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ACQUIRED BRAIN INJURY (ABI): UNDERSTANDING AND SUPPORTING REHABILITATION-PART(1)

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Master of Science in OHS

Date: 16/10/2024

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WORKSHOP OBJECTIVES

At the end of this session, participants should be able to:

- define the term 'traumatic brain injury'
- identify the epidemiology of this source of disability (eg. sex ratio, age distribution)
- describe the basic anatomy of the skull and brain
- recognise how trauma impacts upon the structures of the brain
- recognise the process of recovery
- define stages of rehabilitation
- give examples of four broad categories of long-term impairments often seen after a traumatic brain injury, recognising the links between site and type of injury with possible resulting impairments of brain function
- define common outcomes for the person with the injury as well as their family
- identify the types of services (nationally and locally) available to people with a TBI and their families.

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WORKSHOP AGENDA

1. Introduction to ABI
2. Causes and Impacts of ABI
3. Rehabilitation Stages
4. Practical Support Strategies
5. Case Studies and Role-Playing
6. Cultural Considerations in ABI Care
7. Emerging Technologies in ABI Rehabilitation
8. Self-Care for Support Workers
9. Q&A and Wrap-up

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Pre-Test

The Pre-Test includes multiple choice questions. It is quick to do.

Module 1: Pre-Test

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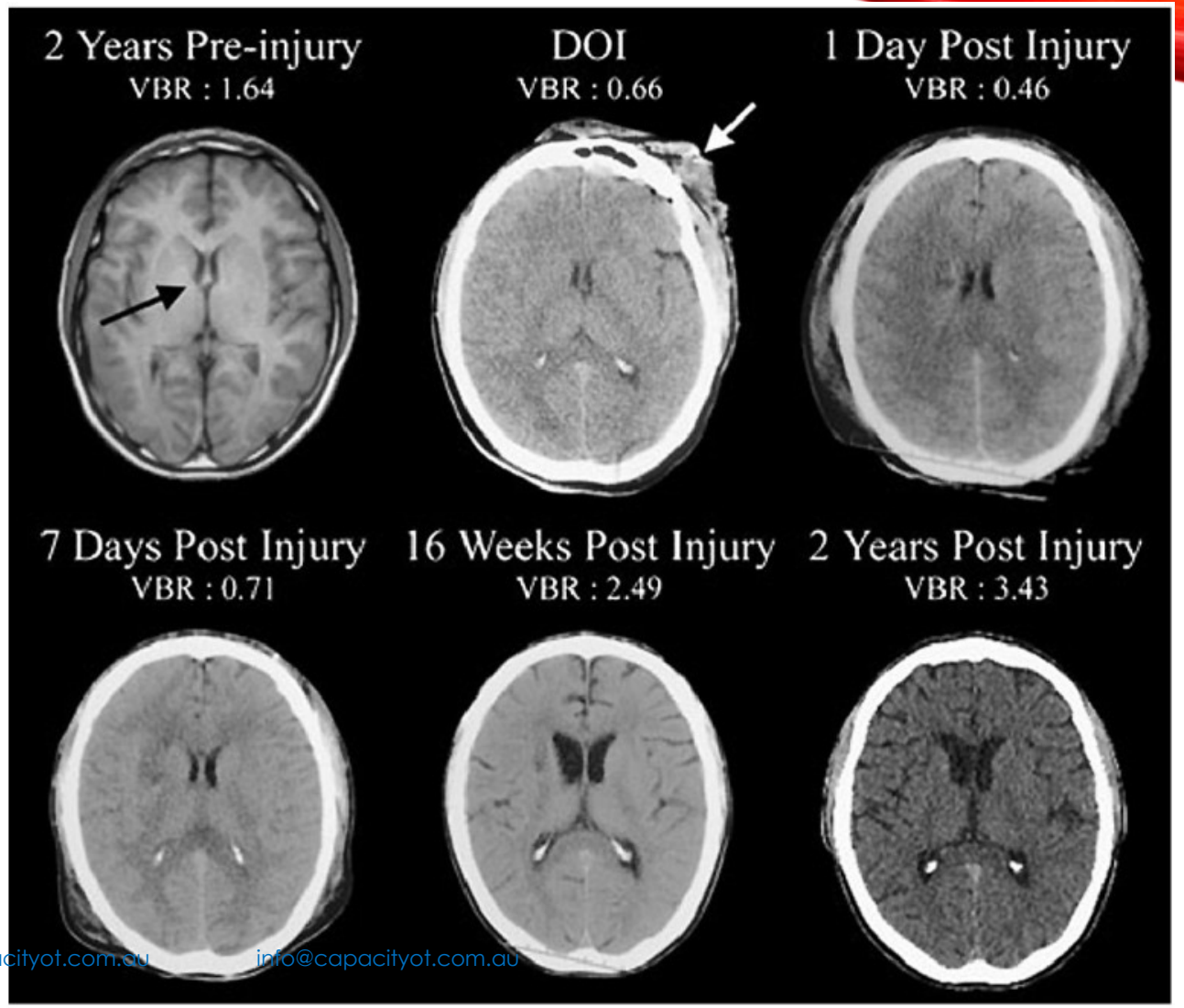
2 Years Pre-injury
VBR : 1.64
DOI
VBR : 0.66
1 Day Post Injury
VBR : 0.46
7 Days Post Injury
VBR : 0.71
16 Weeks Post Injury
VBR : 2.49
2 Years Post Injury
VBR : 3.43

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INTRODUCTION TO ACQUIRED BRAIN INJURY

- Acquired Brain Injury
- Injury to the brain resulting in deterioration of cognitive, physical, emotional or independent functioning.
- Causes include trauma, anoxia/hypoxia, infection, tumour, substance abuse, degenerative neurological diseases or stroke.
- Impairments may either be temporary or permanent and cause partial or total disability or psychosocial maladjustment.
- Adapted from the National Policy on Services for People with Acquired Brain Injury 1994

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WHAT IS ABI?

an injury to the brain

as a result of a cause
e.g. trauma, stroke

resulting in impairments for the person

Different from
- Disease
- Ageing
- Intellectual disability
- Mental illness

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EPIDEMIOLOGY OF ABI

Estimating the Numbers

Incidence of TBI

Between 100 and 377 per 100,000

Prevalence of ABI

Between 1,400 and 1,920 per 100,000

Proportion of cases leading to long term disability

People with severe brain injury: 16–48% had moderate disability or worse at follow-up

