with LOC

- MULTIPLE — had 2 or more TBIs close together, including a period of time when they experienced multiple blows to the head even if apparently without effect.

- RECENT — a mild TBI in recent weeks or a more severe TBI in recent months
  OTHER SOURCES — any TBI combined with another way that their brain has been impaired.

(Corrigan & Bogner, 2007)

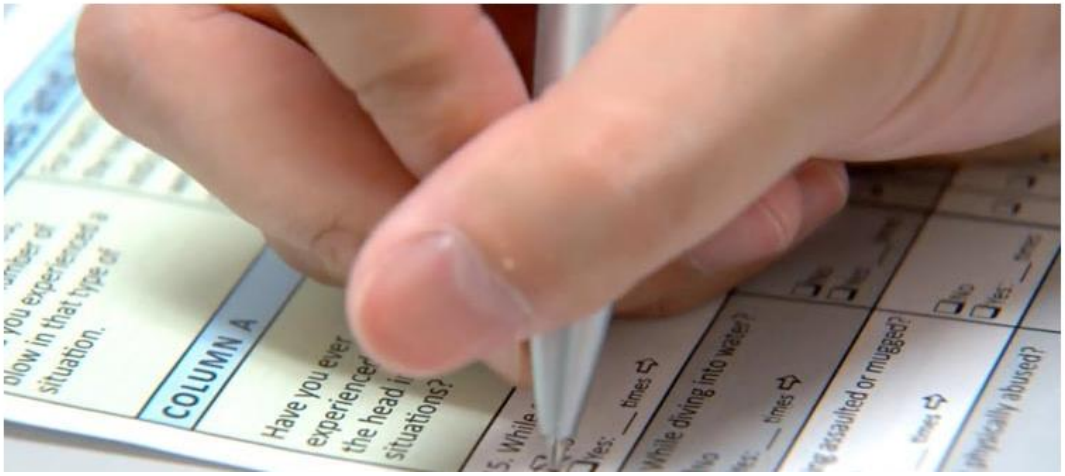
Alex’s Screening

Car Accident at age 13, with two weeks coma and 8 months of hospitalization.

Several possible subsequent injuries—unable to say how many falls related to seizures he has had. Unable to give the dates of injury—estimates that there were about a dozen.

Brain Injury Screening Questionnaire Birc@mountsinai.org

Screening and Assessment Tools for Professionals



- Get Involved In Research
- Learn About Clinical Services
- Explore Our Resources

Contact Us

Brain Injury Research Center of Mount Sinai
Icahn School of Medicine at Mount Sinai
Tel: 212-241-5152
Fax: 212-241-0137
birc@mountsinai.org

Screen for Brain Injury History

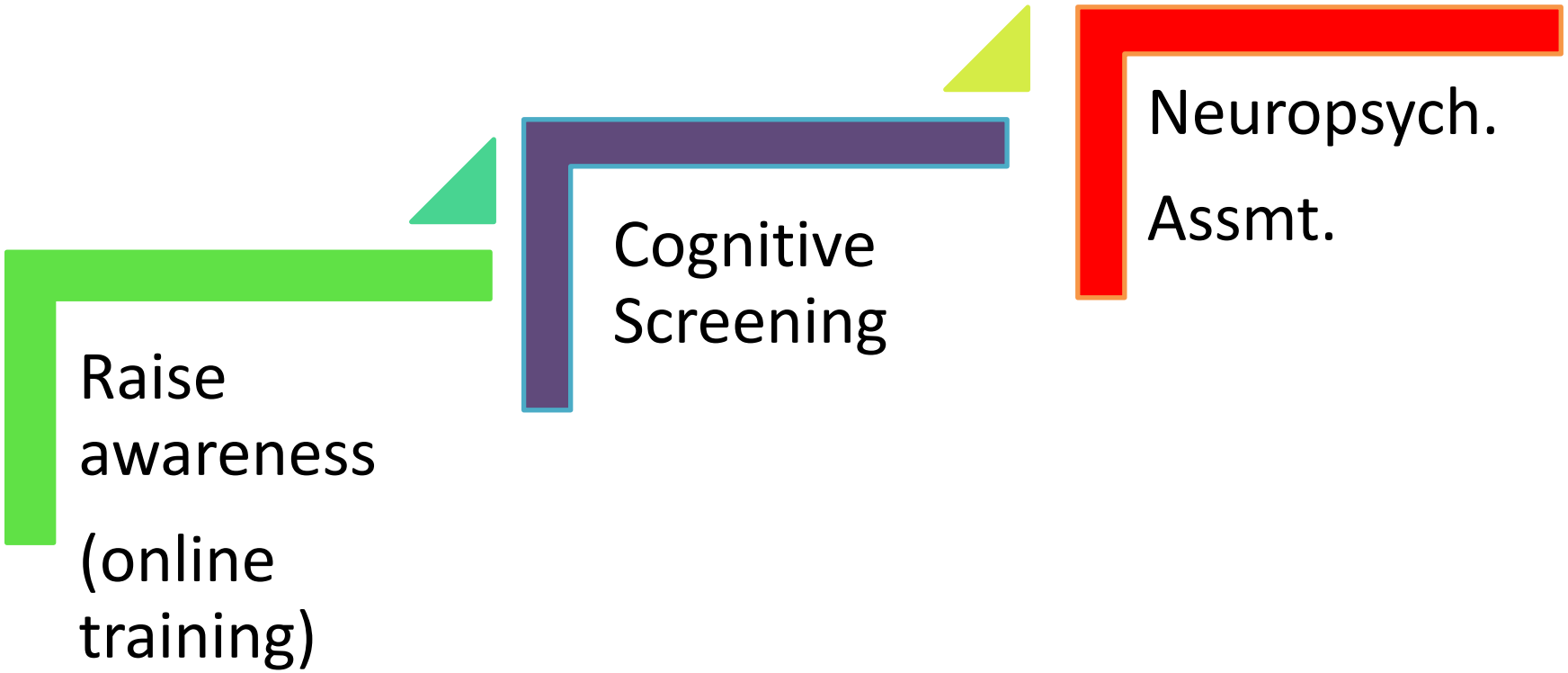
Recognize Cognitive and Functional Impairment

Accommodate Cognitive and Behavioral Symptoms

Integrate with Community Resources

Montior and Manage Co-Occuring Health and Mental Health Issues

Recognize Cognitive and Functional Impairment



RECOGNIZE COGNITIVE IMPAIRMENT

Basic	A person who reports a history of brain injury and/or difficulties with behaviour and follow-through should be regarded as risk factors for cognitive impairment. At a minimum, staff members should use the resources that are referenced in this guideline to become familiar with how cognitive impairment may present in the clients they serve.

Common cognitive difficulties that may be subtle include:

- Communication (receptive/expressive/non-verbal)
- Cognitive slowing
- Impaired Attention
- Impaired new learning and recent memory

You are likely to see…

- Problems with the regulation of thoughts, feelings and behaviors
- Difficulty benefiting from experience, and remembering information from one session to the next
- A disconnection of Intention and behavior

- Not fitting in well with others and the environment because of problems perceiving, understanding, and behaving according to social norms
- Differences in communication or learning style making participation in didactic training and group interventions more difficult and frustrating

Online training

Available Training

from

on

- Agitation with TBI
- Substance Use and TBI

Web-based TBI Training Modules (CEUs)

- Incidence and Prevalence
- Neurobehavioral Impairments
- Impact on Lives
- OSU TBI Identification Method
- Accommodating the Symptoms of TBI

Webinar for Service Providers: What if There's a TBI? (CEUs)

Substance Use Materials from OVC

https://tbi.osu.edu/modules

Introductory Module

Open Module

Incidence and Prevalence

1.0 Continuing Education Credit(s)

In this module you will learn what TBI is, what causes it, who this is happening to and why, how common TBI is, and what can be done about it.

Open Module

Neurobehavioral Impairments

1.0 Continuing Education Credit(s)

In this module you will learn about the effects of a TBI on individuals, and that these effects may be different for each person. This module will also walk you through executive functions of t ... *(Read More)*

Open Module

Impact on Lives

1.0 Continuing Education Credit(s)

In this module you will learn about the long-term consequences of TBI. You will learn about the impact that TBI has on an individual's health, finances, housing, productivity, relationships, an ... *(Read More)*

Open Module

Accommodating the Symptoms of TBI

1.0 Continuing Education Credit(s)

In this module you will learn to recognize the common symptoms of TBI and how to incorporate compensatory strategies into your treatment practices. These simple, yet effective accommodations yo ... *(Read More)*

