



NANAIMO BRAIN INJURY SOCIETY

awareness • support • connection

Brain Injury Basics

**Presentation for
BC Association of
Community Response Networks**

Kix Citton
Executive Director
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Welcome to the Presentation

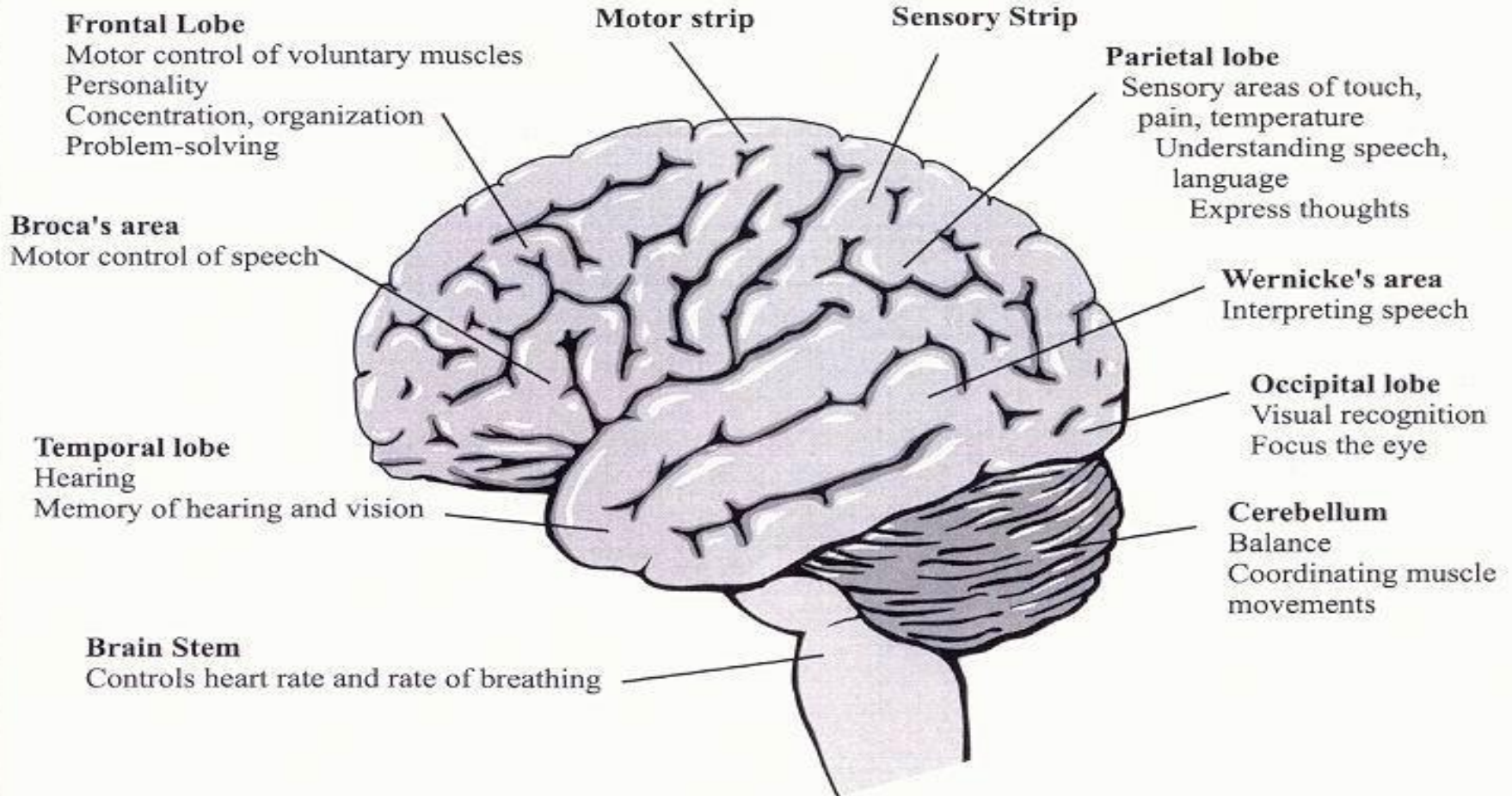
Kix Citton

- Executive Director at Nanaimo Brain Injury Society
- Over 20 years of working with non-profit organizations in Canada and overseas
- Passion for building inclusive, healthy communities
- Background in public health



When not in the office, you will find Kix hosting dinner parties with family and friends, digging in the garden or paddling with her Dragonboat team.