EPIDEMIOLOGY OF ABI

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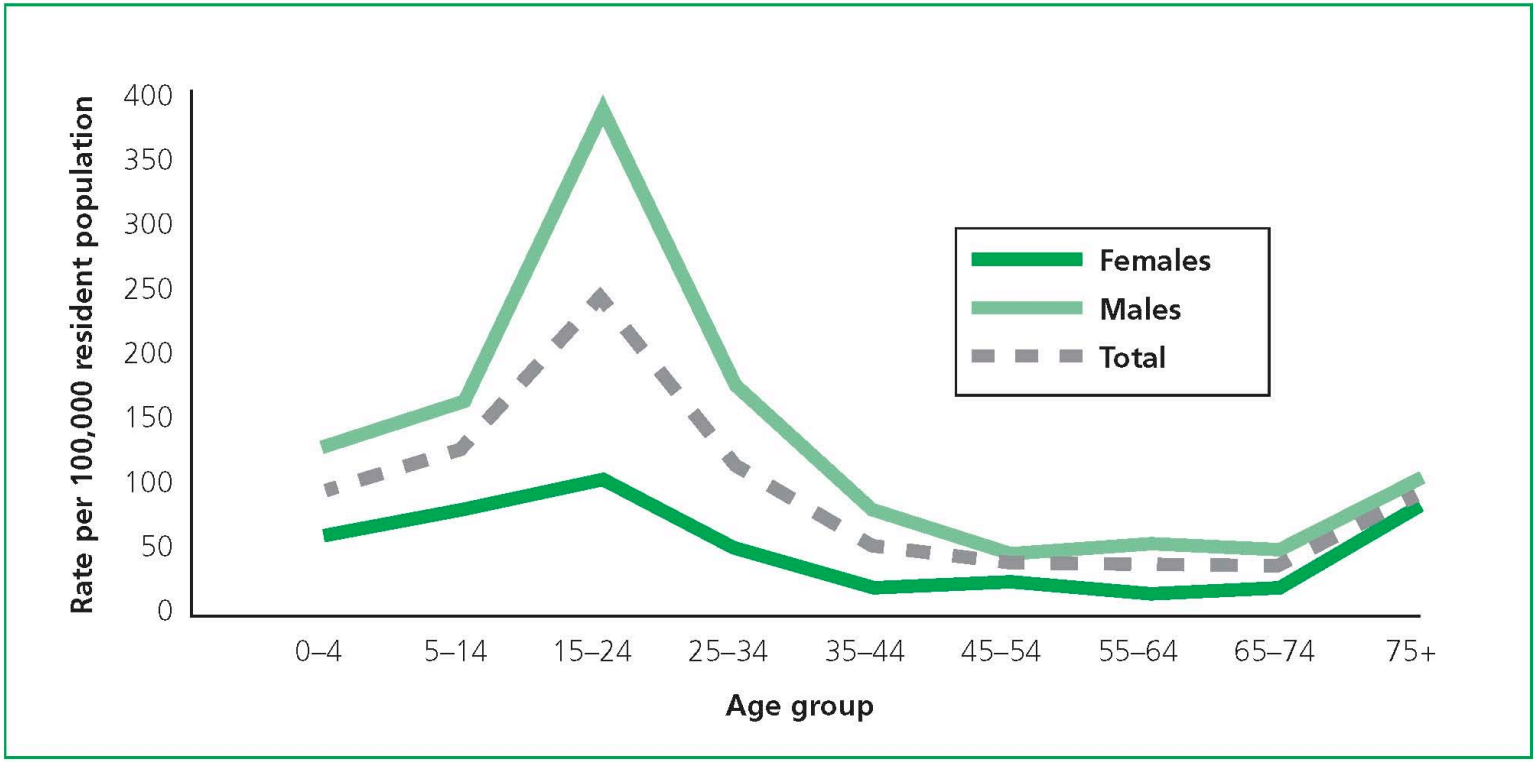
Sex and age breakdown



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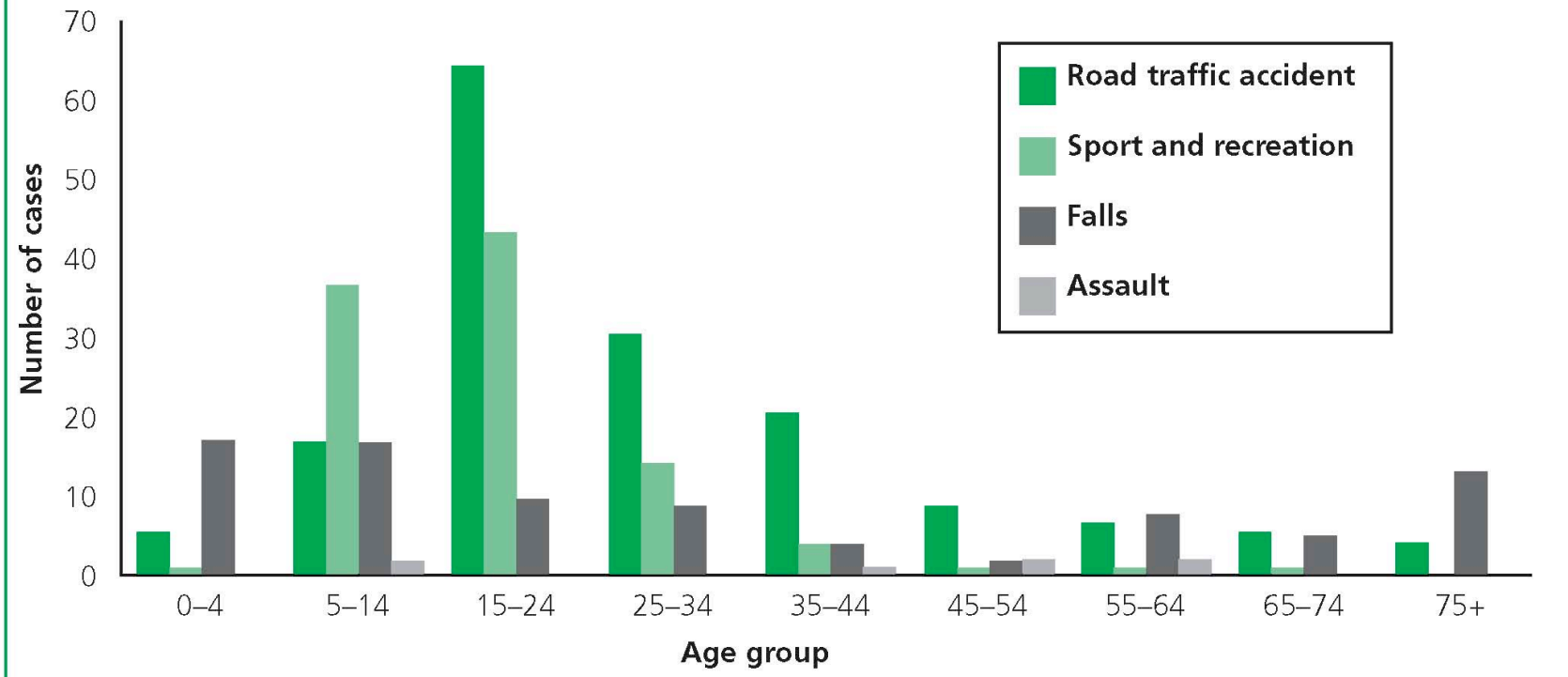
Causes of traumatic brain injury



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GROUP QUESTION

What challenges do you think people with ABI face when returning to daily life?"

