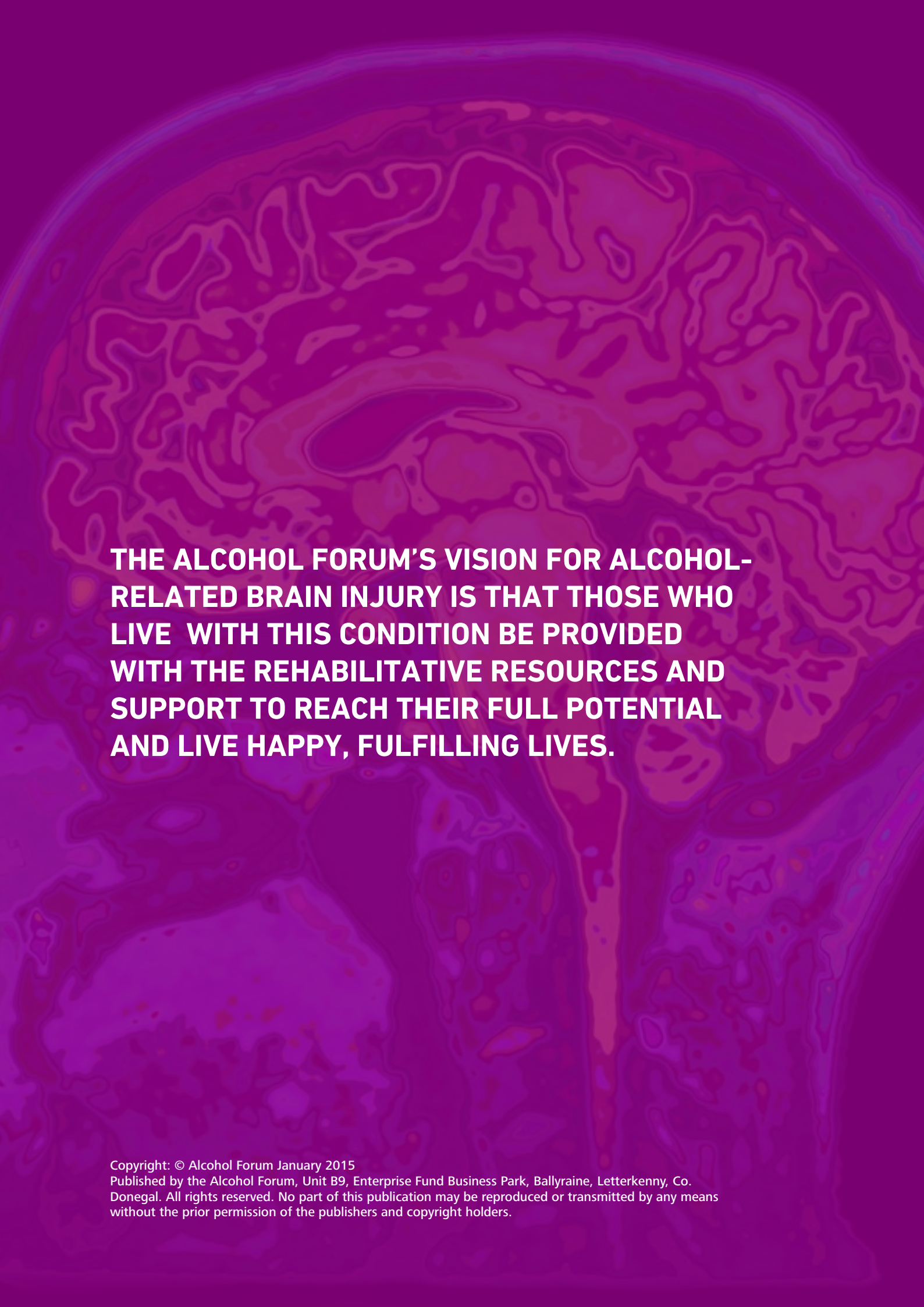
ALCOHOL-RELATED BRAIN INJURY

A GUIDE FOR PROFESSIONALS

alcohol forum
Informing Nationally, Delivering Locally



THE ALCOHOL FORUM'S VISION FOR ALCOHOL-RELATED BRAIN INJURY IS THAT THOSE WHO LIVE WITH THIS CONDITION BE PROVIDED WITH THE REHABILITATIVE RESOURCES AND SUPPORT TO REACH THEIR FULL POTENTIAL AND LIVE HAPPY, FULFILLING LIVES.

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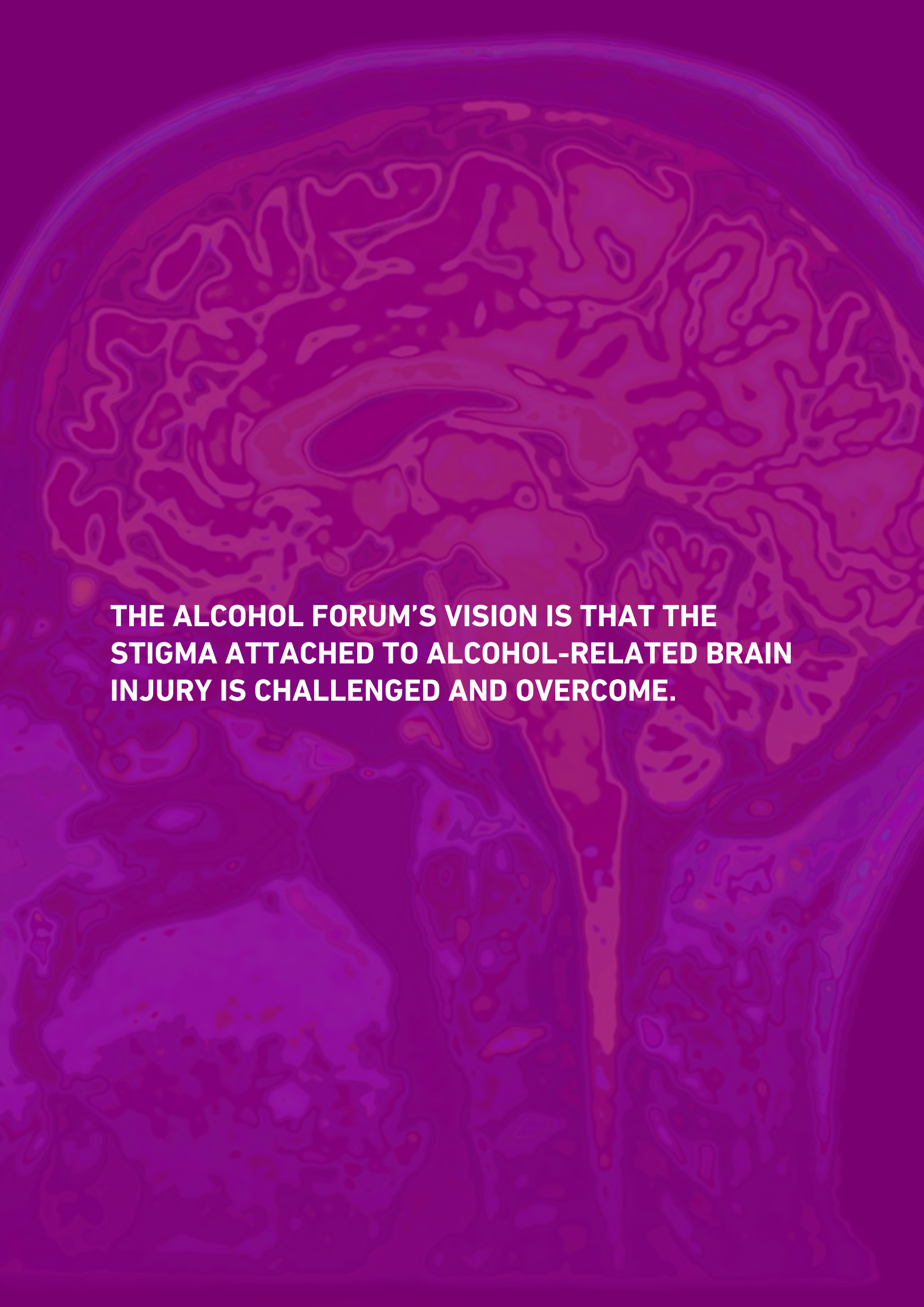

THE ALCOHOL FORUM'S VISION IS THAT THE STIGMA ATTACHED TO ALCOHOL-RELATED BRAIN INJURY IS CHALLENGED AND OVERCOME.

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The Alcohol Forum are grateful to the following people who gave their valuable time, support and expertise to the production and peer-reviewing of this guide:

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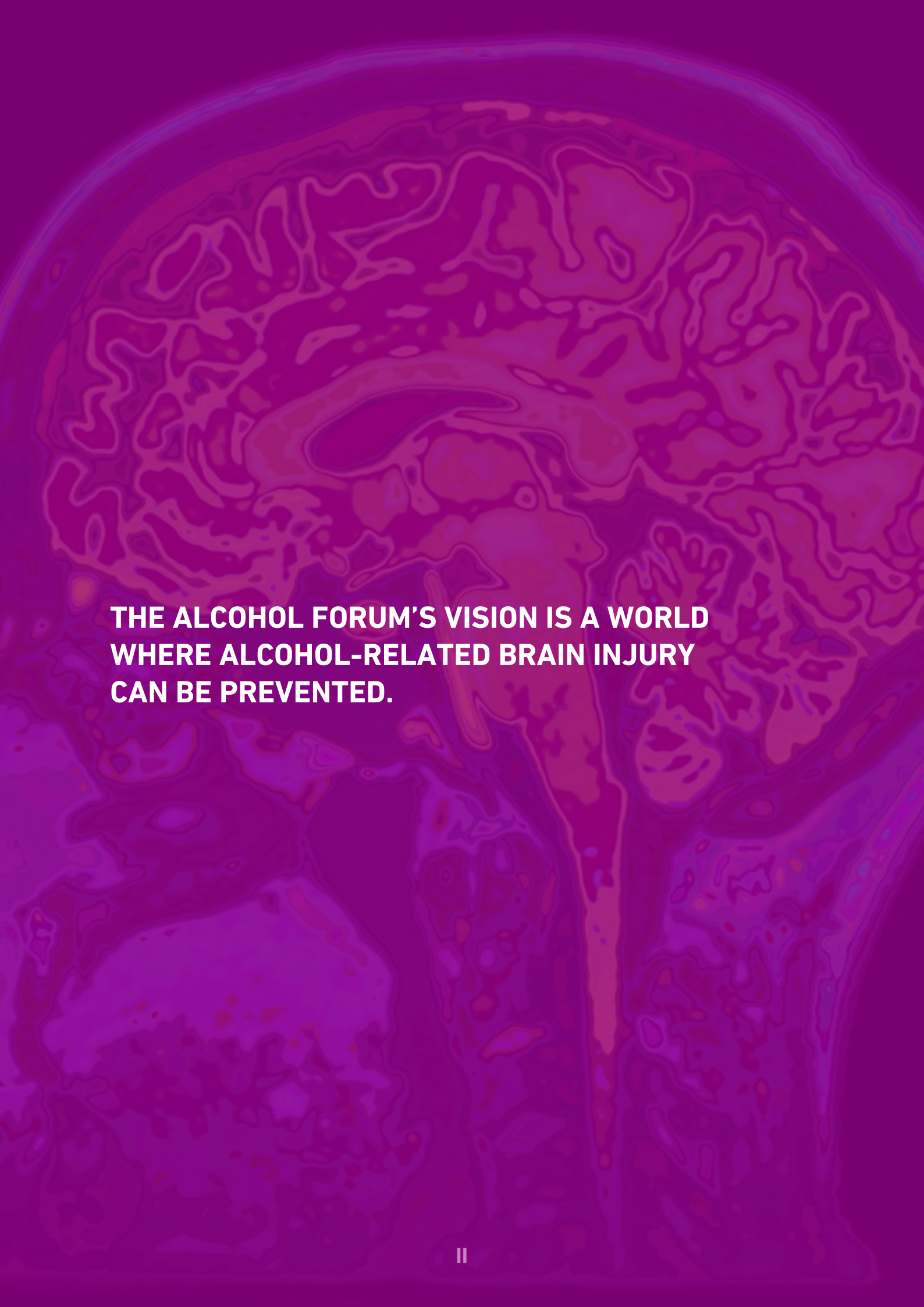


THE ALCOHOL FORUM'S VISION IS A WORLD WHERE ALCOHOL-RELATED BRAIN INJURY CAN BE PREVENTED.

THE ALCOHOL FORUM

A MESSAGE FROM KIERAN DOHERTY, CEO OF THE ALCOHOL FORUM

Alcohol-Related Brain Injury (ARBI) is a hidden but growing problem across Irish communities. The lack of professional awareness surrounding the condition continues to prevent the early identification, treatment and rehabilitation of ARBI.

In our first report studying ARBI published in 2011, we highlighted the lack of specialised care pathways in Ireland to meet the needs of people affected. We believe that our Health Service will be failing some very vulnerable people unless we provide a commitment to bettering our ways of working across the spectrum of disorders which ARBI encompasses.

Our hope is that this guide will provide a comprehensive overview of the crucial roles that various disciplines can play in improving rehabilitative outcomes, and facilitates skill development amongst those professionals most likely to come into contact with ARBI. Ultimately we hope to improve the quality of life of those affected and ensure that they meet their fullest potential.

WHO WE ARE

The Alcohol Forum is a national charity that provides support, information and services to individuals, families and communities impacted by alcohol harm while working at the wider level to change Irelands problematic relationship with alcohol. The Alcohol Forum is a registered charity: CHY17835.

OUR VISION FOR ALCOHOL-RELATED BRAIN INJURY

- A health service which recognises ARBI as a national health priority.
- That those who live with Alcohol-Related Brain Injury be provided with the rehabilitative resources and support to reach their full potential and live happy, fulfilling lives.
- That the stigma attached to Alcohol-Related Brain Injury be challenged and overcome.
- A world where Alcohol-Related Brain Injury can be prevented.

ALCOHOL-RELATED BRAIN INJURY IRELAND'S FORGOTTEN CONDITION

The physical and behavioural consequences of heavy drinking and intoxication are, unfortunately, all too familiar to professionals working in the Irish health service today.

The impact of our societal drinking practices will be more than apparent to those treating the one-in-four emergency-department patients whose admissions can be directly attributed to alcohol consumption[1]. With 88 deaths a month in Ireland now being directly related to the use of alcohol[2], the physical health and economic burden of this universal problem cannot be refuted.

Among the growing numbers of people presenting with alcohol-related injuries and physical health problems is a sub-group of people with a condition that remains largely undiagnosed and untreated. Up to 80% of people with a disorder known as Alcohol-Related Brain Injury (ARBI) are diagnostically missed by attending medical practitioners and allied professionals.

The low identification rates associated with this disorder serve to create a vicious cycle of repeated and increasingly extended hospital admissions, progressive deterioration, reducing prognosis and rising morbidity[3]. Despite having one of the highest rates of alcohol-consumption in the world, Irish professionals remain largely uninformed of this serious condition. The implications of this, not only for the affected individual, but for our health service and Irish families and communities, are enormous.

For example, ARBI now accounts for 10% of the dementia population[4] and for 12.5% of dementias in people under the age of 65[5]. It is thought that ARBI could account for 21% of the homeless of population[6]. There is a significant burden on our acute services with individuals with alcohol-related cognitive impairment being significantly over represented in populations of in-patients who are hard-to discharge[8]. This is not to mention the Irish families who suffer through the emotional turmoil of watching a loved one deteriorate cognitively, psychologically, physically and functionally over a period of many years.

It is difficult not to question why a condition that was initially discovered over a century ago, and currently affects an estimated 18,200 - 128,000 Irish people[9], is still not comprehensively provided for within the Irish health service. The lack of professional awareness surrounding ARBI means that there is a growing group of Irish people who are silently perishing away in the context of scant professional expertise, limited resources and stigmatisation.

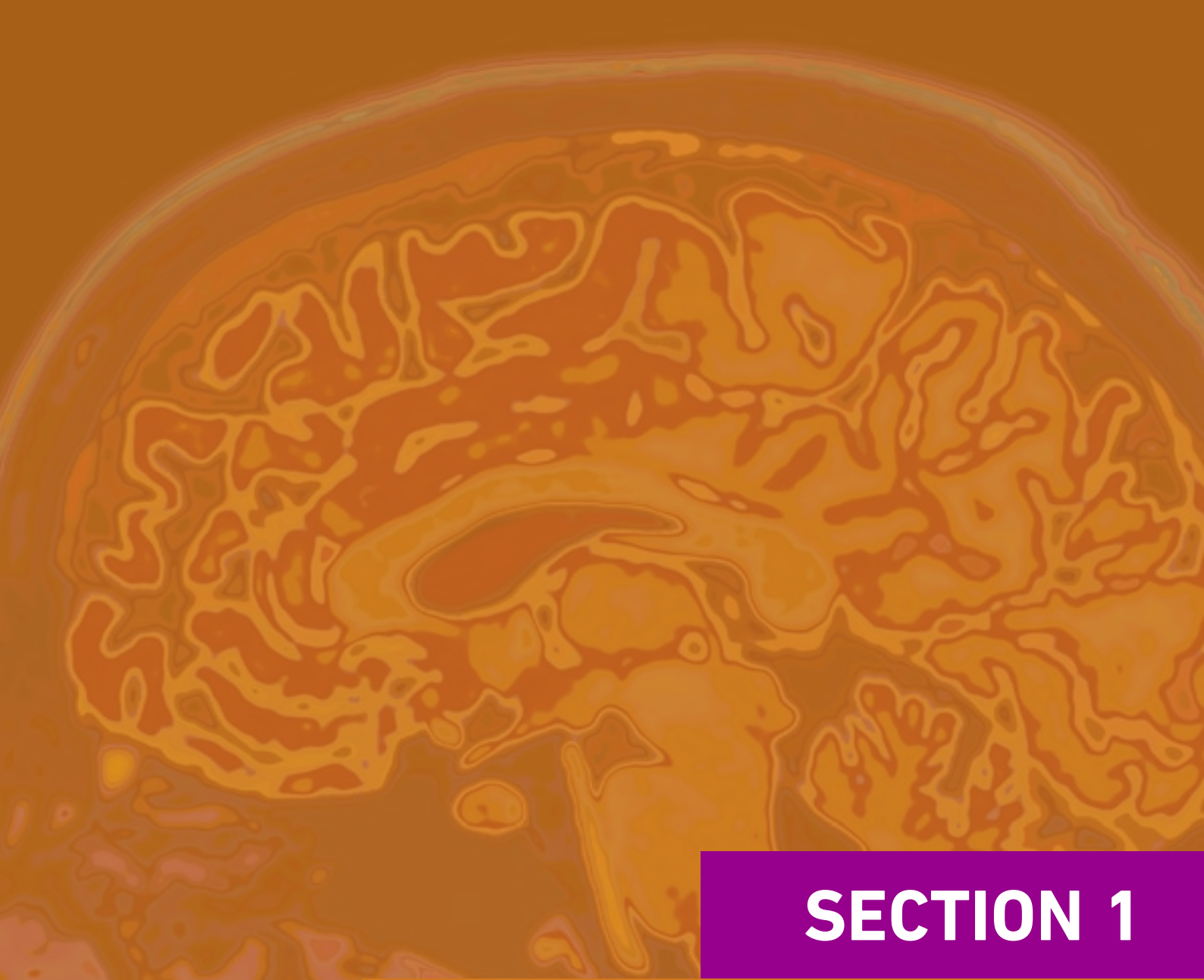
Regrettably, ARBI is often viewed as "somebody else's problem" and a culture of professional nilisim in relation to the disorder is sometimes apparent. A growing body of literature and international interest conclusively indicates that positive outcomes can be achieved for these clients. When appropriate service responses are offered (or developed in accordance with client needs), acute hospital bed-day usage can be reduced by 85% and 75% of affected people can be supported successfully in community settings with only a 10% relapse rate[85].

The over-arching aim of this guide is to improve the quality of care individuals with ARBI receive during their contact with services. By encouraging a chain of intra and inter-professional dialogue around ARBI we hope to cultivate a multi-disciplinary cross-tier approach to the identification, assessment, treatment and rehabilitation of this disorder.

Many professionals may not recognise that they have a whole host of skills applicable to the rehabilitative process of this disorder. For example, professionals across addiction, psychology, mental health, general practice, nursing and acquired brain injury are all equipped with skills and knowledge that are fundamental in informing an integrated service response and achieving successful outcomes for people affected by ARBI. It is more a question of how core professional skills can be adapted to meet the needs of this population, and how willing we might be to extend our services to people who do not typically "fit" within our remits.

Being attuned and responsive to the individual needs of people with ARBI (and of those who care for them) will be key in preventing the progressive deterioration usually observed when the condition is overlooked or missed. By providing clear guidance on how to respond to ARBI we hope that you will see more clearly your professional role within their rehabilitation. While not a definitive guide, we hope that there will be enough information for you to begin adapting your practices to meet the very unique needs of this client group.

CONTENTS

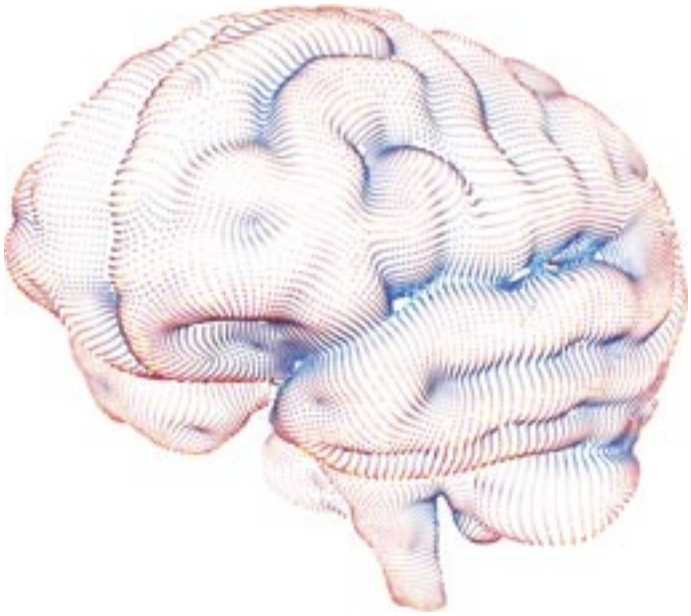


SECTION 1

FREQUENTLY-ASKED QUESTIONS

Alcohol-Related Brain Injury is not a term that features widely in professional dialogue around alcohol. This section is intended to provide some general information about ARBI and to address some of the most frequent questions posed by professionals who are new to working with this condition.

WHAT IS AN ALCOHOL-RELATED BRAIN INJURY



Alcohol-Related Brain Injury (ARBI) is a term used to describe the damage caused to the brain as a result of excessive alcohol consumption and factors associated with this pattern of use. A harmful level of drinking combined with these other factors can cause changes in the brain. These changes are:

- Structural - there are changes to the anatomy (or building blocks) of the brain.
- Functional - there are changes in the way the brain works.

Like many organs in the human body, the brain is very vulnerable to the effects of alcohol.

Most of the physical and behavioural changes that can be observed when a person is intoxicated are directly related to the way alcohol affects the brain.

For example, most of us have witnessed the staggering walk, slurred speech and out-of character behaviour linked with alcohol misuse. People who have been drinking large amounts of alcohol can have trouble with their balance, coordination and social judgement. They react more slowly to things happening in their environment.

Most of these changes will be temporary and a person's abilities and behaviour will return to normal once they have ceased drinking. However, under certain conditions, these changes can become longer lasting, even when the person has stopped drinking. People who have been drinking excessive amounts of alcohol over long periods of time run the risk of developing serious and enduring changes to their brain. This can disrupt the way the brain works and have an impact on a person's ability to perform normal activities on a day-to-day basis.

A person affected by ARBI will experience changes in their thinking, memory and physical abilities. A decline in the person's functioning can have a slow and gradual onset and these changes may not be noticed by others until their condition has progressed. It is possible that ARBI can develop suddenly over a short period of time as well. This can occur if a person drinks extremely high levels of alcohol within a very short time-frame, stops drinking suddenly, or becomes very malnourished.

HOW DOES ALCOHOL DAMAGE THE BRAIN?

DEHYDRATION

People who drink too much alcohol can become very dehydrated. Alcohol's ability to increase urine output (i.e. its diuretic effect) alters the body's fluid level (i.e. hydration state)[11]. Long-standing dehydration can cause shrinkage of brain tissue and is associated with a variety of changes in brain functioning.[12] [13] [14]

TOXIC EFFECTS OF ALCOHOL

Alcohol (or ethanol) is a toxic substance[15]. These toxic properties can have a negative effect on all organs of the body, including the brain[16] [17].

MALNUTRITION

Chronic alcohol use can have a harmful effect on an individual's eating behaviours and this can lead to a suboptimal intake of important nutrients. This increases the risk of malnutrition which can disrupt important energy-generating processes within brain cells[18]. This can cause neurological damage to the brain.

VOMITING

Vomiting and diarrhoea are often linked with excessive alcohol misuse and these reduce the amount of vitamins and minerals being kept in the body[19]. This can disrupt how the brain functions.

DAMAGE TO STOMACH AND INTESTINES

Alcohol can damage the gastrointestinal tract (stomach and intestines) and this can result in the impaired absorption of essential nutrients[20]. As previously mentioned, this can damage the brain.

LIVER DAMAGE

Alcohol's harmful effects on the liver have been clearly established. However, damage to liver cells not only interferes with the normal functioning of the liver but also impacts distant organs, including the brain[21]. The liver supplies certain nutrients to the brain that the brain cannot produce independently. The liver also purifies the blood of toxins that could damage brain cells[22]. Over time, developing liver disease contributes to a decline in brain functioning.

DEPLETION OF VITAMIN B1 (THIAMINE)

A combination of alcohol, poor diet and poor absorption of nutrients can lead to a deficiency in Vitamin B1 (also called Thiamine).

Brain cells require a continuous supply of Vitamin B1[23] and it has a crucial role in maintaining brain health. Thiamine is essential because it helps convert carbohydrates into energy for the brain. Very little Thiamine is stored in the body - only about 30–50 mg. The effects of Thiamine depletion can be seen within 2–3 weeks of reduced intake[24]. A reduction or deficiency in thiamine can interfere with numerous brain functions and may lead to serious brain disorders such as Wernicke's Encephalopathy[25].

WITHDRAWAL

Repeated and untreated alcohol withdrawals may directly cause damage to the brain. If a person is drinking large amounts of alcohol, the brain attempts to adjust its chemistry to compensate for the negative effects of alcohol. However, when the person stops drinking, the brain (and central nervous system) experiences a reversal of this adjustment: this can result in an over-activation and under-activation of key neurotransmitters (Glutamate & GABA). This can have a toxic effect on brain cells.

In addition to this, the process of withdrawal places increased requirements on the body for vitamin B1. In order for the body and brain to withdraw from alcohol in a safe way, it needs sufficient Vitamin B1 to support the process[26] [27]. As we have already seen, people who drink in a harmful way may have very low levels of Vitamin B1 in their system already. The process of withdrawal without adequate supplementation with Thiamine before, during or after withdrawal may lead to complications and the development of serious neurological symptoms.

REDUCED REPAIR

A lot of alcohol can slow down or stop the growth of new brain cells[28]. This means that the brain will find it difficult to repair damage while alcohol is still being used.

ALCOHOL & PREGNANCY

The use of alcohol during pregnancy can disrupt the brain development of the fetus. Children who are exposed to alcohol in-utero can experience a variety of developmental, physical, cognitive, behavioural, and health-related problems known collectively as Fetal Alcohol Spectrum Disorders (FASD).People affected by FASD may be at increased risk for developing substance use disorders, which may increase vulnerability to further cognitive deterioration and ARBI.

WHAT IS WERNICKES-KORSAKOFF'S SYNDROME?

What is Wernickes-Korsakoff's Syndrome?

Alcohol-Related Brain Injury is made up of a spectrum of conditions which can range in their presentation and severity.