Brain Overview



What Are The Stats?

- Silent epidemic
- Anywhere. Anyone Anytime.
- Brain Injury is estimated to affect over 480 people per day in Canada – one every 3 minutes.



TRAUMATIC BRAIN INJURY (TBI) STATS



THE YEARLY INCIDENCE OF TBI IS ESTIMATED AT



FALLS ARE THE LEADING CAUSE OF TBI

RATES ARE HIGHEST FOR CHILDREN AGED 0 TO 4 YEARS AND FOR ADULTS AGED 75 YEARS AND OLDER

ANNUALLY, AN ESTIMATED
10 MILLION PEOPLE
SUFFER A TBI EVENT WORLDWIDE

IN THE EUROPEAN UNION
THE YEARLY AGGREGATE INCIDENCE
OF TBI HOSPITALIZATIONS
AND FATALITIES IS ESTIMATED AT
235 PER 100,000 



ALMOST HALF A MILLION (473,947)
EMERGENCY DEPARTMENT VISITS FOR TBI
ARE MADE ANNUALLY BY CHILDREN AGED 0 TO 14 YEARS



ADULTS AGED 75 YEARS AND OLDER
HAVE THE HIGHEST RATES OF TBI-RELATED
HOSPITALIZATION AND DEATH  



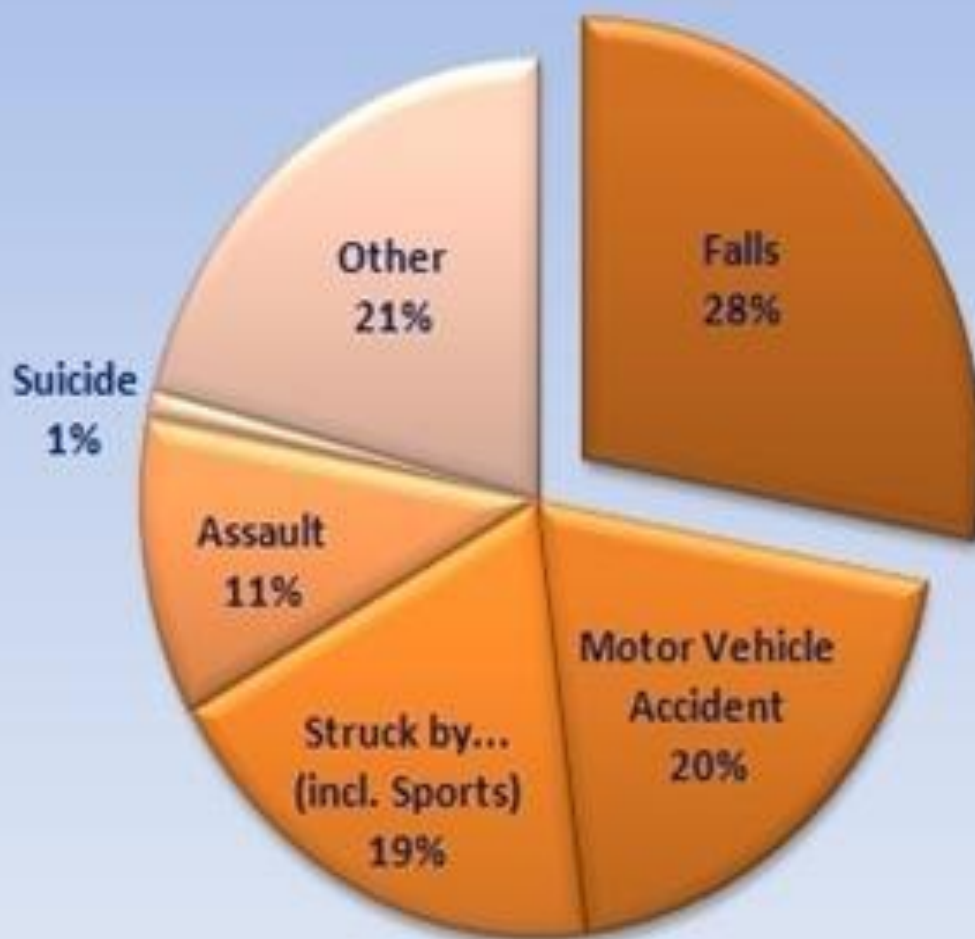
523,043
emergency department visits



62,334
hospitalizations

Traumatic Injuries

Major Causes of Traumatic Brain Injuries



Source: National Center for Injury Prevention and Control, CDC

How Does A Brain Injury Occur?