ANATOMY OF THE SKULL

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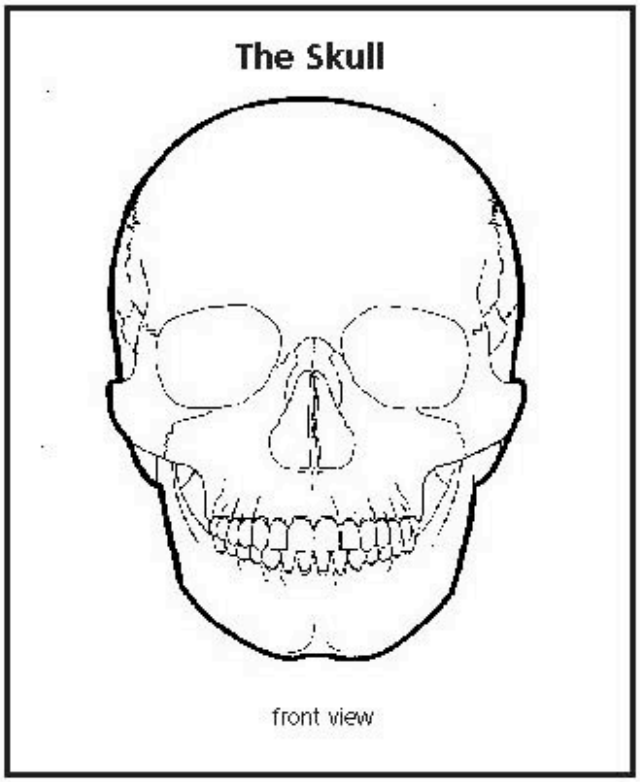
The skull is a hard, bony box protecting the brain. Cerebrospinal fluid circulates within the brain and between the brain and the skull, further protecting and providing stability to the brain.

The skull has bony ridges on its inner surface, which can cause damage to brain tissue in the event of a TBI. This damage can commonly include lacerations or contusions around the frontal/temporal lobes and contra-coup damage in the region of the occipital lobe



ANATOMY OF THE BRAIN

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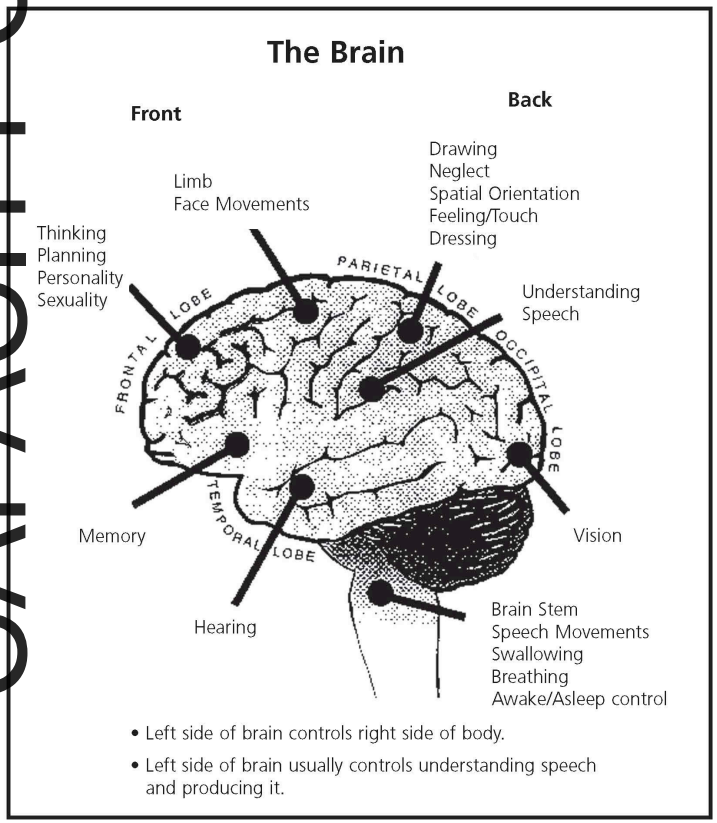

The brain comprises bundles of nerve cells and fibers that are the consistency of 'al dente' spaghetti. The left and right hemispheres of the brain typically control the opposite side of body. In addition, for people who are right handed, the left side of the brain usually controls understanding of speech and production of speech, and vice versa for left-handed people.

The brain is divided into areas that have special functions. Some of the most noticeable areas are the four lobes of the brain, namely the frontal, temporal, parietal, and occipital lobes. Many of the things we do depend on several of these areas working together. To do this, the brain depends on networks of nerves that control the functions and activities of the person and their body

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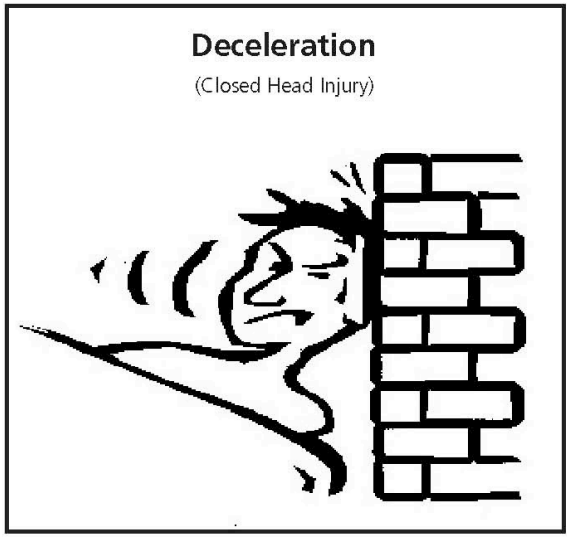
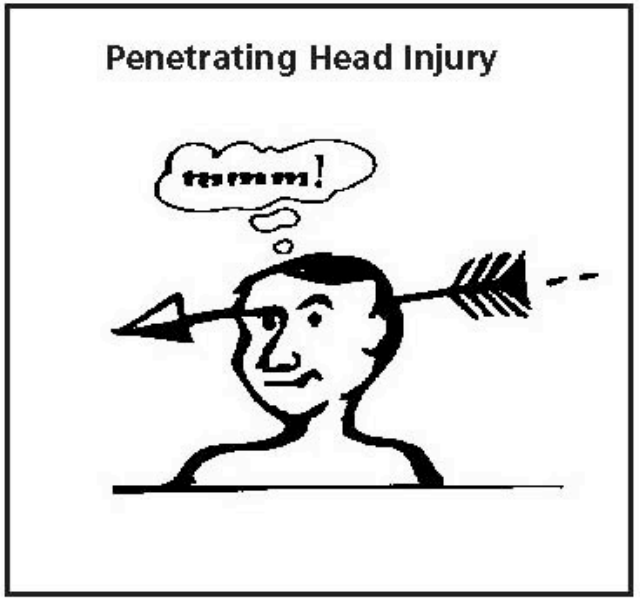
Deceleration – Closed head injury