No two brain injuries are exactly the same and a person can be affected in a number of ways.

The most widely-known and commonly referenced form of Alcohol-Related Brain injury is Wernickes-Korsakoff's Syndrome.

Wernickes-Korsakoff's Syndrome refers to two different but related conditions, each representing a different stage of the same disorder[29].

- Wernickes Encephalopathy (WE) and
- Korsakoff's Amnesic Syndrome (KS)

Wernicke's Encephalopathy represents the acute form of the disorder while Kosakoff's Amensic Syndrome denotes the chronic stage of the condition.

Many professionals may not recognise that ARBI also includes a number of other presentations. Some of these conditions can be more subtle and nuanced than that of the classical description of Wernickes-Korsakoff's. These conditions will be detailed later.

Wernicke's-Encephalopathy

An 'encephalopathy' is a disorder that affects the functioning of the brain. Wernicke's- Encephalopathy (WE) is a brain condition caused by a severe deficiency of Vitamin B1 (Thiamine). As we have seen, a lack of Thiamine is very common in heavy drinkers because they often have a poor diet, or because absorption has been compromised due to alcohol use or disorders of physical health.

Wernicke's is diagnosed in people with any two of the following four criteria[30]:

- Dietary deficiencies.
- Abnormal eye movements (oculomotor abnormalities)
- Cerebellar dysfunction – this includes difficulties with balance & coordination or walking with a wide-based gait)
- Mild memory impairment or altered mental status.

WE usually has a rapid onset and is considered a medical emergency. Treatment should be started as soon as possible with high doses of B Vitamins given intravenously. If a person is treated correctly and in a timely fashion, they may make a full recovery. If untreated, WE leads to death in up to 20% of cases. Of those who survive the disorder, 85% will develop Korsakoff-Amnesic Syndrome.

Many of the symptoms associated with WE can be confused with those of intoxication and WE is widely underdiagnosed[31]. Even in hospitals, only 20% of patients with Wernicke's Encephalopathy are identified prior to death[32]. One of the biggest barriers to diagnosis is the low index of suspicion when all clinical symptoms are not present. It is widely recommended that a high level of suspicion should be maintained for those who are susceptible to thiamine deficiency including those who[33]:

(1) engage in continuous heavy drinking
(2) may be malnourished or have poor dietary intake or
(3) those who experience prolonged episodes of vomiting.

Korsakoff's-Amnesic Syndrome

Korsakoff's syndrome (KS) is a chronic, neuropsychiatric form of Alcohol-Related Brain Injury and is characterised by a range of cognitive impairments, most characteristically in the domain of memory. A person who has developed Korsakoff's Amnesic Syndrome can have a severe difficulty learning new information and remembering recent events.

85% of survivors of Wernicke's Encephalopathy will develop KS. In such situations it is only when the acute disorder has resolved that attending doctors may realize that the person has Korsakoff's Amnesic syndrome[34].

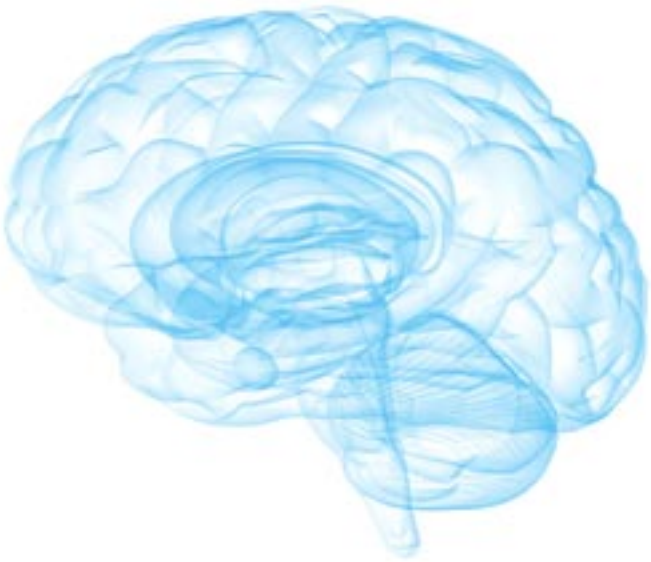
However, not all of those who develop Korsakoff's Syndrome will have experienced an episode of Wernicke's Encephalopathy prior to the development of their condition. Some cases will have a more gradual and insidious onset[35] which may not be observed by others until the condition has advanced.

People who develop Korsakoff's may only be able to remember information for a short period of time and then forget things very quickly. This impairment makes it very difficult for the person to keep up with the pace and content of everyday life and can severely impair the person's ability to live safely or independently.

Those with Korsakoff's often have a 'lack of insight' into their condition and will typically deny difficulties with their cognitive abilities, even if these difficulties pose significant challenges for the person.

In some cases, they will fill-in gaps in their memory (unintentionally) with incorrect stories or explanations which they believe to be true. This is called confabulation.

The may also have cognitive impairments in addition to their memory difficulties. These are outlined on page 11.



Other Forms of ARBI

While many professionals may be familiar with Wernickes-Korsakoff's Syndrome through either their professional training or clinical practice, many may not be aware of the range of conditions that the term ARBI encompasses.

As outlined in the Report "*Alcohol and the Adult Brain*" (Royal College of Psychiatrists, 2014), Alcohol-Related Brain Injuries can be classified broadly into:

1: Neurological conditions
These involve specific neurological symptoms.

2: Neuropsychiatric or Neuropsychological conditions
These involve changes mainly in the person's cognitive and behavioural functioning.

The treatment and management of *neurological disorders* are not considered in detail in this guide. However a brief synopsis of these conditions are provided on the following page, and rehabilitative strategies outlined throughout this guide may be applicable in long-term rehabilitative multidisciplinary plans for these conditions.

The *neuropsychiatric/neuropsychological* conditions can be further broken down into:

2: Neuropsychiatric or Neuropsychological conditions
2a: Acute forms
These include conditions which are severe and sudden in onset and may resolve with appropriate medical treatment.
2b: Chronic forms
These are usually slow developing but long lasting, and may be permanent.

ALCOHOL-RELATED BRAIN INJURY

NEUROLOGICAL

Peripheral Neuropathy
The body's extremities (e.g. fingers, toes) are affected by numbness, pain, pins and needles.

Marchiafava-Bignami disease
This is a rare toxic disorder strongly associated with chronic alcohol dependency. It leads to a progressive deterioration of certain brain tissue (myelin sheath).

Central Pontine Myelinolysis
This is a severe neurological disease causing damage to certain parts of brain nerve cells (myelin sheath). It can cause paralysis, difficulty swallowing and difficulty speaking.

Cerebellar Atrophy
Causes difficulties in parts of the brain responsible for physical coordination. A person with this disorder can have difficulties with walking, balancing and coordination.

NEUROPSYCHIATRIC/NEUROPSYCHOLOGICAL

ACUTE

Wernicke's encephalopathy
This is a brain disorder caused by a severe lack of vitamin B1. It is characterised by abnormal eye movements, ataxia (walking with a wide based gait), changes in mental functioning and dietary deficiencies. Treatment involves intravenous thiamine administration.

Acute withdrawal syndromes
This can occur in people who have been drinking heavily over a protracted period and then stop or significantly reduce their alcohol intake. Symptoms can be observed as early as two hours after drinking and can range from mild anxiety to seizures and delirium tremens (confusion, disorientation, hallucinations, motor restlessness).

Alcohol–related hallucinosis
This is a rare complication of chronic alcohol misuse and is characterised predominantly by auditory hallucinations that can occur either during or after a period of heavy drinking. Hallucinations may be accompanied by delusions and mood disturbances and often occur in the context of clear consciousness. This condition may mimic schizophrenia.

Hepatic Encephalopathy
Many people with alcohol-related liver disease develop symptoms like mood changes, confusion and hallucinations. This condition may start with the person being confused but can progress to coma if left untreated.

CHRONIC

Korsakoff's Amnesic Syndrome
This is characterised by a range of cognitive impairments, most characteristically in the domain of memory. A person who has developed Korsakoff's-Amnesic Syndrome can have a severe difficulty learning new information and remembering recent events.

Frontal Lobe Dysfunction
This is a range of impairments that can arise if alcohol consumption begins to damage the frontal lobe of the brain. The frontal lobe plays a key role in higher mental functions such as motivation, personal awareness, planning and social behaviour. As a result, a person can have difficulties ranging from mild to severe in these areas. These changes can often be subtle or difficult to detect.

Generalised Cognitive Dysfunction
This is marked by a general and widespread decline in a persons cognitive functioning over a period of time and this can be inclusive of difficulties with memory, executive, functioning and visuospatial abilities. These can range from mild to severe and may not be noted until advanced.

Syndromal Presentations of ARBI adapted from: Royal College of Psychiatrists (2014). Alcohol and Brain Damage in adults. With reference to high risk groups. Royal College of Psychiatrists

IS HAVING AN ALCOHOL-RELATED BRAIN INJURY LIKE...?

Is having an ARBI like having Dementia or Alzheimer's disease?

Unlike Dementia or Alzheimer's disease, ARBI does not generally get worse over time if the right treatment is received. If a person abstains from alcohol and adopts a healthy diet with Thiamine supplements, the person has a good chance of some recovery. However, if the person continues to drink and maintains a poor diet, their brain injury is likely to get worse.

ARBI usually occurs at a younger age than Dementia. People with ARBI tend to develop the condition in their forties or fifties. The onset of Dementia/Alzheimer's is rare before the age of sixty. This is important because it means that people with ARBI will be physically more able and active than those with Dementia. As a result, their treatment and rehabilitation needs are different.

Is having an ARBI like having a Traumatic Brain Injury?

A Traumatic Brain Injury (TBI) occurs when the head strikes an object (or is struck by an object) or when the brain is thrown about within the skull by strong forces. This tends to happen during car accidents, falls or assaults. There is no external force involved in the development of an Alcohol-Related Brain Injury. The areas of the brain affected by traumatic injuries can be different from those caused by alcohol misuse. However, many people who have a long history of alcohol misuse also have a history of falls or head injuries. It is common for people who have an Alcohol-Related Brain Injury to also have a history of Traumatic Brain Injury.

Is having an ARBI like having a Learning/Intellectual Disability?

An intellectual disability refers to having a condition – usually resulting from a genetic disorder or accident of birth – which leaves the person with *overall* limited intellectual functioning. People who have an Alcohol-Related Brain Injury usually retain their intellectual abilities but have problems affecting certain brain skills.

BUT.....THEY SEEM OKAY TO ME?

It is very common for people who are not familiar with Alcohol-Related Brain Injury to struggle to see the condition. ARBI is often called the 'Invisible Condition' because the impairments are not always very obvious. This is because alcohol can cause damage to certain parts of the brain, while other parts of the brain remain working very well. ARBI does not affect:

Long term memory

A person with ARBI will usually have a good long-term memory. This means that they can remember things that have happened a long time ago - sometimes in great detail. This can give the impression that their memory is very good. However, they may have difficulty talking about recent events, or events that have happened since the development of their condition.

Immediate memory

This is your ability to remember a small amount of information after a few seconds. If you asked a person with ARBI to repeat what you had just said to them, they could do it easily. This often gives the impression that a person is keeping up with the conversation. However, if you asked them to repeat what you had said after a delay (e.g. a couple of hours/days) they may struggle to remember the conversation.

Language

ARBI does not affect a person's language or vocabulary. An affected-person will be able to read and use vocabulary in much the same way as they did before.

Well learned skills

A person who has developed an ARBI will usually be able to carry out well learned skills. For example, showering or making a cup of tea. However, they may find it difficult to complete these skills if there is some change in the environment. For example, if they now have to use a different kitchen, they may consistently forget where to find utensils or how to use new equipment. Their brain injury may also prevent them from getting started with these activities.

Knowledge and facts and understanding of the world (except current affairs)

Generally, a person with an Alcohol-Related Brain Injury will be able to remember facts that they learned at school or during their working lives. However they have difficulty 'updating' these as time passes.

MASKING BEHAVIOURS

If a person is living with cognitive impairment, they may develop a set of 'masking behaviours' so their difficulties will not be seen by others. These behaviours may be viewed as a protective strategy to prevent themselves from feeling 'caught out' or as an adjustment or compensation for their difficulties. They may also be linked to cognitive impairment associated with the injury.

Mask of the Joker

This behaviour takes the form of using humour to deflect attention away from an impairment e.g. making a joke in response to a question they do not know how to answer. The use of humour may divert the course of conversation away from a challenging subject and as a result the underlying impairment may be missed.

Mask of Expertise

If the person claims "of course I can do that…that's simple!" but does not routinely do this task for themselves, this might be a masking behaviour. Often people with Alcohol-Related Brain Injury can talk about how they can do certain things, but may have difficulty doing these things in practice. It is sometimes wise to be cautious when determining functionality from the clients self-reports, particularly if self-awareness is compromised.

Mask of Defiance

This is when a person gives the impression of being dangerous or threatening so as to avoid their impairments being exposed e.g. being aggressive with people when they try to help.

Mask of Disinterest

A person may feign disinterest in an activity that they are struggling to do e.g. claim they do not like watching TV but they may, in fact, not be able to use a new remote control. Disinterest can sometimes be misconstrued as a lack of motivation and may be linked to executive dysfunction where the drive to 'get going' is sometimes impaired. Often people with ARBI require a lot of encouragement and prompting to get started and keep engaged with certain activities.

WHAT BRAIN SKILLS ARE AFFECTED?

The most common cognitive abilities affected by Alcohol-Related Brain Injury are:

Attention/concentration

Attention is the ability to focus on certain aspects of the environment that one considers important or interesting and to change this focus as required.

Attention is especially affected in the early stages of ARBI. People with ARBI often get distracted very easily, have trouble keeping track of what is being said or done, or miss important details in tasks.

Visuospatial Processing

This group of cognitive functions helps us understand space (i.e. the world around us). It includes mental imagery, navigation, distance, depth perception, and construction abilities.

The person affected by ARBI can appear to be quite 'clumsy', may bump into things a lot, or have difficulty navigating their way around, especially in new environments.

Verbal Learning and Memory

This refers to the ability to learn and remember verbally presented information. For example, the ability to remember what someone has said during a conversation, or recalling a news story from the radio. A person with ARBI may forget names, conversations, instructions or appointments very easily. They may also have difficulty remembering feedback given by professionals.

Visual Learning and Memory

Visual memory is the ability to learn and recollect information about what one has seen. It involves the ability to recall an object once it has been removed from sight. You may notice the person affected by ARBI frequently misplaces or loses items. They may also have difficulty remembering where it is they have an appointment, or how to get there.

Executive Functions

Executive function refers to our higher level mental capacities that control and coordinate all of our other cognitive abilities. Executive functions allow us formulate actions and goals, plan how to achieve them, and allow us to carry out these actions effectively. They also help us connect past experiences to present actions, adapt and apply old learning to a new context and evaluate our behaviour and decisions. They allow us to change our behaviour in accordance with the environment and also help us to evaluate risks and recognise the future consequences of our actions.

A person affected by ARBI may have difficulty correcting or changing their behaviour, even when feedback is given and might persist with certain behaviours even when it is no longer appropriate. While a person with ARBI may express an interest in doing certain activities, they may not be able to 'get going' without a lot of input from another person. They may also have difficulties recognising the risks associated with certain behaviours (e.g. drinking) and may seem unaware of the effect of their behaviour on themselves and other people.

Mild to Severe Impairments

It is important to recognise that these types of impairments can range in their severity. At the milder end of the spectrum a person may notice subtle changes in their thinking skills but be able to maintain a reasonable degree of independent functioning. Towards the more severe end of the spectrum a person may have extreme difficulty keeping up with the normal pace and content of everyday life and may need a significant degree of support from services.

HOW MANY PEOPLE ARE AFFECTED?

2 IN 100

people of the general public may develop Alcohol-Related Brain Injury

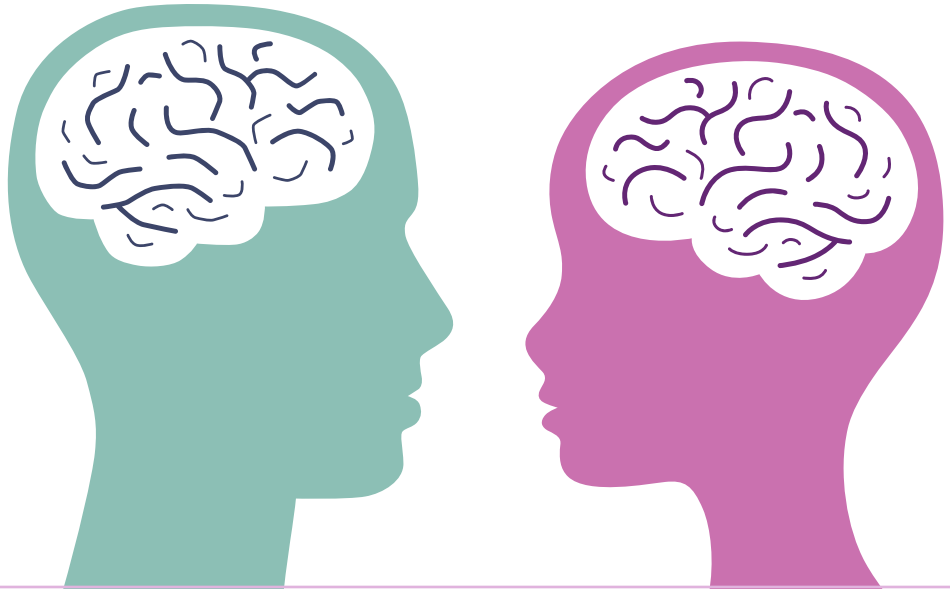
1 IN 8

people who are dependent on alcohol may develop Alcohol-Related Brain Injury[37]

Based on international autopsy studies, it is estimated that the numbers of people affected in Ireland may range from[38]:

18,320 > 128,240

ARE MEN AND WOMEN AFFECTED DIFFERENTLY?



There are more men than women diagnosed with an Alcohol-Related Brain Injury.

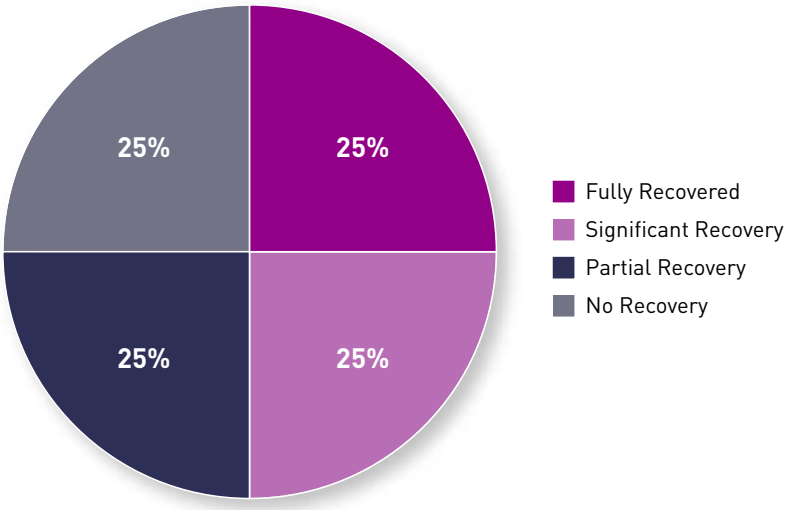
This is because there are more men drinking at harmful levels than women.

Women are more vulnerable than men to many of the medical corollaries of alcohol misuse. For example, women develop liver cirrhosis[39], cardiomyopathy[40], peripheral neuropathy[41] after fewer years of heavy drinking than men.

Similarly, some research has shown that a woman's brain is more vulnerable to the effects of alcohol. Women develop Alcohol-Related Brain Injury about 10 years earlier than men and with shorter drinking histories.[42]

CAN YOU RECOVER FROM AN ALCOHOL RELATED BRAIN INJURY?

RECOVERY FOLLOWING ARBI



There is often a widely held belief that there is nothing that can be done for a person who has developed an ARBI. This inaccurate belief often obstructs professional dialogue in the area and prevents evidenced based interventions being implemented. The prognosis is good for about 75% of people with ARBI if they receive the right treatment.

In the majority of cases, ARBI is reversible (to different degrees) if a person remains alcohol free. By remaining abstinent and maintaining a good nutritional state, a person may recover their brain functioning over a period of months or years.

It is estimated that 25% of people will make a full recovery. Up to 25% will make a significant recovery. Another 25% will make a partial recovery. Unfortunately, 25% of people will make no recovery and will have permanent difficulties.[43] Younger people seem to have a better chance of recovery. If the signs and symptoms of ARBI are identified earlier, this can improve a person's chances of recovery.

WHAT IS THE RECOVERY COURSE AFTER ALCOHOL-RELATED BRAIN INJURY?

Alcohol-related cognitive impairment may be reversible if a person stops drinking. By remaining alcohol-free most people recovering from ARBI will continue to recover their brain functions over a period of several months to one-two years. Unfortunately, some will not recover fully and may have permanent difficulties.

Although the effects of abstinence vary from person to person, it appears that most people display at least some ability to recover from alcohol-related cognitive impairment.

In general, people with ARBI will experience the most rapid improvements in the first three to six months after injury.

They may show further improvements between six months and one year. However, these improvements are usually not as dramatic or rapid as those seen in the first six months and the impression is often that recovery is slowing down.

The time period between one and two years after injury appears to be different for everybody; some people will show further improvements while others show very little improvement. While a person may show some improvement over an extended period of time, it is not always clear if this is because the brain is repairing itself or if the person is starting to adjust to the impairment and finding ways to compensate or manage their deficits.

In general, it seems younger people have a greater capacity to recover following this type of injury. Those with the most severe injuries may show little improvement after 2 years.

WHAT LEVEL OF ALCOHOL USE PUTS A PERSON AT RISK OF DEVELOPING AN ARBI?

Men drinking 35 standard drinks or more per week for more than 5 years are at risk.

Women drinking 28 standard drinks or more per week for more than 5 years are at risk.

In general, a person's vulnerability to developing this condition is dependent on a number of complex interactions between a person's drinking behaviours and their genetics, age, physical health and nutritional status. A widely used criteria has been that put forward by David Oslin and his colleagues at the University of Pennsylvania. This suggests that a drinking history of 35 standard drinks a week for men and 28 for women, for 5 years or more may have a neurotoxic impact.[44]

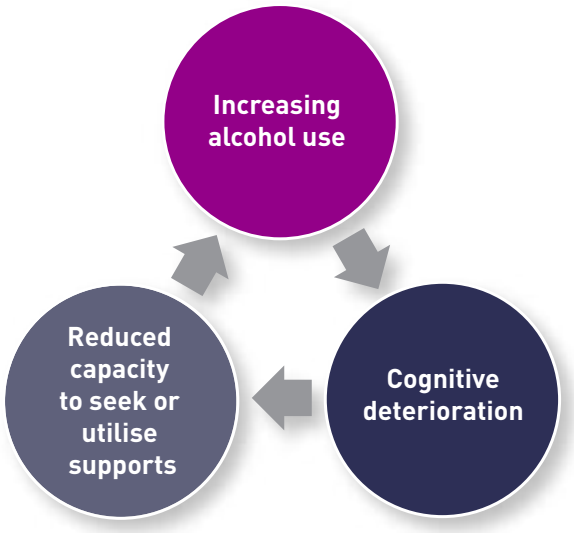
A standard drink equals 10 grams of pure alcohol. This equates to: Half pint of beer (284ml) OR Small glass of wine (100ml) OR One pub measure of spirits (35.5ml). Home measures are often twice the size of those served in pubs.

Oslins criteria differs from the current low risk weekly limits for all Irish adults. The following is the recommended maximum for people who wish to minimise the risk of alcohol-related harm in their lives.

Recommended maximum intake of alcohol to minimise the risk of alcohol-related harm is up to 17 standard drinks a week for men spread out over the course of a week with at least two to three alchohol free days.

Recommended maximum intake of alcohol to minimise the risk of alcohol-related harm is up to 11 standard drinks a week for women spread out over the course of a week with at least two to three alchohol free days.

WHY IS IT SO HARD FOR PEOPLE WITH ARBI TO STOP DRINKING?



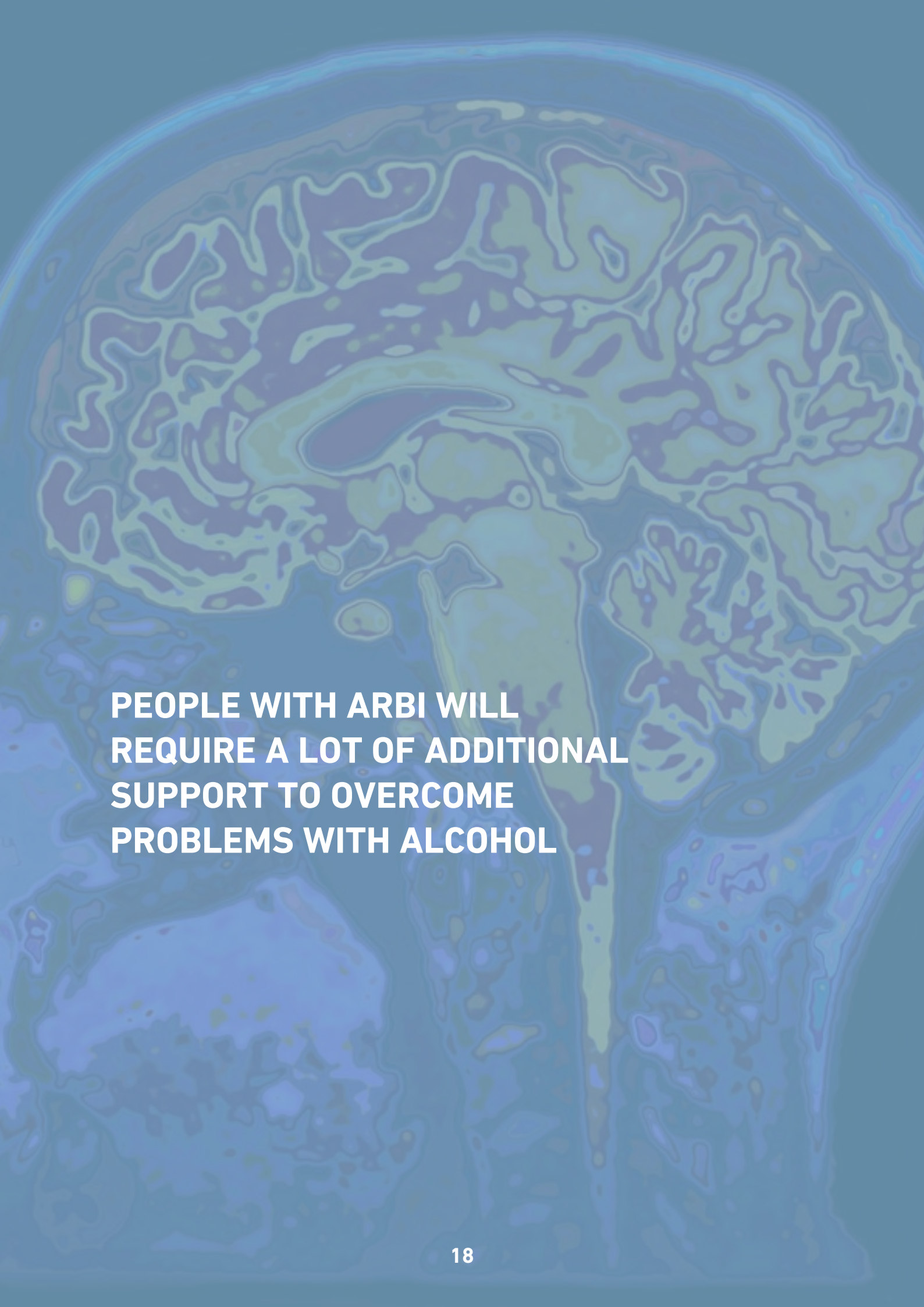
One of most serious and destructive things about excessive alcohol use is that, over time, it begins to rob the person of the skills required to overcome dependency or addiction.