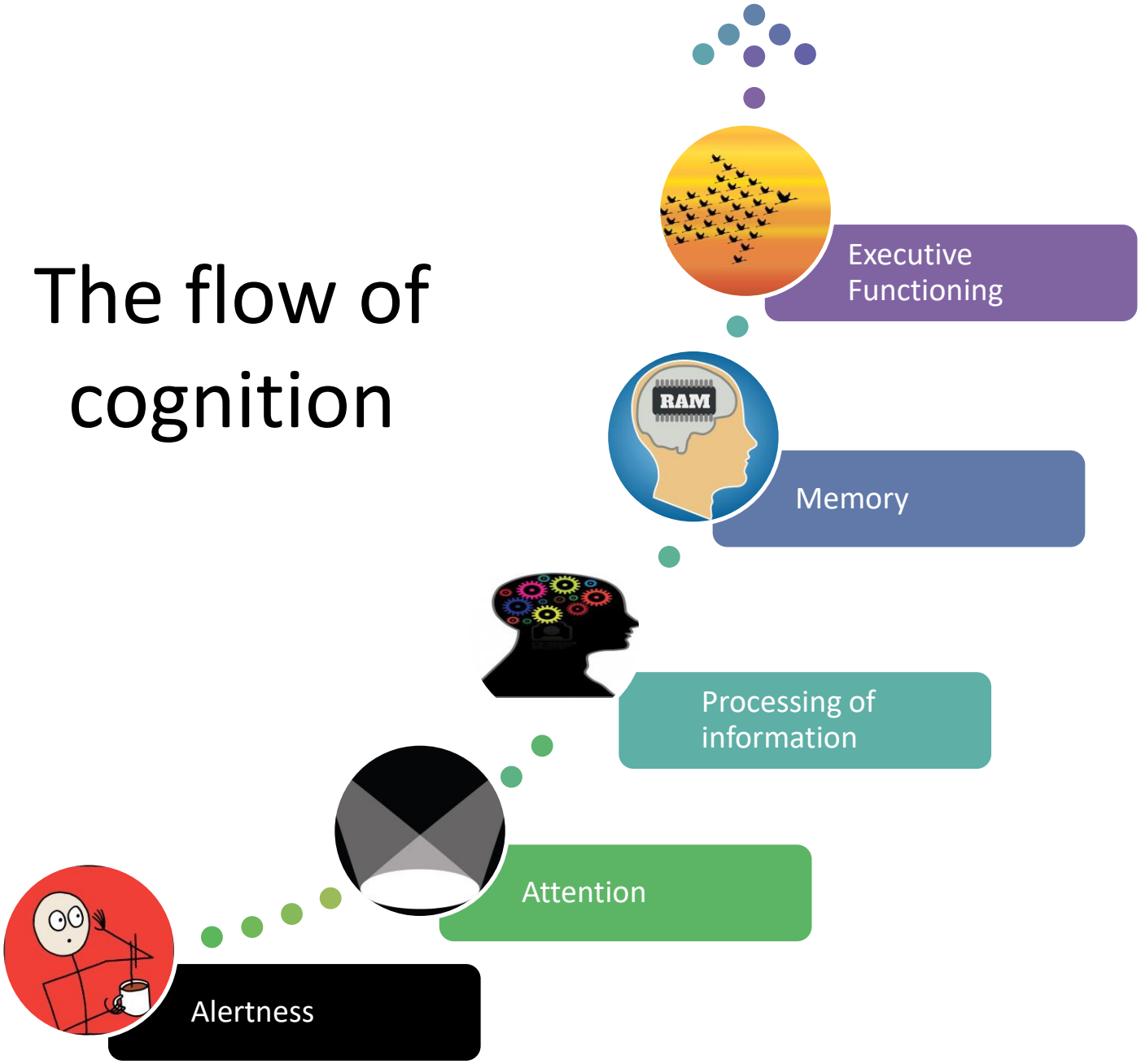
Open Module

TBI Identification Method

1.0 Continuing Education Credit(s)

The Ohio State University (OSU) Traumatic Brain Injury (TBI) Identification Method (OSU TBI-ID) is a standardized procedure for eliciting a person's lifetime history of TBI via a 3-5 minute str ... *(Read More)*

The flow of cognition



Problems with Attention

- Trouble staying tuned-in
- Seeks stimulation
- Looks bored
- Restlessness/fidgeting

Alex

Difficulty with both focusing and sustaining attention

What to do

Command Attention

- Eye contact
- Use notes to focus

Break down information

- Talk in short sentences
- One point at a time

Make it active

- Get repetition
- Rehearse
- Repeat
- Allow walking/fiddling

Other things to do…

- Remove distractions
- Talk in short sentences (not paragraphs)
- Repeat information
- Make Notes
- Check comprehension
- Make stressors predictable (if they can’t be avoided).
- Rehearse responses
- Ask clients how they will remember future events

Problems with Processing Information

- Only hears part of a message
- Seems to get tired easily
- Seems very passive
- Looses attention (spaces out)

Alex

- Moderately slowed auditory processing.
- Able to read words at a 7th grade level, but doesn't seem to be able understand or retain information he's read.
- Poor memory for episodes but is able to learn routines

Alex--Observations

Seems to lose his place in the interview

Repeats information

Shelter staff report repeated rule violations, such as smoking in the wrong place

Did not complete the housing application he was given

Went to get lunch, even though he was waiting for an appointment.

Can’t name his meds or what they’re for

What you can do

Slow it down.

- Pause
- Write notes while you speak

Simplify

- One idea at a time

Check-in

- Ask for a repetition

Problems with Memory

- Inconsistent in activities
- Trouble recalling events
- Difficulty Learning
- Lack of follow-through
- Seems to make things up

Memory

Most often impaired

- Learning new information
- Recalling new information without cues
- Remembering to do things in the future
- Memory for context (source memory)
- Memory of episodes after injury

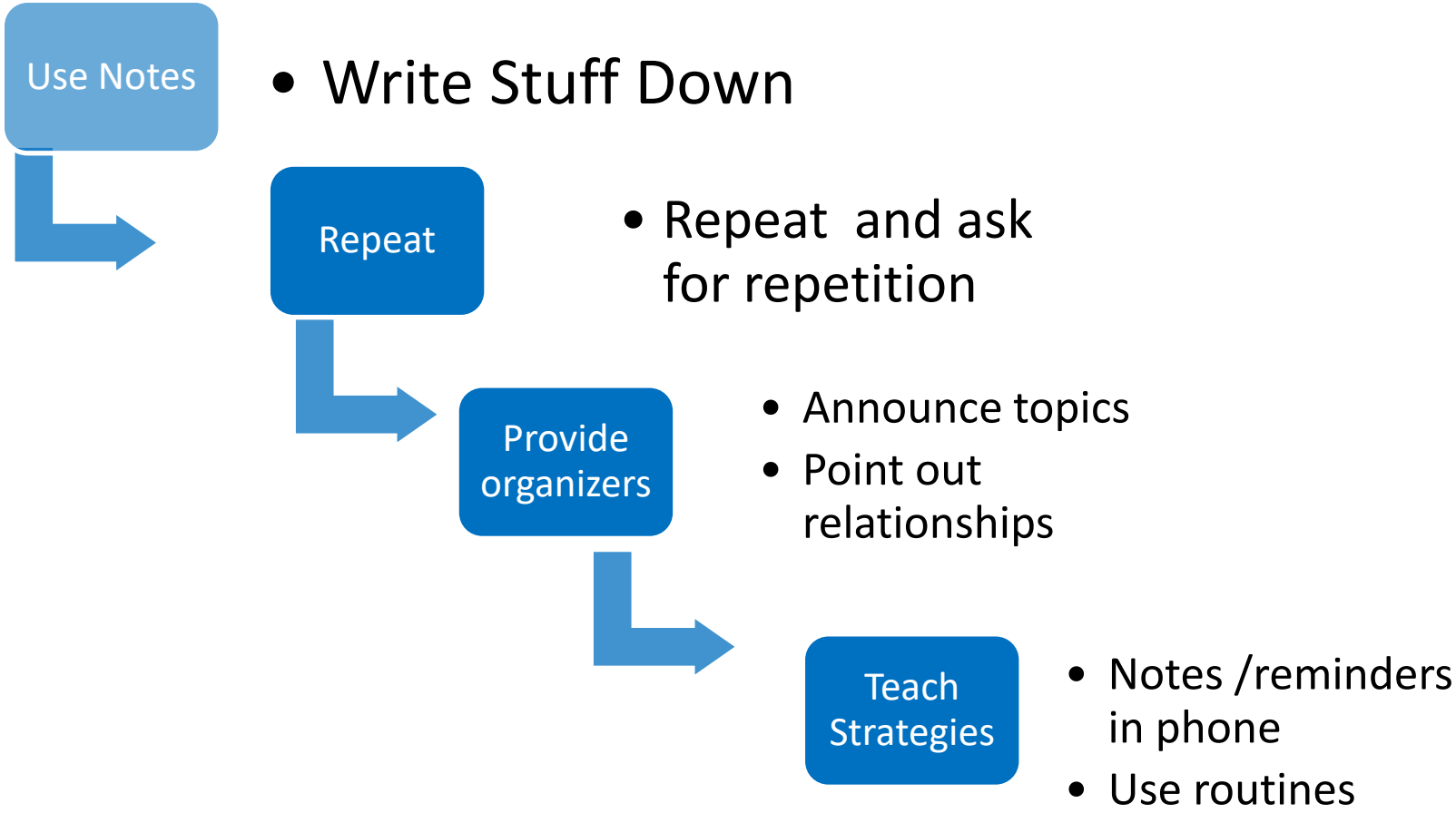
Often show less impairment

- Memory for faces
- Recognition (cued) memory
- Procedural learning (learning by habit/routine)
- Biographical information (pre injury)

Alex

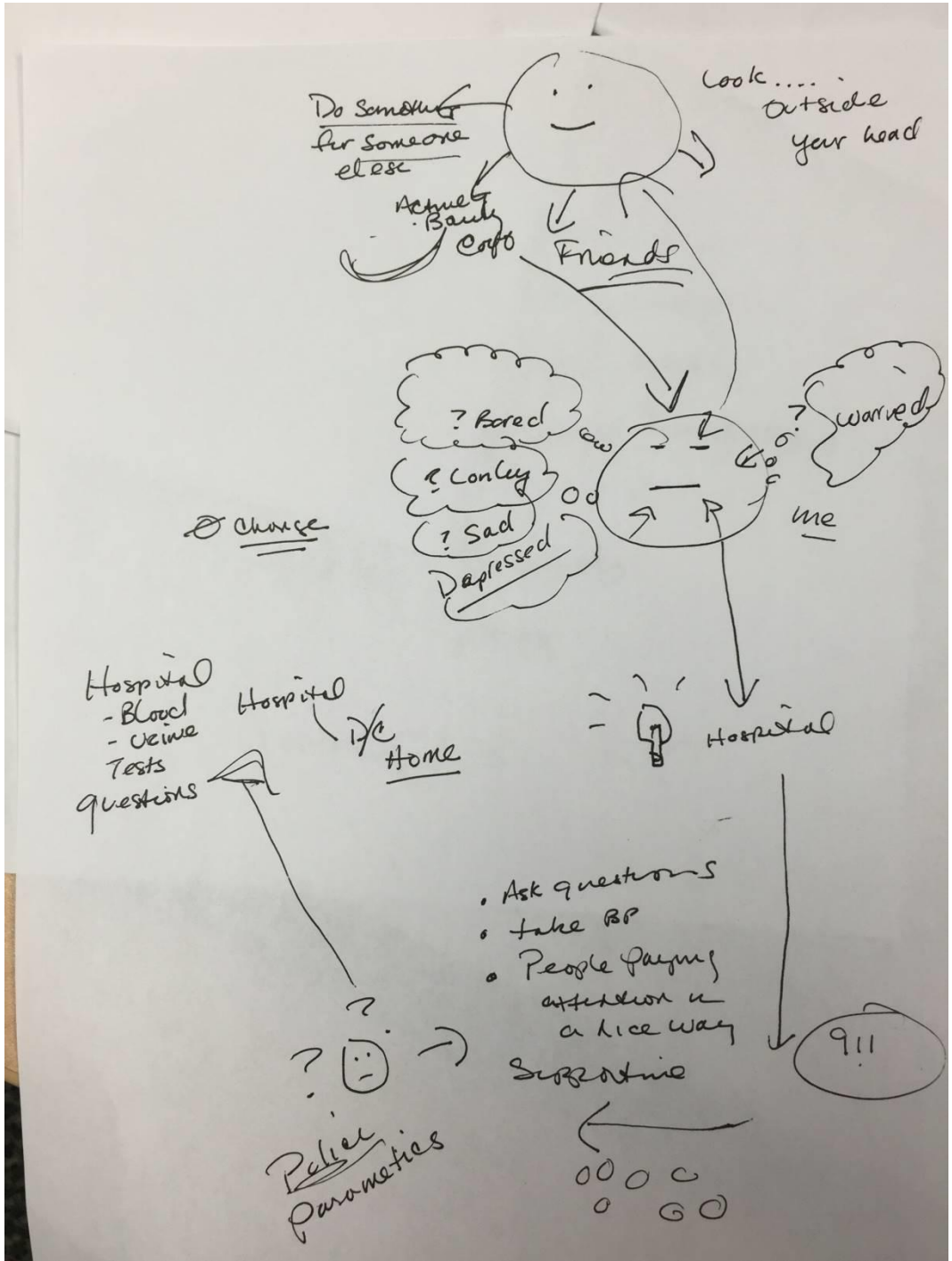
- Moderate problems organizing information to remember
- Once something is learned he remembers it well
- Learns routines well
- Trouble paying attention makes it difficult for him to register new information