Penetrating head injury



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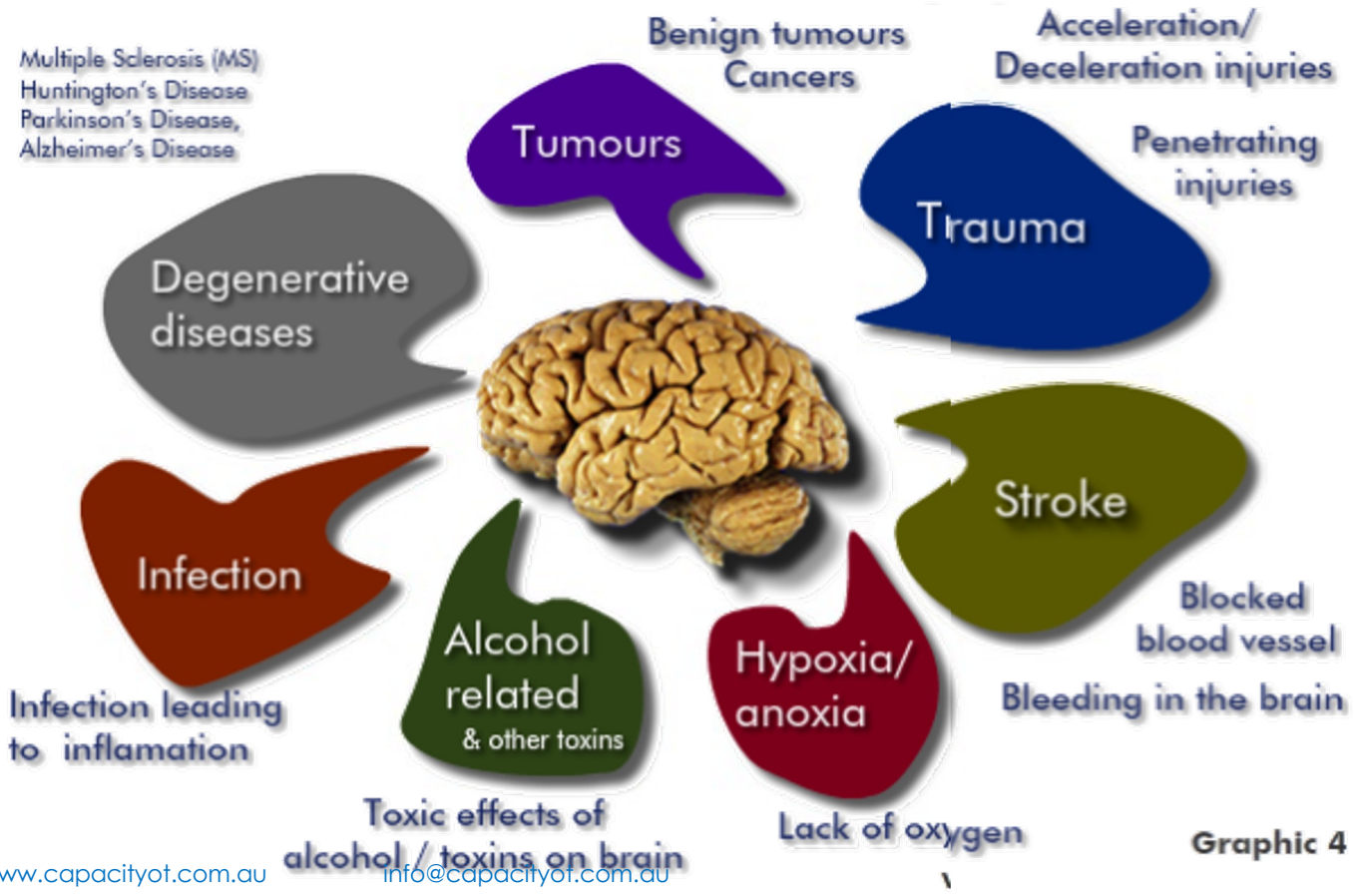
PRIMARY CAUSES OF ABI



Graphic 4

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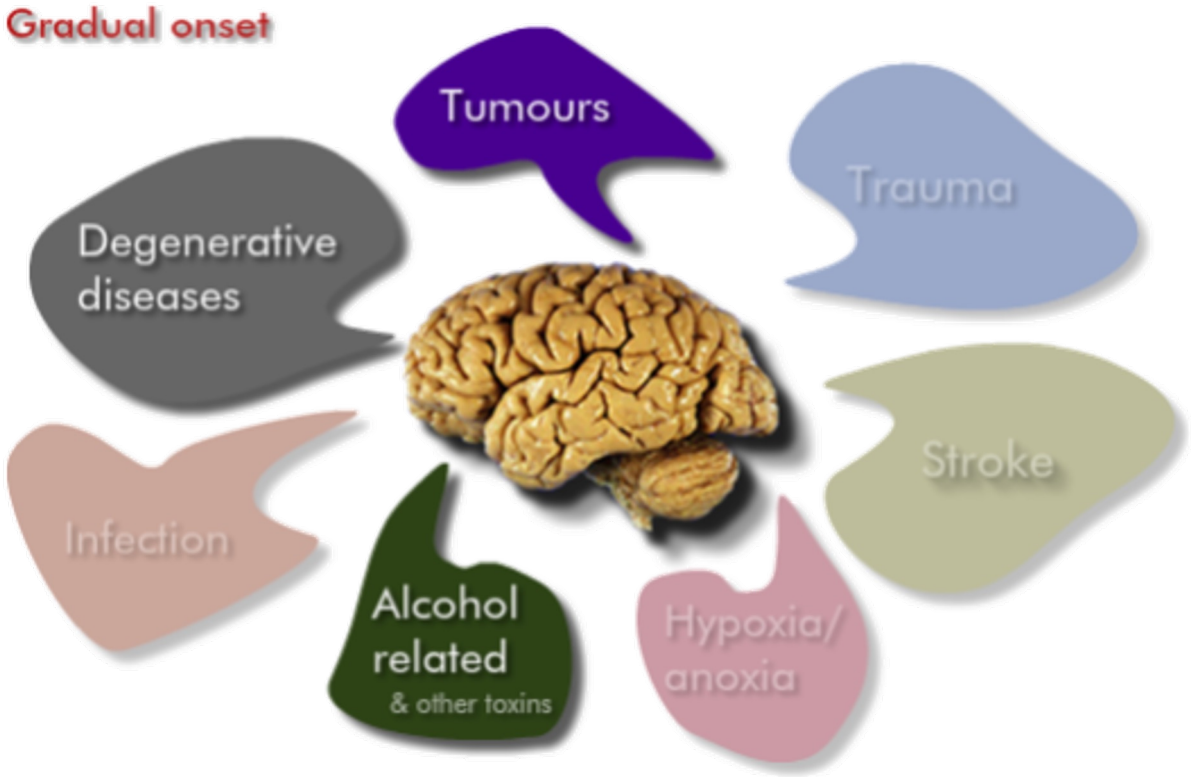
PRIMARY CAUSES OF ABI