Addiction, as many professionals are very aware, can be very complex. Patterns of alcohol use are linked to individual genetic, biological, psychological, environmental and cultural influences. All of these factors can be taken into account when facilitating a person to overcome substance abuse.

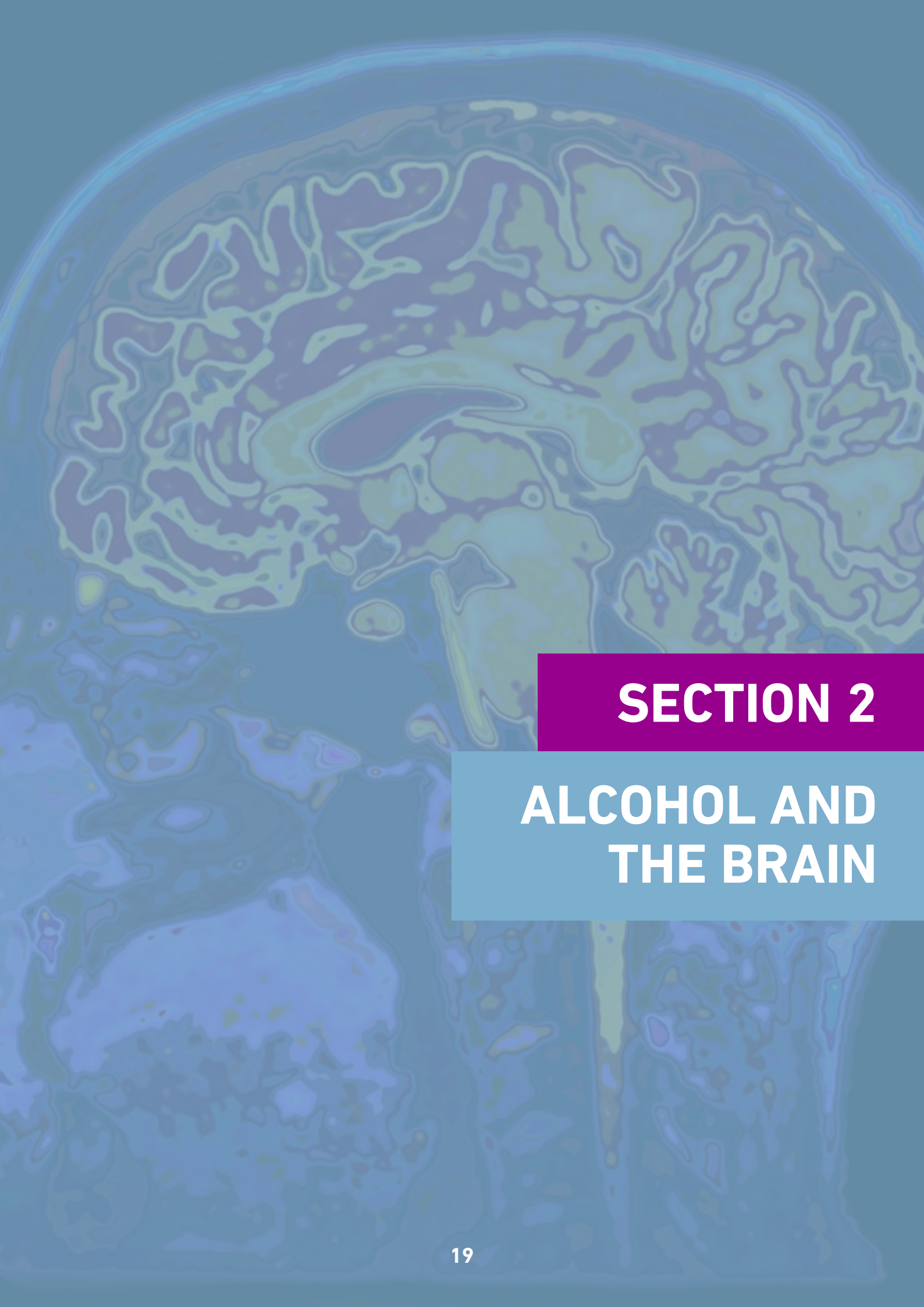
However, at its most basic level, many of the prerequisite skills required to overcome an addiction are compromised due to cognitive impairment. In order to begin addressing substance misuse a person requires intact skills in the following areas:

- Ability to identify the problematic consequences associated with alcohol use.
- Ability to identify possible sources of support and to initiate help-seeking behaviours.
- Ability to remember an appointment and an ability to make arrangements to attend.
- Ability to navigate oneself to a new environment.
- Ability to follow and remember a detailed conversation.
- Ability to bring important information to mind and communicate this in a logical way.
- Ability to learn new strategies.
- Ability to implement advice/strategies and an ability to follow-through with action.
- Ability to self-monitor and apply new behaviours in key contexts.
- An ability to reflect on what is working, what is not working, and make changes as necessary.

These are the very skills that are diminished to varying degrees in people with ARBI. This leads to the development of a vicious cycle of continued alcohol use and a progressive worsening of cognitive functioning. As a result, people with ARBI will require a lot of additional support to overcome problems with alcohol and require adapted treatment models that take into account their cognitive capabilities.



PEOPLE WITH ARBI WILL REQUIRE A LOT OF ADDITIONAL SUPPORT TO OVERCOME PROBLEMS WITH ALCOHOL



SECTION 2

ALCOHOL AND THE BRAIN

THE CEREBELLUM

Function

The cerebellum is responsible for the maintenance of balance and posture, as well as the coordination and timing/force of muscle movements. It also has a role to play in motor learning. The cerebellum, when functioning optimally, keeps our movements very smooth, controlled and precise.

Short Term Effects of Alcohol

When alcohol is consumed at a faster rate than the body can metabolise, the function of the cerebellum is compromised. This can cause a staggering gait, balance and coordination difficulties and an increased risk of falls.

Long Term Effects of Alcohol

Cerebellar degeneration secondary to alcohol misuse can lead to the progressive development of gait ataxia which is marked by a wide based gait and an unsteady, short stepped, lurching gait pattern. The person may have difficulties with day-to-day balance, coordination and with both fine and gross motor skills.

Neuroimaging Findings

MRI studies indicate long term alcohol consumption can cause atrophy of the superior cerebellar vermis. Studies suggest these changes in about 35-50% of brains in Wernickes-Korsakoff's Syndrome[45]. However, a negative MRI or CT does not rule out a diagnosis.

MAMMILLARY BODIES, DIENCEPHALON & HIPPOCAMPUS

Function

The mammillary bodies and hippocampus have important roles to play in the formation and recollection of memories. Neurons in the mammillary bodies makes connections with the hippocampus (and other parts of the brain including diencephalon) which facilitates learning, long term storage and the recollection of information.

Short Term Effects of Alcohol

Alcohol significantly inhibits neuronal activity in the hippocampus and mammillary bodies and this can disrupt or completely block the ability to encode memories of events that happen while a person is intoxicated. This is known as a blackout.

Long Term Effects of Alcohol

Long term misuse of alcohol can lead to permanent difficulties with the encoding and retrieval of memories.

Neuroimaging Findings

MRI studies indicate reduced volumes and shrinkage in the mammillary bodies and hippocampus[200]. However, a negative MRI or CT does not rule out a diagnosis.

THE FRONTAL LOBE (PREFRONTAL CORTEX & FRONTO-CEREBELLAR CIRCUIT)

Function

The prefrontal cortex is one of the most complex structures in the human brain.

It is responsible for executive functioning which controls processes such as social judgement, planning, sequential ordering of behaviour, goal-orientated behaviours, mental flexibility and ability to profit from experience.

Connections exist between the prefrontal cortex and the cerebellum and this is known as fronto-cerebellar circuitry. This circuit has a crucial role in executive functioning also.

Short Term Effects of Alcohol

The frontal lobe is particularly sensitive to both short term and long term alcohol misuse. Individuals who consume alcohol can show impulsive, disinhibited and socially inappropriate behaviour.

Long Term Effects of Alcohol

Long term alcohol misuse can inhibit the communication between the frontal lobe and other regions/circuitry in the brain. This may cause long term difficulties with motivation, judgement, risk taking behaviours and problem solving. It may lead to difficulties with adapting to changes in life. Changes in personality can also occur.

Neuroimaging Findings

MRI studies indicate long term alcohol consumption can cause atrophy or gliosis in the frontal lobe as well shrinkage[201]. However, a negative MRI or CT does not rule out a diagnosis.

SECTION 3

SCREENING AND ASSESSMENT FOR ALCOHOL-RELATED BRAIN INJURY

IDENTIFYING HIGH RISK GROUPS

Many of the "classical symptoms" of Alcohol-Related Brain Injury may represent a late stage of a process that began years earlier. Alcohol-Related Brain Injury can be defined as existing along a continuum or trajectory moving across different stages of risk: from early indicators, to advanced conditions and to recovery or relapse.

Given the impact that this condition can have on the individual, opportunities should not be lost to identify the condition in its earliest stages. In doing so, we may be able to prevent the occurrence or advancement of the disorder.

Routine dialogue around cognition and nutrition with service users who are misusing alcohol will be an important part of this effort. In addition, being aware of additional high risk groups and factors is essential in professional practice with alcohol misusers. In doing so we may be able to prevent crises and the progression of neurological and neuropsychological damage.

Identifying ARBI - Four Areas for Professional Upskilling

- **Understanding patterns of drinking that increase risk for ARBI.**
- **Understanding indicators and additional high risk factors**.
- **Nutritional Status** – routine dialogue around nutrition and basic screening for malnourishment.
- **Cognitive Screening** – routine dialogue around cognition and being attuned to the presence of cognitive impairment using both behavioural observation and cognitive screening tools.

SUMMARY OF ARBI HIGH RISK FACTORS & INDICATORS

This table represents a collation of indicators and high risk factors outlined in the literature and may facilitate screening and assessment efforts. A suspicion of ARBI may be warranted when there are endorsements across alcohol history and additional domains. Discussion of high risk factors is undoubtedly a multidisciplinary processes, and practitioners should consult with colleagues (e.g. medical practitioners, addiction specialists etc.) when concerns arise.

Malnourishment[45]				**Alcohol History**			
Recurrent episodes of vomiting or diarrhoea in the past month				Men: 35 standard drinks or more per week for more than 5 years[46]			
Reports of nutritional neglect while drinking (self-report or observer report)				Women: 28 standard drinks or more per week for more than 5 years[47]			
Reduced BMI or marked weight loss				A pattern of heavy or extended binge drinking[48]			
Lack of funds to purchase food[49]				Multiple episodes of alcohol withdrawal without medical assistance			
Physical observations of malnutrition				Multiple medical detoxifications			
Bloods e.g. MCV, vitamin/mineral screen				Frequent 'memory blackouts' while intoxicated[50]			
Medical conditions related to poor nutrition				Alcohol-Related hospital admission or delayed discharge in the past year[51]			
Diabetes[52]	Anaemia						
Physical Health[53] **(Alcohol-related)**				**Cognitive Health**			
Liver damage	Renal disease			Reports or observations from a significant other of a decline in cognitive functioning			
Gastrointestinal disorders	Cardiovascular disease			Behavioural indications of cognitive impairment during assessment			
Other organ damage	Pancreatic disorder			Performance on a screening tool indicates the presence of cognitive impairment			
Peripheral Neuropathy				**Age & Gender**			
				Male Aged 35+	Female Aged 35+		
Balance and Coordination Difficulties				**High Risk Social Factors**			
Changes in Eye Movements: Nyspagmus, bilateral/lateral palsy or conjugate gaze palsy				Homeless	Prison History		

COGNITIVE SCREENING FOR ARBI

Up to 80% of people with a significant history of alcohol misuse will experience some changes in their cognitive abilities whilst actively consuming alcohol and post detoxification. These changes can range from subtle and nuanced changes to severe impairment. For the vast majority of cases, these difficulties will resolve (to varying degrees) over the first three to six months of abstinence.

Cognitive screening is one facet of assessment which can help identify those service users who may warrant further investigation. Within the context of a trusting relationship and good therapeutic alliance, those professionals who work with clients affected by substance use disorders should be encouraged to ask about changes in cognition. This can include a discussion with the service user themselves and with people actively involved in their care (other professionals, family members).

Providing routine dialogue around alcohol-related cognitive impairment and ongoing psycho-education about the condition can increase opportunities for earlier identification while simultaneously allowing for specific interventions to be employed to prevent progression of the disorder.

In the earlier stages of ARBI, a person may be able to self-report mild changes. Most people may not think to report these, but there can be a relief when these changes are normalised and discussed openly. Monitoring and tracking these changes over time (through the use of cognitive screening tools and behavioural observation) as the person progresses in their recovery can be an ongoing incentive to engage with services and maintain abstinence.

Other service users whose condition may be more advanced, can have deficits in self-awareness and be unable to give an account of any cognitive dysfunction. In these instances, information provided by family members as well as the use of behavioural observation and performance on brief cognitive screening tools can be employed to inform over-all assessments of the person's functioning.

The results of these types of screenings should always be discussed with the person's attending medical physician/G.P and conducted as part of a thorough psychosocial assessment including the collation of the person's substance misuse and physical history. Ongoing multidisciplinary assessment will be needed to confirm an actual clinical suspicion of Alcohol-Related Brain Injury after three to six months, but cognitive screening allows for earlier identification when concerns arise.

Indicators of cognitive impairment

People affected by cognitive impairment can present in a variety of ways. A cluster or group of indications should be noted before attributing a person's behaviour to cognitive impairment.

- Vague responses to questions – struggles with specifics and details
- Poor day-to-day memory – general forgetfulness
- Overly descriptive or tangential answers – does not pick up on social cues to allow others to talk or end a conversation
- Has difficulty remembering recent events
- Only discusses events from the past
- Has trouble keeping track of what is being said
- Takes longer to answer questions or bring to mind information
- Difficulties with flexible thinking e.g. finds it difficult to think about things from 'different angles' – very rigid thinking style
- Difficulties remembering when it was that things happened
- Difficulties solving problems
- Poor self-awareness
- Changes in levels of interest and motivation – the person seems to have 'lost their spark', appears apathetic, lacks initiative or spontaneous behaviour
- Confabulation

Complicating factors

There are a number of instances where professionals should be more cautious when drawing conclusions from the clients behaviour or conducting cognitive screenings. These include when the service user has;

- Mental Health Difficulties
- A History of Intellectual Disability
- A very high or low educational achievement history
- When the person is not communicating in their first language (e.g. foreign nationals)

When uncertainties arise, consultation with the person's G.P or attending medical practitioner is advised.

Benefits of Cognitive Screening

- Provides a baseline measure: Alcohol-Related Brain Injury usually has a slow and insidious onset in the context of prolonged alcohol misuse and nutritional deficiency – if a person is screened at a relatively early stage, a baseline measure can be established on which to compare the progression of the disorder e.g. is it getting better, is it getting worse?
- For individuals who have multiple treatment episodes, cognitive screening allows us to compare general cognitive functioning over a number of years.
- Allows for referral to other agencies.
- Feedback around cognitive changes can encourage abstinence and act as an incentive for change.

Conducting a Cognitive Screen

It is important to recognise that screening tools are only considered to be a 'brief snap-shot' of a person's functioning and these tools should be used in conjunction with other methods of assessment such as observation and collateral information from family members and other professionals. The use of cognitive screening tools in isolation may lead to an incomplete assessment and care-plan.

1: Preparation

- Ensure that you have completed a number of practice administrations of the screening tool you are using and have consulted with both the administration guidelines and scoring instructions.
- If possible, let the client know that you will be doing this type of screening in advance. Explain why you are doing it – use non-threatening language and normalise this process as much as possible. Point out the benefits of the screening.
- If it would be helpful, ask the person to bring a close friend or family member who will be able to act as a collateral informant. Ask them to bring any reading glasses or hearing aids that they require. Ring to remind them if necessary.
- Sensitively enquire if they have any difficulties with reading or writing.

2: Timing

- Optimally, a person should be abstinent for a minimum of 2-3 weeks before completing a cognitive screening tool. Prior to this, behavioural observation, collateral information and review of the person's history can be useful in determining if cognitive impairment or other high risk factors are present.
- Avoid the following times:
  (a) Immediately after wakening from sleep, wait at least 30 minutes.
  (b) Immediately before and after meals.

(c) Immediately before and after medical treatment or procedures.
(d) In the presence of pain or discomfort.
(e) If the person is in withdrawal from alcohol, cigarettes or another substance.
(f) If the person has experienced seizure activity in the previous 24-48 hours.

- Choose a time that the person is well rested.
- In as far as possible, provide a comfortable setting free from distractions to conduct the screening.

3: Beginning

- Position yourself so the person can clearly hear and see you e.g. if they are hard of hearing.
- Let the individual set the pace of assessment – don't rush. Take note if the person is taking longer than you would normally expect to answer questions or do tasks.

4: What to ask – Talking about Cognition

- Have you noticed any changes in your memory over the last while – can you describe these changes. How do these changes affect you?
- Have you noticed any changes in your ability to think clearly about things? Can you give me an example?
- Do you find it difficult to concentrate on the things you are doing? How does this affect you on a day to day basis?
- Do you find yourself losing track in the middle of conversations?
- Do you find it difficult to cope when something happens outside of the normal routine? Do you have difficulties thinking of solutions to problems?
- Do you find yourself to be more 'clumsy' than usual or bumping into things/ knocking things over – even when you are not drinking?

5: What to ask – Screening for Traumatic Brain Injury

Many people who have a long history of alcohol misuse also have a history of falls or head injuries. It is common for people who have an Alcohol-Related Brain Injury to also have a Traumatic Brain Injury. With the person's consent you may (a) consult with family members or (b) request the person's medical records, if the person cannot detail or remember incidences of head injury.

- Have you ever had any falls or head injuries?
- If so, when?
- Did you lose consciousness? For how long? For less than a minute? 1-20 minutes? Longer than 20 minutes?
- Were you seen by a medical doctor following this?
- Did you notice any changes in your memory or thinking skills following this incident? Any headaches, dizziness, memory or balance problems?

Always consult with the persons G.P or attending medical practitioner when difficulties associated with an injury persist or have not been reported in the past.

6: Disorders of Awareness

Sometimes, people will not have any awareness of their cognitive dysfunction. This is usually the case in more advanced cases. Some indicators of this might be:

- Their description of events seems to be at odds from the reality of their situation.
- They may over estimate their abilities e.g. denying the need for support when there is a lot of evidence to the contrary.
- They are not sure why they have been referred for treatment.

A relatively simple way of assessing someone's awareness is to ask them to rate their memory (or thinking skills) out of 10. Then ask a family member, or a person who knows them well, to rate their memory (or thinking skills) out of 10 also. If there is a difference of more than two or three in the ratings, then the person may have a disorder of awareness also. This is a common clinical practice but only considered a subjective rating as part of a broader assessment.

7: Masking Behaviours

Be aware that clients may have become adept at masking any cognitive impairment. Please see page 10 for some common masking behaviours. If these behaviours are observed it may be more helpful to get collateral information from family members with the person's consent.

8: Talking to families

Given the longevity of relationships between family members, they are often well placed to report more subtle or nuanced changes in the person's abilities. Some questions to ask can include:

- Does he or she have trouble remembering things?
- Does he or she have trouble recalling conversations

you have had with them?
- Have you noticed any changes in their personality?
- Have you noticed any behaviours that would be considered out of character for them?
- Are they able to take care of themselves (e.g wash, eat, manage finances etc.)
- Are all of the above a change from how the person used to be?
- Has the person worsened since their last admission to hospital?
- Are you worried about their safety?

9: Behavioural Observation of Cognitive Impairment

Memory: Key observations

Observing services users ability to acquire, retain and recall information on a daily basis

- Can the person remember events/conversations following a delay?
- What is the degree of distinction - is there a complete loss of information, are only elements retained, is information confused or merged with other information so that it is recalled inaccurately? After what amount of time is the information forgotten – after hours or days?
- Does the person tell the same story repeatedly or ask the same questions a lot?
- Do they frequently misplace or lose things?
- Do they frequently forget daily routines e.g. taking medications?
- Would they be able to find their way around in an unfamiliar environment or would they get lost easily? Is it better in a familiar environment?

Executive Function: Key observations

- Can they initiate/begin activities on their own or do they need to be prompted/told to do something?
- Can they think flexibly about things e.g. change their mind when provided with reason or do they appear to have a very rigid thinking style e.g. quite stubborn?
- Do they repeat the same stories/behaviours/ remarks over and over?
- Are they socially appropriate with other people e.g. can they respect boundaries? Do they make jokes offensively or at the wrong time? Can they take appropriate turns in conversation?
- Have they become more irritable than they have usually been in the past? Do they react to stress or frustration as they always have or are they more short tempered than usual?
- Do they seem aware of the difficulties they have been experiencing in their life? Does their account of their life match the reality of their situation? Are their personal goals perceived to be realistic and in line with capabilities?
- Can the person implement feedback from others consistently, or does it need to be reinforced regularly through repetition?
- Are they interested in doing things? Do they seek out activities or do they need to be prompted to engage in events?
- Do they make impulsive decisions without thinking things through? Do you think they act in good judgement when making decisions?
- Do they have an interest in their personal affairs – e.g. finances. Can they attend to these on a daily/weekly basis?

10: Cognitive Screening Tools

A diagnosis of alcohol-related brain injury cannot be made solely on the basis of the results of cognitive screening tools and the results need to be examined in context of the person's biopsychosocial history and overall functioning. They can be a useful indicator as to the need for more detailed assessments.

Montreal Cognitive Assessment (MoCA)[54]

The Montreal Cognitive Assessment (MoCA) assess eight different cognitive domains

- Executive Functions
- Naming
- Memory
- Visuo spatial abilities
- Language
- Abstraction
- Delayed Recall
- Orientation & Attention

It takes 10 minutes to administer.

Recent research has indicated that the MoCa provides a time efficient and resource conscious way to identify substance use disorder patients with neuropsychological impairment[55].

The total possible score is 30. The following score ranges may be used to grade severity:

- 18-26 = mild cognitive impairment
- 10-17 = moderate cognitive impairment
- less than 10 = severe cognitive impairment.

It's available free of charge for non-commercial use from www.mocatest.org. This website also includes information about cut-off scores.

It is available in a number of different languages and there are 3 different formats, so it is useful if re-testings are completed to monitor changes in cognition over a period of time.

There are no qualification restrictions for use of the test and it can be used by a range of professionals. However, interpretation of these results should be discussed with the persons G.P and if possible, a neuropsychologist.

Addenbrookes Cognitive Examination III (ACEIII)[56]

The Addenbrooke's Cognitive Examination-III (ACE-III) is a brief cognitive test that assesses five cognitive domains:

- Attention
- Memory
- Verbal fluency
- Language
- Visuospatial abilities

It takes about 15-20 minutes to administer.

The cut-off score of 88 out of 100 is recommended for suspected cognitive impairment.

To download the ACE-III, as well as updates on publications and language translations, please go to the following website:
http://www.neura.edu.au/frontier/research

Mini Mental State Examination® (MMSE)
The absence of executive function tests on the MMSE makes it **not** well suited to the detection of cognitive impairment in this population. The use of the MMSE in more subtle cases of ARBI is likely to generate a false-negative. The use of the MMSE should be supplemented with additional tests of frontal lobe functioning which is beyond the scope of this section.

What to do if you suspect cognitive impairment

- If a person's score on a screening tool is borderline or suggests cognitive impairment, or you have made observations which indicate the person may be affected by cognitive impairment, this should be discussed with the person's G.P or attending medical clinician. Outline your concerns and the outcome of the cognitive screen. Liaison with the G.P/Medical Clinician will be important as other causes of cognitive impairment will need to be ruled out (e.g. Dementia).
- If a person is actively drinking, a supervised and medically assisted detox will be necessitated in most instances.
- If the person is actively drinking, the priority will be on helping this person achieve abstinence so that a clearer picture of their underlying cognitive abilities can be formed. Consideration should be given to what environment and services can best support the person in achieving this outcome. The greater the degree of cognitive and functional impairment, the greater degree of support that will be required. Following detoxification, it is reommended to discharge to an alcohol-free environment with due consideration to the person's supervision and rehabilitation requirements.
- If the person has been abstinent for a period of time, a person may be referred for neuropsychological assessment and an occupational therapy assessment. These assessments will inform long term care planning. A description of these assessments and possible referral criteria are outlined below.

Assessment and Management of Cognitive Impairment

In the medium and long term, cognitive impairment and its functional correlates are best assessed by professionals working in the field of psychology and occupational therapy. Once abstinence has been achieved, these key assessments will be central in developing long term rehabilitative care plans.

Neuropsychological Assessment

A neuropsychological assessment is an assessment process involving a number of clinical and psychometric methods and tools to establish a valid estimate of a person's functioning. This type of assessment can be useful following evidence of neurological insult or a

change in a person's functioning (e.g. physical, cognitive, behavioural or social).

A neuropsychological assessment typically provides information about overall changes in functioning, the extent of these changes and the possible impact of these changes on day-to-day functioning.

Usually, neuropsychological assessment involves the following and occurs over a number of sessions and, if possible, across multiple settings:

- A review of the person's personal, social and medical history based on interview or medical notes.
- Face-to-face interview with the person using interview schedules and screening tools for cognition, mood and mental state.
- Interviews with significant others e.g. family members, persons involved in their care.
- The use of selected psychometric assessment tools as a means of answering specific referral questions. The nature of these tools is discussed on page 62.
- The interpretation of these psychometric tools in the context of the individuals clinical history, presentation and current functioning.

When to refer for a Neuropsychological Assessment

Neuropsychological assessment is a significant undertaking for both the client and the clinician. It is not a universally required assessment for all ARBI clients. In many cases, if a thorough screening assessment has been completed, or there is clarity and consensus around the needs of the affected person, a neuropsychological assessment is not always necessitated.

However, the following circumstances may indicate the need for a neuropsychological assessment. The following list is not exhaustive and final decisions about neuropsychological assessment need to take into account the client's individual needs/presentation and team-based factors.

- **The initial screening and ongoing monitoring indicates the presence of a spectrum of cognitive and behavioural impairments that impact on day-to-day functioning and may pose safety concerns for the individual.**
- **When care planning during periods of transition e.g. change in living arrangements.**
- **Where the degree of support and management has heightened (e.g. behavioural difficulties). In these instances the ongoing input of multidisciplinary team is required.**
- **As part of an established diagnostic process where longer term care needs need to be more fully ascertained.**
- **There is sufficient evidence to suggest that the person has been alcohol free for a period of approximately six months.**

Occupational Therapy

Occupational therapy aims to improve or maintain independent functioning in all aspects of living.

The Occupational Therapist will assess and treat those physical and cognitive problems which may interfere with a person's functioning and employ measures or rehabilitative activities that maximise independence.

People who have developed an Alcohol-Related Brain Injury will experience disruptions to their daily lives. Functional implications may result in:

- Difficulties performing everyday tasks
- Difficulties living without supervision
- Difficulties accessing the community safely
- Inability to return to work or gain meaningful employment
- Inability to return to previous leisure interests or gain new interests

An occupational therapy assessment will be important during the following stages of rehabilitation

1) Pre-Discharge from acute hospitals
2) During the first three/six months in recovery
3) During transitions or changes in living or activity arrangements.

An Occupational Therapist will assess and provide therapy, if suitable, in the following areas:

1) Physical changes

An Occupational Therapist will use formal assessments and functional observation to evaluate the person's physical abilities and decipher what supports may be necessary.

2) Cognitive deficits

The Occupational Therapist will practice everyday activities and work-related tasks to reduce the effect the

cognitive impairment will have on functioning at home or in the community

3) Activities of Daily Living (ADL)

ADL encompasses the patient's ability to resume personal self-care activities, domestic tasks and community living skills. The Occupational Therapist will retrain in self-care and where necessary teach specific techniques and prescribe adaptive equipment. Assessments will be completed to assure safety and independence at home. Occupational Therapy may facilitate retraining community skills such as money handling, shopping, budgeting, using timetables, phone books, time management etc. If appropriate the Occupational Therapist may help coordinate a stay in an Independent Living Unit to practice self-care, domestic and community skills prior to return home.