There are a number of common causes of acquired brain injury:

- **Traumatic brain injury** - Traumatic brain injury occurs as the result of some external force being applied to the brain.
- **Stroke** - Stroke usually occurs as the result of a hemorrhage or blockage to the blood vessels that supply blood to the various regions of the brain.
- **Hypoxia/anoxia** - Hypoxia/anoxia refers to the reduced or complete stopping of the flow of oxygen to the brain leading to tissue damage, and can be caused by uncompleted hangings, near drowning, or **overdoses** - "Toxic Brain Injury".

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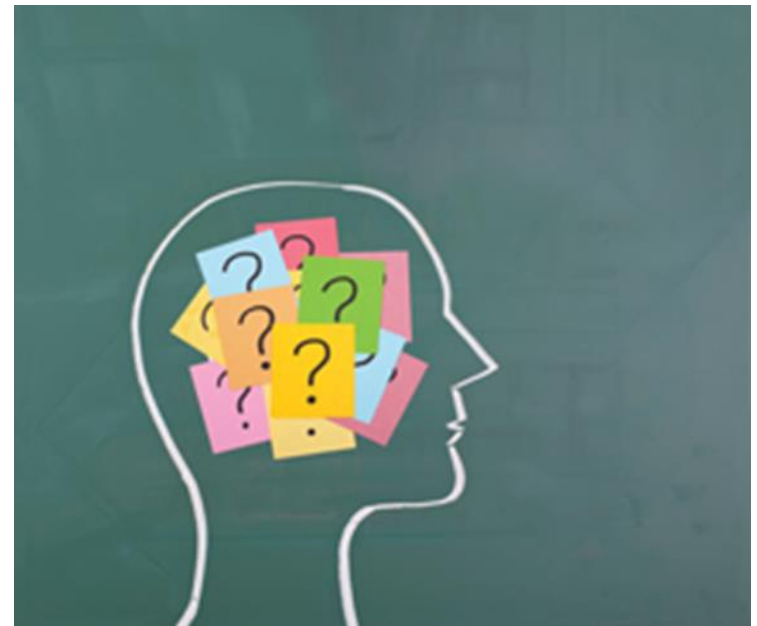
- **Infection** - Bacterial or viral infections can lead to an inflammation of the brain covering (meningitis) or the brain tissue itself (encephalitis).
- **Tumor** - Tumors cause damage to the surrounding brain tissue and structures as they grow within the brain.
- **Toxins** - Alcohol acts as a toxin and the long term misuse of alcohol can cause damage to brain tissue.

The Effects of Brain Injury

- Wide ranging, and uniquely specific to each individual.
- Brain injury is not always visible; it is referred to as the “unseen” or “invisible disability.”

Pre-injury Factors That Can Affect Recovery

- Health - including previous trauma/injury
- Education
- Employment
- Socio-Economic status
- Substance use/abuse
- Social environment
- Mental health
- Personality
- Family



Injury and Post Injury Factors That Can Affect Recovery

- Age at the time of injury
- Location of the brain injury
- The severity of the brain injury
- Length of coma
- Time since the injury
- Type of environment since injury
- Financial status since injury

Injury and Post Injury Factors That Can Affect Recovery

- Access to treatment
- Family and social supports
- Health
- Motivation for recovery
- Substance use/abuse
- Mental health

CURRENT SYSTEM

SUPPORTS ARE NONEXISTENT, LONG WAITS OR SHORT TERM

← BRAIN INJURY →

EARLY INTERVENTION

NO GAP IN SERVICES AND ONGOING SUPPORT

MENTAL HEALTH:

RISK OF **SUICIDE**
INCREASES BY **400%**

ADDICTION:

200% HIGHER CHANCE
OF ADDICTION

HIGHER CHANCE OF JOB LOSS &
HOMELESSNESS.

52% OF HOMELESS PEOPLE
HAVE A BRAIN INJURY

HIGHER CHANCE OF
INCARCERATION.