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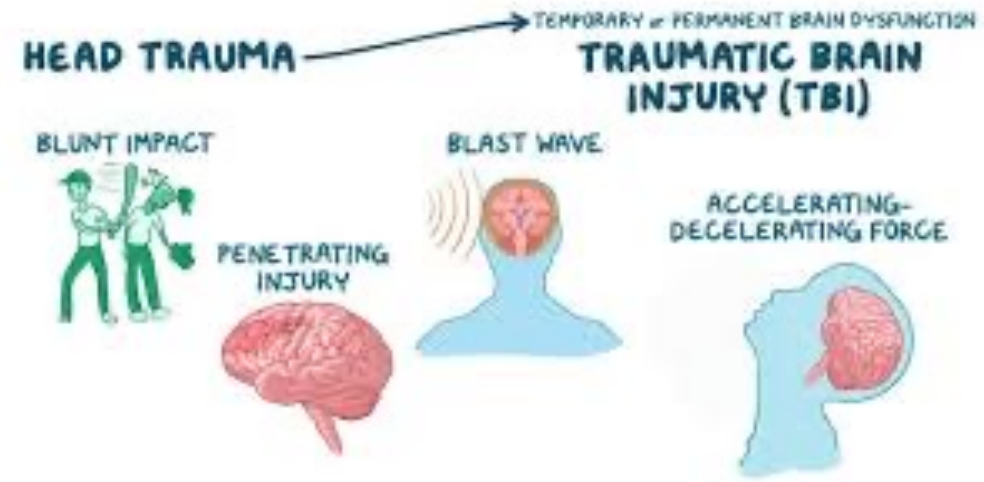
MECHANISMS OF INJURY

Primary

- Contusions and lacerations
- *Diffuse axonal injury
- Focal injuries

Secondary

- Breakdown of cell products
- Haematomas (blood clots)
- Raised intracranial pressure
- Local infection
- Hydrocephalous
- Systemic failure



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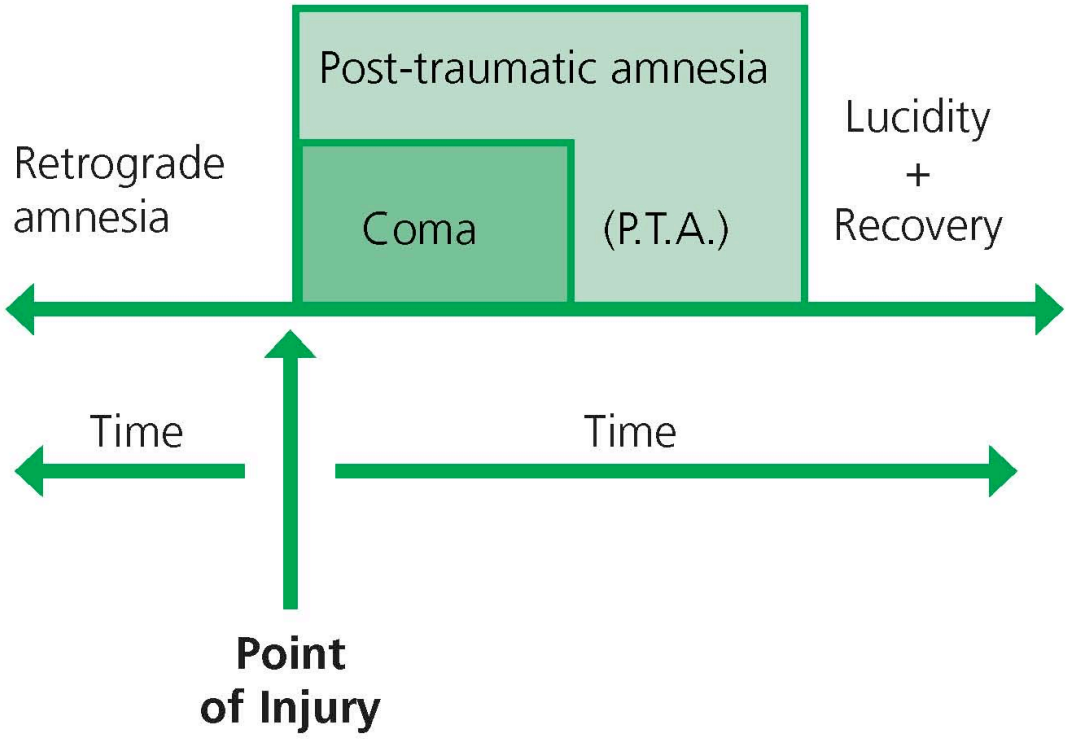
RECOVERY PROCESS



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GLASGOW COMA SCORE

Measures

- Eye opening
- Best motor response
- Best verbal response

Outcomes

- Score ranges from 3 to 15
- < 8 90% were in coma
- < 8 for more than 6 hours 50% mortality rate
- > 8 none in coma

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POST TRAUMATIC AMNESIA

• Very mild	Less than 5 minutes
• Mild	5 to 60 minutes
• Moderate	1 to 24 hours
• Severe	1 to 7 days
• Very severe	1 to 4 weeks
• Extremely severe	More than 4 weeks

ABI: CAUSE TO IMPACT

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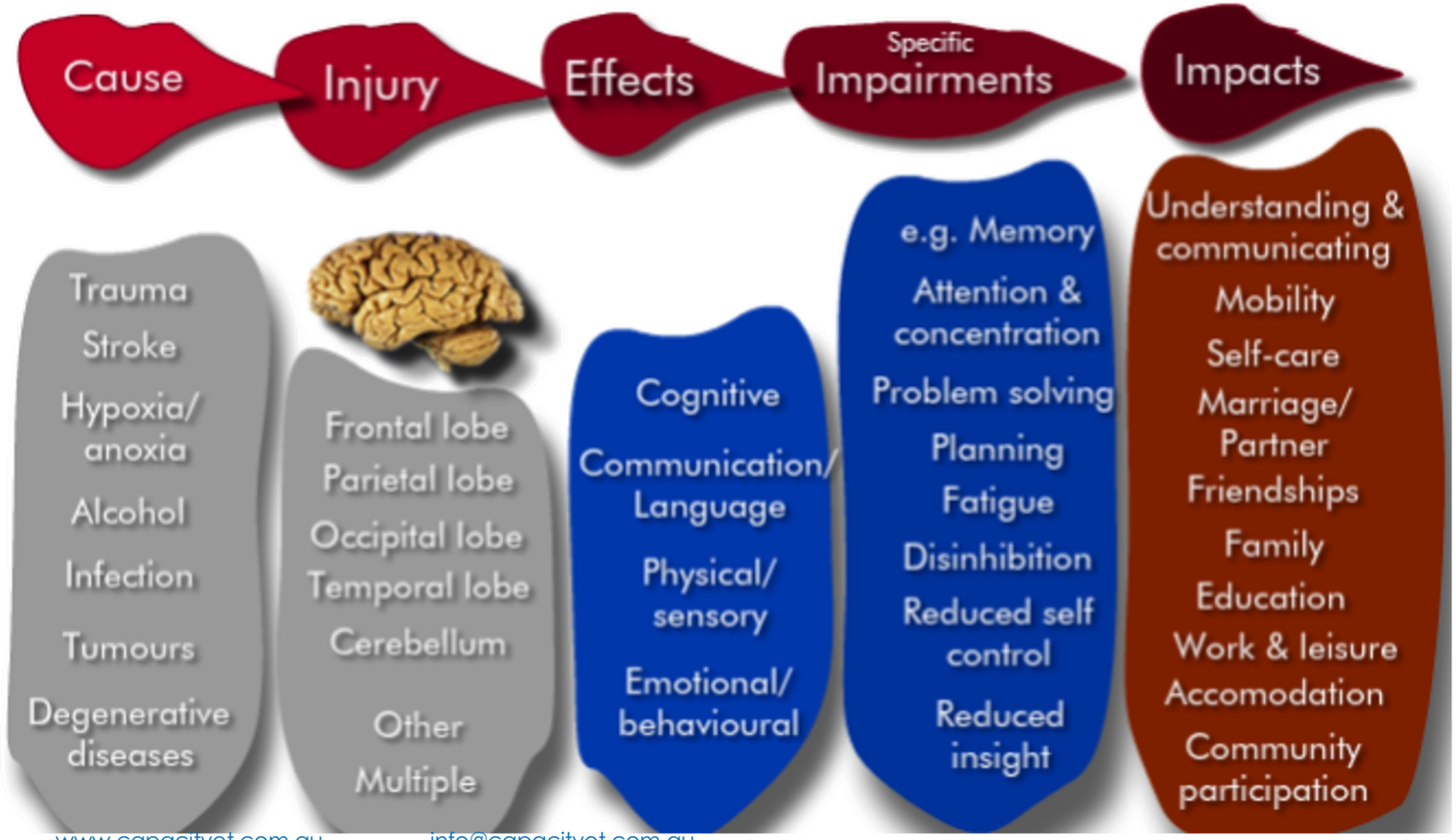