5) Work

After a period of rehabilitation, an Occupational Therapist may address leisure activities or work. The Occupational Therapist will assess work skills and potential for returning to work.

SCREENING FOR MALNOURISHMENT

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Many long term alcohol misusers can develop a condition known as malnourishment. This occurs when a person's diet does not contain the right amount of nutrients for their bodies. Eating foods rich in nutrients provides the body with the energy it needs for healthy growth and repair. Without an adequate supply of nutrients, the brain and body can be affected. This is one of the reasons Alcohol-Related Brain Injury develops (see page 3 & 4). Long term alcohol misuse can lead to malnourishment in a number of ways:

- Larger amounts of alcohol can suppress feelings of hunger and decrease appetite.
- Because alcohol is a diuretic (increases the output of urine) it can cause the loss of certain nutrients before they are absorbed.
- People who drink too much alcohol often vomit or experience diarrhoea. This can lead to nutrients being lost before they are absorbed into the blood stream.
- Alcohol can damage the linings of the stomach and intestine which can disrupt digestion and the absorption of nutrients.
- Alcohol can damage the liver which is responsible for storing certain vitamins and minerals.

When a person is regularly drinking, it may be difficult for them to implement dietary advice.

- Money might be limited if a person has a substantial dependency to alcohol.
- The person may not have access to cooking facilities e.g. if they are homeless or if electric supply has been turned off.
- They may never have developed cooking skills.
- They may not 'feel' like eating because alcohol can cause a decrease in feelings of hunger.
- Nausea or vomiting/diarrhoea may reduce the drive to eat.

Identifying Malnourishment

Moderate drinkers (two drinks or less per day) seem to be at little risk for developing malnourishment or nutritional deficiencies[57]. However, malnutrition and various nutritional disorders may begin to appear when people begin drinking at greater levels. Research shows that the following people are most at risk of malnutrition[58]:

- People who are hospitalised for medical complications associated with alcohol.
- Homeless people or those who are socially isolated.
- People on low incomes.
- People with a chronic illness or condition.
- Elderly people, especially those who are hospitalised or in long-term institutional care.

Possible signs of malnourishment

All people with a history of long-term alcohol misuse should be checked for malnourishment.

- Weight loss
- Cracks around the persons mouth
- Clothes fitting more loosely than usual - loose wedding rings etc.
- Pale lips and mouth
- Hair loss or thinning
- Slow healing cuts or wounds
- Eyes appear "sunken"
- Money difficulties preventing the person buying food
- Susceptibility to feeling cold – e.g. wearing layers of clothes on a warm day
- The person is vomiting regularly or has frequent diarrhoea
- Cheeks may look hollow
- The person suffers disorders of physical health such as gastro-intestinal difficulties
- Poor dental hygiene or sore teeth/gums make eating difficult
- Mobility Problems – the person cannot get out to buy food
- The person has a confirmed nutritional disorder e.g. anaemia

Malnourishment is not just about weight

It is important to note that alcohol is high in calories but contains almost no nutrients or minerals. Alcohol can 'trick' the body into feeling that it has all the nutrients it needs because calorie requirements have been met. A heavy drinker will often get 50 percent or more of their total calories in the form of alcohol. It is possible that a person may maintain their weight (or be overweight) but still be malnourished.

Further to this, because Thiamine stores can become depleted very quickly, a person can be deficient in this vitamin during a short but heavy binge where food is neglected entirely. This also means that a person can maintain their weight (or be overweight) but be deficient in a key nutrient for brain health.

Assessment for Malnourishment

If you are concerned that a person may be malnourished due to their drinking behaviours, it may be important to have a detailed assessment completed. This could be facilitated by the G.P, nursing staff or a dietician.

Some people who have certain physical health problems will need specialist help from a dietician and their medical practitioner. Specialist assessments are required:

- When a person has a liver or renal disease
- When a person has a medical condition which may have specific nutritional requirements e.g. diabetes or HIV
- When a person has lost a lot of weight involuntarily
- When a person has a confirmed nutritional deficiency e.g. anaemia
- When a person scores 2 or more on the MUST screening tool
- When a person has difficulties swallowing food

Helpful Tools for identifying Malnourishment

Mini-Nutritional Assessment Short-Form (MNA®-SF)[60 61]

This a screening tool used to identify older adults who are malnourished or at risk of malnutrition. It consists of 6 questions on food intake, weight loss, mobility, psychological stress or acute disease, presence of cognitive impairment or depression, and body mass index (BMI). When height and/or weight cannot be assessed, then an alternate scoring for BMI includes the measurement of calf circumference. Scores of 12-14 are considered normal nutritional status; 8-11 indicate at risk of malnutrition; 0-7 indicate malnutrition.

MUST Screening Tool

The Malnourishment Universal Screening Tool (MUST) can be used alongside results from blood work and reports from the person/family. MUST is a five-step screening tool to identify adults who are

malnourished or at risk of malnutrition. It can be used in hospitals or in the community and can be used by all care workers. It is available from the BAPEN website www.bapen.org.uk.

Food Diaries

Examining food diaries may provide information about the risk of nutritional deficiencies[59]. Asking a person to record what they have eaten over a period of a week can reveal a lot about eating behaviours. This could become a routine part of alcohol-treatment programs in order to highlight the importance of nutrition while a person is in recovery or reducing alcohol. Unfortunately, some people will not be able to give an accurate account of their eating habits. In these cases, family/friends could provide observations of the person's eating habits (with the persons consent) or other methods, such as those listed below.

Blood Tests

Certain blood tests can be helpful in identifying malnourishment. A G.P will be able to do a round of blood tests as part of an over-all physical health check and may be useful in identifying nutritional deficiencies.

Oral health

Having decayed teeth and a painful mouth can make it more difficult to eat certain foods. 80% of alcohol misusers have moderate to severe gum disease and decayed teeth[62]. This can reduce the amounts of food eaten, or result in choosing soft sugary/fatty food over healthier foods such as fruit and vegetables. Reasons for poor oral health in alcohol misusers can include:

- Long periods without brushing teeth.
- Frequent vomiting may cause damage to the enamel of the teeth.
- High intake of carbonated drinks.
- Lack of finances to attend dentist.
- Damage to teeth as a result of falling.
- High sugar diet.
- Smoking also affects oral health.

Identifying Oral Hygiene Problems in Alcohol-Users

All long term alcohol misusers should have a dental review as this may impact on eating behaviours and nutritional intake. Some indicators of poor oral health are;

Gum Disease
- Red swollen or bleeding gums
- Bad breath or bad taste in the mouth.
- Receding gums and loose teeth.
- Visibly decayed or broken teeth.
- Refusal to eat, difficulty chewing.

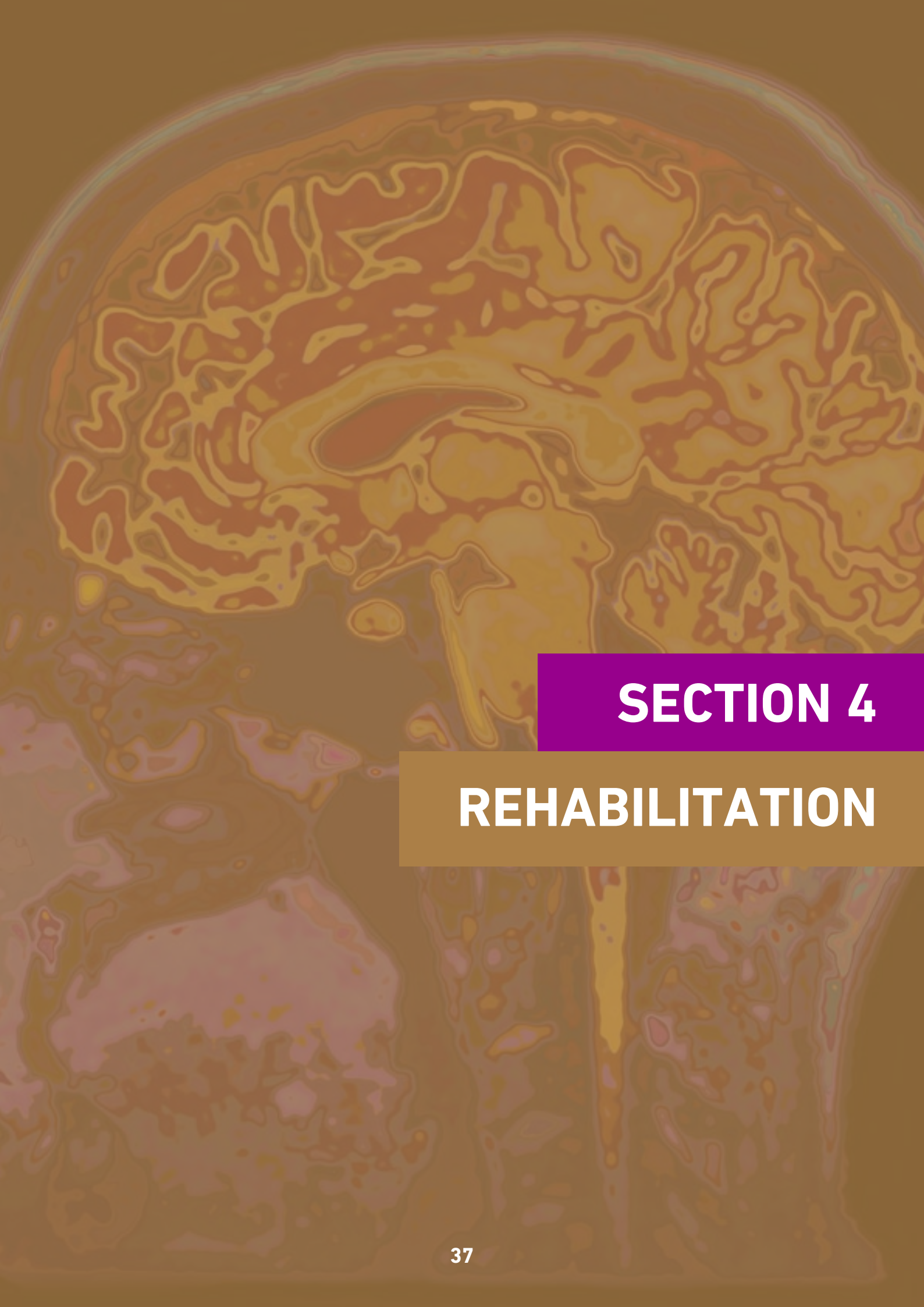
Dental decay
- Broken teeth.
- Discoloured teeth.
- Bad breath and broken teeth.

What to do if you suspect malnourishment

Malnourishment can have serious consequences for the affected individual and their over-all brain health. If malnourishment is suspected, it will be essential to talk to an attending medical practitioner as soon as possible.

If malnutrition is identified alongside changes in cognition and the person is actively drinking, a supervised and medically assisted detox will be necessitated in most instances, and this may be required urgently.

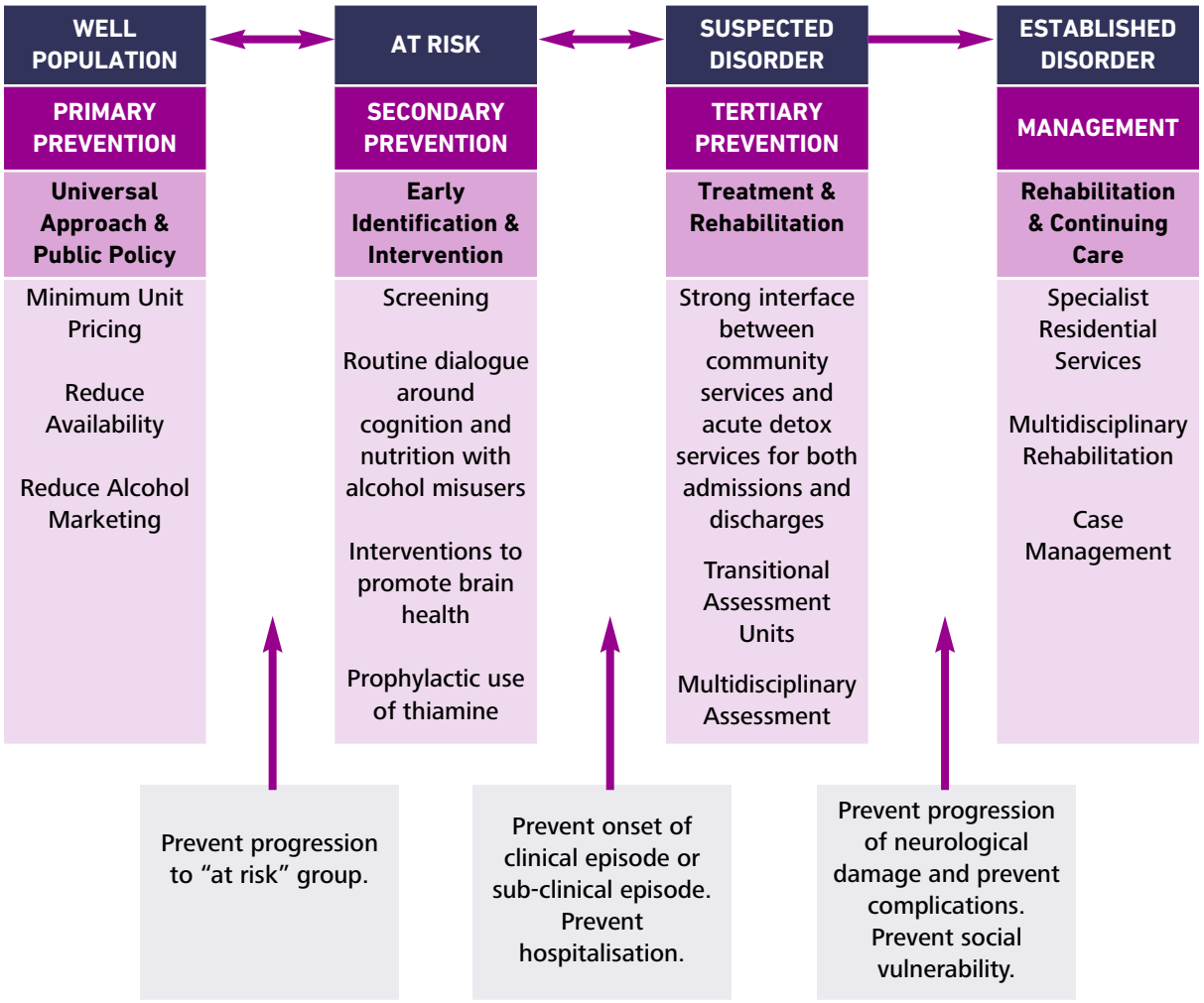
Further guidance on facilitating a person who is actively drinking to maintain a reasonable level of nutrition is outlined in the section “Nutrition and Alcohol-Related Brain Injury”. This section also addresses nutrition during rehabilitation and how Alcohol-Related Brain Injury may impact on eating behaviours.



SECTION 4

REHABILITATION

A WHOLE SYSTEM APPROACH FOR ARBI



A model of Prevention, Early Intervention and Rehabilitation

It is evident with the high rate of mortality and morbidity associated with this condition, new and better methods to intervene at all points along the spectrum of ARBI need to be developed. Forestalling the occurrence of the disorder or, when that is not possible, to prevent further neurological damage should be essential facets in Alcohol-Related Brain Injury service development.

A whole-system approach to ARBI should focus on targets which will result in preventive treatment strategies that allow individuals and their health providers to find the means to prevent, halt the progression of ARBI, or when opportunities of recovery have been lost, to maximise the quality of life of an affected individual. This is inclusive of primary, secondary and tertiary prevention strategies as well as long term management provision.

Primary Prevention

The primary prevention of Alcohol-Related Brain Injury should begin by addressing population levels of alcohol consumption through national policies. The potential to successfully prevent ARBI and other alcohol-related harms will be dependent on the support of public health policies to address issues such as alcohol pricing, availability and marketing.

Minimum Pricing

The increasing affordability of alcohol in Ireland has been reflected by a rise in alcohol consumption and a simultaneous upward trend in the prevalence of alcohol-related harm across Irish society. Alcohol is causally related to over 60 different medical conditions[63], many of which are related to ARBI. In the majority of cases there is a dose-response relationship, with risk increasing with the amount of alcohol consumed[64].

Price has been shown to be a key contributing factor in alcohol use and misuse. There is unanimous evidence in the literature demonstrating that increases in the price of alcohol are correlated with reduced consumption at a population level[65]. This research further demonstrates that minimum price per unit is the most effective of all available price-related policy measures for reducing-alcohol related harm[66]. A minimum unit price for alcohol is exclusively targeted at the heaviest drinkers (with low risk drinkers[67] remaining unaffected) and hence it is likely to have the greatest impact for those who are most at risk of developing ARBI.

Reduced Availability

It is well evidenced that a substantial increase in the number of alcohol retailers and outlets results in increased alcohol consumption and resultant harms[68]. The influence of outlet density on high-risk drinking among younger drinkers is particularly marked. Efforts aimed at reducing alcohol availability may have a significant impact in longer term efforts to prevent the development of Alcohol-Related Brain Injury as well as many other alcohol-related health conditions.

Reduced Alcohol Marketing

Many longitudinal studies have confirmed that younger people exposed to alcohol advertisements drink more than youth exposed to fewer of these advertisements[69] and greater exposure to alcohol portrayals in the media is correlated with increased drinking behaviours[70].

Measures targeted at reducing alcohol marketing may impact long term alcohol-consumption patterns on younger generations and influence risk of developing alcohol-related conditions, such as ARBI.

Secondary Prevention

Secondary prevention measures should focus on early identification and interventions which prevent the progression of risk factors among alcohol misusers. Services need innovative approaches to help ensure that every person who is currently misusing alcohol can be helped to pre-empt, prevent or minimise the risk of developing this condition. Future ARBI services should incorporate an anticipatory model of care which can be widely utilised by professionals who come into contact with alcohol misusers. Our efforts should aim to reduce hospital admissions and crises interventions.

Routine dialogue around cognition, nutrition and brain health are necessary additions to current treatment models for substance misuse. Professionals that feel competent and skilled in initiating and maintaining discourses in these areas will provide increased opportunities to service users to reduce their current risk. Professional training in cognitive and nutritional screening should be integrated into substance misuse training programmes on a national level. Further to this, a broader recognition of the importance of prophylactic thiamine before, during and after detoxification is needed.

The development, advancement and communication of key ARBI-specific health improvement messages to raise awareness of the risks of prolonged, heavy alcohol consumption and nutritional neglect is needed to support professionals in their endeavours to prevent the development of ARBI. In particular, consistent communications around nutrition, adherence to prescribed thiamine and avoiding sudden reductions in alcohol consumption in the absence of professional support (when physical dependency is apparent) are needed.

Tertiary Prevention & Treatment

A strong interface between community services and acute detox services for both admissions and discharges is essential when ARBI is suspected. A high index of suspicion should be maintained and supported by fluid service arrangements in each primary care locality.

Accessible detox resources and consistent, evidence based detox protocols should be widely available and accessible through referrals from G.Ps and community alcohol services.

Discharge arrangements are equally important to prevent delayed discharges and 'blockages' at an acute level. There is a need for transitional assessment units to provide a period of multidisciplinary assessment in the context of abstinence. These are particularly important in moderate to severe cases where cognitive impairment is likely to significantly impact on a person's ability to engage in community based substance misuse services and relapse into drinking is highly certain. Provision of these periods of assessment will allow for cognitive recovery and restitution and have been shown to improve longer term outcomes for these clients.

Where mild cognitive impairment is evident post detox, immediate follow up by addiction services is necessary and referral to residential treatment may reduce risk of relapse. Residential treatment centres may consider offering a 'lead in' period of 2-3 weeks where demands on cognition are reduced until a degree of cognitive recovery has been achieved. This will maximise the persons chances of engaging in treatment in a meaningful way.

If a person with suspected ARBI is offered these treatments in a timely fashion and at an early enough stage, their prognosis for recovery is very good and they minimise the likelihood that the person will continue on to develop permanent brain damage.

Management

Many service users who are offered a period of assessment within a supervised transitional assessment unit will recover their cognitive functions rapidly. Others may recover more slowly, and require supported accommodation in the community alongside input from case managers or key workers who can facilitate community participation and integration.

However, there will be a sub-group of people whose cognition and functionality will remain severely impaired and are likely to require long-term high-level residential support. To date, few residential services exist for working age adults with high degrees of cognitive impairment in Ireland. Opportunities exist for residential providers to develop such services on a regional basis.

STAGES OF REHABILITATION

A phased rehabilitation programme for people with Alcohol-Related Brain Injury has been developed by Professor Kenneth Wilson and his colleagues in the Cheshire and Wirral Partnership NHS Foundation in the UK. This model of ARBI rehabilitation outlines comprehensive and progressive rehabilitative measures for moderate to severe cases of ARBI. A brief synopsis of these stages is outlined below.

Stage One: Acute Physical Care

During this stage, the person receives the medical treatment they require in order to stabilise presenting physical and mental conditions. This will usually involve detoxification and appropriate thiamine supplementation. A person's level of vulnerability or risk may be assessed according to the Mental Capacity Act. An MRI or a CT scan may be completed. The person may also be seen by a psychiatrist, social worker and Occupational Therapist. Strong consideration is given as to the most appropriate discharge destination to facilitate abstinence and recovery.

Stage Two: Stabilisation

During this stage, the person is transferred to an environment where their ongoing rehabilitation and abstinence can be supported and maintained. This could be either at home, within an addiction treatment service or in an institutional setting (hospital or care home), whichever is most suitable for the person.
The priorities at this point are to develop a consistent daily routine. Improving nutritional status and sleep patterns are also important. During this stage, the person is continually monitored to see if they are improving. Cognitive screenings are important as are regular reviews across disciplines. Some people will make a full recovery within 3 months. Others will have longer term support needs.

Stage Three: Functional Rehabilitation

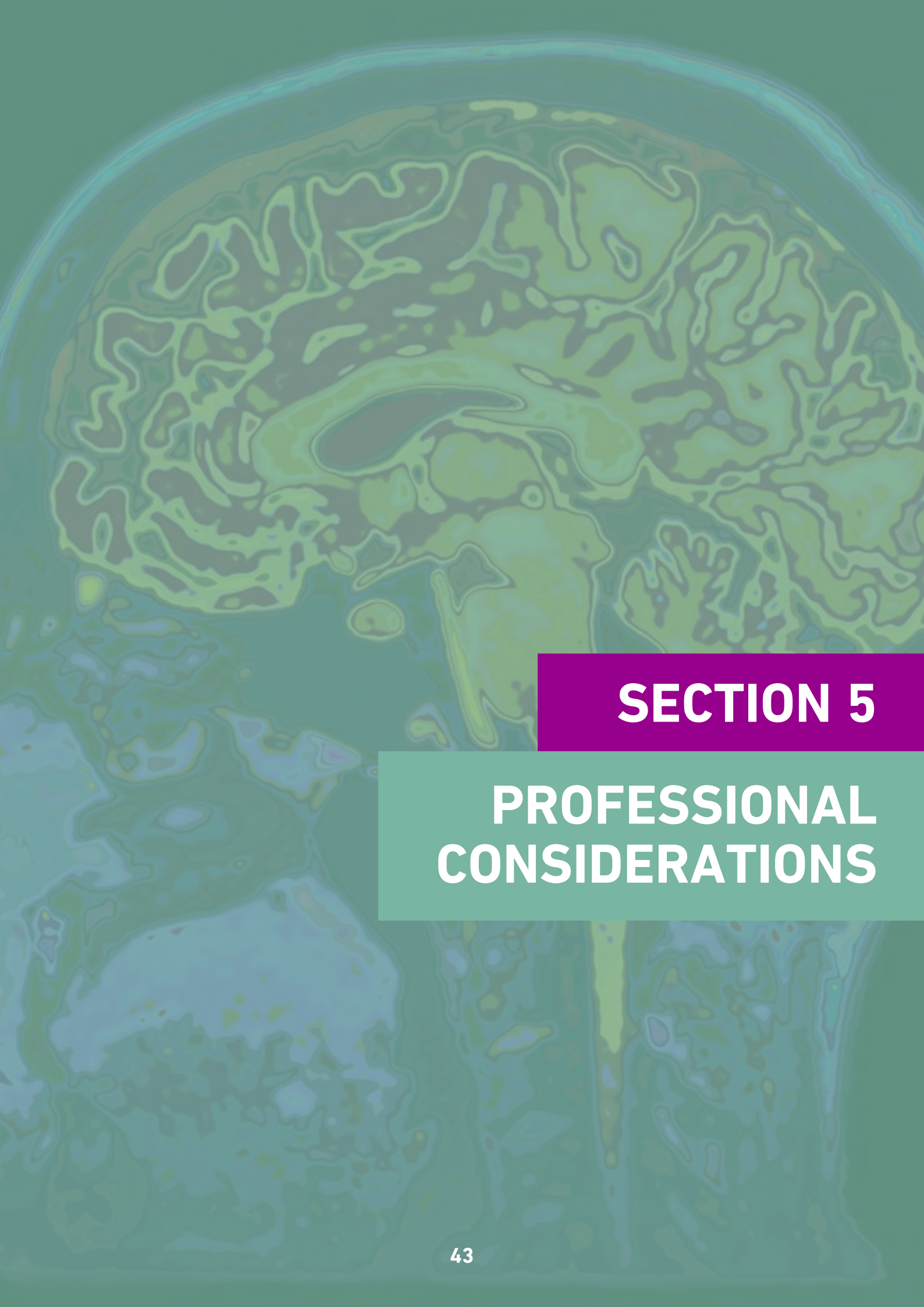
This is an active stage of rehabilitation where the person begins to redevelop key life skills which may have been impaired due to their injury. They are gradually introduced to key activities according to their abilities. At this stage, a person may begin keeping a diary or using other methods to improve their memory for events. A person may also have a full occupational therapy assessment and neuropsychological assessment.

Stage Four: Adaption and Generalisation

Following a full occupational therapy and neuropsychological assessment, the person is introduced (in a planned manner) to an environment that is most suited for them in the long term. This may be a supported living accommodation or at home with

supplementary support packages. For a small minority long term care with a high degree of support may be required.

Stage Five: Socialisation and Relapse Prevention
In this stage the person is encouraged to maintain their daily routine, support systems and abstinence in the long term and develop a wider network of supportive relationships.



SECTION 5

PROFESSIONAL CONSIDERATIONS

G.P MANAGEMENT OF ALCOHOL-RELATED BRAIN INJURY

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Opportunities should not be lost within General Practices and Primary Care to identify Alcohol Related Brain Injury in its earliest stages. There is a clear role for Primary Care services in anticipatory care and early assessment. As Alcohol-Related Brain Injury often has a slow and insidious onset, the G.P is well placed to detect subtle changes in a person's physical, cognitive and functional profile over a prolonged period of time. A key factor in making a presumptive diagnosis of Alcohol-Related Brain Injury is the synthesis of the person's drinking history, screening for malnourishment and cognitive decline as well as collateral information provided by the patient and family members.

ARBI is a clinical syndrome that is characterised by two distinct features: evidence of enduring cognitive impairment with a causative link to excessive alcohol consumption and thiamine deficiency. The term ARBI encompasses a spectrum of disorders (see page 9) including the more widely known Wernickes-Korsakoff's Syndrome. However, the syndrome may include more subtle presentations such as changes in frontal lobe functioning (executive functions) or more generalised cognitive deterioration.

Alcohol-Related Brain Injuries are a group of chronic, changing conditions. The symptoms may begin peak and subside in accordance with periods of abstinence, continued alcohol consumption or binge episodes, nutritional status and comorbid physical and mental health conditions. They typically have their origins in the third of fourth decade of life.

It may be possible to define Alcohol-Related Brain Injury along a trajectory moving across stages of risk: from early symptoms or indicators, to full symptoms or advanced conditions, to diminution, relapse, and/or recovery. By predicting, identifying, and intervening early, an individual's prognosis can be dramatically improved.