What you can do



Problems with initiation

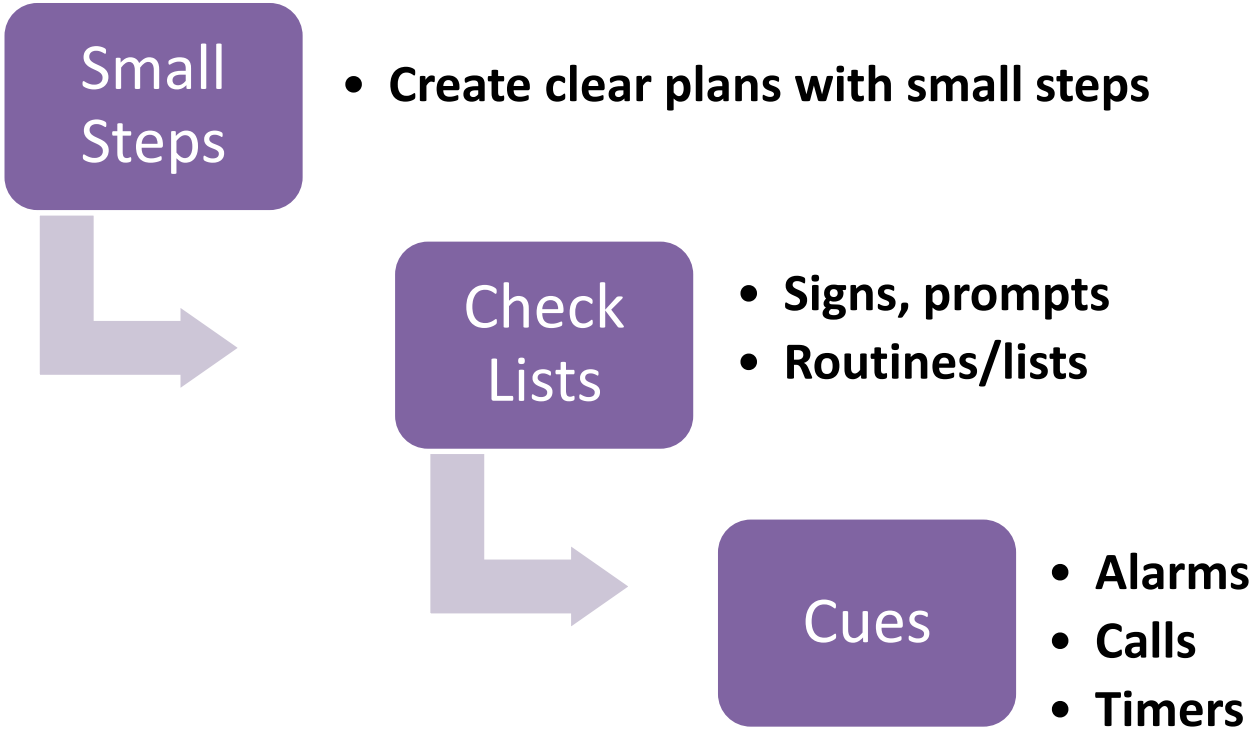
- Appears unmotivated
- Identifies goals, but doesn’t act
- Needs constant reminders to complete a task
- Others describe as ‘lazy’


Do something for someone else
Look.... Outside your head
Actually Bank Coffee
Friends
? Bored
? Lonely
? Sad
Depressed
? Worried
Me
Change
Hospital - Blood - Veine Tests questions
Hospital D/C Home
Hospital
• Ask questions
• take BP
• People paying attention in a nice way
Supportive
911
Relier Paramedics

Alex

- Alex has a hard time getting going in the morning. It’s tough to get out of a warm bed, but he will do it if he has something he wants to do.
- Spends a lot of his time watching TV until someone invites him to do something.
- Seems to procrastinate.

How to help


Small Steps
• Create clear plans with small steps
Check Lists
• Signs, prompts
• Routines/lists
Cues
• Alarms
• Calls
• Timers

Executive Function

- Planning
- Mental Control
  - Initiating activity
  - Switching tasks
- Emotional Control
- Self Awareness

Definitions

"The *executive functions* of the brain can be defined as the complex process by which an individual goes about performing a novel problem-solving task from its inception to its completion."

Sbordone (2000)

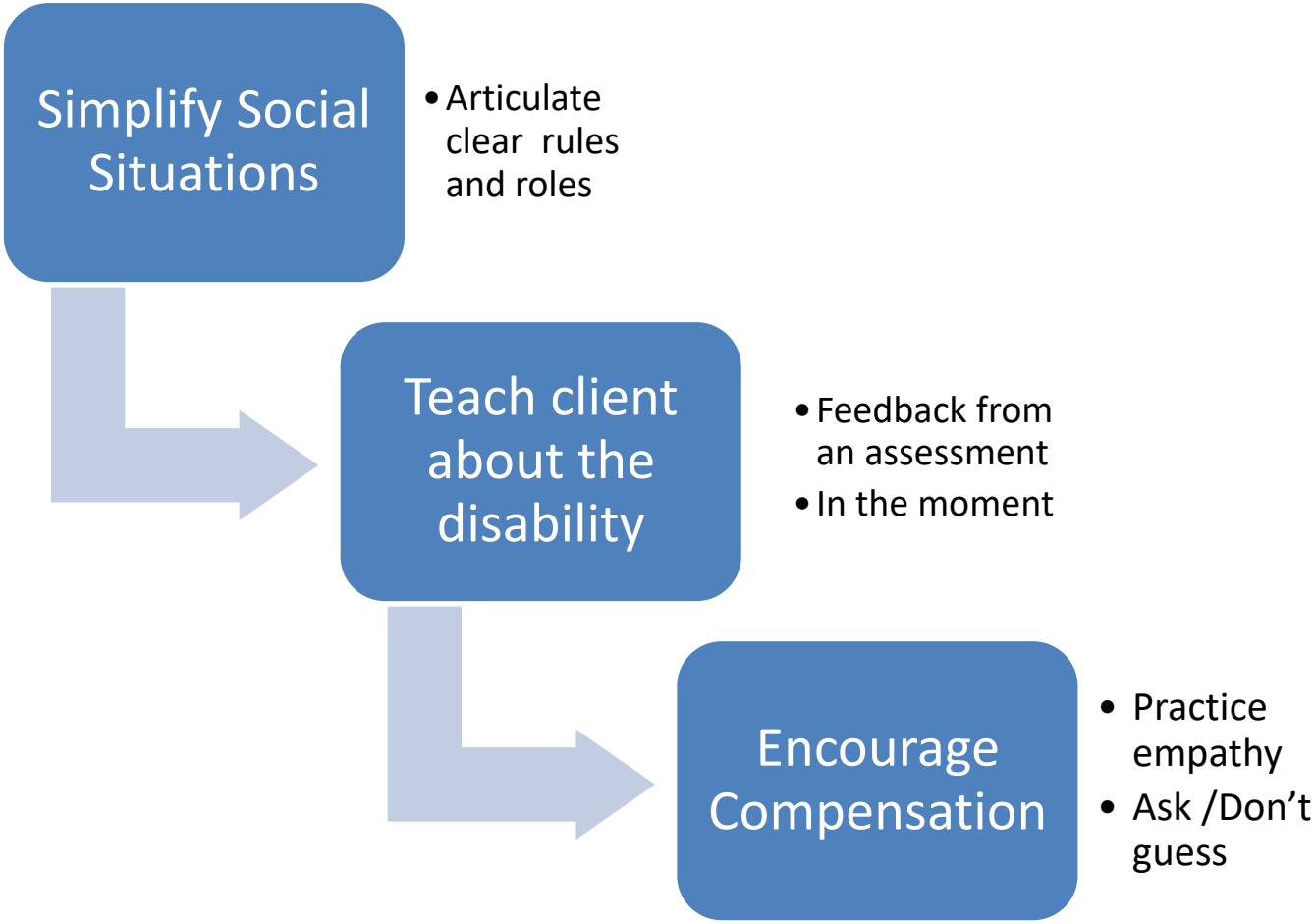
The "A-B-C's" of Self-Regulation

- **A**ffective (emotional) regulation
- **B**ehavioral planning
- **C**ognitive resource allocation

Emotional Regulation

- Difficulty getting along with others
- Lacks empathy
- Behaviour that seems childlike
- Emotional lability
- Misinterprets others' intentions

How to Help


Simplify Social Situations
• Articulate clear rules and roles
Teach client about the disability
• Feedback from an assessment
• In the moment
Encourage Compensation
• Practice empathy
• Ask /Don't guess

Alex

- What others say about him….
  - He has no sense of humor—can’t understand when I’m being sarcastic
  - Likes the sort of humor little kids like—slapstick
  - He’s pretty gulable
  - He doesn’t show much emotion, and when he gets angry he pops. Then he can’t understand what the big deal was

Flooding


OVERSTIMULATION
SENSORY
OVERLOAD
LOUD NOISES
PHONE CALLS
SUNLIGHT
WORK STRESS
UNCOMFORTABLE CLOTHING
MUSIC
COOKING
TRAFFIC
RELATIONSHIPS
TOUCH
NIGHTTIME
DARKNESS
PAYING BILLS
SCARY MOVIES
DRIVING
SUMMER HEAT
BRIGHT LIGHTS
UNEXPECTED CHANGES
BIG CROWDS

Emotional Mind

Angry

→ Shout / Swear

→ Break things

→ Self harm

Replacement Behaviours

- Use a towel on the bed.
- Use ice ~~cubes~~ for strong physical sensation.