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SEVERITY

Examples for sudden onset ABIs

Mild

e.g. good physical recovery, limited concentration, able to go back to previous work

Moderate

e.g. improvement over time, motor coordination difficulties, inability to organise, may require different work

Severe

e.g. decreased ability or inability to control movement, decreased ability or inability to communicate, requires support with daily living, not able to work; e.g. severe ABI & able to go back to work with return to work programs and support

Very severe

e.g. inability to control movement, inability to communicate, requires 24 hour support; e.g. very severe ABI with minimal or no physical injury but still requires 24 hour support because of cognitive difficulties

INDICATOR OF SEVERITY

Indicators of severity

Neuropsychological assessments
(which assess cognitive functioning)

Functional independence assessments
(which assess the degree of supports required).

Level of consciousness at the time of injury
for sudden onset ABIs (measured by the Glasgow Coma Scale)

Length of post traumatic amnesia at the time injury
for traumatic brain injury

A medical assessment of the progression of disease
for degenerative disease

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REHABILITATION PROCESS

- **Stage 1**: Acute rehabilitation focusing on medical stability and physical recovery .
- **Stage 2**: Community resettlement – transitioning back home and adapting to daily life .
- **Stage 3**: Social rehabilitation – long-term support aimed at maintaining community involvement .

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REHABILITATION

Stage 1: Primary (Acute) Rehabilitation

- Intensive Care Unit
- High Dependency Ward
- Acute Rehabilitation Ward

Stage 2: Secondary (Community re-settlement) Rehabilitation

- A Residential or home based rehabilitation
- Community Outreach Programs

Stage 3: Tertiary (Social) Rehabilitation

- Community Integration
- Long term support

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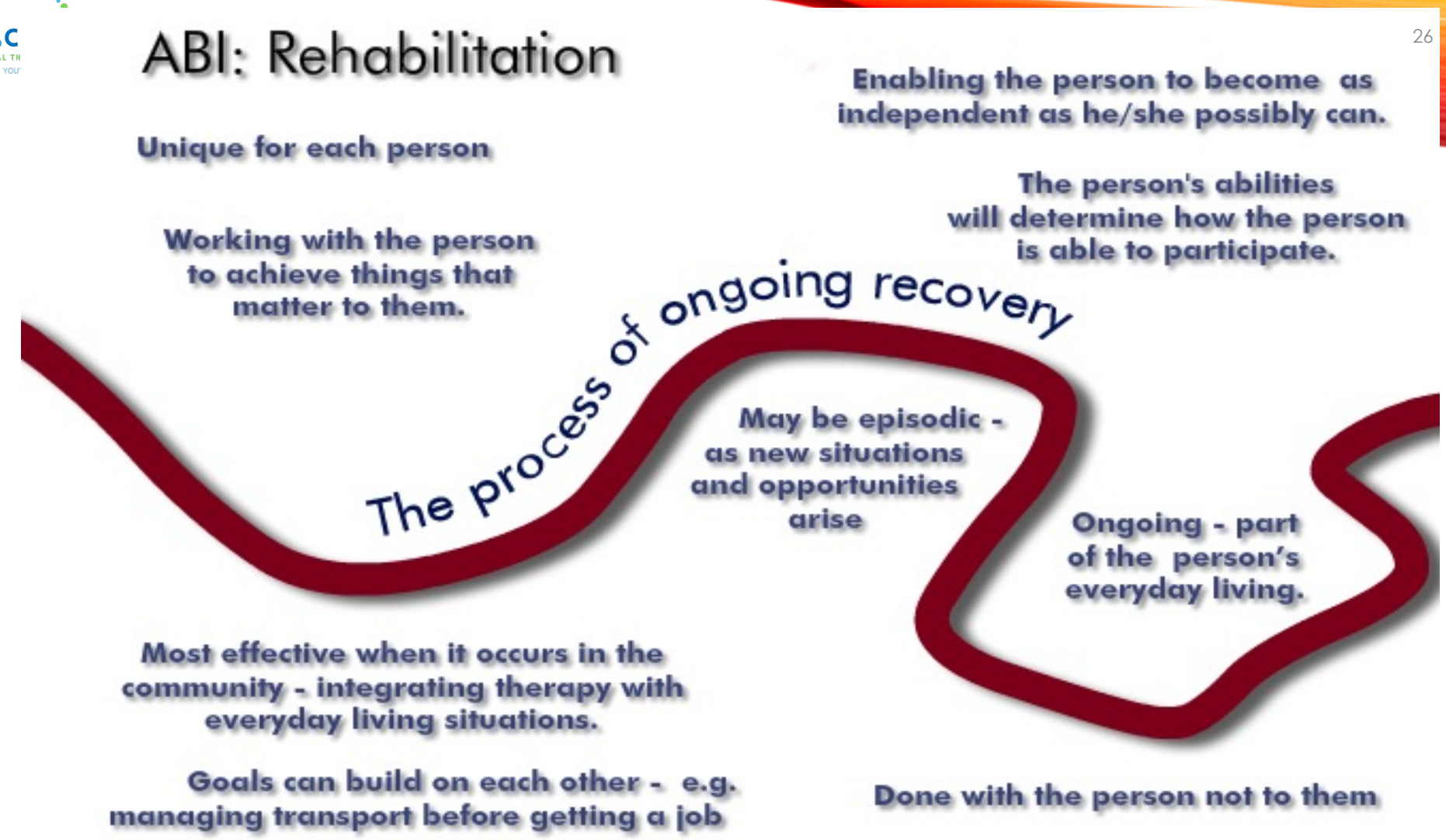
ABI: Rehabilitation



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QUIZ

What is the most common cause of acquired brain injury for people 18 to 25 years?