Diagnostic Criteria

A diagnostic criteria for probable ARBI involves observation of[71 72]:

1: Significant Alcohol Use

Men drinking >35 standard drinks a week for more than five years
Women drinking >28 standard drinks a week for more than five years

2: Cognitive Impairment

Observed on a screening tool e.g. ACEIII or MOCA
Behavioural Observation in clinic, or reports from significant others

The diagnosis can be supported by the presence of the following:

Alcohol Related Physical Health Conditions

- Hepatic Disorders
- Renal disease
- Pancreatic Disorder
- Ataxia
- Gastrointestinal Disorders
- Cardiovascular Disorder
- Peripheral Neuropathy

Neuroimaging Evidence

- Generalised cerebral atrophy
- Cerebellar atrophy – especially of the Vermis
- Ventricular and Sulcal dilation

Contraindications or Complicating Factors[73]

The observation of any of the following may indicate complicating conditions or require a more detailed differential diagnosis.

- The presence of a language impairment
- Neurological signs (other than ataxia and peripheral neuropathy)
- Neuroimaging suggesting focal brain pathology such as infarction or subdural haematoma.
- An elevated Hachinski Ischemia Scale score - The Hachinski Ischemic Scale is a tool widely used to identify a likely vascular component in dementia. A score greater than 7 suggests vascular involvement.

Patient Assessment

General Appearance[75]

A number of symptoms can be visually observed, though are not present in all patients:

- General impression of malnourishment – loose fitting clothes, sunken eyes etc.
- Visible evidence of underlying Liver Disease e.g. clubbing, spider nevi etc.
- Poor personal hygiene

Physical Examinations[76]

- Examination of the nervous system may show polyneuropathy.
- Reflexes may be decreased (or of abnormal intensity), or abnormal reflexes may be present.
- Gait and co-ordination may be abnormal.

Common Presentations

Wernicke's – Encephalopathy	Korsakoff's Amnesic Syndrome	Executive Dysfunction	Generalised Cognitive Impairment
Any two of the following[74]: • Dietary Deficiencies. • Oculomotor abnormalities • Cerebellar dysfunction (e.g ataxia) • Altered mental state or mild memory impairment	• Difficulties forming new memories • Loss of memories formed since condition onset • Confabulation (not always) • Lack of Insight • Apathy	• Problem - solving difficulties • Rigid or inflexible thinking • Adynamia • Poor self- awareness • Changes in temperament e.g. impulsive, or disinhibited	• General decline in cognitive function • Memory difficulties • Executive function difficulties • Visuospatial problems

- Muscles may be weak and may show atrophy.
- Eyes may show abnormalities of movement - nystagmus, bilateral lateral rectus palsy or conjugate gaze palsy

Bloods

- LFTs: GGT Values ≥50
- AST-ALT Ratio: Ratio > 2
- FBC: MCV may be elevated.
- Vitamin/mineral screen – deficiencies observed.
- Increased Uric Acid
- Increased Triglycerides

Collaterals

Reports from families will be particularly important when the patient has a disorder of awareness or is not self-reporting cognitive changes despite evidence to the contrary. Discussion can include their impression of self-care, management of finances, contact with children or vulnerable adults, frequency of falls or LOC, driving behaviours, seizure activity, challenging behaviours or involvement of other services (probationary, social services etc.), violent behaviour.

Cognitive Screening

Please see page 26 for a more detailed description of cognitive screening. Please note that the widely used MMSE is not sensitive to detecting milder cases of ARBI. Alternatives include the MOCA and the ACEIII, both of which are accessible online

Behavioural Observations

- Vague responses to questions – struggles with specifics and details
- Overly descriptive or tangential answers – does not pick up on social cues to allow others to talk or end conversation
- Has difficulty remembering recent events
- Only discusses events from the past
- Has trouble keeping track of what is being said - you may ask them to summarise what you have discussed to check this
- Takes longer to answer questions or bring to mind information
- Difficulties with flexible thinking e.g. finds it difficult to think about things from 'different angles' – very rigid thinking style
- Difficulties remembering when it was that things happened
- Difficulties solving problems
- Poor self-awareness
- Changes in levels of interest and motivation – the person seems to have 'lost their spark', appears apathetic, lacks initiative or spontaneous behaviour
- Confabulation

Screening Tools

MOCA (Montreal Cognitive Assessment) – takes 10 minutes to administer

- 18-26 = mild cognitive impairment
- 10-17= moderate cognitive impairment
- less than 10= severe cognitive impairment

ACE III – Addenbrookes Cognitive Examination III – takes 15 minutes to administer

- < 88 is indicative of cognitive impairment

Management & Rehabilitation

While Alcohol-Related Brain Injury is considered a diagnosis of exclusion, treatment should not be delayed whilst waiting for test results.

- Most patients suspected of ARBI will require a medically assisted withdrawal. Outpatient withdrawal is unsuitable for clients where[77]:
  - There is a history of DTs
  - Previous complicated withdrawal
  - High level of alcohol dependence

- Consider a lower threshold for hospital admission when cognitive impairment or other vulnerabilities (lack of social support, multiple comorbidities) are suspected[78].
- For people in acute withdrawal with, or who are assessed to be at high risk of developing alcohol withdrawal seizures or delirium tremens, offer admission for medically assisted withdrawal[79].
- Refer patient immediately for parenteral thiamine (i.m or i.v) when Wernicke's Encephalopathy is suspected – recommend parenteral Pabrinex for minimum of 5 days as part of this admission. There should always be high level of clinical suspicion for WE[80] and it is considered a medical emergency[9].
- Discharge planning and follow up arrangements from the acute hospital are essential for this client group. Consider attending discharge/care planning meetings prior to discharge.
- A full needs assessment of ARBI is best undertaken after three months of abstinence. Consider the most

appropriate option for helping the person achieve abstinence in light of their presentation and cognitive capabilities. In moderate to severe cases, residential rehabilitation/treatment in an institutional setting for a period of up to 3 months is recommended to allow for cognitive recovery and functional rehabilitation[81]. This period should be facilitated by multidisciplinary input.

- Following 3 months, referral for neuropsychological and a full occupational therapy assessment is necessitated – outcomes of these assessments should be used to plan long term management.

Prevention and Early Intervention

1: Query nutrition and changes in cognition as a routine part of assessment with patients with significant alcohol use

- Patients may be able to report in the earliest stages of cognitive impairment

2: Recommend engagement with alcohol-treatment services.

- Inform alcohol-treatment services of patients likely risk of developing ARBI. Patients with suspected cognitive impairment may require additional assistance attending for appointments e.g. reminder on the day, transport assistance etc.
- Consider referral to an Alcohol – Outreach Worker if client is unable to access appointments

4: Explain risks associated with harmful drinking and inadequate nutrition. Provide dietary advice.

- Emphasise a balanced diet inclusive of thiamine rich food (outlined on page 81). Refer to dietician according to criteria on page 34. Encourage those who continue to drink to eat at the very least one substantial meal every day - preferably before they commence drinking.

5: Encourage patient to avoid sudden reduction in alcohol intake

- Encourage them to attend for advice or assistance with withdrawal to prevent the development of acute withdrawal symptoms.

6: Patients with significant alcohol dependency should be given thiamine in accordance with NICE Clinical Guidelines[82] .

- They are malnourished or at risk of malnourishment - prescribe oral thiamine 50 mg per day (as a single dose) for as long as malnutrition may be present.
- If they have decompensated liver disease.
- Before, during and after a planned medically assisted alcohol withdrawal or if they are in acute withdrawal.
  Explain the importance of adherence to thiamine. If impairments or drinking behaviours prevent adherence, consider what support could be offered from services/family to allow the person to continue.

7: Maintain a high clinical suspicion of Wernicke's Encephalopathy at all times in patients with multiple risk factors. Always consider a lower threshold for hospital admission when vulnerabilities such as cognitive impairment, lack of social support are suspected[83].

Prognosis

- If WE is left untreated it leads to death in up to 20% of cases.
- 85% of survivors will develop Korsakoff's syndrome.
- 75% of patients diagnosed with ARBI will have some chance of recovery if offered the appropriate treatment[84].
- When appropriate service responses are offered (or developed in accordance with client needs), acute hospital bed-day usage is reduced by 85% and 75% of affected patients can be supported successfully in in community settings[85].
- When receiving appropriate care, relapse into alcohol misuse runs at about 10% and there is a 10% mortality rate[86].

Family – The Hidden Patient

The family of people affected by ARBI will require support. Many will have experienced difficulties or traumas associated with the person's alcohol misuse. They may benefit from counselling and education. *Alcohol Related Brain Injury - A Guide for Families* is available from the Alcohol Forum Website – www.alcoholforum.org .

ACUTE MANAGEMENT AND TREATMENT OF ALCOHOL-RELATED BRAIN INJURY

Acute Management and Treatment of Alcohol-Related Brain Injury

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We are all aware that we live in a more litigious age than ever before. We are also aware that doctors are at particular risk of litigation for a variety of reasons from allegations of medical malpractice to allegations of inappropriate examinations. Failure to treat a patient adequately for a condition that should have a high index of suspicion, such as a patient with a history of Alcohol Dependence Syndrome (ADS) with signs of delirium, can be classed as medical negligence. The failure to adequately treat this common condition can lead to the catastrophic Korsakoff's syndrome (KS), with the loss of the ability to form new memory. Adequate treatment of Wernicke's Encephalopathy (WE) within a reasonable time-frame from the onset of the delirium can avoid this condition and lead to successful treatment of the WE, without advancement to KS.

The key to avoiding the common conditions in withdrawal from alcohol is to have a high index of suspicion and a low threshold for treatment. It is always better to over-treat than to fail to adequately treat the common adverse sequelae of Alcohol Dependence Syndrome. One such method of avoiding adverse events is to use a reliable withdrawal scale and to treat accordingly with a combination of Chlordiazepoxide and Vitamin supplements, remembering always that many of those with ADS will have a severely inflamed gastro-intestinal tract and poor absorption rates.
The use of CIWA-Ar, the Clinical Institute Withdrawal Assessment scale revised version and referring to recommended treatment scores will help avoid any uncertainty. The scale is available online at www.mdcalc.com/ciwa-ar-for-alcohol-withdrawal/ .It is available for print-out and copying free of charge.

Diagnostic Criteria

A diagnostic criteria for probable ARBI involves observation of[87 88]:

1: Significant Alcohol Use

Men drinking >35 standard drinks a week for more than five years
Women drinking >28 standard drinks a week for more than five years

2: Cognitive Impairment

Observed on a screening tool e.g. ACEIII or MOCA Behavioural Observation in clinic, or reports from significant others

The diagnosis can be supported by the presence of the following:

Alcohol Related Physical Health Conditions

- Hepatic Disorders
- Renal disease
- Pancreatic Disorder
- Ataxia
- Gastrointestinal Disorders
- Cardiovascular Disorder
- Peripheral Neuropathy

Neuroimaging Evidence

- Generalised cerebral atrophy
- Cerebellar atrophy – especially of the Vermis
- Ventricular and sulcal dilation

Contraindications or Complicating Factors[89]

The observation of any of the following may indicate complicating conditions or require a more detailed differential diagnosis.

- The presence of a language impairment
- Neurological signs (other than ataxia and peripheral neuropathy)
- Neuroimaging suggesting focal brain pathology such as infarction or subdural haematoma.
- An elevated Hachinski Ischemia Scale score - The Hachinski Ischemic Scale is a tool widely used to identify a likely vascular component in dementia. A score greater than 7 suggests vascular involvement.

Wernicke's Encephalopathy

Wernicke–Korsakoff's syndrome arises as a result of thiamine deficiency in the brain. The acute phase of the condition is Wernicke's Encephalopathy, which can occur in the context of several situations where there is an inadequate supply of thiamine to the brain.

Remember that WE is a medical emergency. If WE is not adequately treated, it can lead to the chronic phase of the syndrome, which is known as Korsakoff's syndrome, or KS, and is characterised by permanent brain damage. Patients with KS have a memory disorder whereby they appear to be clear-minded, but often have problems with short-term memory – such as repeatedly asking the same questions and not being able to recognise people they've met. The inability to remember the correct answers to everyday questions leads them to almost automatically make up for the memory-loss by confabulating, the substitution of false history for the lost memory. The confabulation may not be recognised so a good history with particular attention to historical detail should be compared with a good collateral history from a reliable relative or friend.

Key Points

- Neuropsychiatric disorder that results from thiamine deficiency in the brain
- WE is a medical emergency
- KS is the chronic phase of the inadequate treatment of WE and can lead to KS
- Permanent brain damage may result.
- In the developed world, WE is most commonly associated with alcohol misuse. Interestingly, it is thought that the combined effect of thiamine deficiency and alcohol misuse produces a synergistic effect that is much more harmful than either alone[90].

Caine Criteria[91]

Because the classic triad of WE are rare, and because up to 80% of cases are diagnostically missed, the Caine criteria may provide value in acute hospital wards or emergency departments[92]. Observation of any of the two of the following is indicative of WE.

- Eye Signs
- Cerebellar signs
- Mild memory impairment or confusion in the absence of an alternative aetiology
- Signs of Malnutrition – physical observation or blood results

Pathophysiology of abnormal mental state: Common Neuroimaging Findings

The pathophysiology of the abnormal mental/physical state appears to be related to several well-recognised changes.

- Generalised cerebral atrophy
- Cerebellar atrophy especially of the Vermis
- Ventricular and Sulcul dilation (especially the third)
- Reduced volumes and shrinkage in the mammillary bodies and hippocampus
- Frontal lobe gliosis

However, a negative MRI or CT does not rule out a diagnosis

Altered Mental Status or Mild Memory Impairment

Abnormal mental signs or mild memory impairments are thought to be the most common sign.[93]

- Disorientation
- Confusion – even mild
- Coma
- Drowsiness
- Poor memory
- Confabulation
- Cognitive Impairment as noted on a screening tool

MOCA (Montreal Cognitive Assessment) – takes 10 minutes to administer

- 18-26 = mild cognitive impairment
- 10-17 = moderate cognitive impairment
- Less than 10 = severe cognitive impairment

ACE III – Addenbrookes Cognitive Examination III – takes 15 minutes to administer

- < 88 is indicative of cognitive impairment

Eye Signs

There are also many different signs which manifest in the eyes[94]. Ophthalmoplegia is the classic sign that was described in Wernicke's classic triad. This is a paralysis or weakness of the muscles that control eye movement. Other oculomotor abnormalities that may manifest include[95]:

- Nystagmus (involuntary flicking eye movements)
- Symmetrical or asymmetrical palsy of both lateral recti and other ocular muscles
- Conjugate-gaze palsy (inability to move both eyes in

the same direction)
- Sluggish reaction of the pupils to light
- Anisocoria (unequal pupil size)
- Light-near dissociation (Pupils do not react to light as expected, ie do not constrict, but do respond as expected to accommodation.)
- Bilateral visual disturbances with optic disc oedema, sometimes with retinal haemorrhages

Gait Ataxia

- Ataxic gait
- Trunk ataxia
  - Limb ataxia
  - Loss of equilibrium
  - Loss of coordination
- Cerebellar dysfunction in the form of ataxia. Patients with WE who display this sign typically have trouble walking.[96] Many patients with ataxic gait may present as if they are drunk, with unsteady movement and difficulty standing or walking without assistance.[97]
- In addition, patients may also present with incoordination of the gait and trunk ataxia along with loss of equilibrium.[98] A few patients have also displayed limb ataxia, often along with dysarthria (difficulty speaking)[99] Patients with trunk ataxia have difficulty standing or sitting without support, which can be made much worse upon closing the eyes.
- Patients with ataxia may exhibit signs of limb incoordination, including finger-nose, dysdiadochokinesis and past-pointing possibly present.[100]

Malnutrition

NICE (2013)[101] makes a series of recommendation to facilitate the identification of malnutrition at an acute level. These include:

- All hospital inpatients should be screened on admission for malnutrition
- Screening for malnutrition or the risk of malnutrition should be carried out by healthcare professionals with appropriate skills and training
- All hospital inpatients should be screened on admission and all outpatients at their first clinic appointment. Screening should be repeated weekly for inpatients and, when there is clinical concern, for outpatients.

Nutrition support should be considered in people who are malnourished, as defined by any of the following:

- Body mass index (BMI) < 18.5
- Unintentional weight loss greater than 10% within past 3-6 months
- People who have eaten little or nothing for more than 5 days or are likely to eat little or nothing for the next 5 days or longer
- People who have a poor absorptive capacity, high nutrient losses, or increased nutritional needs

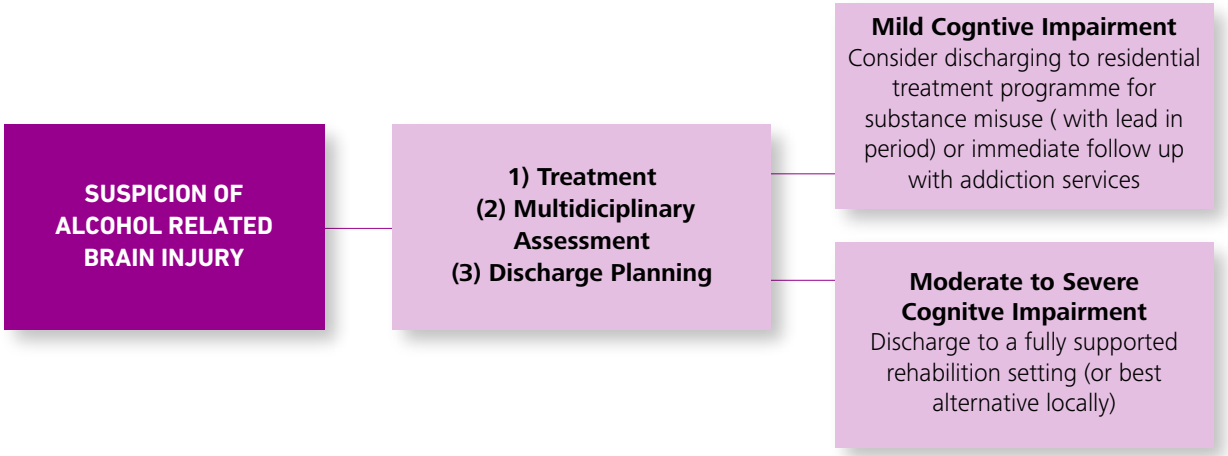
Medical Management

All of the above features of Wernicke-Korsakoff syndrome can be avoided by having a low threshold for the diagnosis and a high index of suspicion, especially in Ireland where we see so much of this condition. WE may remain untreated because of the many challenges that can make the diagnosis or identification of WE rather difficult. Firstly, there is no defined circulating thiamine level at which WE develops in all patients. Secondly, there are no specific routine laboratory tests that measure thiamine deficiency. In addition, those who chronically misuse alcohol may present to hospital in a state of intoxication or withdrawal, which can mask some of the signs of an underlying WE episode.[102]

Apart from the administration of the appropriate fluids and medications for any comorbid medical conditions, including dehydration, the administration of adequate doses of Thiamine and Vitamin C must be insisted upon. It is false economy to partially treat the patient with ADS as they will inevitably return, in a worse physical and mental state over time. Best to treat appropriately and fully with the recommended doses of Parenteral Thiamine.

Treatment

Thiamine transport occurs by both active and passive mechanisms across the blood–brain barrier. At normal physiological plasma thiamine concentrations, active transport accounts for almost all the thiamine influx into the brain, and occurs at a rate that's similar to the rate of thiamine turnover in the brain. When thiamine is administered parenterally, this results in high concentrations of thiamine in the blood, creating a steep plasma to central nervous system concentration gradient to allow rapid passive diffusion across the blood–brain barrier. Therefore, the treatment of WE will be facilitated by high blood concentrations of thiamine, which can best be provided by parenteral therapy.[103]



NICE Guidelines[104] for parenteral Thiamine:

- Due to the concern of long-term brain injury, NICE recommends that patients for whom there is even a low index of suspicion for WE should be treated with parenteral thiamine
- Blood thiamine levels fall rapidly after administration so the treatment should be given more than once a day
- Maintain a high level of suspicion for the possibility of WE, particularly if the person is intoxicated[104]
- Parenteral treatment should be given for a minimum of 5 days, unless WE is excluded[104]
- Oral thiamine treatment should follow parenteral therapy[104]

2 x (No.1 + No.2 ampoules) tds for 5 days

Ampoule 1:

- Thiamine hydrochloride BP
- Riboflavin (as phosphate sodium BP)
- Pyridoxine hydrochloride BP

Ampoule 2:

- Ascorbic acid BP
- Nicotinamide BP

Discharge Arrangements

Discharge planning and follow up arrangements from the acute hospital are essential for this client group. Without due consideration for their long term needs, those with Alcohol-Related Brain Injury are likely to having a revolving door pattern of admissions. Those suspected of ARBI are likely to benefit from assessment from occupational therapy, psychiatry and social work prior to discharge. Strong consideration should be given the most appropriate option for helping the person achieve abstinence in light of their presentation and cognitive capabilities. In moderate to severe cases, residential rehabilitation/treatment in an institutional setting for a period of up to 3 months is recommended to allow for cognitive recovery and functional rehabilitation[105]. This period should be facilitated by multidisciplinary input. Where cognitive impairment is mild, discharge with immediate follow up by the addictions services may be necessary.

Conclusion

WE and KS are common conditions in those who suffer with severe ADS, many of whom will present to our emergency departments at all times of day and night. Their "self-inflicted" injuries are no less the necessary object of our attention than the acute presentation of the emphysematous elderly smoker and should be treated with the same degree of respect and quality of care. The time frame for treatment is key to the successful management of this condition which leaves so many of our young and not-so-young in permanent residential care at enormous cost to the Exchequer. Our response must be to treat early and treat often.

OCCUPATIONAL THERAPY FOR ALCOHOL-RELATED BRAIN INJURY

Introduction

Occupational therapists have a key role to play in providing client-centred assessment and rehabilitation for individuals with ARBI. While this is an emerging role, there exists strong evidence base to support therapeutic work and cognitive rehabilitation. The recovery pathway for individuals with ARBI is said to include the following phases: stabilisation, psychosocial assessment, therapeutic rehabilitation, adaptive rehabilitation (including social and environmental adaptations) and social integration including relapse prevention[211]. It is clear that occupational therapists are ideally based to facilitate individuals on this journey. The establishment of a strong therapeutic relationship is central to this work.

In this section the contribution of occupational therapy to the rehabilitation of ARBI will be explored. It is important to note that the evidence base for the treatment of ARBI is at an early stage and so this document is not exhaustive. We recognise this area as an emerging role of practice and there is an ongoing need for discussion, training and research to increase our knowledge and confidence in this area. Therapists themselves have a role to play in opening up this discussion and beginning to gather clinical evidence for occupational therapy interventions.

In this section the following will be discussed;

- OT and Brain Injury
- Considerations for Working with Individuals with ARBI
- Assessment
- Cognitive Rehabilitation
- Physical Rehabilitation
- Mood
- Self Identity, Roles and Routines
- Vocational Rehabilitation
- Assistive Technology
- The Importance of Environment
- Collaborative Working

Considerations for Working with Individuals with ARBI

Occupational therapists have long been considered an integral part of multidisciplinary teams working with many other neurological conditions such as stroke, traumatic brain injury and dementias. While many therapists will not have specific training with ARBI, our core skills and interventions provide a good foundation for working with this population. Below are three considerations for working with individuals with ARBI.

Holistic Approach

The cognitive, behavioural and functional sequelae of ARBI may vary from individual to individual. The impact of ARBI is multifaceted, variable and includes impairments in a number of areas, including cognitive, psychosocial and behavioural functioning[106]. Broadly speaking, memory impairment, executive dysfunction, and difficulties with balance/coordination are the most common areas affected. Studies have shown that cognitive impairment affects I-ADL more than P-ADL[107] and I-ADL activities taking place outside of the home environment have been shown to be affected to an even greater degree[108]. For example, people with ARBI may have the capacity to be independent for basic activities of daily living where routines/task requirements tend to be more one-dimensional or well-established. However, instrumental activities of daily living such as managing finances, planning for the future and managing novel situations activities require intact executive functions because they involve increased cognitive flexibility, complexity and variability.

Timing of Occupational Therapy in ARBI

Alcohol-Related Brain Injury is a condition which is prone to progressive recovery (to varying extent in the context of abstinence). While the majority of individuals diagnosed with ARBI can be expected to improve to some degree, it estimated that around 25% will require on-going residential care or access to supported accommodation services.[109] Timely treatment is essential in order to prevent chronic cognitive impairment (Svanberg and Evans, 2013). Little is documented regarding the effectiveness of longer term rehabilitation (Smith & Hillman, 1999).

Peripheral Neuropathy

Many long term alcohol misusers may also develop peripheral neuropathy to varying degrees of severity. Alcoholic neuropathy can affect both movement and sensation. Symptoms range from slight discomfort to major disability.

Functional Impairments Associated with Peripheral Neuropathy

- May have difficulty walking, a sensation of heaviness in the legs
- Reduced sensation in hands and feet, more prone to injury e.g burns
- Using stairs may be difficult or effortful
- Stumbling frequently
- May find it difficult to fully grasp or carry items – may drop things a lot
- Difficulties opening jars, turning door knobs or personal grooming.
- Neuropathic Pain

Assessment

A holistic and comprehensive assessment captures the person's cognitive, functional and behavioural baseline. It is appropriate to have an on-going assessment process which mirrors the person's changing functional and cognitive profile particularly during the first six months of rehabilitation where the condition is prone to this progressive improvement and spontaneous recovery. It is likely that grosser impairments in function and participation will be observed in the initial stages, while latter stages may be marked with more subtle and nuanced difficulties. Following this initial period, it is likely that longer term rehabilitative plans can be detailed once a clearer picture of enduring cognitive/functional difficulties is established. A detailed assessment of the environment is also important in understanding occupational performance.

OTs are ideally based to offer a holistic assessment of the individual with ARBI incorporating the influence of physical, environmental, social, emotional and occupational factors.

Complementing standardised tests with other forms of assessment techniques, such as direct observation, behavioural assessment and discussion with family and carers will provide additional, and often more subtle information on the person's cognitive functioning. A cognitive screening assessment tool must also be considered to provide a full cognitive picture. Evidence supporting the efficacy of cognitive rehabilitation

intervention for clients with ARBI is scant. However, what does exist, tends to support interventions associated with a compensatory rather than restorative strategies.

Rehabilitation

Memory

Memory deficits are the most well-known cognitive impairments associated with ARBI. This can present multiple difficulties for the process of rehabilitation which relies on active participant learning. Thus, individuals with ARBI may be limited in their ability to benefit from rehabilitative processes in the absence of specific interventions to support their memory and recall. Further to this, memory is likely to be a key underlying facet in occupational difficulties for this client group. Within the context of occupation, memory deficits are likely to impact on some, if not all aspects of life and manifest in both activity limitations and participation restrictions.

In the field of memory rehabilitation, a thorough therapy plan should provide measures of the quality and degree of impairment, identify target difficulties, and propose how to maintain acquired information[110].

Memory rehabilitation should be focused on concrete and specific goals[111] and the primary objective of memory interventions is to allow the individual to become as independent as possible in activities of daily living.

- **Errorless learning techniques[112]:** Errorless learning is an instructional strategy that ensures clients always respond correctly. In errorless learning the individual is asked to repeat information immediately after it has been presented. The immediate prompt prevents any chance for incorrect responses. It has been found that if a person is not encouraged to 'guess', this can improve the accuracy of recall over time[113].
- **Introduction of a daily routine** and structure in order to foster a sense of predictability can be very helpful for those with memory difficulties. Changes to the person's routine should be kept to a minimum and planned well in advance. Routines allow for repeated consistent practice and allow natural prompts to develop through environmental cues[114]. Furthermore, core activities that are initiated and completed consistently and repeatedly are more likely to be retained by the individual.
- **The introduction of a dairy**[115 116] to facilitate recall will greatly enhance an individual's ability to retain day-to-day events and provide reminders of upcoming events.