80% OF PRISONERS HAVE
A BRAIN INJURY

3X GREATER RISK OF SUFFERING A
SECOND BRAIN INJURY

BETTER ODDS OF FINDING
MEANINGFUL ACTIVITIES
INCLUDING EMPLOYMENT
& VOLUNTEERISM

BETTER CHANCE OF MAINTAINING
A STRONG SUPPORT NETWORK OF
FAMILY & FRIENDS

INCREASED SENSE OF BELONGING &
CONTRIBUTION IN
THEIR COMMUNITY

SUPPORT OTHERS
LIVING WITH ACQUIRED BRAIN INJURY

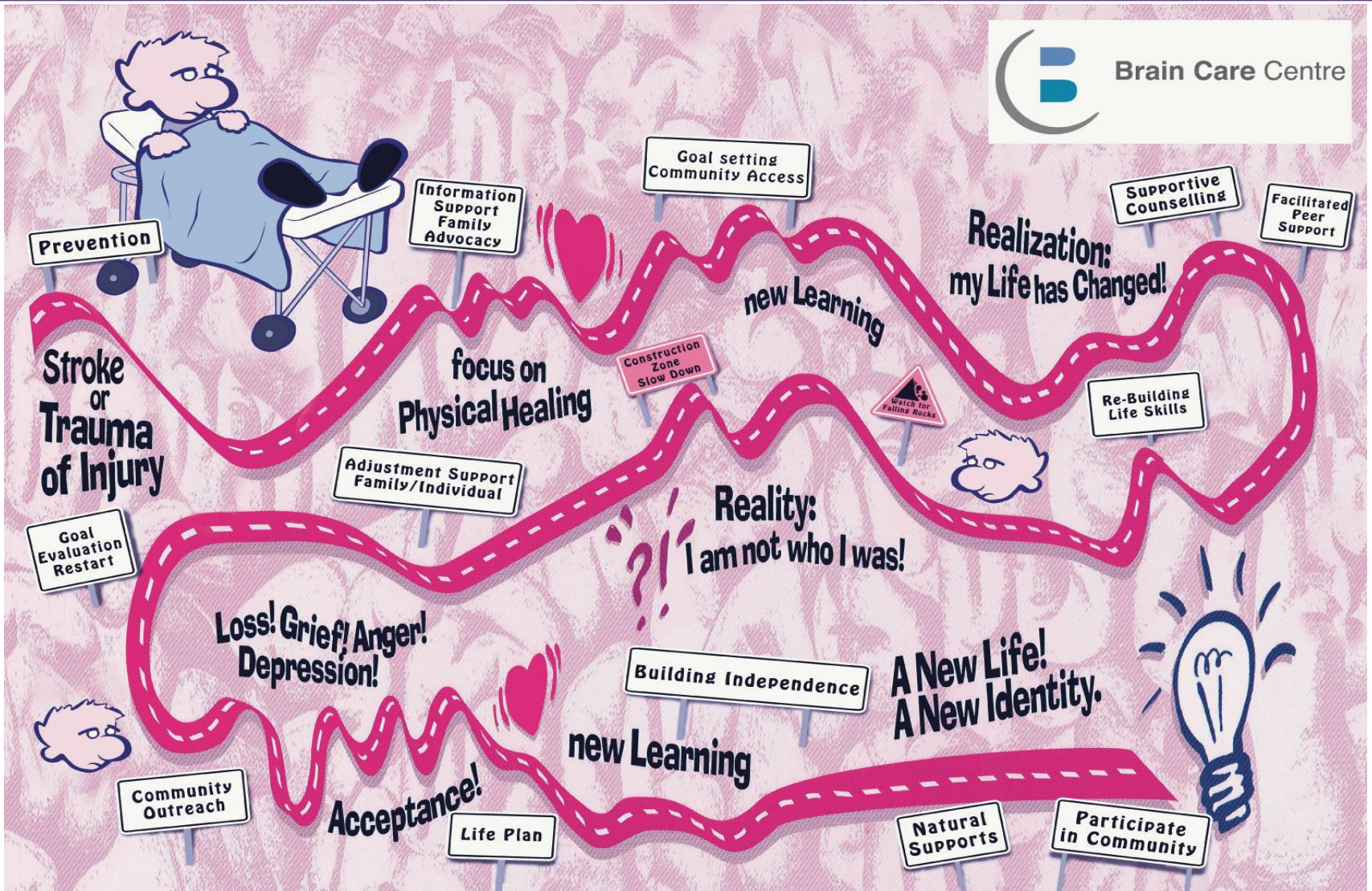
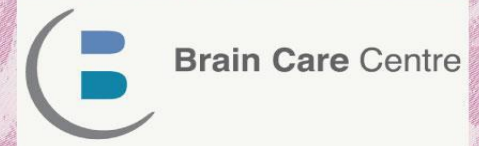
REDUCTION IN COSTS
ASSOCIATED WITH POLICING, EMERGENCY
SERVICES, INCARCERATION & HOMELESSNESS