- Trauma
- Stroke
- Alcohol related
- Anoxic / Hypoxic
- Degenerative diseases
- Other

What is one of the most common causes of acquired brain injury for people over 65 years of age?

- Trauma
- Stroke
- Alcohol related
- Anoxic / Hypoxic
- Degenerative diseases
- Other

What is the most common of the degenerative diseases causing acquired brain injury?

- Multiple Sclerosis (MS)
- Huntington's disease
- Parkinson's disease
- Motor Neurone disease
- Alzheimer's disease

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CATEGORIES OF LONG TERM IMPAIRMENTS

- **Cognitive**: Memory loss, poor concentration.
- **Communication:**
- **Emotional/Behavioural**: Personality changes, mood swings
- **Physical**: Mobility issues, **(Motor sensory)** sensory loss.
- **Psychosocial:**

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MOTOR SENSORY IMPAIRMENTS

- **Paralysis, Restricted range of movement**
- **Poor coordination**
- **Changes in sensation (vision, hearing, touch, taste, smell**
- **Poor bladder/bowel control**

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INCIDENCE OF MOTOR-SENSORY IMPAIRMENTS

- 42% Visual impairments at 5 years post-injury (n=103)
- 97% Independent mobility at 2 years (n=175)

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COMMUNICATION IMPAIRMENTS

Aphasia

- Understanding speech
- Expressive communication

Dysarthria

- 34% have persisting dysarthria at 5 years post-trauma

Social communication

- Turn taking
- Poor eye contact
- Not taking hint to finish conversation

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COGNITIVE IMPAIRMENTS

Attention/Concentration

- Reduced immediate memory span
- Reduced attention ability
- Poor concentration
- Highly distractible

Memory

- Impaired new learning
- Forgetfulness

Thinking

- Difficult with complex ideas
- Rigidity, perseveration

Planning/Organisation

- Poor planning
- Disorganised approach
- Poor self-monitoring
- Failure to learn from mistakes

Reasoning

- Concreteness

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PSYCHOSOCIAL IMPAIRMENTS

Drive

- Lethargic, inert

Control

- Disinhibited
- Low frustration tolerance

Emotion

- Unrealistically happy/optimistic
- Flattened affect
- Labile, "teary"

Insight

- Unrealistic expectations
- Poor appreciation of the impact of own behaviour

Self-centredness

- Very demanding
- Reduced sensitivity to others
- Irresponsible

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LIFE CHANGES ASSOCIATED WITH TRAUMATIC BRAIN INJURY

- **Activities of daily living**
- **Work**
- **Leisure pursuits**
- **Psychological reactions**
- **Friendships**
- **Marriage or relationship**
- **Impact on family**

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PSYCHOLOGICAL REACTIONS

- **Depression**
- **Anxiety**
- **Low self-esteem**
- **Thinking about suicide**

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IMPACT ON FAMILY

- Over 90% of people with TBI will return home
- Financial impact
- Increased conflict
- Family members take on new roles
- Family members become socially isolated
- Experience grief, depression or post traumatic stress

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SERVICE NETWORKS

- State peak organisation
- Rehabilitation
- Vocational rehabilitation
- Case management
- Avocational
- Respite/home support
- Support groups/self help groups
- Accommodation

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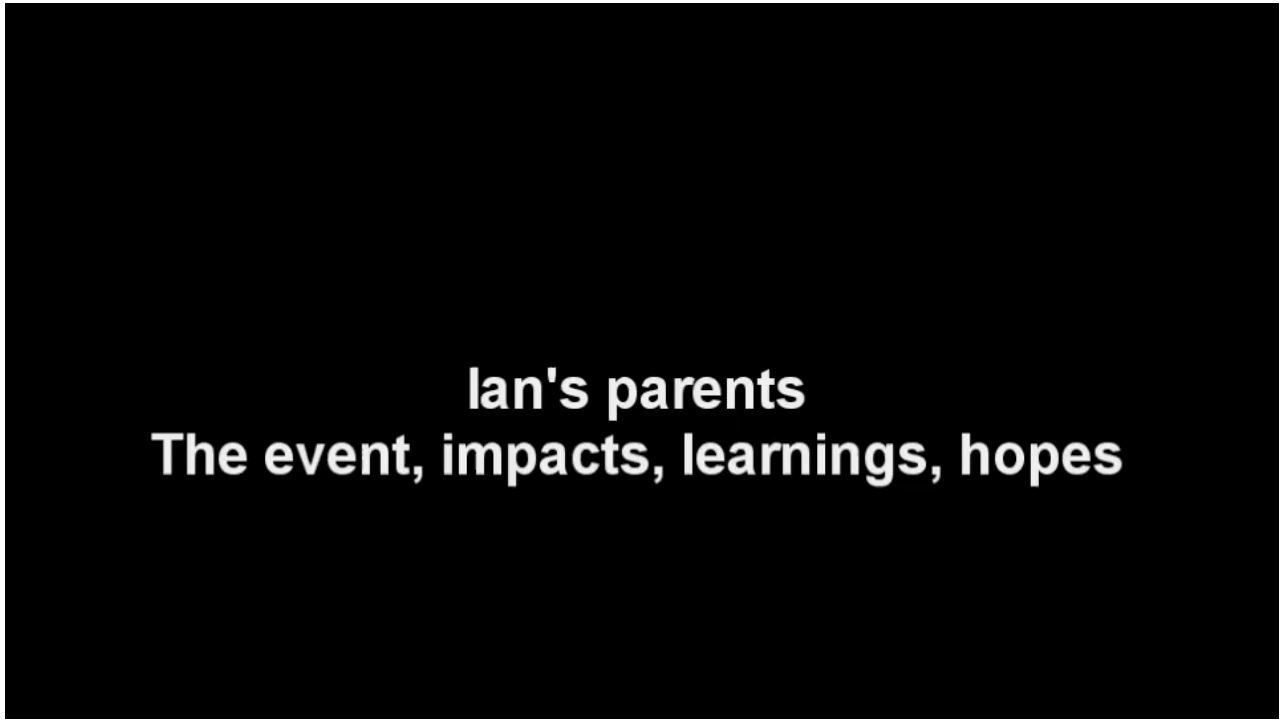
PEOPLE WITH ABI



ASSESS YOUR UNDERSTANDING

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From the video which of the following are true for Jonathan?

- He remembers what he was like before the accident.
- Has has worked very hard for many years to overcome the effects of the ABI
- He may not fully recover from the brain injury.
- He gets frustrated with himself and takes it out on others.

What challenges has Jonathan been working on?