Considerations for the Use of a Diary

1. The process of introducing a diary can take time to implement.
2. It is important that everyone involved in the individuals care is aware that the individual is using a dairy.
3. It should be initially supervised.
4. An individual should be encouraged to write important details or conversations immediately after they have happened.
5. Professionals and family/friends should be encouraged to facilitate the individual in recording a summary of conversations/work immediately after it has happened.
6. The individual can be regularly reminded to refer to this diary at key parts of the day (e.g. morning, lunch time) using a verbal prompt or a personal alarm (e.g. on phone or watch).
7. An individual should be facilitated to use the diary in real life settings with increasing independence.
8. A key worker or family member could go through the diary in detail with the individual at regular intervals.

- **Elaborative and semantic processing**[117 118] highlights the way in which elaboration, enactment and repetition can lead to deeper processing of information and thus aid memory. This is inclusive of:
  - Giving more time for the exchange of information and allowing more time for explanation. Important information can be reinforced by others involved in the individuals care.
  - Reworking – asking the individual to put information into their own words, asking them to explain it to you and then encouraging the person to talk about it with someone else.
  - Imagery – creating an image of something the individual wants to remember – this can be done by using mental imagery or external imagery (e.g. providing a photograph)
  - Task enactment–studies have shown that the memory for information enacted is often better than for verbal information. One study demonstrated that recall is best following performance of an action, next best for imagining

the performance of an action and worst when the information has simply been heard[119]. This effect has been indicated in Korsakoff patients[120] and lends support to behavioural approaches and role rehearsal in rehabilitation.

Executive Dysfunction

Executive functions are the controlling systems of the brain. To regulate and guide behaviour through a constantly changing environment, the brain requires an executive coordinating system. Executive functions are responsible for the operation of a number of cognitive processes in charge of goal-directed, task-oriented behaviours, self-regulation and behaviour inhibition. This executive system is also responsible for planning, working memory, mental flexibility, response inhibition, impulse control and monitoring of action[121]. Executive functions represent the many skills required in the preparation and execution of complex behaviours and they govern most cognitive functions, especially those involving new and unstructured situations. Executive function impairments are considered among the most disabling of all cognitive impairments because they pervade virtually all aspects of an individual's ability to function in his or her life and are strongly related to emotional, behavioral, and social outcomes.

The table below outlines the potential functional implications of executive dysfunction.

Assessment of Executive Dysfunction

Executive functions can pose both assessment and intervention challenges for the occupational therapist. The manifestation of executive dysfunction is frequently context dependent and dynamic. Executive dysfunction represents a participation level condition involving difficulties performing tasks within the context in which the person lives. Hence, assessing executive functioning requires dynamic occupation and performance-based assessment. Standardised Tests can be limited in their

AREA OF EXECUTIVE FUNCTION	FUNCTIONAL IMPLICATIONS
Planning	May be unable to formulate a strategy to complete a task, particularly when faced with an unfamiliar situation.
Time-Management	Difficulties approximating how much time one has to complete a task and how to best manage/organise that time.
Organisation	Difficulties arranging, coordinating and keeping track of multiple actions.
Decision-Making and Problem Solving	May be unable to generate solutions to difficulties based on prior experience, or may be unable to choose between various options.
Flexibility	Difficulties initiating, stopping, and switching actions and difficulties making changes in behaviour according to feedback or evaluation.
Response Inhibition	Difficulties in suppressing a response until a situation has been evaluated. May be quite impulsive. Difficulties regulating or controlling behaviour.
Predict Outcomes	Difficulties foreseeing the consequences of their behaviour.
Judgement and Safety	Difficulties in the employment of reason and decision-making capabilities to intentionally avoid physically, emotionally, or financially dangerous situations.
Task Initiation	Difficulties get started in a timely manner, being slow to respond. The person may verbalise intent to act but fail to follow through.
Goal-Setting	Difficulties determining what they want to achieve and planning how to achieve it.
Goal-Directed Persistence	Difficulties finishing what they had started and seeing a task through to completion.
Generalisation	Difficulties using newly learned strategies in novel situations.

ability to accurately measure the impact of executive dysfunction on community participation.

In many instances issues with executive functioning will only become apparent during unstructured daily social, vocational/education and community activities. It may be difficult to assess while the individual is in the structured and routine led hospital environment. As such, a more real-world approach to evaluation involving observations in the context of everyday activities, away from structured hospital environments may be appropriate.

SELF AWARENESS

Rehabilitation of executive dysfunction begins with an appreciation, understanding, or awareness of the deficits associated with ARBI[123] by the affected individual. When impaired self-awareness obstructs motivation to engage in rehabilitation, gaining insight into the difficulties posed by the condition may become a necessary facet of rehabilitation for the individual.

A major challenge facing all professionals working with individuals with ARBI is facilitating realistic self-awareness. Impaired self-awareness is often described by clinicians as the central obstruction to clients achieving good progress in rehabilitation and attaining good outcomes[124]. Poor self-awareness is linked to poor motivation and engagement in rehabilitation[125], limited progress[126] and high strain on caring relationships[127]. On the other hand, accurate self-awareness in individuals has been associated with increased participation and performance in rehabilitation[128], community reintegration[129] and less strain on relatives[130].

Self-awareness will from a crucial part of risk assessment and risk-management plans in ARBI. The assessment and treatment of impaired self-awareness is therefore considered an important aspect of rehabilitation in ARBI. It is important to note, however, that it has been observed that some people with ARBI experience increased emotional distress as they gain greater levels of self-awareness about their impairments. This emotional distress may include levels of depression and anxiety. Due consideration should be given to whether the benefits of improving an individual's self-awareness outweighs the likelihood or level of emotional distress[131] in the long term and the clients responsiveness to interventions over time.

Three levels of awareness have been described[132]:

- Intellectual awareness: Refers to the cognitive capacity of the person to understand that a particular function is diminished from premorbid levels and to acknowledge the possible implications deficits may have on functional performance.
- Emergent awareness: the ability to recognise a problem when it is actually occurring during an activity
- Anticipatory awareness – the ability to anticipate that a problem is likely to happen because of some deficit.

Raising Self-Awareness

Developing insight and self-awareness, and adjustment to changes as the result of ARBI can take time. Awareness building intervention should be continually reviewed to ensure that the dignity and welfare of the individual is promoted. Occupational therapists working in ARBI-rehabilitation could use functional tasks as a means of providing feedback to improve awareness. Interventions should be provided in the context of a positive therapeutic relationship and alliance where the individual has an understanding that they can make mistakes without losing the support of the rehabilitation team. When working with individuals with reduced self-awareness and insight, assessment of safety and accurate reporting and management of risk is essential.

Facilitatory Techniques for Improving Clients Self-Awareness Include:

- Educating the client, family, and other professionals on the what difficulties may be expected[133] following ARBI
- Specific and consistent feedback regarding clients performance on tasks[134 135]
- Planned failure where clients experience their impairments in real life situations with the support of the occupational therapist and analysis of performance post-activity[136]
- Videotaped feedback[137]
- Client analysis of skills needed for specific task performance, prediction of performance pre-activity and review of predicted performance post-activity[138]
- Collaborative formation of strengths and weakness lists[139]

Goal Setting, Planning and Problem Solving

Ylvisaker and Feeney[140] assert that executive system habits are more likely to become internalised when activities start with a formulation of a goal and a plan, and end with a review that involves both a rating of

success and a listing of effective and ineffective strategies[141].

Goal-Plan-Do-Review Technique for Executive Dysfunction

1. Goal – What do I want to accomplish?
2. Plan – How am I going to accomplish my goal?
3. Identification of materials / equipment and steps / assignments necessary to act on the plan.
4. Prediction – How well will I do? How much will I get done?
5. Do.
6. Identification of problems that arise.
7. Formulation of solutions to identified problems.
8. Review – How did I do?
9. Self rating / Other rating (OT, family member)
10. What worked? What didn't work? What will I try differently next time?

Physical Rehabilitation

Changes in balance and coordination abilities are common in long term alcohol misusers. These changes are associated with intoxication, changes in peripheral nerve functioning and damage to a part of the brain known as the cerebellum. Severe alcoholism can cause cerebellar degeneration, a slowly progressive condition affecting portions of the brain called the anterior and superior cerebellar vermis. This can lead to the development of ataxia which is characterised by a wide-based gait, leg incoordination, and an inability to walk heel-to-toe in tightrope fashion. The gait disturbance usually develops over several weeks, but may be relatively mild for some time, and then suddenly worsen after binge drinking or an unrelated illness. Falls management is a critical component of care when balance and coordination is compromised. OTs also have a key role to play in the assessment and management of self-care and toileting, bed, chair and toilet transfers and indoor mobility.

There are few studies addressing the use of occupational therapy in ataxia despite it the importance of assessment and treatment from this perspective. Ataxia UK has produced guidance for occupational therapists in their paper *Management of the Ataxias: Towards best Clinical Practice*[142]. These guidelines focus on the progressive ataxias, and exclude disorders where ataxia has developed as a result of Alcohol-Related Brain Injury. Certain aspects of these guidelines may be relevant for OT's working with this ataxia associated with ARBI, and this should be reviewed on a case-by-case basis with clinical judgement prevailing.

Functional Impairments Associated with Ataxia

1 Walking is characterised by a widened base
2 Turning can be problematic and can result in falls
3 High Stepping, staggering and lurching from side-to-side
4 When severe, individuals are no longer able to stand or walk without great assistance and effort.
5 Damage to the cerebellum can cause a tremor when people end a purposeful movement, such as reaching for an object (intention tremor), or when people try to hold their body in a certain position (postural tremor).
6 An inability to perform rapid, alternating movements.
7 Difficulties adjusting the power of the movements in the hand and the legs
8 Difficulties with fine motor movements e.g. closing buttons, gripping utensils

Mood

It is important not only to consider cognitive and physical factors but also emotional issues presenting in the individual. Research on intervention for people with mood disorders and ARBI are very limited. However Morrisson and Pestell[143] provide evidence for an adapted CBT intervention in lowering depression scores for an individual with ARBI. They highlighted the importance of a motivational approach in challenging negative thinking. The establishment of a therapeutic relationship is also seen as core.

Self Identity, Roles and Routines

White[144] states that in order to understand recovery from the chaos of addiction, identification of the recovering individual's habits and lifestyles is required. In order for habits (routines) to exist there must be sufficient repetition of the action to establish the pattern, in addition, consistent environmental circumstance must be present[145]. Issues with alcohol disrupts the very centre of human occupation, in work, leisure and self-care and becomes the driver of occupational behaviour, changing and damaging performance components as the addiction takes hold[146]. Maladaptive routines and dysfunctional roles, evident in addiction can influence an

individual's ability to adapt and recover[147]. Occupational therapists assess the individual's performance capacity to re-engage in meaningful occupations and facilitate the individual in rebuilding or establishing new roles and routines by formulating what activities bring the individual a sense of wellbeing and identity. Successful modification of behaviour will require relatively long periods of practical training to assist long term change[148] Occupational therapists can become catalysts in facilitating individuals build new levels of well-being, ensuring that they are equipped with the skills to adapt to changed circumstances, for example, abstinence from alcohol and living with an Alcohol Related Brain Injury.[149]

Vocational Rehabilitation

WHO Guidelines emphasise the importance of recognising that individuals with Brain injuries are important contributors to society and that allocating resources to their rehabilitation is an investment[150]. Training and protected employment should be encouraged. Crucial to the integrated care planning for individuals with ARBI is addressing their vocational needs. The BSRM Standards for Rehabilitation Services Mapped on to NSF for Long Term Conditions (2009) recommends that all adults of working age should have their vocational needs addressed and have access to a local or specialist vocational rehabilitation service as part of their programme of rehabilitation or through appropriate sign-posting or referrals. For those unable to return to work, training or education it is advised that the individual is facilitated in exploring and building in meaningful, purposeful activities and occupations into their routine and lifestyle.

Assistive Technology

While staff prompting has been shown to be successful in reducing the impact of memory impairment, technology has great potential to help those with memory and executive functioning difficulties. Devices, such as smartphones, Google calendar and pagers may help those who have prospective memory (the ability to remember to do something in the future) difficulties. The advantage of these devices is that one or multiple alarms may be set that provide an external cue triggering a predefined action. These devices may be useful for individuals who are already quite familiar with smart technology. They may be unsuitable for others who may have difficulties with small buttons/text.

The Importance of the Environment

A person with an ARBI is likely to have difficulties generalising learned information from one setting to another[151]. Rehabilitative efforts should be conducted in the environment where it is anticipated that the individual will live long term. It is acknowledged that this may not always be possible, so special consideration should be given to facilitating the individual to adjust to a new environment through supplementary occupational therapy during times of transition. The importance of a naturalistic environment in cognitive rehabilitation is increasingly recognised. It can help establish daily routine and structure for those with memory issues and allows for accurate assessment of executive functioning. Additionally there is evidence to support the benefits of supported accommodation for this population.[152]

Collaborative Working

The Occupational Therapist does not work in isolation and involvement of the individual and family/caregivers is essential to any OT process. Additionally a collaborative team working with other members of the multidisciplinary team will enhance any proposed therapeutic aims. Active participation of the clinical team and family social support will contribute to successful outcomes. It will be important for professionals, staff and family to work consistently to maintain and implement pre-agreed strategies. This mode of working allows for continual and consistent intervention which will maximise the retention of remediative or compensatory strategies.

Summary

It is clear that multifaceted and holistic assessment and intervention is supported when working with individuals with ARBI. While further evidence and research needs to be completed, the clear role and need for occupational therapy is highlighted. ARBI can be said to cross the divide between physical and mental health interventions. Occupational Therapists are ideally placed to help with this comprehensive clinical work and form an important part to the multidisciplinary team.

NEUROPSYCHOLOGICAL CORRELATES OF ALCOHOL-RELATED BRAIN INJURY

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Approximately 50-70% of alcohol abusers have cognitive deficits on neuropsychological testing[153]. Alcohol-induced cognitive impairments can range from time-limited mild to moderate impairments which are variable in nature, to the more severe persistent disorders with amnesic features and/or changes in frontal lobe functioning[154]. Neuropsychological deficits associated with alcohol abuse can often be diffuse and possibly include a global spectrum of cognitive variations as well as changes in emotional and behavioural functioning.

In many cases, Alcohol-Related Brain Injury can be subtle and difficult to detect. Impairments are often masked by intact general intelligence, a reliance on long term memory, and the young age of onset (typically the third or fourth decade of life). A failure to adequately identify and assess this condition results in a multitude of difficulties, not only for the affected individual, but also for alcohol-treatment providers and emergency department staff who may misattribute poor treatment engagement as a lack of motivation or an unwillingness to change[155].

The widely used mini-mental examination (MMSE) has been found to be largely insensitive to this type of cognitive impairment and it has been demonstrated to provide a false-negative result in almost in 33% of cases of ARBI[156]. Further to this, studies have shown a poor concordance between treatment provider's judgements of cognitive functioning and subsequent performance on neuropsychological testing[157]. Psychologists have a crucial role to play in the provision of cognitive assessments which quite readily uncover the 'hidden' vulnerabilities associated with this disorder.

The aim of this section is to provide an overview of the neuropsychological correlates of Alcohol-Related Brain Injury and to look at the more typical cognitive profiles associated with this syndrome. Some clients with ARBI will show neurocognitive strengths and weaknesses based on (1) their pre-morbid level of functioning (2) specific neurological lesions associated with their disorder (3) integrity of supportive cognitive functions (4) prior neurological insults. These factors must always be considered whenever tests of cognitive ability are administered and analysed[158] and it is recognised that this is not an exhaustive review.

Diagnosis and Classification

The fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5)[159] (American Psychiatric Association, 2013) provides a common framework for the diagnosis of neurocognitive disorders. It describes the main cognitive syndromes and the defining criteria to delineate specific aetiological subtypes of mild and major neurocognitive disorders.

Time Course

The transition from relatively mild impairment seen in many individuals with alcohol dependency to severe cognitive dysfunction can be relatively abrupt, such as those with Wernicke's-Encephalopathy. In other cases there is a more progressive and insidious decline with no history of diagnosed Wernicke's Encephalopathy.

Presentations: Chronic Conditions

The term Alcohol-Related Brain Injury is an umbrella term that encompasses a wide variety of conditions[160]. This includes what may be considered primarily neurological conditions (Marchiafava-Bignamini Disease) or neuropsychiatric conditions which can further be defined as acute or chronic[161]. The remit of the psychologist will most likely be chronic forms of the disorders including Executive Dysfunction, Korsakoff's Amnesic Syndrome, and Generalised Cognitive Dysfunction. As a result, this section will primarily focus on people captured within this cohort, as practice based evidence strongly suggests that the role of the psychologist is particularly relevant where longer-term impairments of function (i.e. cognitive, behavioural, and social) are indicated.

Executive Dysfunction

- Executive dysfunction is a characteristic sequela of chronic heavy drinking which in involves, in many cases atrophy of the frontal lobes.
- This is associated with neuropsychological deficits in abstract thinking, cognitive flexibility and persistence, and inhibition of competing responses[162].

Korsakoffs Amnesic Syndrome

- The main manifestation of Korsakoff's syndrome is a disproportionate impairment in memory and new learning in comparison to other cognitive functions.
- In addition to their memory impairments, many individuals with Korsakoff's have sustained different grades of cognitive deficits (particularly visuoperceptual and abstracting functions).

Generalised Cognitive Dysfunction

- Some clients will present with variable and diffuse cognitive impairments which can vary in severity[164].
- Deficits in episodic memory are often accompanied by impairments in the domain of executive function, attention, processing speed and visuospatial abilities[6].

Expectations Following Abstinence

A period of facilitated abstinence is crucial in differentiating time-limited cognitive dysfunction (usually directly related to excessive alcohol consumption in isolation) from those likely to experience longer-term impairments[165] (related to co-morbid thiamine deficiency or other complications).

If heavy drinkers maintain abstinence there is typically a rapid improvement (and sometimes complete resolution) within the first 3 months[166]. Longer term abstinence (approximately 2 years) facilitates gradual improvements in residual deficits in this group[167], and in some cases can be associated with normal NP performance. However, there will be a significant minority who may show only mild-moderate improvement during extended periods of abstinence and these are likely to remain cognitively impaired on a permanent basis[168].

If there is a relapse into drinking this will likely result in continued cognitive deficits and progressive or sudden deterioration[169]. Increasing age is associated with incomplete NP recovery even in the context of abstinence, with younger people showing a greater potential for recovery. Factors such as nutrition and comorbid physical health difficulties can impact on recovery[170]. A full needs assessment of ARBI is best undertaken after a minimum of three months of abstinence[171].

Timing of Assessment

The neuropsychological assessment is optimally completed 6 months following abstinence. This

timeframe is based on clinical judgement, practice-based evidence, and the typical trajectory of physical and neuropsychological recovery during the initial period of abstinence. Requests for comprehensive assessments prior to 6 months of abstinence should be should be carefully reviewed as an assessment within this timeframe may not present the optimal circumstances for an accurate assessment of a person's overall functioning.

Facilitating Abstinence

Environmental Factors

Strong consideration should be given as to the most appropriate option for facilitating the person achieve abstinence in light of their presentation and cognitive capabilities, particularly on discharge from acute hospitals. In moderate to severe cases, where a combination of difficulties may create safety concerns, and where typical social supports/resources (e.g. family) are limited, transfer to an environment that can provide residential rehabilitation with multidisciplinary input (for a period for 3+ months) should be strongly considered. This will allow for a degree of cognitive recovery and functional rehabilitation.

During this time, the person should be monitored continually[172]. Intermittent cognitive screens as outlined on page 23 can be used by other professionals to track the trajectory of recovery. Colleagues interacting with the person on a day-to-day basis can be encouraged to review questions on page 10 in order to provide collateral information to inform the neuropsychological assessment.

Neuropsychological Assessment Process

A typical neuropsychological assessment involves the following and occurs over a number of sessions and, if possible across multiple settings:

1. Review of the person's clinical history through interview and review of medical notes. This is inclusive of personal, social and medical history.
2. Face-to-face interview with the person using interview schedules and screening tools for cognition, mood and mental state.
3. Interviews with significant others e.g. family members, persons involved in their care.
4. The use selected psychometric assessment tools as a means of answering specific referral questions.
5. The interpretation of these psychometric tools in the context of the individuals clinical history, presentation and current functioning.

Medical Notes

- Evidence of chronic or significant alcohol misuse (see page 25)
- Multiple Detoxifications and episodes of Wernickes Encephalopathy
- Head Injuries, LOC, Post-Traumatic Amnesia, neurosurgery, seizures, CNS infections, skull fractures[173]
- Common Medical comorbidities e.g. liver dysfunction, malnutrition, Renal Dysfunction
- History of Psychiatric Illness
- Multiple hospital admissions
- A decline in over-all functioning

Clinical Interviews

Collateral Interview

- Developmental, educational, vocational, social and alcohol history
- Specific information about possible areas of difficulty (cognitive, behavioural, social)

Family

- Corroborate personal history
- Estimates of alcohol use and impact on functioning
- Specific concerns following most recent event episode/admission
- Information on when initial changes were observed and progression since this time.

Professional

- Overall presentation relative to previous interactions (e.g. G.P, OT etc.)
- Impressions of over-all functioning and any concerns arising.

Clinical Interview

Most of those with Alcohol-Related Brain Injury will present as being alert and responsive. Orientation should be assessed. Their responses can be vague and absent of specific detail, especially for recent events. Those with ARBI can often provide only fragmentary accounts of their recent (and sometimes extended) past and their descriptions can often be at odds from that of collateral

informers such as family members. The merging of past and present events, so that they are recalled as one, can sometimes be observed.

Other clients can be disinhibited and tangential and provide an excessive amount detail about remote past events.

A lack of awareness of current functioning and possible support needs may be a feature. Querying the clients perspective of their situation (memory, safety, support needs etc.) and comparing these to those of reliable informants who interact with the client on a regular basis will be essential during assessment.

Masking behaviours may be evident, such as the use of humour to deflect from impairments.

There can be some indications of perseveration and/or repetitiveness and this is particularly evident across multiple visits or review assessments.

Behavioural makers such as apathy, disinhibition or a coarsening of personality may also be observed.

Behavioural Observations

It may be useful to have direct observation of a person's day-to-day functioning including ADLs/ IADLS and or speak to other professionals (e.g. Occupational Therapist) involved in the person's care to estimate the functional impact of underlying cognitive or behavioural changes secondary to possible ARBI.

Factors influencing formal assessments

For a small cohort of clients, a formal psychometric assessment of functioning may be warranted. The following section will outline key elements or key tools used in this process. Please note that the following information is not exhaustive and the choice of tools should be based on psychometric properties, the clinician's choice, the key referral questions and the clients functioning or circumstances.

It is important to note that performance on formal psychometric tools can be influenced by a number of factors e.g. comprehension, motor skills, attention, motivation, mood, educational history etc. As a result, it will be important to take note of these factors when interpreting test performance.

Formal Neuropsychological Tests

Premorbid Functioning

It is important to establish an estimate of the person's premorbid functioning[174] (i.e. an estimate of functioning in the event that they hadn't sustained neurological change as a result of their alcohol use). This is typically based on the personal information and performance on reading based assessments (e.g. The Test of Premorbid Functioning[175]).

Intelligence

The WAIS IV[176 177] is typically used as a broad estimate of general cognitive function. The profile of strengths and weaknesses are important in establishing an estimate of over-all abilities.

Overall intelligence, as measured by standardised IQ tests, may remain intact27 and Full Scale IQ may equate broadly to measures of premorbid intelligence on neuropsychological testing. In others cases verbal IQ may be preserved with deficits observed in Performance IQ only.

Memory

Episodic & Autobiographical Memory

Korsakoff's Amnesic Syndrome is classically described as a disproportionate impairment of episodic memory compared to other aspects of cognitive function[178]. Within the spectrum of Alcohol-Related Brain Injury, deficits in episodic memory can range from mild to severe and can be more variable than those presentations which feature dense amnesia[179].

Memory loss for recent events is generally more severe than loss of information or memories formed before the onset of the condition. There is usually a 'temporal gradient' such that early memories are recalled better than more recent ones but there can be individual variations in the extent of the memory loss and the steepness of the resultant gradient[180]. The retrograde component of Alcohol-Related Brain Injury can extend back almost 20–30 years[181] and it appears to be related to both the duration of the illness and the difficulties associated with laying down of memories in the presence of significant alcohol use.

The key elements of memory that need to be formally assessed can include:
- Recent and delayed recall of verbal and visual information,
- Ability to learn new information (learning curve).

The WMS[50] or equivalent provides a range of subtests that provide valid tests of these key memory functions. The administration of a full WMS is often not warranted and may not provide relevant additional information. The key sub-tests include:
- Logical Memory I & II
- Verbal Paired Associates

Additional visual memory tests can include:
- Rey Complex Figure[49] (or equivalent) for immediate and delayed recall of visual information.

Additional tests of the learning curve can include;
- RAVLT[48]

Deficits may be observed on:
- WMS Logical Memory Subtest - immediate and/or delayed recall, confabulations may be evident.
- RAVLT - flat learning curve in some cases, primacy and recency effects, susceptible to intrusions and interference, recognition performance can be poor with multiple false positives.
- RCF (or equivalent) - immediate and/or delayed recall.

Both research and clinical evidence indicate that the ability to order events in their correct temporal sequence can be deficient in Alcohol-Related Brain Injury and a marked deterioration in the sense of 'time' is usually observed[182 183]. As well as difficulties with temporal ordering, studies have shown that those with ARBI may also have specific difficulties encoding spatial contextual information[184]. Those with ARBI may have difficulty combining these 2 facets (temporal and spatial contextual) with other information to form complex memories.

In addition to this, false memories without a deliberate intention to deceive, widely referred to as confabulation is sometimes present. Studies have found that confabulation is most marked in the domain of episodic/autobiographical memory. Spontaneous confabulation (unprovoked erroneous recall) is usually featured in the acute phase of Wernicke's Encephalopathy while provoked confabulations (in response to questioning or a challenge to memory) is more generally observed in the chronic manifestations of Korsakoffs.

Semantic Memory & Procedural Memory

The assessment of memory can be extended to look and Semantic and Procedural memory. This is beyond the scope of a typical assessment is outside the scope of this publication.

Executive Functions

- Executive function deficits are among the alcohol-related cognitive impairments that are most likely to disrupt rehabilitation outcomes[185]. Impairment of executive functions in those that are alcohol-dependent has been associated with attrition from rehabilitation and higher rates of relapse.[186]

There are a number of tools that are used to screen specific elements of the broader concept of executive functions: These include:
- FAS Test[36]
- Trail Making Test[54]
- Raven Progressive Matrices[52]
- Wisconsin Card Sorting Test[56]
- Delis Kaplan Executive Function Test[51]

Impairments may be noted on:
- Trail Making Test (in particular, Part B): Errors may be evident and time-to-completion reduced.
- FAS: Fluency may be reduced
- Wisconsin Card Sorting Test: Rule breaks may be noted. A failure to learn from experience and difficulties with set-switching can be evident.

The memory impairment in ARBI may be partly related to deficits in frontal lobe functioning[187] where retrieval might result from concomitant frontal lobe involvement[188]. The presence of executive dysfunction in Alcohol-Related Brain Injury is supported by evidence from both brain imaging studies[188 189] and the results of comparative neuropsychological studies(e.g) and has been shown to be an early and chronic sign of ARBI[191]. Numerous findings suggest those with Alcohol-Related Brain Injury are impaired in the functions such as

organisation, inhibition, flexibility, categorisation and updating abilities[192 193 194].

The formal assessment executive functioning is a complex undertaking and there are questions as to the ecological validity of such tools and observing the person in real life setting if often a crucial element in assessing executive skills – day-to-day activities or observations from the Occupational Therapist is key in this regard.

Poor performance on frontal lobe tests does not necessarily indicate frontal dysfunction per se. Individuals with low educational achievements will typically perform poorer on these tests as do those with clinical depression. Liaison with the Occupational Therapist will be essential in determining the impact of executive dysfunction (if any) on the person's skills of independent living.