1.5 MILLION CANADIANS LIVE
WITH A BRAIN INJURY



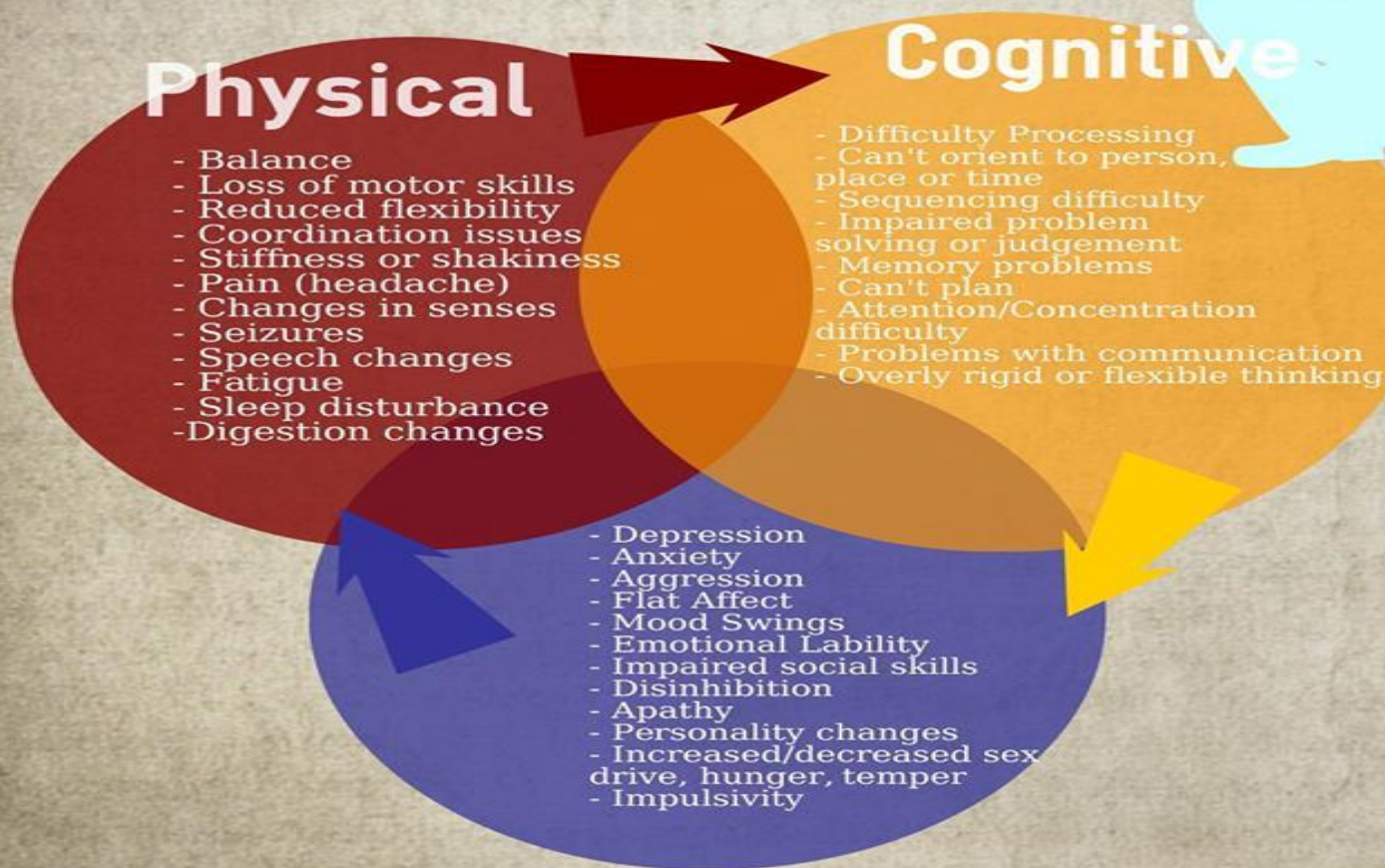
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The Journey



The Effects of Traumatic Brain Injury

Brain injury can create problems in one or all of these areas. Effects in one can lead to problems in another but generally are all related to the injury



Emotional/Behavioral

Problems don't always start right away. It can take months for the symptoms to appear after the TBI