- Access to social activities
- Ongoing rehabilitation
- Access to work and training opportunities
- Long term support

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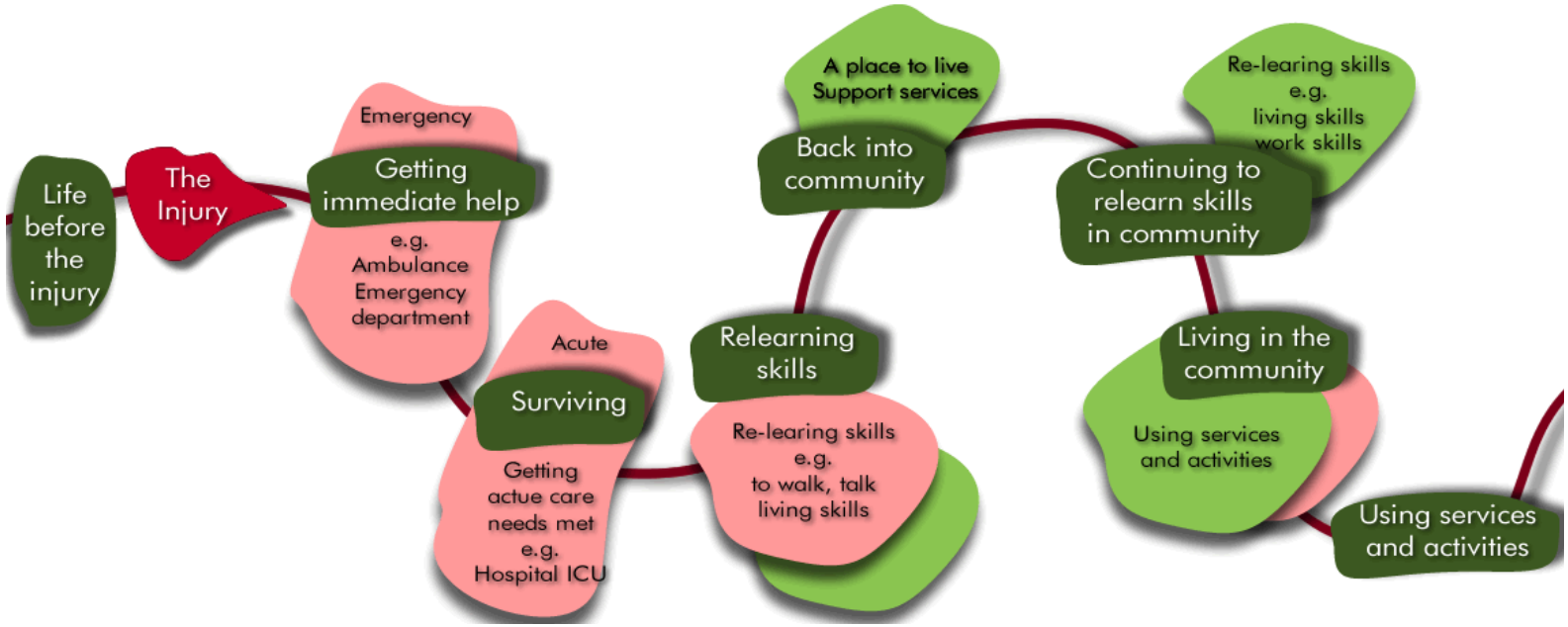
PATHWAYS FOR LIFE AFTER ABI

A3 ABI: Personal Pathways for serious injury



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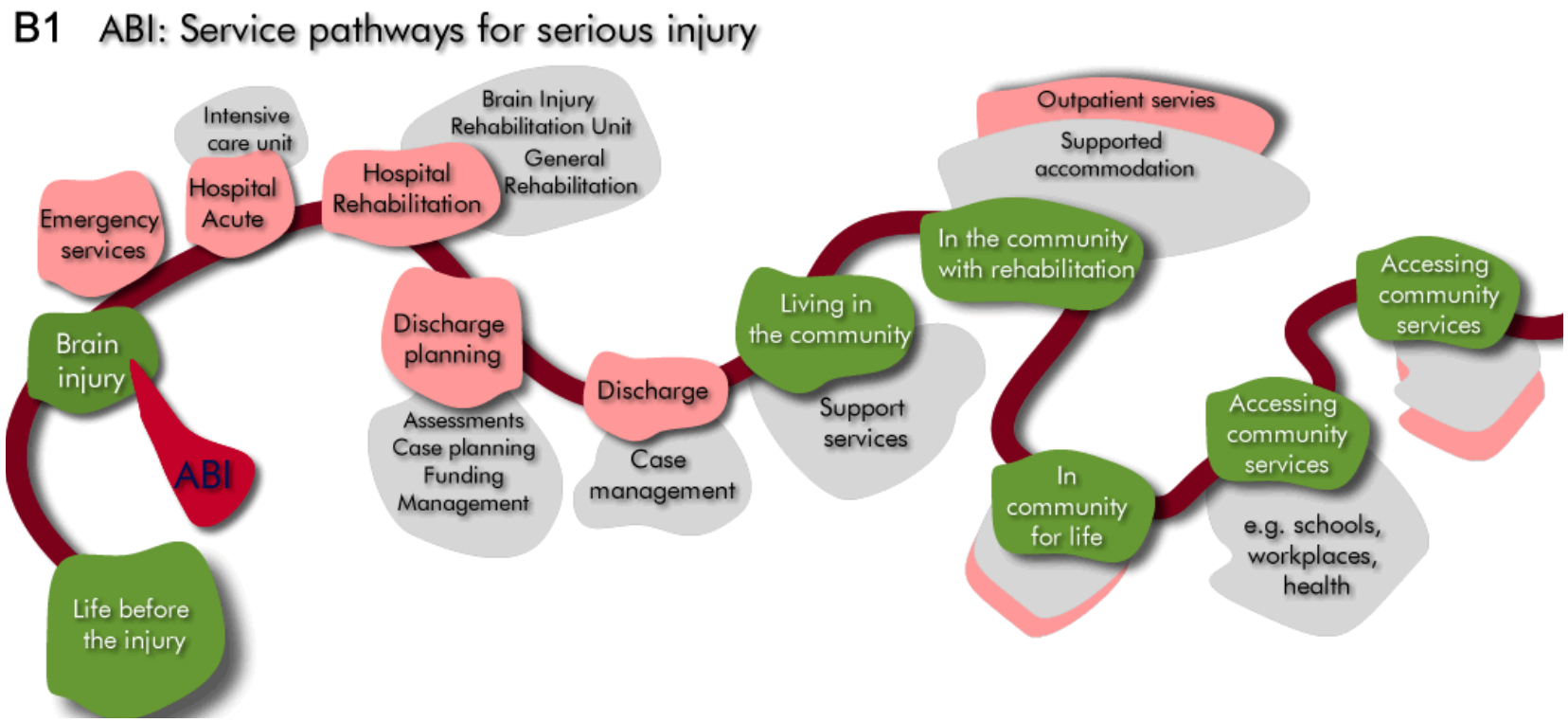
PATHWAYS FOR LIFE AFTER ABI



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WRAP-UP AND Q&A

Summary:

- ABI affects cognition, mobility, and emotional well-being.
- Effective rehabilitation focuses on individualized care and long-term community integration.

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Q&A

Thanks for listening