? maybe legal problem

→ $ - Stuff

→ Secure

→ feel
mu

Feel proud.

Have my money

∅ legal problems

People will get along w/ you

Sensory and Emotional Flooding

- Appears irritated, or shuts down in busy places
- Closes eyes when thinking/speaking
- Loses chain of thought
- Frequent requests for breaks (cigarettes, BR)

Alex

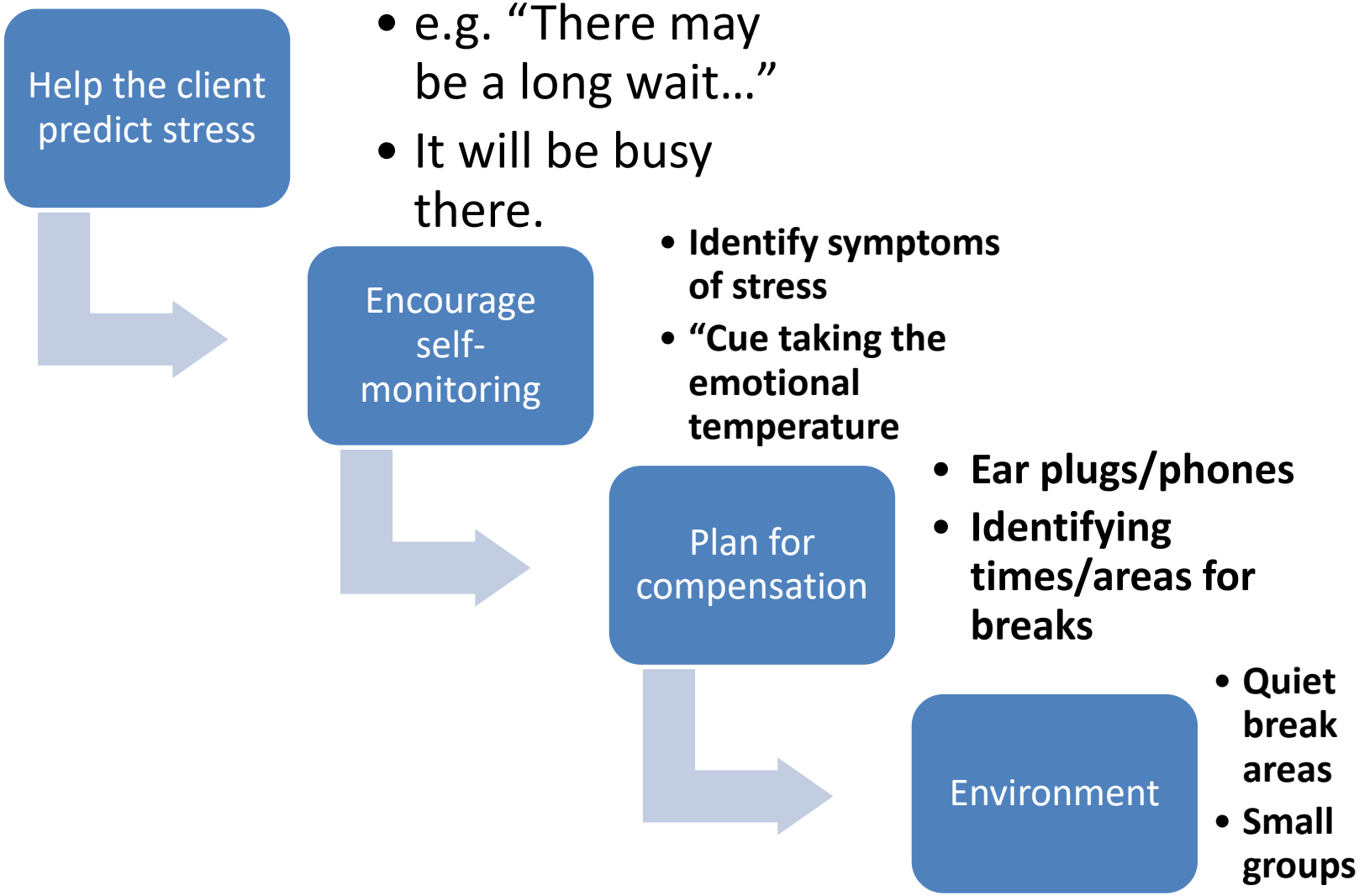
Has a tendency to run away when things are difficult.

Seems tense in busy places.

Strategies to Manage Flooding

- Know what's happening
- Identify triggers
- Support clients to develop their own strategies
  - Limiting exposure to the triggers
  - Using techniques to reduce arousal
  - Engage planning and problem-solving

How to Help

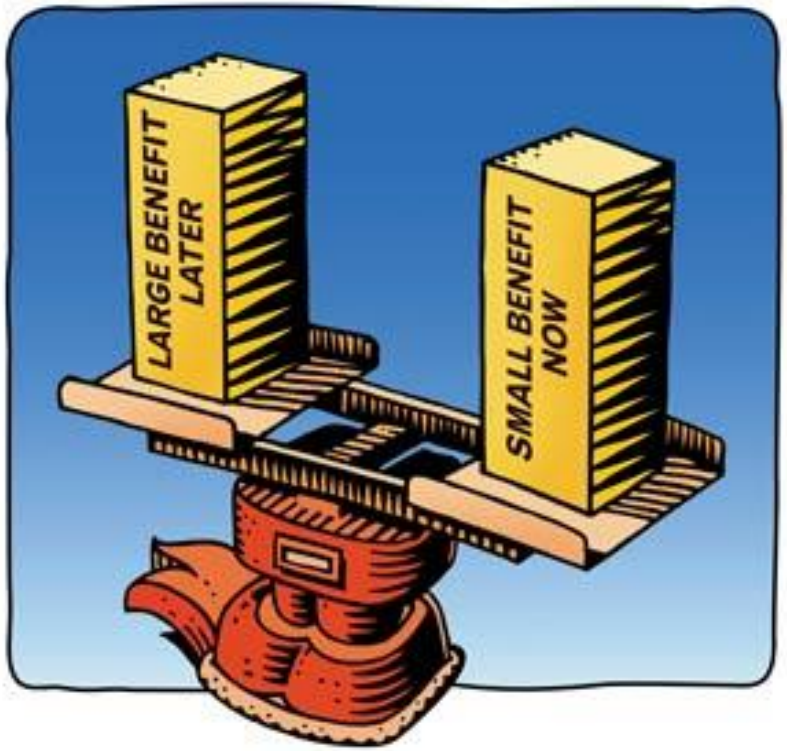

Help the client predict stress
• e.g. "There may be a long wait…"
• It will be busy there.
Encourage self-monitoring
• Identify symptoms of stress
• "Cue taking the emotional temperature
Plan for compensation
• Ear plugs/phones
• Identifying times/areas for breaks
Environment
• Quiet break areas
• Small groups

Alex

- Alex has trouble making simple plans. As a result he’s often late.
- When there’s a new problem he tends to ignore it until someone calls it to his attention.
- He sometimes says he’d like to do something, like save money, but couldn’t tell you about how he’d do it.
- He’s impulsive, and might forget a plan that has been made and do the easy or fun thing in the moment.