Signs and Symptoms of Brain Injury

Cognitive Effects

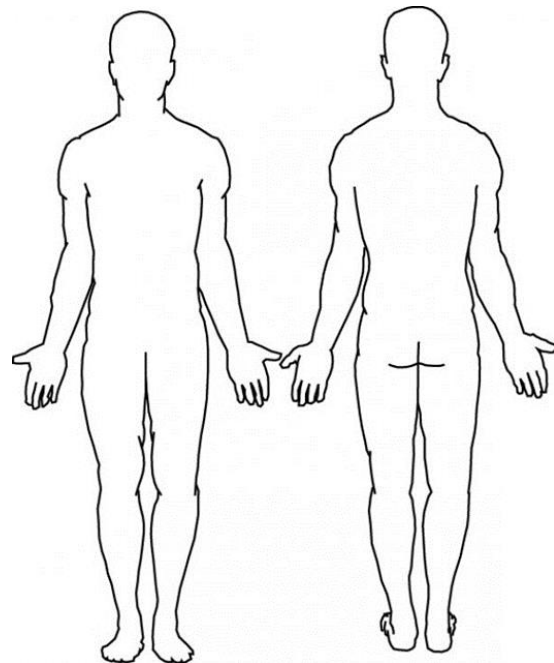
*affect the way a person thinks, learns
and remembers*

- Memory
- Attention & Concentration
- Information Processing
- Visio-spatial & Perceptual difficulties
- Language skills

Signs and Symptoms of Brain Injury

- ***Physical Effects***

- Movement, Balance & Coordination
- Dyspraxia
- Sensory loss
- Tiredness (fatigue)
- Headaches
- Speaking & Swallowing
- Bladder and Bowel
- Seizures



Emotional Consequences of Brain Injury

- Agitation
- Depression
- Anxiety
- Paranoia
- Lability
- Stress
- Anger Control



Possible Responsive Behaviours Of Brain Injury

- Physical attempts at communicating a need that may not have a willful intent to harm (e.g. fist making, hitting, kicking, biting, pinching, scratching, choking, hair pulling; throwing/pushing a person or object)
- Using words that insult (e.g. racial slurs or threats to harm; sexual comments; cursing)
- Person may not appreciate or be aware of care needs. Resistance may be expressed either verbally or physically saying “no” in different ways (e.g. turning away from caregiver, screaming out, pushing care giver away, folded arms, protective stance/posture)
- Individuals may continue to have a need for intimacy however there are behaviours (e.g. public masturbation, sexually suggestive language, requests for sexual acts) that may occur as a response to the person’s altered cognitive state
- Collecting, saving, storing and declining to part with items either in their home or on their body

Understanding Behaviour

- Result of the injury (ie, reduced frustration tolerance)
- A trigger in the environment
- Pre injury characteristics
- Psychological causes, such as depression
- All of the above!

Benson-Yody, B et al. Applied Behaviour Management and Acquired Brain Injury: Approaches and Assessment. *J Head Trauma Rehabil* 2000; 15 (4) 1041 - 1060

Behavior

Change in Personality	Misinterpreted As
Disinhibition / impulsiveness	Rude, immature, intimidating, angry
Egocentric / self absorbed	Insensitive, selfish, obsessive
Disturbances of perception, recognition, recollection and reasoning	Confused
Emotional Lability	Over reactive, superficial, agitated
Lowered drive, lowered motivation, reduced initiation	Lazy
Expressing fear of being hurt physically or emotionally	Suspicious, paranoid
Reduced Social Skills	Difficult, inappropriate

Difficulties With Executive Functioning

Executive Functioning refers to the range of cognitive, emotional and behavioural abilities which are often affected after injury to the frontal lobes of the brain

- **Planning and organization**
- **Flexible thinking**
- **Monitoring performance**
- **Multi-tasking**
- **Solving problems**
- **Self-awareness**
- **Learning rules**
- **Social behaviour**
- **Making decisions**
- **Motivation**
- **Initiating & inhibiting appropriate behaviour**
- **Controlling emotions**
- **Concentrating**
- **Taking in information**

Strategies to Help Deal With Impaired Executive Function

- Encourage the person to take step-by-step approaches to tasks; rely on visual organizational aids.
- Encourage the use of tools like time organizers, cellphones, computers or watches with alarms.
- Prepare visual schedules and review them several times a day.
- Provide written directions with verbal instructions whenever possible.
- Plan and structure transition times and shifts in activities.
- Breaks

Strategies to Help Deal With Impaired Executive Function

- Be aware of fatigue, energy management
- If individual has self awareness, then education can be very helpful
- Ask yourself, is anyone at risk of harm?