Behavioural Observations of Executive Dysfunction

- Collateral information may indicate disinhibition, failure to initiate independently, anosognosia, repetitiveness or preservation.
- A coarsening of personality is linked with changes in frontal lobe functioning and may be observed in some clients. It involves a loss of social and sometimes sexual inhibitions. Morbid jealousy may also be a feature[13]

Motor Skills

Completion of tests requiring motor skills times can be compromised by a number of factors. Symptoms associated with peripheral neuropathy may impact on completion times for paper-pencil or construction tasks. Damage to the cerebellum can cause a tremor when people end a purposeful movement, such as reaching for an object (intention tremor). Deficits may be noted on the Finger Tapping Task, and it is postulated that this may be partially linked to frontal lobe disruption (compromised fine motor task initiation and difficulties with persistence) as well as mere physical slowing[195].

Complicating Factors

Dual Diagnosis

There is a high prevalence of co-morbid mental health disorders, including schizophrenia, anxiety, panic, phobia, obsessive-compulsive disorder, bipolar, depression and anti-social personality disorder[196 197]. Comorbidities and dual diagnosis may represent contributory factors to NP impairment, making it difficult to distinguish or identify underlying cognitive deficits. Each co-morbidity may well contribute to the level of Cognitive/NP impairment suffered by the person and the level of impairment attributable to alcohol misuse becomes difficult to extricate and differentiate. This issue is beyond the scope of the current discussion, however, it is important to consider the possibility of co-morbidity and dual diagnosis when considering ARBI. In this situation, multidisciplinary working is strongly justified,

COUNSELLING FOR ALCOHOL-RELATED BRAIN INJURY

Counselling for Alcohol-Related Brain Injury

Alcohol-Related Brain Injury and the cognitive, emotional and behavioural changes associated with this disorder can present unique challenges for counselling professionals. Traditional models of counselling which rely on intact cognitive skills may simply be 'inaccessible' for people with this condition. Cognitive impairment in the areas of memory and executive function may limit a person's ability to engage with and benefit from the counselling process.

- Difficulties with self-awareness
  The person may think they do not need help despite strong evidence to the contrary.
- Difficulties with initiation
  The person may be unable to seek help or follow through with their intention of getting help.
- Memory Difficulties
  The person may not be able to retain the advice a professional gives them and they may forget appointments.
- Executive Dysfunction
  They may have difficulty thinking about things from different perspectives and present as having a very 'rigid' thinking style.
- Problem Solving Difficulties
  They may be unable to generate new ways of responding to old problems or unable to implement new strategies on a daily basis.

Identifying cognitive impairment in therapy: The Invisible Condition

Many of the difficulties experienced by people with ARBI in therapy are often mistaken for lack of motivation or an unwillingness to change. Alcohol-Related Brain Injury is often referred to as the 'invisible condition' as underlying cognitive difficulties are masked from counsellors and allied professionals (see page 12). Indications that someone may be affected by cognitive impairment during therapy include:

- Talking excessively about the past and very little about recent events
- Providing vague or general responses to questions
- Not being able to keep up in group therapy activities or conversations
- Telling the same stories over and over again
- Difficulties keeping focused in conversation – going off on tangents unrelated to what is being talked about
- Difficulties taking turns in conversation
- Poor retention between sessions – poor recall of past sessions
- Going 'round and round' in circles with little or no progress in therapy
- Rigid or concrete thinking - finds it difficult to think about things from different angles.
- Being able to talk about what they want to do, but very poor follow through.
- Difficulties recalling newly acquired information – can't remember new techniques or coping strategies.
- Denial of substance misuse, despite very strong evidence to the contrary.
- Copes and adapts very poorly with change
- Missed appointments
- Unusual approach to solving problems
- Evidence of poor judgement in real life
- Over-all impression of changed cognitive abilities.

If a cluster of these behaviours occur in the context of a history of dependent/ hazardous drinking, it may be helpful to conduct a brief cognitive screen (see page 26) and liaise with the general practitioner around a possible suspicion of alcohol-related brain injury. It will be the role of the general practitioner or an associated medical professional to rule out other possible causes of cognitive impairment.

Do People with ARBI Need Counselling?

There is much to suggest that people with Alcohol Related Brain Injuries could benefit from the practical and emotional support provided within a trusting therapeutic relationship. Counselling - provided in a cognitively accessible manner - could have an important role to play during multidisciplinary rehabilitation for this condition. For example, people with ARBI may experience:

- Adjustment difficulties following brain injury – e.g. changed levels of independence
- Social Isolation and relationship breakdown
- Re-experiencing of difficult memories/life events in the absence of alcohol during rehabilitation
- Support for maintaining abstinence
- Personal issues which the person may not wish to share with other professionals involved in their rehabilitation
- Co-morbid mental health difficulties e.g. depression, PTSD.

Adapting Counselling for People with ARBI

The inherent challenge for the counsellor lies in the adaption of the counselling process and providing interventions to meet the unique needs of the person affected by ARBI. This may mean a shift in how models of therapy are delivered and the role the counsellor plays within this.

Working with people with ARBI will involve the counsellor taking a more proactive and directive role in the therapeutic process. Provision of therapies with a structured format represents a good starting point for the adaption of therapeutic endeavours with this population. Support for substance misuse will usually be required long term, with regular review and 'top-up' sessions and close liaison with other professionals involved in care and rehabilitation.

For Moderate to Severe ARBI: Life Story Books

Life Story Books help people share and recall their life history even when their memory of these life events has been compromised due to brain injury. It is a therapeutic approach based on the collation of a person's life story,

from past to present which gives people the opportunity to remember and talk of their different life experiences often using photographs and personal belongings as triggers to discussion.

This type of work may be helpful for those with more profound memory difficulties or those who are in receipt institutional care. It may also be useful in the earlier stages of rehabilitation where cognitive difficulties are likely to be at their worst.

This type of work may be helpful as developing an understanding of who we are, our place in the world and how to relate to those around us is critical to emotional wellbeing[198]. Having a coherent narrative to share with others when expected is necessary if people are to meet societal expectations and avoid appearing different from peers[199]. Life story work may help the person integrate both positive and negative information, which offers a more balanced identity and prepares them for presenting themselves in day-to-day relationships[200].

This type of work may be appealing to people with ARBI who often like to share stories or reminisce on the past. It will also be helpful in reducing the stigma attached to this disorder by helping other professionals see the identity of the person beyond the brain injury or substance misuse history. Collecting these narratives also acknowledges members of this group as people who have significant experiences to share.

This type of work can often be a good starting point in developing a therapeutic relationship with someone with an ARBI. If the book approaches from past to present in chronological order it will initially draw on residual long-term memory which is well preserved in Alcohol-Related Brain Injury. As the work draws nearer to the present day, the person's memory for events is likely to be fragmentary. Family members or friends can be called on to contribute to its development and to to put 'flesh on the bones' of memory, and to help person to begin to develop a story that makes sense. As the person's rehabilitation progresses, this life story can be continually added to with new friends, acquaintances, professionals and life events and personally meaningful goals.

Dementia UK[201] recommend the following sections to guide the development of a Life Story Book.

- Introduction to my life (date and place of birth, siblings etc)
- My childhood
- My working life
- Significant life events
- Significant places
- Social activities and interests
- My life now
- My Likes/dislikes
- My Wishes for the Future

For Mild to Moderate ARBI: Cognitive Behavioural Therapy

Cognitive-behavioural therapy (CBT)[202] is being increasingly used in populations with Traumatic Brain Injury with co-morbid mental health difficulties. There is a growing body of literature showing that people with TBI can benefit from CBT and other psychological interventions which lends support to the possible application of this model of therapy to people with ARBI.

An advantage of Cognitive Behavioural therapy is its highly structured content which is amenable to specialised adaptation for memory, attention and problem solving impairments, reflecting the difficulties people with brain injuries often experience[203 204]. However, these programs require modification to account for difficulties related to the ARBI (for example, memory and executive impairments)[205].

Below is a list of principles for adapting cognitive behavioural therapy (CBT) to meet the needs of those presenting with Alcohol Related Brain Injury. This list has been expanded and adapted from the principles originally designed for use of CBT with people with TBI by Hsieh, Ponsford, Wong and McKay in 2012[206].

1: PREPARATION

- Educate and familiarise yourself with Alcohol-Related Brain Injury and the physical, cognitive, behavioural and emotional sequelae of this condition before beginning any therapeutic work with the client.
- Acknowledge that conducting therapeutic work with someone affected by ARBI may be very different from your day-to-day work with other individuals. Some behaviours associated with ARBI can be perceived as challenging within the therapeutic relationship e.g. repetitiveness or tangentiality. Working with someone with ARBI can require flexibility, creativity and a degree of patience.
- It can be helpful to talk to others involved the

person's care and to review any assessments that have been complete. Collateral informants may need to play a bigger role than in your assessment because of the client's cognitive deficits. Corroborative histories from family/professionals may help when the client has poor recall and will allow you to differentiate between confabulation and true events[207].

- Allow for extra time to prepare for the session with the person. You may need additional time to prepare material to plan your session in accordance with their needs. You may also need additional time to walk them to and from their transport
- Consider mobility difficulties and how they can access your office (e.g. seeing them in a room on the ground floor so they don't have to use the stairs). People with Alcohol Related Brain Injury may require assistance with transport to get to appointments. They may have difficulties planning/organising bus timetables or locating service buildings. It may be helpful to have this planned in advance with the client and arrangements put in place to support travel.

2: DEVELOP THE THERAPEUTIC RELATIONSHIP

- Provide the person with picture and a brief description of who you are and what your job role is. Encourage the person to keep this in their diary or rehabilitation folder. Provide this description to other professionals or staff and ask them to provide reminders of this information as your appointment approaches. You may need to introduce yourself each time you meet the person in the earlier stages – don't assume that they remember your name or who you are.
- In as far as possible, try to schedule a number of regular appointments in advance and help the client record these in their diary. Having an appointment at the same day and time every week allows the therapeutic work to become a part of their regular routine or structure. Provide a phone-call/text both the day before the appointment and a couple of hours before the appointment.
- Avoid being overly formal. People with Alcohol-Related Brain Injury will appreciate a degree of humour, an exchanging of stories and 'small talk'[8].
- Match your language to the client's cognitive abilities[6]. Try to carefully manage the use of abstract concepts and overly long descriptions/ sentences. Instead use the clients' own words which will increase the likelihood that the content of the session will be remembered.
- In developing the therapeutic relationship and treatment plan, the identification of a person's areas of strengths will be vital. For example, a client that may have severe memory problems but be able to use intact reading skills to help them effectively use a checklist to complete daily tasks. Keeping the focus on the person's strengths and intact abilities is likely to foster a sense of unconditional positive regard.

- It can be helpful for the person to have 'a therapy buddy'. Having a family member, friend or keyworker in session can be beneficial in encouraging follow-through and reminders of agreed actions. Before inviting this person into a session, the therapist will need to explain the benefits of this action, and to gain the clients consent for doing so. Topics which the client wants to remain confidential must be identified.

3: USE BEHAVIOURAL TECHNIQUES

Behavioural techniques such as activity scheduling and behavioural activation are likely to be most beneficial (and usually easier) in the earlier stages of rehabilitation. Those with Alcohol-Related Brain Injury respond well to structure and routine. They will learn better by doing rather than saying or talking about things[208].

- The introduction or use of a dairy can be very helpful for recording essential activities.
- Behavioural activation should be supported by others involved in the persons care such as keyworkers, family and residential staff. Multidisciplinary working will be a key facet in ensuring that behavioural activation is initiated and maintained.
- Using the outcome of completed assessments (e.g. occupational therapy) you may make a list of suitable activities for the person to choose from. If they have chosen an activity which they would not be able to complete independently, consider what supports may be put in place to facilitate this.
- Clients often benefit from support in breaking down activities into smaller components and then developing a step-by-step plan to achieve them[6]. They may need explicit written instructions and verbal instructions from others to remind them to initiate this behaviour.
- Relaxation strategies may be relatively straightforward and accessible for people with Alcohol Related Brain Injury. Providing clients with 'guided relaxation' recordings or C.Ds may allow the person to practice them outside of sessions.
- With the person's consent, inform others involved in

their care what activities have been agreed and ask them to remind the person to initiate the activity at the agreed time.

4: SIMPLIFY COGNITIVE TECHNIQUES

- A starting point may be to ask the client to keep a mood record at regular intervals (once every hour – you could set an alarm on their phone/watch). Providing them with a list of common emotions may be helpful for those who may have difficulties finding the right expressive words.
- Teaching clients the link between their thoughts, feelings and behaviours can be helped by using a simple model[6].
- The mood diary can then be expanded to thoughts – the recording and planning of behaviours may already be in place during stage one.
- Cognitive restructuring techniques may be too challenging for some clients with Alcohol-Related Brain Injury[6]. For clients with difficulties generating ideas, obtain the person's consent to allow you to provide a small number alternatives. These alternative thoughts that can be turned into coping statements to be written down and repeated and rehearsed[206].
- If a person has problems solving difficulties, the therapist could provide a number of solutions and the person can then be encouraged to choose which idea/solution is personally preferred by them. This method will allow the client maintain their sense of behavioural choice and control.[209]
- Keep messages around alcohol-use and its management very simple, concise and easy to follow. With the person's consent, it may be helpful to share these with others involved in their care.
- Always allow 10-15 minutes towards the end of the session to check the person's understanding of the session, clarify what has been agreed and to revisit anything not fully understood.

COMPENSATE FOR COGNITIVE IMPAIRMENTS[6]

- Pace your sessions appropriately. This may mean having only one or two items on your agenda for a whole session.
- You will need to repeat information regularly throughout the session. Always start a session with revision of what was completed in the last session. It can be helpful to have more regular sessions, or brief 'top-up' sessions by phone during the week to facilitate recall.
- Regularly check the person's understanding. A person may indicate that they understand either through their body language (e.g. nodding) or verbal agreement, but when asked to explain what they understood, they may have missed important details or incorrectly perceived the information.
- Provide material in a number of ways – written, verbal or in diagrams. Overtime, try to determine which method works best for the client.
- Encourage keeping these notes in one place (e.g. a folder). Remind them to take this folder to appointment and to refer to it regularly.
- Smartphones and downloadable applications may be helpful for this client group if they have been previously familiar with this technology. For example, goals and homework exercises can be emailed/texted or a reminder alarm can be set on the client's phone.
- Helpful thoughts and coping statements can be practiced and rehearsed in session through role-play[6]. With the person's consent, these coping statements could be shared with others who have regular contact with the person and who could prompt these coping statements when needed.
- Mutually agree a signal for 'going off track' – people with ARBI can often go off on tangents with stories from the past, which can prevent progress in-session. Develop a signal that will let your client know when they have gotten off topic. Encourage the family and other professionals to use the same signal. You could also say "We were talking about… " using a kind tone of voice. Going off in tangents can be one of the most frustrating elements of conducting therapy with this client group. You will need to be more direct than would be considered appropriate for other client groups.[8]
- Help clients to practise coping strategies in real life settings (e.g., at home, on the street).

Dealing with Denial

- With consent, the persons medical records relating to substance misuse could be requested (e.g. admissions notes from the emergency department, detoxifications, blood alcohol levels on admission etc.) The therapist could go through these notes with the client and come to an agreement about what this information says about the person's past drinking behaviours. This should be done in a non-confrontational manner and collaboratively with the client.
- With consent, ask the family or the G.P or another

addiction worker to provide a written letter outlining the extent and impact of the person's past substance misuse. Again this should be done in a non-confrontational manner. This letter can be jointly read and discussed by the client and the therapist.
- In some instances, focusing on the consequences of future substance misuse can be more helpful rather than addressing past substance misuse. In these cases, it may be more helpful to focus on the brain/physical injury and provide information on how this would worsen if they were to continue to drink. This message can be supported by others involved in their care, should as G.Ps or psychiatrists.
- Where interventions addressing denial fail to increase insight, environmental changes may reduce opportunities for alcohol consumption. Examples include, living in supported accommodation or the provision of alcohol-free activities/day placements.

Substance Misuse Residential Treatment Programmes for ARBI

Addiction-focused residential programmes may find it beneficial to develop a programme of recovery specifically tailored to meet the needs of those who may have mild-moderate cognitive difficulties and provide a brief screening on entry to facilitate identification of clients who may have cognitive impairment.

In cases where there is a mild level of cognitive impairment post detox, the residential treatment programmes may offer a 'lead-in' period to allow for a degree of cognitive recovery. This period could be provided for a minimum of three weeks. Rather than beginning therapeutic counselling or group therapy during this initial time, a person may engage in more practical activities such as gardening, artwork, or life-story work. By allowing for this 'lead-in' period, a person may be cognitively more 'able' to benefit from the treatment programme once it begins.

For those with a moderate degree of impairment, a 'lead in' period and the allocation of a key-therapist who could have a speciality in working with difficulties associated with alcohol-induced cognitive impairment could be useful. Developing links with community based services with a strong emphasis on continuity of care and interagency working will be essential for long term maintenance of abstinence on completion of the programme.
A person would not be suitable for an addiction focused residential treatment programme if the following were present:

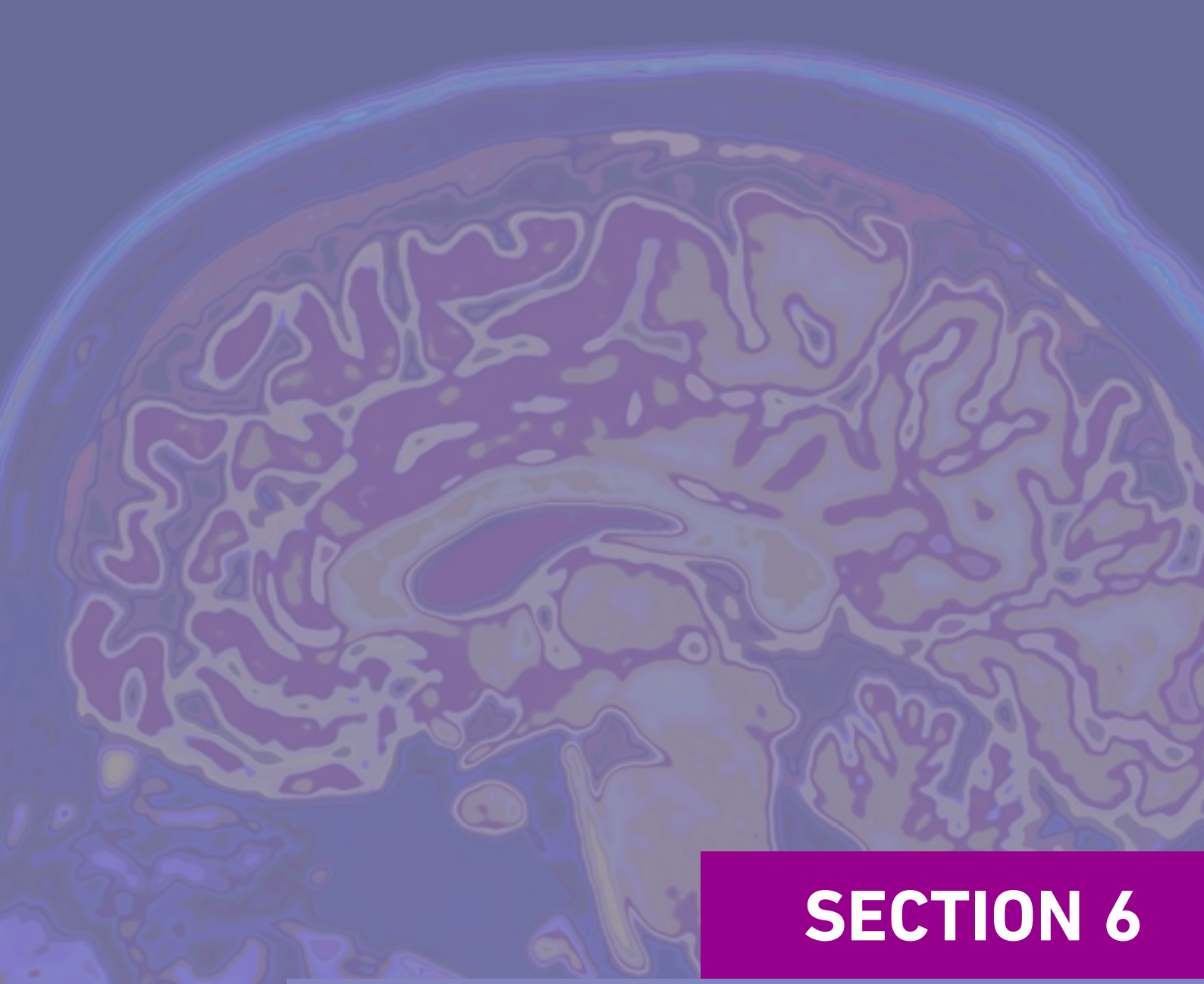
- Behavioural Disturbance – physically or verbally aggressive
- Acute/Global confusion
- Prone to wandering or absconding
- Moderate-Severe memory/executive function deficits
- Ongoing nursing or physical needs

Alcoholics Anonymous

Those people affected by executive dysfunction may have trouble with abstract conceptualisations such as 'a power greater than ourselves'; or struggle to complete some of the steps involved in Alcoholics Anonymous such as 'making a fearless moral inventory of ourselves'. Despite this, the routine of attending regular meetings and the social support/contact gained within these meetings often make them appealing for some people with ARBI. Having a trusted sponsor who is understanding and knowledgeable of the person's condition may allow the person to have the individualised support they require in the context of a group setting. Special consideration should be given to reminding the person of when and where the meetings are held and transport to and from meetings.

Training for Counsellors and Therapists

The increasing prevalence of Alcohol Related Brain Injury among alcohol dependent populations raises the critical importance of addiction counsellors becoming attuned to signs of cognitive impairment among alcohol dependent populations. Dialogue around cognitive changes associated with alcohol misuse could become a routine part of client assessments and therapeutic treatment programmes. Development of CPD events for counsellors and embedding competencies for working with Alcohol Related Brain Injury into accredited training programmes for professionals is an essential action to allow professionals to respond to the needs of those affected by this condition.



SECTION 6

ADAPTING ENVIRONMENTS AND INTERACTIONS TO MEET THE NEEDS OF ARBI

COGNITIVE AND BEHAVIOURAL DIFFICULTIES

Problems of Attention and Concentration

Attention is the ability to focus on certain aspects of the environment that one considers important or interesting and to change this focus as required. Problems with attention or concentration are very common in the early stages of brain injury, and are particularly common after detoxification.

You might notice that the person;

- Gets distracted very easily.
- Has trouble keeping track of what is being said or done.
- Gets bored very quickly
- Misses important details in a task.
- Switches off and appears not be listening.
- Changes the subject inappropriately.
- Has difficulty sustaining attention e.g. not being able to sit through a full television programme.
- Has difficulties multi-tasking.
- Feels overloaded and frustrated in certain environments.
- Can't complete things they start.
- Is unable to screen out irrelevancies in the environment e.g. can't concentrate on a conversation when there is a television on in the background.
- Avoids busy places where they cannot focus e.g. supermarkets
- Has difficulty "switching gears" or changing focus from one thing to another (e.g., may continue to do things the wrong way even after you explain why things should be done a different way). May have difficulty stopping themselves thinking about something, becoming quite 'fixated' on something.
- Misses 'bits' or parts of conversations.
- Seems to be unable to enjoy activities they previously enjoyed.

What you can do to help

- Reduce distractions (shut the door, turn off music etc.) when you are saying/doing something important with them.
- Plan tasks in advance. Break them into small steps.
- Ensure only one task is attempted at a time. Complete the task one-step-at-a time.
- Talk slowly and clearly. You might need to plan exactly what you want to say and how you will say it.
- Give frequent reminders of the next step in the task.
- When a person is distracted, gently interrupt and bring back the person to the task.
- Build in regular breaks to every task.
- Change activities, if necessary, to keep their interest.
- Monitor what times during the day their attention seems best – some people have better concentration levels at certain times during the day.
- Schedule more demanding tasks for when attention is at its best or when the environment is at it calmest
- If some activities are too demanding, try something less demanding first and build up over time to more demanding tasks.
- Encourage the person to stay on the task for a little longer each time.
- Encourage the person to do puzzles which require concentration – e.g. word-finding puzzles, jigsaws. Start with the most basic level and build up in difficulty.

Problems with the Speed of Information Processing

The most common cognitive problem noted after ARBI is slowed processing speed. This means the speed at which an affected person can make sense of what is happening or what is being said is reduced. A reduction in speed of thought is common, even in milder cognitive impairment.

You might notice that the person:

- Takes longer to answer questions.
- Takes longer to understand things he or she understood easily before.
- Takes a long time to react to things (this may be dangerous in emergency situations, when crossing roads or when driving).
- Is very 'slowed down' in the way they think.
- Can't keep up with the pace of a normal conversation, or when in a group.

What you can do to help

- Allow more time planning an activity or conversation.
- Talk at a slow and steady pace.
- Keep questions simple.
- Present one piece of information at a time.
- Check that the person is keeping up e.g. ask them what they have understood so far.
- Make sure all areas of 'risk' have been assessed by the relevant professional e.g. safety when crossing road, driving ability. Don't choose activities during care planning that require very quick responses.

Problems with Insight or Self-Awareness

You might notice that the person:

- Seems unaware that they have problems with their memory or cognitive abilities.
- Doesn't understand the need for support from services or family.
- Has unrealistic goals or expectations.
- Attempts to do things they are not able to do.

What you can do to help

- Anticipate that awareness is poor when planning activities and supports.
- Gently and sensitively remind the person of their deficits.
- Point out the possible negative consequences of the persons unrealistic plans.
- If it is safe and not dangerous, with supervision allow the person to try the behaviour and to discuss their performance. Record any learning points in their diary.
- Give immediate feedback about performance.
- Explain why a support is useful.
- Place external limitations where necessary – e.g. remove car and drivers licence.
- Inform others of their limitations if necessary.
- Distract the person when discussing unrealistic behaviours, or change the subject.

Problems with Visuospatial Ability

This group of cognitive functions analyses and understands space (i.e., the world around you). They include mental imagery and navigation, distance and depth perception, and visuo-spatial construction.

You use mental imagery and navigation to process and rotate 2-D and 3-D objects in your mind, or to virtually move throughout an image from your surroundings which you've reconstructed in your mind. This function is very useful in everyday life. For example, it allows you to give someone directions to your house by following the route in your mind's eye.

Your visuo-spatial functions also enable you to estimate distance and depth. This lets you move without bumping into any of the obstacles in your path, or to judge whether you have enough time to cross an intersection before an oncoming car reaches you or before the light turns red.

You might notice that the person;

- Has difficulty drawing or copying objects.
- Has difficulty recognising objects.
- Keeps bumping into things.
- Keeps knocking things over.
- Has difficulty constructing objects e.g. jigsaw, lego, flat-pack furniture.
- Difficulty following directions.
- Difficulty analysing visual information.
- Difficulty finding their way around, particularly in new places.

What you can do to help

- Change the person's living space to allow more room to move around objects.
- Place personal belongings in easily accessed places.
- A person may need special adaptions e.g. a handrail – refer to occupational therapy reports.
- Provide assistance when introducing the person to a new place.
- If there is a concern about safety due to visuospatial problems when cooking or using various tools, discuss with the affected person about the need for support in this area.
- Reinforce that he or she should not drive unless this has been approved by his or her doctor.
- When using visual methods to communicate information support the information being communicated in written and/or oral form.
- If a particular skill is desired, repetitive and intensive exercises or practice may be required.

Problems with Memory

Problems with memory can be the most difficult cognitive impairment for people with ARBI and their carers. If a person is not supported with this difficulty, things can become very chaotic and/or distressing for the person and others. The difficulty lies in damage in the part of the brain that converts short term memories (things that have recently happened) into long term memories. While a person may be able to remember things for short periods of time, the information is not transferred into the long-term store, and thus, they will not be able to remember it at a later point. At its worst, a person may not be able to form any new memories following their injury.