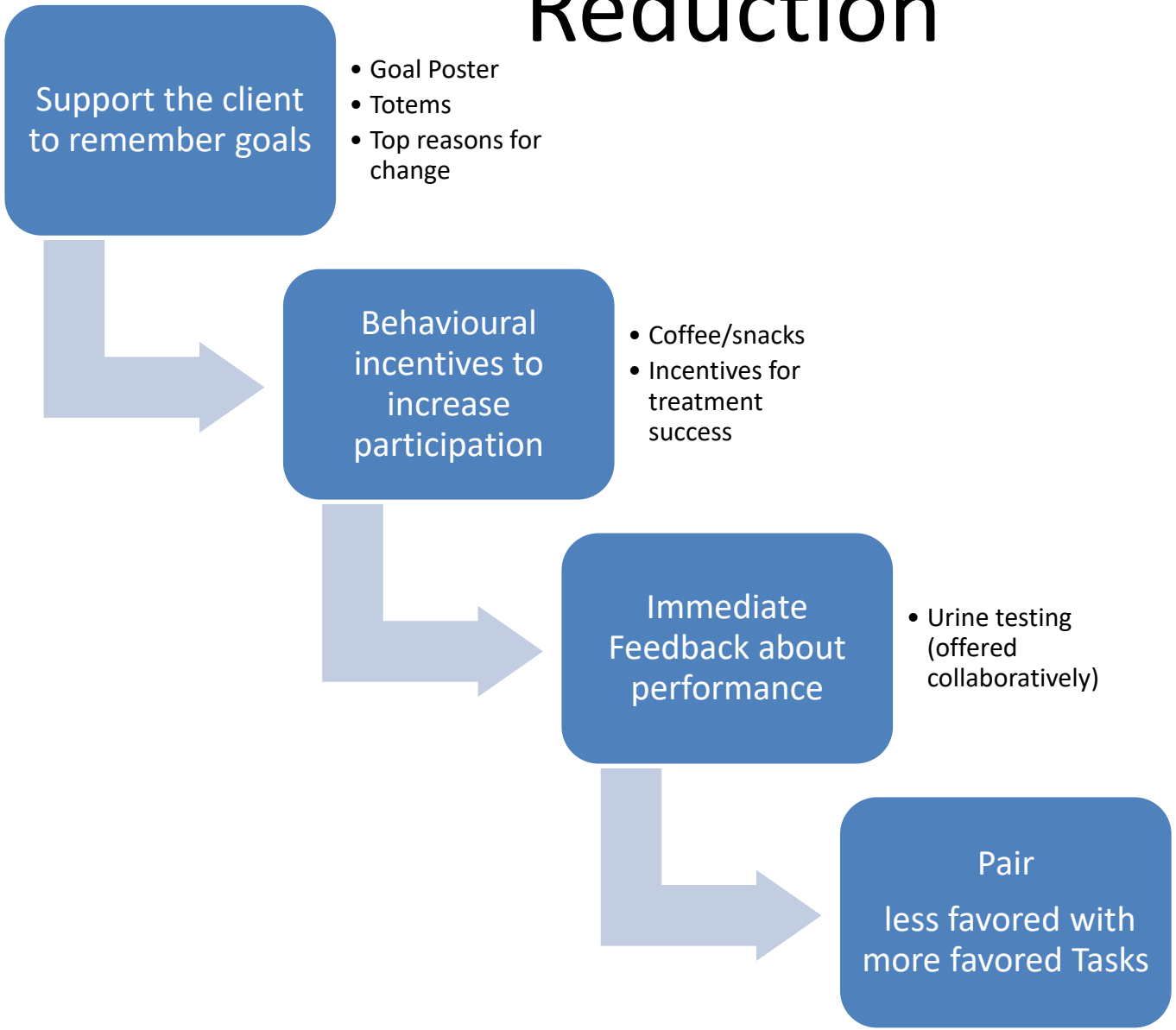
Delay Discounting

Choosing a small immediate reward in lieu of a larger delayed reward



What do problems with delay discounting look like?

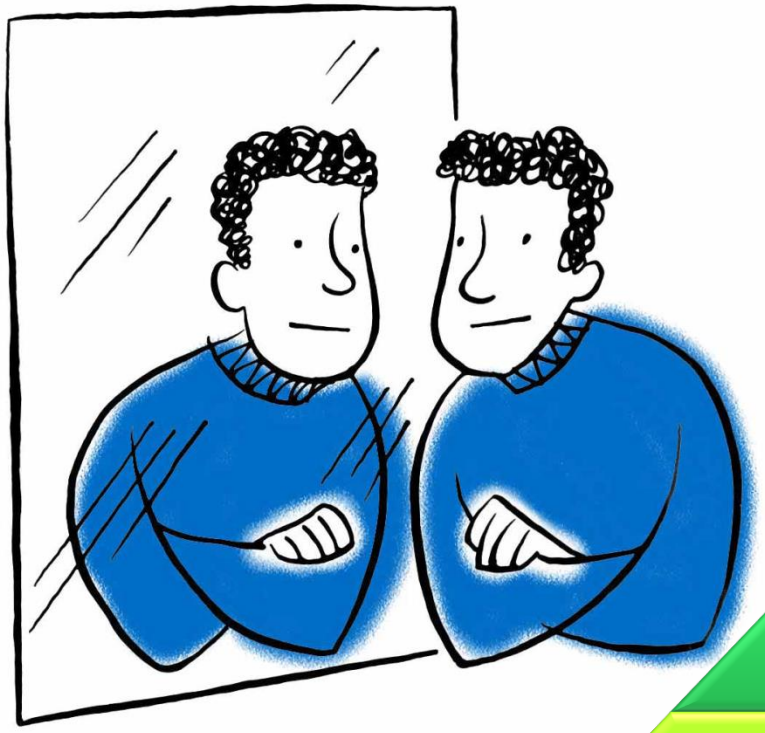
How to help –Focus on Harm Reduction

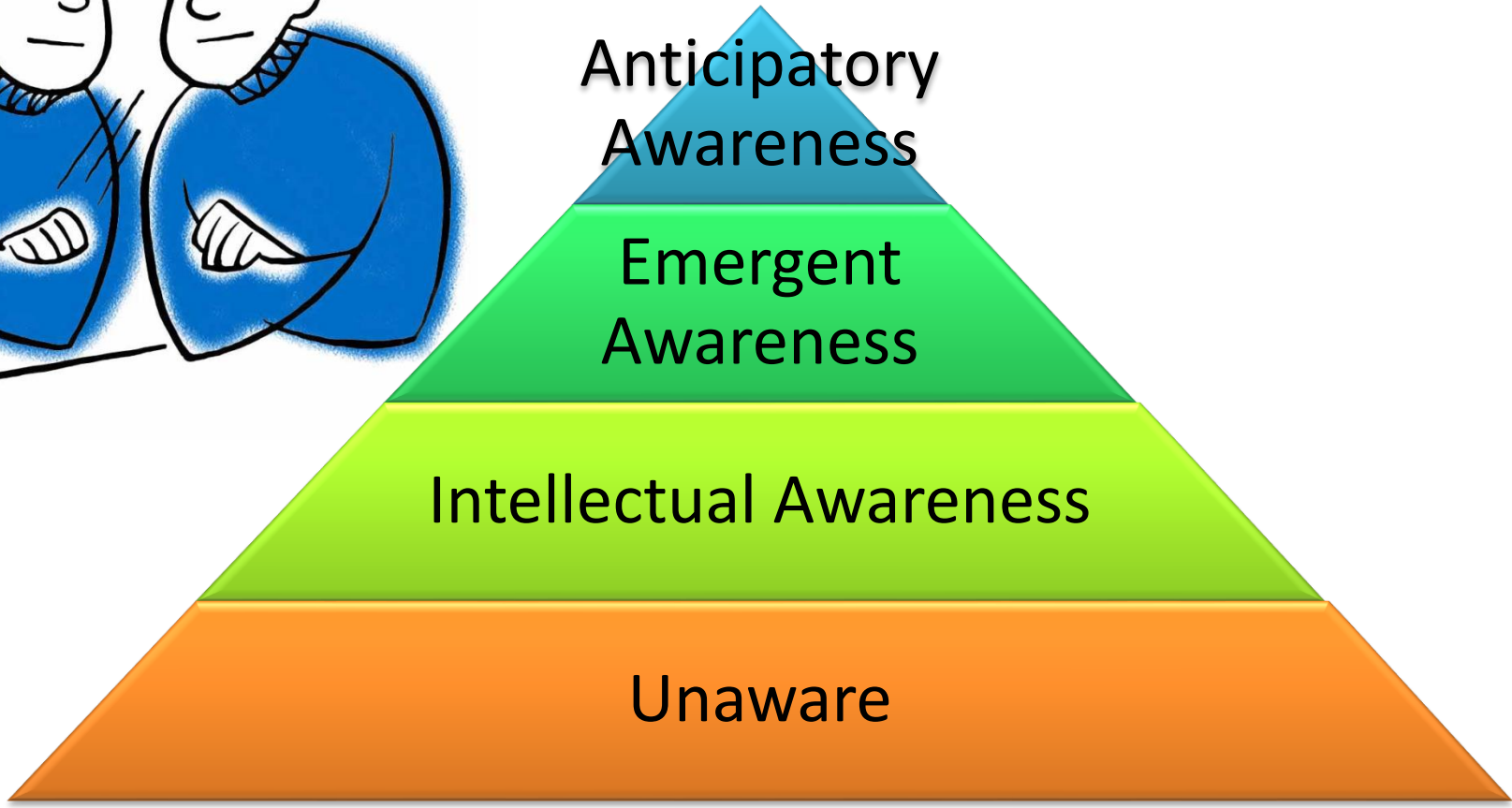


Awareness….

…Requires memory, perception, reasoning and other cognitive functions working in concert.

Awareness




Anticipatory Awareness
Emergent Awareness
Intellectual Awareness
Unaware

Alex

- Knows about his brain injury but doesn’t think that there’s a problem
- Alex has often refused treatment/support

What you can do to help

Accommodation BASIC

Staff members take time to build a working alliance with clients who present with signs of cognitive impairments.

Staff members explore the potential for cognitive difficulties when a client presents with difficulty in following through with tasks, complying with rules or communicating their needs and wishes

Accommodation Specific

The team has a member with brain injury training and experience that can provide guidance.

The team is able to create individualized support plans based on the recommendations of a trained professional

Specialized Services

The team has access to or includes brain injury professionals including an occupational therapist, social workers speech and language therapists, neuropsychologist and physiatrist as well as rehabilitation nursing

Accommodation Specialized

The team provides specialized care. Specific programming is developed, including supported housing options that accommodate cognitive impairment.

Assessing Functional Impairment

BASIC

Observation and Interview

Specific

WHODAS

(self-report) and Observation

Specialized

WHODAS

Detailed functional assessments

Assessment Specific

There is a team member who has training and experience in recognizing and evaluating cognitive and functional impairment and can perform screening using standardized measures.

Cognitive screening is conducted by, or under the supervision of a trained professional who supports the interpretation of findings and assists in the development of recommendations.

Assessment Specialized

The team has access to professionals that can provide diagnostic evaluations that enable access to diagnosis specific programs and/or disability entitlement programs.

Functional Impairment

Activities of day to day functioning that are negatively affected.

- Basic activities of daily living (feeding, bathing, toileting, dressing)
- Instrumental Activities of Daily living (cooking, cleaning, money management, laundry, etc.)
- Social Interaction
- Social Participation

Signs of Functional Impairment

Difficulties with grooming

Persistent “rule violations”

Conflict in social interaction

Difficulty in Providing History

Trouble keeping appointments

Difficulty following through

Interview Strategy

- Broad open-ended questions
  - Allows a window into the organization and thought process.
- Prompts that zone in on relevant content.
  - Allows the interviewer to get a sense of limits related to communication, memory and organization.

Interview Content

Tell me about your day?

Do you hear about routines?

What do you do first?