Attention

- Extremely common difficulty that arises for people who have sustained any brain injury
- 3 Common Types:
 - Sustained attention (keeping your concentration)
 - Selective attention (not being distracted)
 - Divided attention (doing 2 things at once)

Slowed Information Processing Speed

- Also very common
- Takes more time to take information in, process it, and respond to it.
- Most noticeable in more demanding situations (i.e. multi-tasking, high stimulus environment)
- Often misinterpreted

Memory

- Most common complaint
- Very complex, beyond scope for this seminar
- Important to know which type of memory the individual has greatest strength in
- Forgetting happens across the general population also

Memory

- Long-term and Short-term
- Consider Permanent and Working memory
- Common difficulty learning new information
- 'Permanent' memories remain more intact

Champion, Andrew J. Neuropsychological Rehabilitation; A Resource for Group-Based Education and Intervention. p48

How Trauma Impacts Four Different Types of Memory

EXPLICIT MEMORY

SEMANTIC MEMORY

What It Is

The memory of general knowledge and facts.

Example

You remember what a bicycle is.

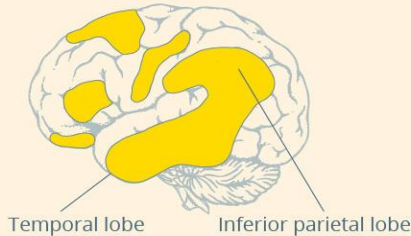


How Trauma Can Affect It

Trauma can prevent information (like words, images, sounds, etc.) from different parts of the brain from combining to make a semantic memory.

Related Brain Area

The temporal lobe and inferior parietal cortex collect information from different brain areas to create semantic memory.



IMPLICIT MEMORY

EPISODIC MEMORY

What It Is

The autobiographical memory of an event or experience – including the who, what, and where.

Example

You remember who was there and what street you were on when you fell off your bicycle in front of a crowd.

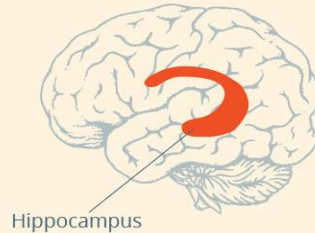


How Trauma Can Affect It

Trauma can shutdown episodic memory and fragment the sequence of events.

Related Brain Area

The hippocampus is responsible for creating and recalling episodic memory.



EMOTIONAL MEMORY

What It Is

The memory of the emotions you felt during an experience.

Example

When a wave of shame or anxiety grabs you the next time you see your bicycle after the big fall.

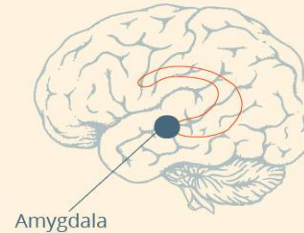


How Trauma Can Affect It

After trauma, a person may get triggered and experience painful emotions, often without context.

Related Brain Area

The amygdala plays a key role in supporting memory for emotionally charged experiences.



PROCEDURAL MEMORY

What It Is

The memory of how to perform a common task without actively thinking

Example

You can ride a bicycle automatically, without having to stop and recall how it's done.

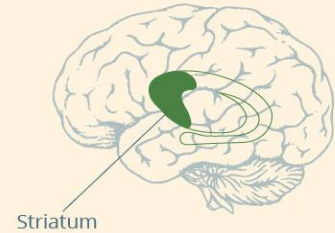


How Trauma Can Affect It

Trauma can change patterns of procedural memory. For example, a person might tense up and unconsciously alter their posture, which could lead to pain or even numbness.

Related Brain Area

The striatum is associated with producing procedural memory and creating new habits.