How do you take care of….bathing, laundry, getting something to eat?

That sounds like a great plan…how often are you able to do that? What gets in the way?

WHODAS

- Generic assessment for health and disability
- Used Across Diseases
- 5-20 minutes to administer
- Applicable across cultures and settings
- Linked to the ICF Disability and Health

WHODAS 2.0 Domains

Cognition: *Understanding and Communicating*

Mobility: *Getting Around*

Self-Care: *hygiene, dressing, eating & staying alone*

Getting Along—*interacting with People*

Life Activities -*home, work, leisure, school*

Participation in Society —*joining community activities*

Available Forms

- 12 item screening form
- 36 item assessment form
  - Self-report
  - Interview
  - Proxy report

  Simple scoring and weighted scoring

12 + 24 (screening and follow-up items)

Frames of Reference for Items

- Degree of difficulty (pain, slowness, change)
- Due to health conditions
- Past 30 days
- Averaging good and bad days
- Responding as the client *usually* does an activity
- Items not experienced in the last 30 days are not rated

WHODAS Technical Specs

- Excellent reliability and validity
- Consistent with the International Classification of Functionaling, Disability and Health (ICF)
- Sensitive to Intervention
- Simple/Complex Scoring

WHODAS Manual

WHODAS site

WHODAS 2.0

WORLD HEALTH ORGANIZATION
DISABILITY ASSESSMENT SCHEDULE 2.0

12-item version, self-administered

This questionnaire asks about difficulties due to health conditions. Health conditions include diseases or illnesses, other health problems that may be short or long lasting, injuries, mental or emotional problems, and problems with alcohol or drugs.

Think back over the past 30 days and answer these questions, thinking about how much difficulty you had doing the following activities. For each question, please circle only one response.

In the past 30 days, how much difficulty did you have in:						
S1	Standing for long periods such as 30 minutes?	None	Mild	Moderate	Severe	Extreme or cannot do
S2	Taking care of your household responsibilities?	None	Mild	Moderate	Severe	Extreme or cannot do
S3	Learning a new task, for example, learning how to get to a new place?	None	Mild	Moderate	Severe	Extreme or cannot do
S4	How much of a problem did you have joining in community activities (for example, festivities, religious or other activities) in the same way as anyone else can?	None	Mild	Moderate	Severe	Extreme or cannot do
S5	How much have you been emotionally affected by your health problems?	None	Mild	Moderate	Severe	Extreme or cannot do

WHODAS 12 item

- http://www.who.int/classifications/icf/WHODAS2.0_12itemsSELF.pdf

WHODAS 36 item

WHODAS 2.0

World Health Organization Disability Assessment Schedule 2.0

36-item version, self-administered

Patient Name: _____ **Age:** _____ **Sex:** ❑ Male ❑ Female **Date:**_____

This questionnaire asks about difficulties due to health/mental health conditions. Health conditions include **diseases or illnesses, other health problems that may be short or long lasting, injuries, mental or emotional problems, and problems with alcohol or drugs.** Think back over the **past 30 days** and answer these questions thinking about how much difficulty you had doing the following activities. For each question, please circle only **one** response.

							Clinician Use Only		
	Numeric scores assigned to each of the items:	1	2	3	4	5	Raw Item Score	Raw Domain Score	Average Domain Score
	In the last 30 days, how much difficulty did you have in:								
	Understanding and communicating								
D1.1	Concentrating on doing something for ten minutes?	None	Mild	Moderate	Severe	Extreme or cannot do			
D1.2	Remembering to do important things?	None	Mild	Moderate	Severe	Extreme or cannot do			
D1.3	Analyzing and finding solutions to problems in day-to-day life?	None	Mild	Moderate	Severe	Extreme or cannot do			
D1.4	Learning a new task, for example, learning how to get to a new place?	None	Mild	Moderate	Severe	Extreme or cannot do		30	5

http://www.who.int/classifications/icf/WHODAS2.0_36itemsSELF.pdf

Adaptive Behaviour Assessment System - 3

Harrison and Oakland (2015).

ABAS - 3

- Birth to 93 years
- Self, other and observation formats
- Administered by a professional with testing/evaluation training, e.g. Occupational Therapist, social worker, Psychologist
- Can be used as a part of an assessment to qualify and individual for disability entitlements

ABAS-3

Domain Areas

- Conceptual
- Social
- Practical

Skill Areas: Communication, community use, functional academics, health and safety, home or school living, leisure, motor, self-care, self-direction, social and work

Intervention Planner

Adult form

- 239 items
- Ratings:

  0= unable to perform the task

  1=never or almost never performs the task

  2=performs the task sometimes

  3=always or almost always performs the task
- 45-60 minutes admin time

A Few Sample Items

BEHAVIOR RATINGS

Communication	Ability	Frequency			
	Is not able	Never (or almost never) when needed	Sometimes when needed	Always (or almost always) when needed	Check **ONLY** if you GUESSED
1. Says the names of other people (for example, "Mama," "Daddy," or names of friends).	0	1	2	3	☐
2. Says "Hello" and "Good-bye" to others.	0	1	2	3	☐
3. Answers the telephone by saying "Hello."	0	1	2	3	☐
4. Uses sentences with a noun and verb.	0	1	2	3	☐
5. Names 20 or more familiar objects.	0	1	2	3	☐
6. States his or her home address, including zip code.	0	1	2	3	☐
7. Gives verbal instructions to others that involve two or more steps or activities.	0	1	2	3	☐
8. Speaks clearly and distinctly.	0	1	2	3	☐

	Year	Month	Day
Testing date	2015	4	29
Date of birth	1945	4	5
Age	70	0	24

Raw Score to Scaled Score Conversions

Adaptive skill area	Raw score	Scaled scores			
Communication	44	2	2		
Community Use	32	1			1
Functional Academics	56	6	6		
Home Living	43	3			3
Health and Safety	43	2			2
Leisure	56	9		9	
Self-Care	39	1			1
Self-Direction	56	6	6		
Social	67	8		8	
(Work)					
Sum of scaled scores		**38**	**14**	**17**	**7**
		GAC	Conceptual	Social	Practical

Sum of Scaled Scores to General Adaptive Composite (GAC) and Adaptive Domain Score Conversions

	Sum of scaled scores	Standard score	Percentile rank	Confidence interval ☐ 90% ☑ 95%
General Adaptive Composite (GAC)	**38**	73	4	70 - 76
Conceptual	**14**	73	4	70 - 76
Social	**17**	92	30	87 - 97
Practical	**7**	67	1	62 - 72

Cognitive Assessment

Domains

- Orientation
- Attention/Working Memory
- New Learning and Memory
- Language
  - Expressive/Receptive
- Executive
  - Problem-solving Judgement

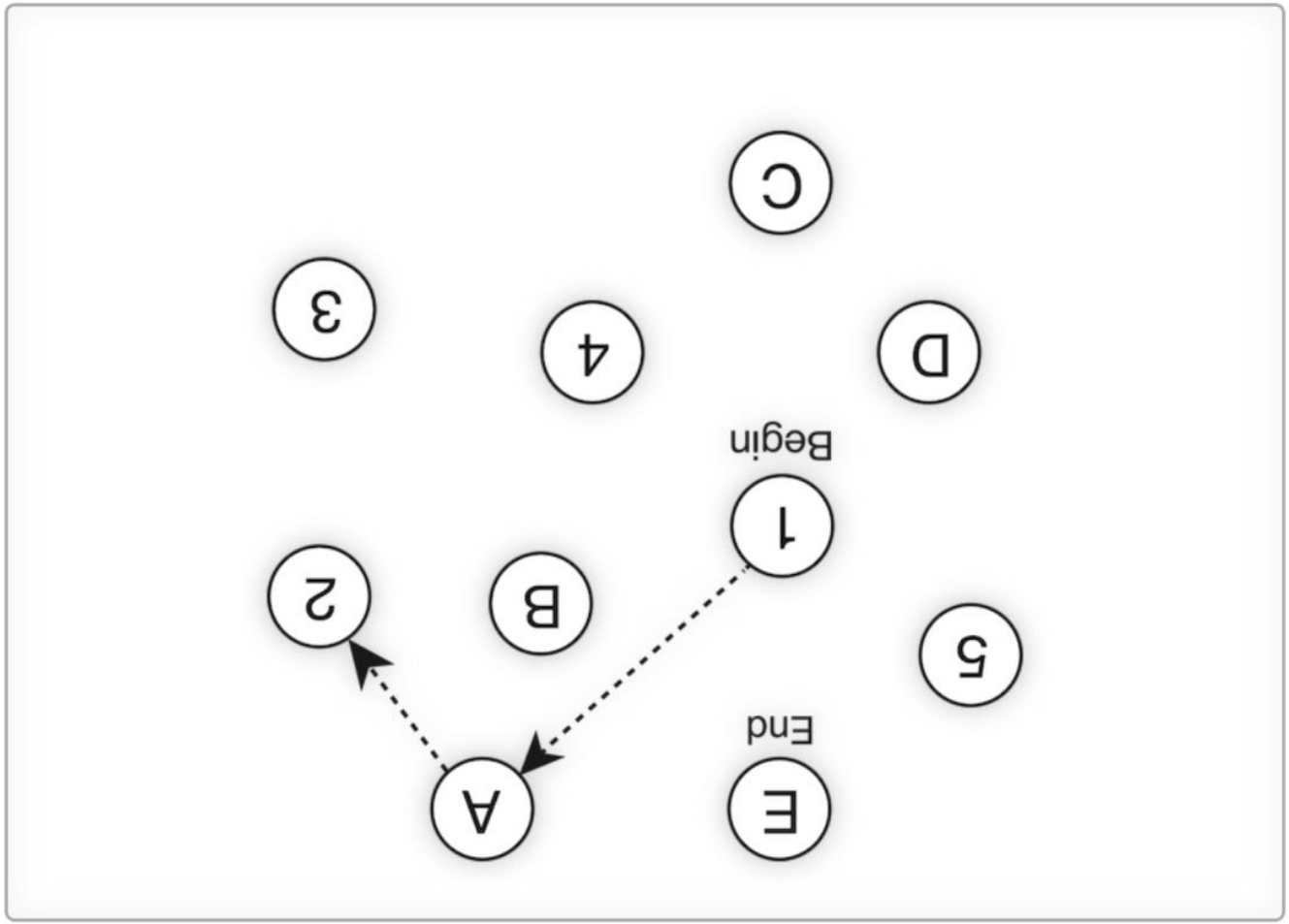
Neuropsychological Assessment

- Sensory
  - Olfaction
  - Primary Visual Perception
  - Tactile
- Psychological Status
- Effort

Less often: Emotional perception and Response to reward

MOCA

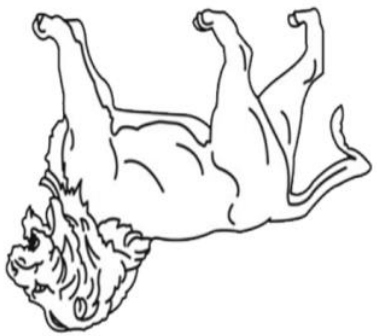
www.mocatest.org

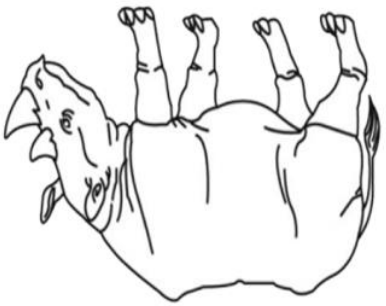


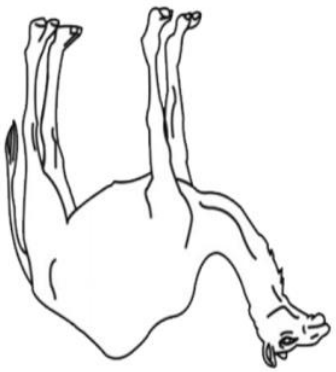
"Please draw a line going from a number to a letter in ascending order. Begin here [point to (1)] and draw a line from 1 then to A then to 2 and so on. End here [point to (E)]."

00:08

VisuoSpatial - Trails







Point to each figure and say:

"Tell me the name of this animal."

00:39

Naming

Considerations in Interpretation

- Education effects
- Effort
- Focal versus Diffuse Impairment

A comprehensive Assessment considers…

Full History: Developmental, health, education and occupation

Current situation: Psycho-social, stressors

All Potential Sources of cognitive impairment

Engagement in Testing: Attitude toward testing, sleep, Sensory impairments

Variations in Functional Status

Difference between ‘Say and Do’.

Variation Across time.

The impact of emotional state

Metabolic Factors

Fluctuations that are more extreme suggest dysregulation

Inner City
FAMILY HEALTH TEAM

About Us | Services We Provide | Group Programming & Monthly Calendar | Becoming a FHT Client | Clinic and Hours | Resources

Services We Provide


Chiropody


Doctor/Nurse Practitioner


Health Promotion


Neuropsychology


Nursing


Physician Assistant


Physiotherapist


Social Work/Counselling

Innercityfht.ca

Client Eligibility

- Used Seaton House
- Homeless or precariously housed
- No Access to a family physician

Closure of Seaton House shelter delayed as city struggles to secure funding

Seaton House, Toronto's biggest shelter, was originally slated for demolition this year as part of a larger effort to revitalize the area.

Seaton House Numbers

- 634 Bed

- To be developed into 100 emergency shelter spaces
- 378 Long term care beds
- 130 Assisted Living Units and an affordable housing component

Preliminary Data N=45

- Ave. Age = 56.4
- Age Range 25-78
- Ave. Education =11.5 years
- 82% homeless
- 4% independently housed
- 4% supported housing

- 51% documented brain injury
- 89% Problematic Substance Use
  - 42% alcohol
  - 8.9% cannabis
  - 15.6% other
  - 22% poly

Shyla, Roy and Proulx 2014 and personal communication, Sylvain Roy, 2015

Nature of Cognitive Impairment

- Brief cognitive status examination
  - 28% impaired
  - 53% borderline-to impaired
  - 71% below average
- Complex Attention
- Immediate and Delayed Memory
- Processing Speed
- Mental Flexibility

Shyla, Roy and Proulx 2014 and personal communication, Sylvain Roy, 2015

Findings

Learning and Memory

- 59.5 some problem
- 47.6 impaired enough to require some accommodation

Registering new information

Recalling information

Recognizing information that has been learned

Remembering information in context (source memory)

Shyla, Roy and Proulx 2014 and personal communication, Sylvain Roy, 2015

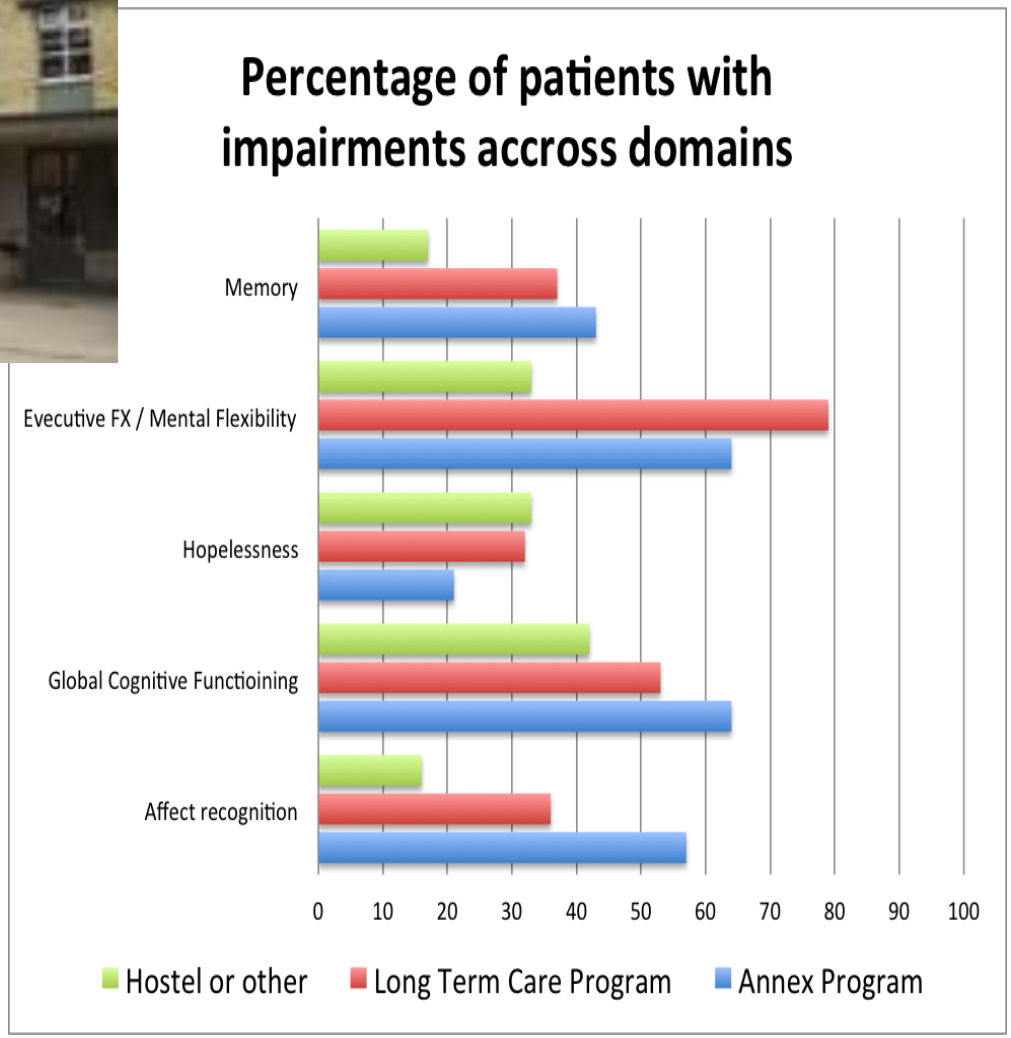
Findings

Executive Functioning

- 70% cognitive flexibility, complex attention and cognitive processing speed.
- 30% had severe impairments
- 42% unable to generate solutions to common situations (e.g. responding to fire)

- Reading
  - 37% below average
  - 18% borderline (difficulty reading labels/instructions)
  - 12% (5) profoundly impaired
- Affect Naming
  - 52% borderline to impaired

Hostel 250
Long-term Care 135
Annex 133 (harm reduction)



The work to be done…

- Only 200 clients will qualify for the new building
- 400 will need permanent re-location
- Triage
- Recommendations for care

Rapid Assessment

Brief interview with staff members:

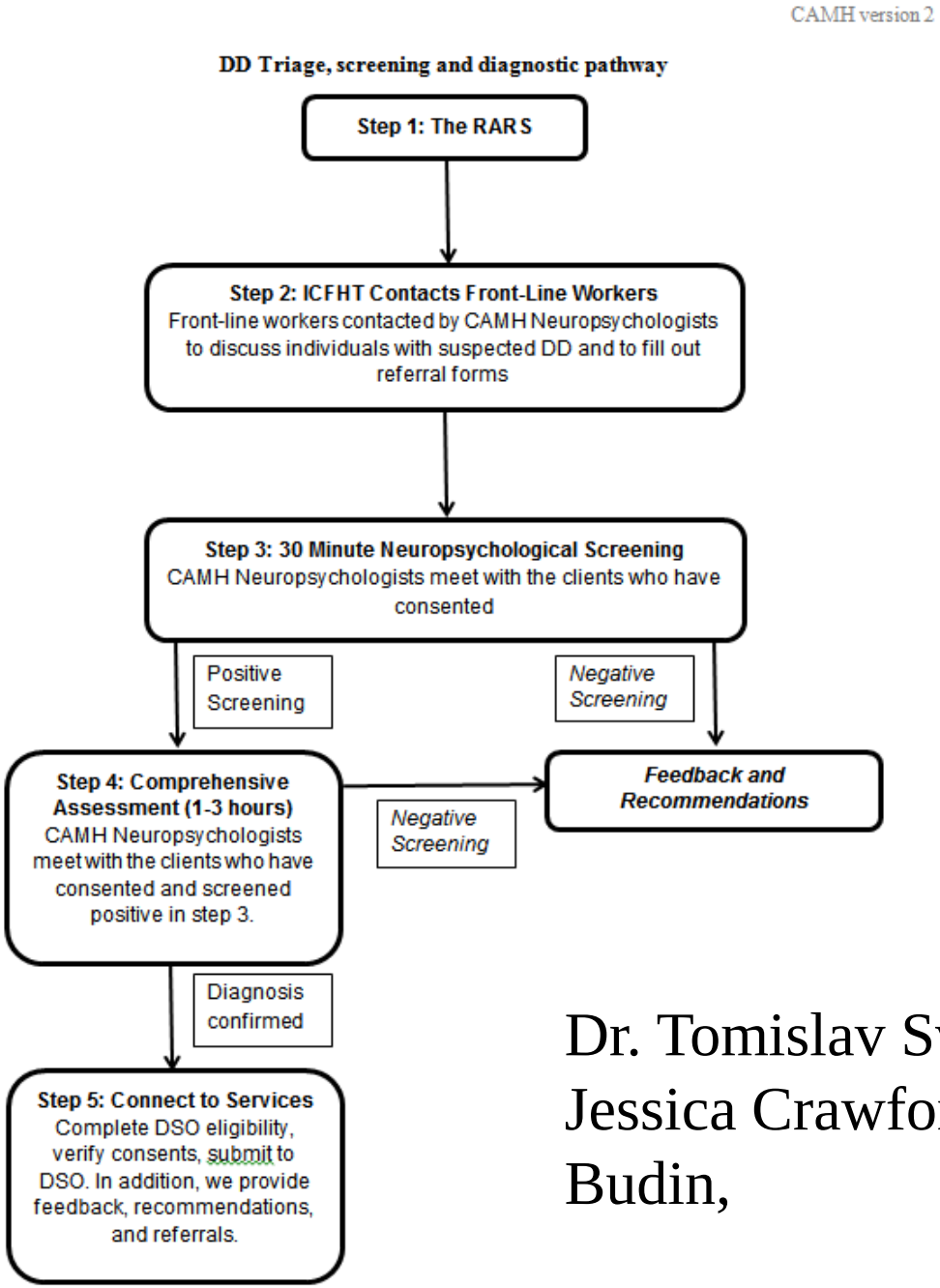
- Confidence Rating
- Overall rating of how difficult the individual is to care for
- Co-morbidities, such as mental health and addictions
- Rule-breaking
- Suspicion of neurocognitive impairment/disease
- Estimate of the amount of care required

Homeless Clients in Hospital CAMH

Screening to assess 111 clients who are homeless, but hospitalized.

- 24% with brain injury
- 70% rated as difficult to care for
- 100% had substance use that interfered with housing stability
- 98% cognitive impairment on testing
- 37% likely developmental disability

Inner City Family Health Team (ICFHT)



Dr. Tomislav Svoboda
Jessica Crawford, Dr. Sylvain Roy, Dr. Radek Budin,

Rapid Screen
Referral to Assessment
Brief Screen
Positive Screens referred for full Neuropsych
Connect to Services

Screen for Brain Injury History

Recognize Cognitive and Functional Impairment

Accommodate Cognitive and Behavioral Symptoms

Integrate with Community Resources

Montior and Manage Co-Occuring Health and Mental Health Issues

INTEGRATE WITH COMMUNITY RESOURCES	**Teams reach out to local and state brain injury associations to learn about available community-based programs.** **Teams are aware of resources for developmental disability and aging**	**Teams develop active partnerships with brain injury and other social services and may co-manage care.** **Active case management is provided.**	**Teams provide specialized care.** **Assessments and triage may be focused on obtaining entitlements and supports**

Connecting to Brain Injury Resources

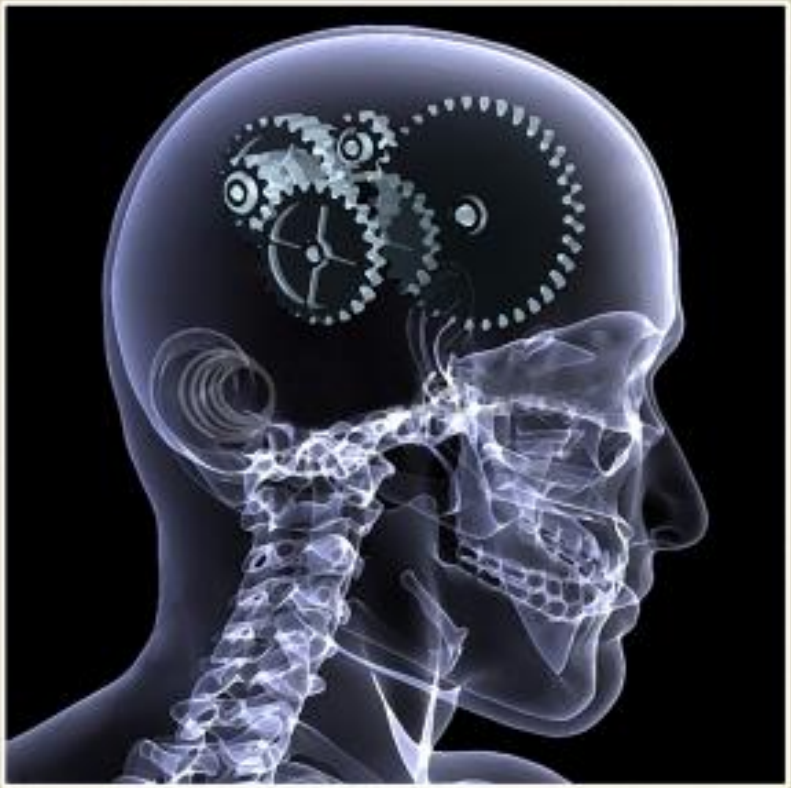
www.biausa.org

www.brainline.org

https://www.nashia.org/StatePrograms.asp

MARYLAND

Traumatic Brain Injury Advisory Board



2016

Annual Report

Maryland TBI

programs that offer personal care and other supports.	Maryland, Baltimore Campus in 2012. ***See recommended actions pages 9-10.***
Brain Injury Waiver. There is one home and community based program in Maryland designed specifically for individuals with brain injury. It is a small specialty program designed to support individuals with moderate to severe deficits resulting from their injury who meet the financial, medical and technical eligibility for the program.	**Gap:** Eligibility for the Brain Injury Waiver currently is based on "facility-based access," meaning it is limited to individuals transitioning out of four state-operated chronic hospital/nursing facility settings and five state psychiatric hospital settings. This limits access to the program for individuals who are in need of this level of support and otherwise eligible but are not receiving treatment in one of those institutional settings. ***See recommended actions pages 9-10.***
Behavioral Health Services. Maryland	**Gap:** Behavioral Health providers do not routinely screen the

Screen for Brain Injury History

Recognize Cognitive and Functional Impairment

Accommodate Cognitive and Behavioral Symptoms

Integrate with Community Resources

Monitior and Manage Co-Occuring Health and Mental Health Issues

MONITOR AND MANAGE CO-OCCURING HEALTH ISSUES

Clinicians are aware of elevated risk for:

- Mental Health Diagnoses
- Seizure disorder
- Endocrine disorder
- Early onset dementia
- Sensory impairments
- Pain (headache)
- Neurological deficits
- As well as post-concussive symptoms

When referring for health care, teams provide information related to the history of brain injury, as well as any functional issues observed.

Teams can refer physicians to evidence based guidelines

Teams include a brain injury-aware physician who is able to conduct a history and physical in consideration of the likelihood of cognitive impairment and history of trauma.

Physicians are aware of evidence based guidelines for medical care.

Teams include physicians and access to specialty services.

Monitor and Manage Co-occurring Health and Mental Health Issues

Sensory: sense smell, taste, hearing and balance

Fatigue and sleep disturbance

Headaches

Seizure disorders

Endocrine disorders

Early onset of cognitive decline

TBI Model Systems

http://www.msktc.org/tbi

Ontario Neurotrauma Foundation

Ontario Neurotrauma Foundation and Institut national d'ecellence en santé et en services soclaux Evidence based review of Moderate to Severe Brain Injury

http://www.abiebr.com/

http://dvbic.dcoe.mil/

Current Brain injury Guidelines

- Geared toward acute rehabilitation
- Very little guidance for service delivery in the community
- Little or no consideration given to marginalized populations
- VA has done a lot of work on returning vets with TBI/Blast injuries

Mild Brain Injury Guidelines

The Center for Disease Control and Prevention: Updated Mild Traumatic Brain Injury and Concussion Guideline for Adults.

VA/DoD Clinical Practice Guideline for the Management of Concussion-Mild Traumatic Brain Injury Department of Veterans Affairs Department of Defense

Physical Examination

Practice Trauma-informed care

Be alert to evidence of brain trauma, including scars

Medical screening: Include endocrine function and neurological examination

Blood and Urine testing: compliance with medication and SUD

Assess for functional Impairment

Cognitive Assessment

Plan of care

Compensate for cognitive impairment with simplified written information, prompts and reminders

Case management supports should be considered

Use of incentives (and treatment incentives)

Creation of routines and routine environments

Interdisciplinary care

Patient Education

- Review findings in cognitive assessments
- Train in compensation strategies developed collaboratively with the client with specific functional goals
- Educate about the particularly adverse effects of substance use with brain injury (http://Ohiovalley.org)
- Self management information for headache, fatigue and sleep

Complications

- Seizure risk (complicated by SUD)
- Risk for cognitive decline
- Risks of victimization, contact with the justice system, poor social interaction
- Increased risk of mental health and substance use disorders
- Sensory changes, including sensitivity (or insensitivity) to heat/cold

Managing Co-occurring Health Issues

- The introduction of medication for people living with brain injury should be initiated at the lowest possible dose and titrated slowly upwards.
- Consider the use of seizure medications that minimize cognitive impairment
- For sleep disorders the use of melatonin and trazadone should be considered
- Benzodiazepines and Non-benzodiazepine hypnotics should be used as a last resort

Treatment of Depression

- Consider the use of selective reuptake inhibitors for their favorable side-effect profile
- Sertraline and citalopram have been found to be effective for some individuals
- Referral to a Psychiatrist may be required.

Clinical guidelines AP

https://braininjuryguidelines.org/