Strategies to Help

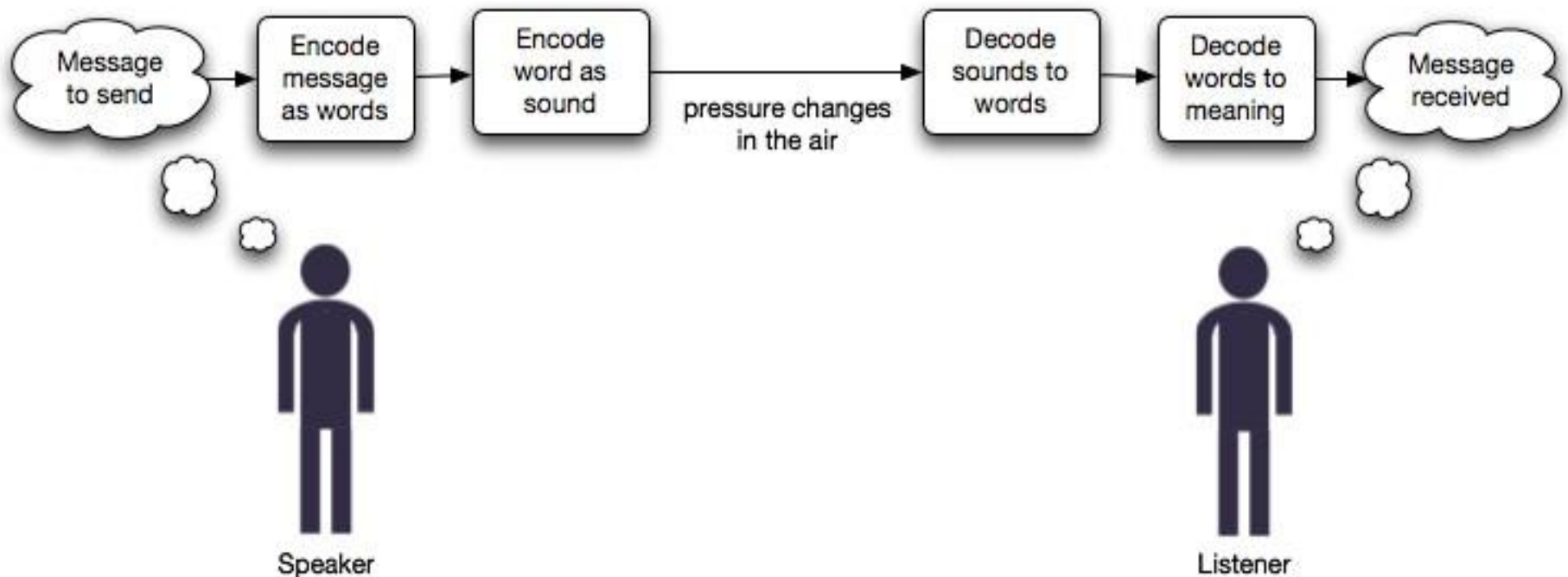
- Encourage note taking or present information in written form.
- Use check lists for multi step tasks
- Strive to rely most on an individuals strongest memory skill - i.e. give visual cues
- Use as few words as possible
- Remove distractions
- Consider the time of day
- Determine who is a natural support, and if it's ok to share important information with them
- Connect to supports for memory skill training - many new options using technonogy coming on market (CanAssist - CanPlan App)

Language and Communication

- Loss of abstract language skills
- Flat expression
- Difficulty with turn-taking in conversations
- Word finding

Communication Effects

- brain injury can affect someone's ability to effectively communicate.



To Help A Person Understand

- Avoid background noise.
- Speak naturally but clearly.
- Ensure eye contact.
- Speak in short, simple sentences.
- Try rephrasing what you said if the person does not understand.
- Talk about events, objects and people in the here and now.
- Clearly identify people and topics.
- Do not change topic quickly.
- Be aware that the person will understand better when they are not tired.

To Help the Person Express Themselves

- Give the person plenty of time to respond.
- Encourage all attempts to communicate.
- Avoid interrupting or answering for the person.
- Give questions or choices to clarify what the person means, for example:
 - “Do you mean ... ?”
 - Ask what their topic is
 - Offer a choice of two options (“Do you want to watch TV or go outside?”)
- The most important thing is the meaning behind the communication, not how well the person can put a sentence together.

Nanaimo Brain Injury Society

Vision

NBIS aspires to a world where neurological health is nurtured, and where full and active citizenship is attainable by all.

Mission

NBIS fosters opportunity and self-determination with those affected by Acquired Brain Injury.

Values

Since the inception of NBIS in the 1970s we have sought to influence an environment where health for all citizens is valued.

NBIS Services

- **Community Navigator - Support and Referrals**
- **Groups and Courses - Peer Support**
- **Volunteer Program**
- **Caregiver Support**
- **Education, Prevention, Events**
 - **Public Awareness**
 - **In-service presentations**
 - **Brain Injury & Concussion Education and Awareness**
 - **Helmets for Kids Initiative**

Contact Us.

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