You might notice that the person

- Finds it hard to learn and remember new things.
- Forgets peoples names even if they see them often.
- Forgets daily routines and schedules.
- Forgets appointments.
- Forgets conversations.
- Frequently loses important items.
- Repeats questions or stories over and over again.
- Will only discuss events prior to their injury.
- Confuses past and present events.
- Confabulates (makes up convincing stories to fill memory gaps; this is not intentional lying).
- Repeats behaviours, even when you have asked them not to do these.

What you can do to help

- Encourage the use of a notebook to log daily events and tasks to be completed. Encourage the person, and everybody involved in their care to contribute to it and refer to it for daily events. It can take a person a long time to get used to doing this, approximately 3 months. It is important that everybody works together to remind the person to use it until it becomes an established behaviour.
- Encourage review and rehearsal of information in the diary at key parts of the day (e.g. every hour or at breakfast, lunch etc.). You could set an alarm to remind the person to do this.
- Put a sign on their door to remind them to take their diary with them if they are going out.
- Establish a structured routine of daily tasks.
- Limit changes in daily routine as much as possible.
- Provide detailed explanations of even the most basic changes in daily routines.
- Talk to other involved in care and confirm information provided by the service is accurate information.
- Repeat important information as much as possible and give regular reminders.
- Encourage the person to rehearse this information out loud with you. Ask them to repeat important information before you end your conversation.
- Keep belongings in the same place – a place for everything and everything in its place!
- Gently remind the person of the correct details if they get it wrong.

Problems with Self-Monitoring

You might notice that the person

- Does not realise they are making mistakes in certain situations.
- Seems unaware of the effect of their behaviour.
- Doesn't seem to be able to correct or change their behaviour, even when feedback is given.
- Keeps talking and not include others in the conversation, or keeps talking when others are no longer interested

What you can do to help

- Provide supervision for activities where self-monitoring is poor.
- Agree a set of signals (such as a gesture like shaking your head or a hand signal meaning 'stop') to communicate to the person that their behavior is not appropriate at this time e.g. its time to let someone else speak.
- Provide feedback consistently around problem behaviors.
- Take into account poor self-monitoring when planning activities with the person.

Problems with Perseveration

You might notice that the person

- Gets stuck on one idea or behaviour.
- Talks about the same topic all the time.
- Returns to the preferred topic of conversation when there is a gap in conversation.
- Finds it difficult to switch to another topic/behaviour when asked.
- Persists in a certain behaviour even when it is no longer appropriate.
- Gets irritated if someone expresses an opposing view or opinion.

What you can do to help

- Listen the first time the person talks about their favourite topic and acknowledge that you have heard and understood them.
- If the person brings it up again in the same conversation, remind them gently they have told you before.
- If they bring it up again, try to distract them with a different conversation or activity. If they continue, try to ignore references to the topic as it may reinforce repetition.
- Be patient and avoid arguments. Remind yourself that this is the brain injury. If irritated, take a break.

Problems with Initiation

Initiation is your ability to get started. While a person with ARBI may express an interest in doing certain activities, the ability to get going is affected. Problems with initiation can often be misinterpreted as a lack of motivation, noncompliance with rehabilitation, or even laziness.

You might notice that the person

- Has trouble getting started.
- Appears disinterested or unmotivated.
- Will not start/do anything until you ask them.
- Won't move from one activity to another without prompts.

What you can do to help

- Work with person to draw up a list of enjoyable or meaningful activities.
- Ensure these activities are built into a structured daily routine
- Provide specific choices 'would you like to do A or B today?'
- Praise the individual when he or she gets started without assistance
- Help the person develop a structured daily routine.
- Ensure there are no long periods of inactivity during the day.
- Set an alarm clock, send a text message, phone the person, or drop into them to prompt the person to start a task.
- Encourage the use of a notebook or calendar and set specific deadlines for tasks to be completed.

Problems with Planning and Organisation

You might notice that the person

- Does not follow-through with a task they had intended to do.
- Has difficulty planning the task they want to do and breaking it down into different steps.
- Completes steps of activities in an incorrect order.
- Doesn't think ahead to the outcome of their behaviours.
- Can talk about how they would do something, but not be able to do it in practice.
- Has difficulty organising their thoughts, and difficulty expressing these thoughts in a logical way.

What you can do to help

- Break large tasks down into small steps. Provide the person with a list of these steps. Encourage the person to follow through these steps in a systematic way, ticking off each step as they go on.
- Avoid giving open-ended tasks.
- Make goals very clear.
- Remind the person of the next step in a task.
- Encourage the person to think on paper – to write down their thoughts and help them organise or prioritise them.

Problem - Solving Difficulties

You might notice that the person

- Makes impulsive decisions without thinking of the consequences of their actions.
- Gets overwhelmed when too many options are present and is unable to choose between them.
- Gets stuck on one idea and is unable to consider alternative options.
- Has a very random approach to solving problems.

What you can do to help

- Help the person use a system to work through problems as they emerge. This could involve the following model:
  - Identify the problem
  - Generate possible solutions
  - Evaluate the pros and cons for each option
  - Identification what steps are needed in order to complete the task.
  - Do the task
  - Review – How did I do?
- If the person has difficulty generating potential solutions, ask their permission to provide them with two or three different options to discuss.

Disinhibited or Inappropriate Behaviour

Disinhibition is when a person does not show respect for normal social rules. They may come across as being rude or disrespectful or tactless.

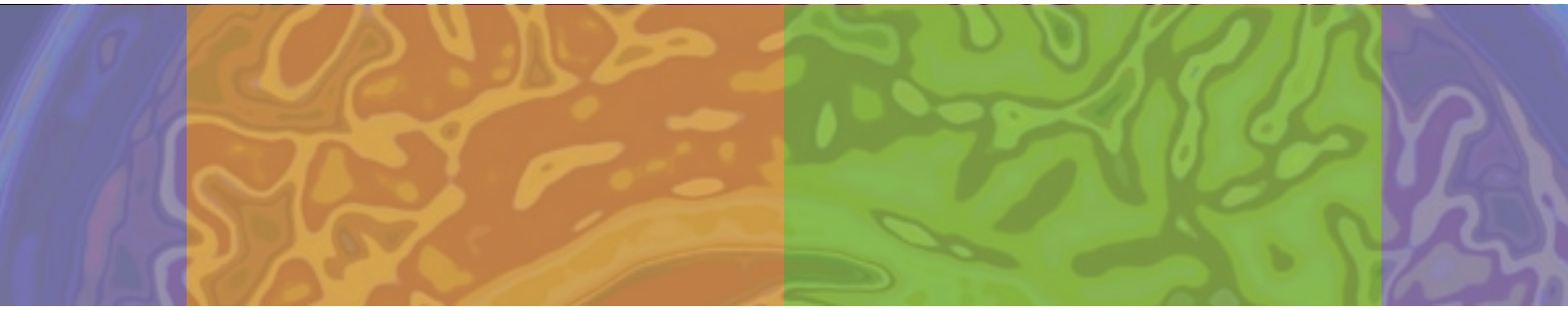
You might notice that the person

- Doesn't think ahead to the consequences of their actions.
- Says inappropriate or childish/flippant things.
- Ask overly personal questions
- Tells very personal information to strangers.
- Spends money without thinking.
- Uses frequent expletives even in inappropriate settings
- May not respect the boundaries of other people.

What you can do to help

- Plan ahead and avoid situations where the person's disinhibition could cause distress or danger to yourself or others.
- Give immediate feedback about why the behaviour is not appropriate or ignore the behaviour when this cannot be done.
- Talk to other professionals involved in their care and decide if external controls might be necessary e.g. over finances etc.

PHYSICAL DIFFICULTIES



Ataxia

Ataxia develops when the cerebellum of the brain becomes injured through alcohol. The person begins to walk with their legs spread quite far apart (this is sometimes called walking with a wide-based gait).

You might notice that the person:

- Walks with their legs spread far apart.
- Lurches or staggers from side-to-side.
- 'High-steps' - this means the person has to lift their feet higher than normal when walking.
- Has difficulty turning – this can result in falls.
- Has tremors (or shakiness) in their hands or legs.
- Has difficulties with fine motor movements e.g. closing buttons, gripping utensils.
- When severe, affected people are no longer able to stand or walk without great assistance and effort.

What you can do to help?

- Consider referring for a Physiotherapy assessment and input
- An occupational therapist may be able to advise on the need for specialist equipment or devices or environmental adaptions.
- Encourage the person to use any devices recommended for them, prompt them to take these wherever they go (e.g. walking aids).
- Encourage the person to keep their personal living space in order and keep all walkways clear.
- Make sure good lighting is provided in all rooms, both day and night.

Peripheral Neuropathy

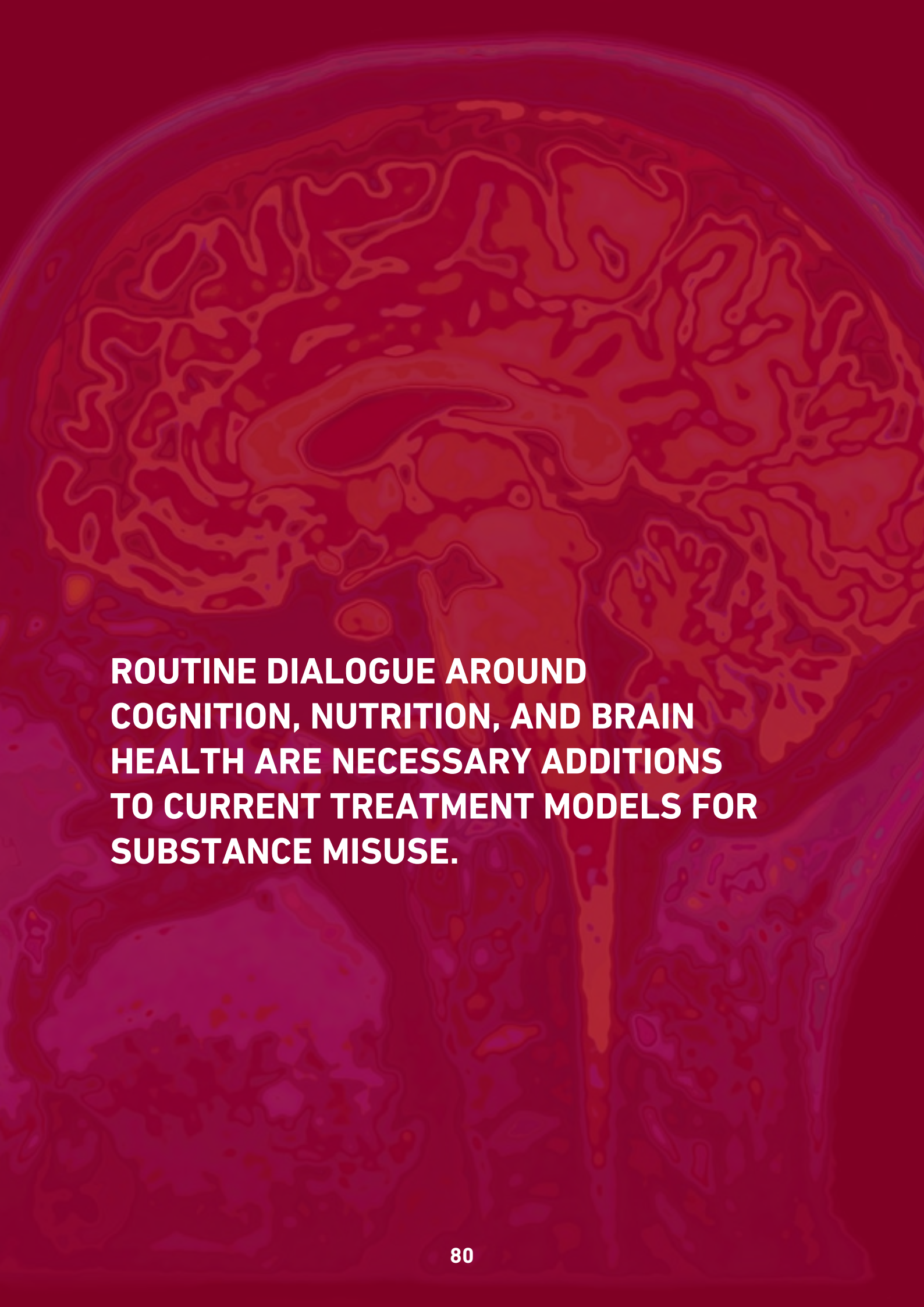
Peripheral Neuropathy is a term used to describe a loss of sensation or movement in different parts of the body. It usually affects the hands and feet. Symptoms range from slight discomfort to major disability.

You might notice that the person:

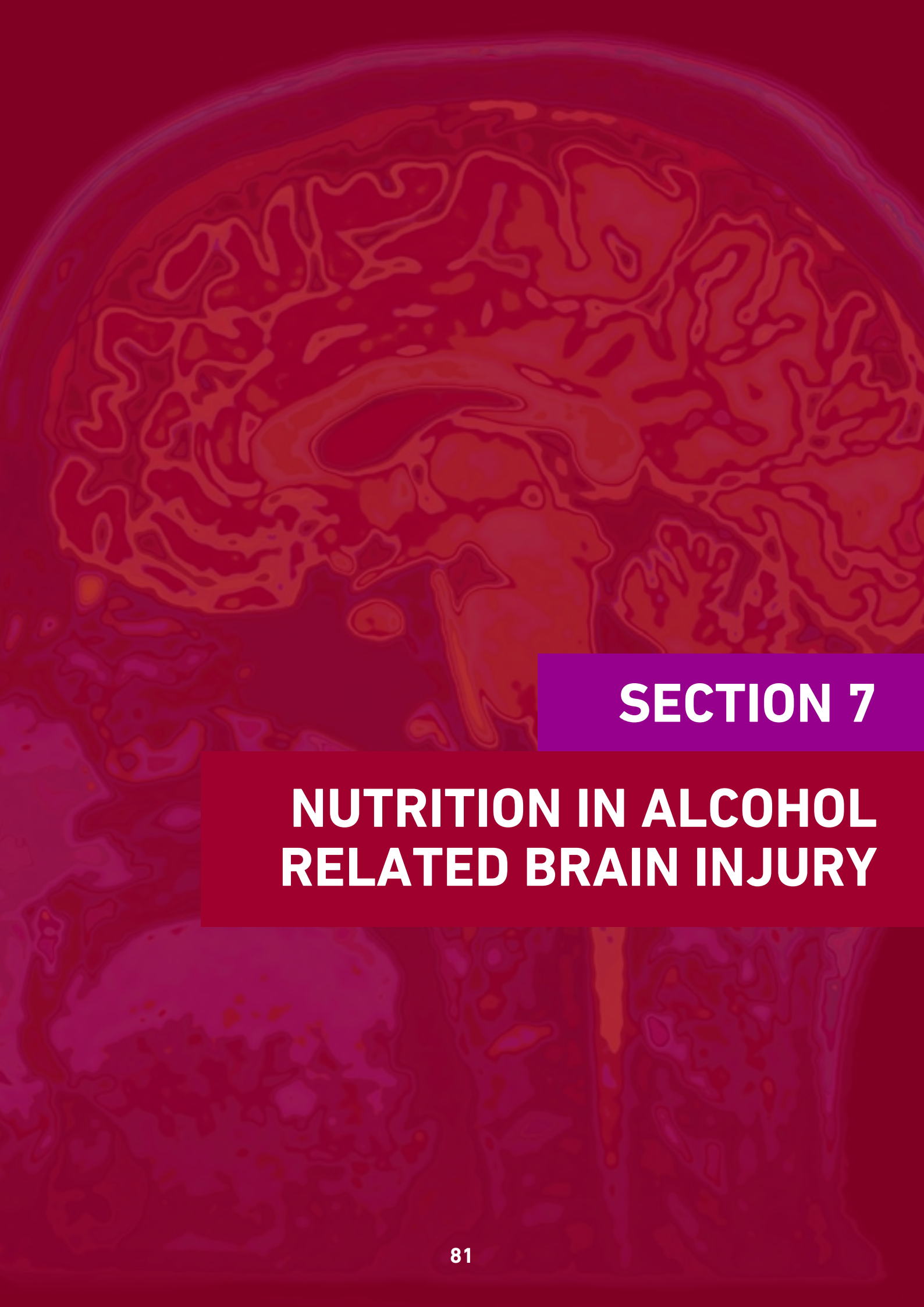
- May have difficulty walking.
- Has a sensation of heaviness in the legs.
- Has reduced sensation in the hands and feet and is more prone to injury e.g. burns or falls.
- Finds using the stairs difficult.
- Stumbles frequently.
- Finds it difficult to fully grasp or carry items – may drop things a lot.
- Has difficulties opening jars, turning door knobs or with personal grooming.

What you can do to help

- The person may benefit from an occupational therapy or physiotherapy assessment.
- Encourage the maintenance of a healthy diet with client-appropriate physical activity.
- Encourage the person to use any devices recommended for them.
- If there is significant pain associated with the condition, a discussion with the persons G.P may be necessitated to clarify if medication may help.
- Make sure walkways in their immediate environment are kept clear to reduce the risk of falls.



ROUTINE DIALOGUE AROUND COGNITION, NUTRITION, AND BRAIN HEALTH ARE NECESSARY ADDITIONS TO CURRENT TREATMENT MODELS FOR SUBSTANCE MISUSE.



SECTION 7

NUTRITION IN ALCOHOL RELATED BRAIN INJURY

NUTRITION IN ALCOHOL-RELATED BRAIN INJURY

Active alcohol drinkers

When a person is regularly drinking, it may be difficult for them to implement dietary advice.

- Money might be limited if a person has a substantial dependency to alcohol.
- The person may not have access to cooking facilities e.g. if they are homeless or if electric supply has been turned off.
- They may never have developed cooking skills.
- They may not 'feel' like eating because alcohol can cause a decrease in feelings of hunger.
- Nausea or vomiting/diarrhoea may reduce the drive to eat.
- Active drinking might compromise a person's reasoning skills - they may find it difficult to make good decisions about their physical health.

For those that are drinking regularly and heavily and neglecting their diet, the starting point may be to encourage them to eat something, even if it is a small amount. The person can then begin to increase the amount as their appetite returns. Encourage and remind them to:

- Eat (at the very least) one meal every day - preferably before they start drinking.
- Eat small amounts of nutritionally dense foods (see table below) at regular intervals.
- Take a multivitamin capsule daily with at least 100mg of thiamine (vitamin B1)
- Attend for a regular check up with the doctor – if necessary arrange this for them and remind them on the day of appointment.
- Attend a day centre where low cost/free meal is provided. It may be helpful to provide a list of organisations or day centres which provide these and to remind the person of these by phone.
- Alcohol-Treatment centres may want to keep a stock of emergency food supplies for those individuals presenting as being malnourished.

Low preparation and nutritionally dense snacks

- Toast with tinned sardines or baked beans
- Nuts (e.g. Peanuts, Cashew nuts) and dried fruit (e.g. raisins)
- Sandwich – Peanut butter and banana
- Sandwich – Ham
- Breakfast cereal
- Fruit
- Soups - Tinned/Dried/Carton
- Yoghurts
- Actimel drinks

People who require Specialist Diets

Certain people will require specialist diets. These include:

- People who have liver or renal disease.
- People who have a medical condition which may have specific nutritional requirements e.g. diabetes or HIV.
- People who have lost a lot of weight involuntarily.
- People who have a confirmed nutritional deficiency e.g. anemia.
- People who have difficulties swallowing food.

It is important to follow the guidance of a dietician in these cases.

How Alcohol-Related Brain Injury can affect appetite and eating behaviours during rehabilitation.

Having a cognitive impairment or brain injury can also affect a person's eating habits. Alcohol-Related Brain Injury can influence the person's eating behaviours in the following ways:

- Lack of initiation/motivation may mean that the person does not have the 'drive' to prepare a meal or snack.
- Difficulties with self- monitoring may prevent a person from noticing that they are hungry.
- Difficulties with awareness of the passage of time may mean that a person will not realise how much time has passed since they last ate.
- Difficulties with memory may mean that a person will forget that they have eaten recently and may begin eating another meal.
- Difficulties with correct sequencing may mean that a person may be unable to prepare a meal.
- Difficulties with memory may mean that it would not be safe for them to prepare a meal independently without supervision.
- People with Alcohol-Related Brain Injury may smoke heavily, which can reduce appetite.

What you can do to help – Considerations for Residential Treatment

Creating the right Eating Environment

- An activity before mealtime may boost appetite, such as a light walk.
- Keep to a regular routine of meal times.
- Keep a regular schedule/routine of pre-meal activities e.g. setting table, filling jug with water etc.
- Remind the person when meal time is approaching.
- Ensure that tableware is kept in the same place to allow them to find utensils easily.
- Prompt the person to attend for the meal.
- It may be helpful for the person to have their own place at the table when in group settings.
- Avoid distracting noises from television/radio during the meal.
- Invite others - eating in the company of others may be helpful as they can use the cues of other people's behaviour to start eating.
- Make food colourful and appetising.
- If a person has forgotten that they have eaten already, it might be helpful to put a note on the fridge saying so, and what time the next meal is at.
- An occupational therapy assessment may be helpful in determining if the person will need supervision or assistance completing any kitchen based activities. Consideration should be given to turning off/removing cooking appliances if there is a significant safety risk as a result of memory impairment.
- Those who are significantly impacted with limb tremor or ataxia may require special utensils etc.

Forgetting to eat or easily distracted

- Provide frequent, gentle reminders to eat.
- Reduce distractions in immediate surroundings.
- Leave healthy snacks close at hand.

Not finishing a meal or reluctant to eat

- Investigate whether they may have any of the following difficulties – dental problems, swallowing difficulties or physical health difficulties.
- Provide a smaller meal more regularly.

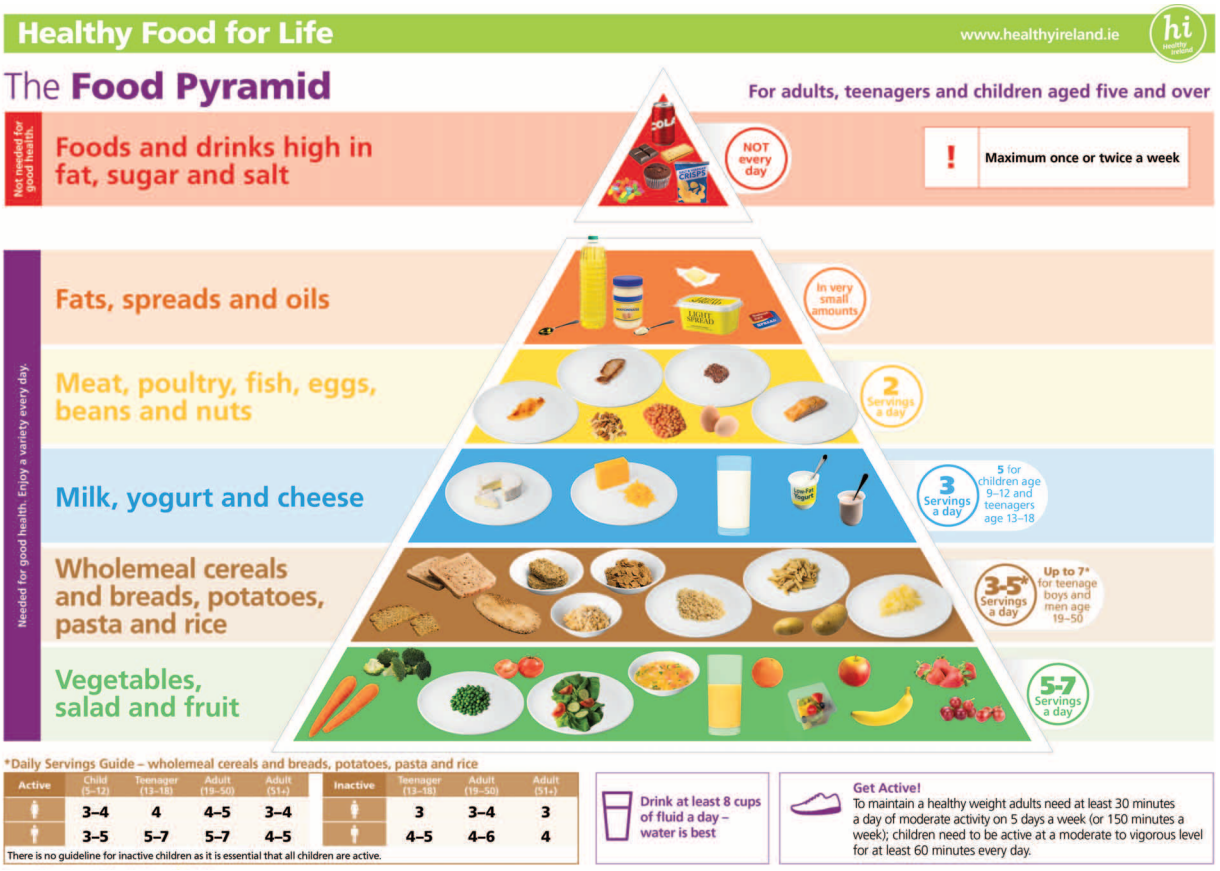
- Offer smaller portions or snack foods more often.
- Plan food choices in advance with the person and make an agreement about meal plans.
- Avoid offering beverages such as tea or coffee for an hour or two before meal times.
- Encourage reduced smoking before meal times.
- Provide frequent high calorie and nutritionally dense snacks or finger foods if a person cannot tolerate large meals.
- Arrange for family or friends to attend at meal time – group meals may encourage eating activity.
- Provide high calorie drinks – milk shakes, smoothies – if a person is frequently missing/not finishing meals.
- Offering extra food at a time when the person seems to be eating more.
- Collect as much information as you can about a person's usual eating and drinking habits, likes and dislikes and incorporate these into the daily routine.

Craving sweet foods

You may notice that the person with ARBI has a tendency to choose sweet food over savory food. This is because the body converts alcohol directly into sugar which causes a spike in blood sugar levels. Following detox, a recovering person may find that they crave sweets and starchy foods more than they did before. These sugar cravings should pass as other withdrawal symptoms fade, but the compulsion to eat sugary foods could remain well into a person's rehabilitation as a psychological replacement for alcohol.

Rather than eating sweets, try to encourage the person to have a healthier sweet-alternative as part of a healthy eating plan;

- Fresh/dried/tinned fruit.
- Chocolate-dipped strawberries
- Frozen Grapes
- Hot chocolate with semi skimmed milk
- Yoghurt with honey
- Jelly and ice cream.
- Fruit tarts e.g. apple tart
- Milk and fruit smoothies.
- Pancakes and syrup.
- Artificial sweetener sprinkled on any food to provide a sweeter taste.
- Carrot, parsnip, swede drizzled in honey
- Gammon glazed with brown sugar/honey.
- Mint jelly and lamb.
- Sweet chilli sauce/ ketchup on sausages chicken, potatos etc.
- Apple sauce/cranberry jelly with meat, turkey.



Source: Department of Health. December 2016.

Healthy Eating for Alcohol-Related Brain Injury

During rehabilitation, it is important that a person who has become malnourished or has neglected their diet is provided with a healthy, balanced and nutritious diet. One of the best ways to do this is to use the food pyramid to guide choices. It will help a person get the correct amount of nutrients (like protein, fat, carbohydrates, vitamins and minerals) to help develop and maintain good health. As indicated earlier, this may not be suitable for all clients who may require a more specialist diet.

In a nutshell, healthy eating involves:

- plenty of vegetables, salad and fruit
- a serving of wholemeal cereals and breads, potatoes, pasta and rice at every meal - go for wholegrain varieties wherever possible
- some milk, yoghurt and cheese
- some meat, poultry, fish, eggs, beans and nuts
- a very small amount of fats, spreads and oils
- and a very small amount or no foods and drinks high in fat, sugar and salt.

Food Safety Authority of Ireland

A person with Alcohol-Related Brain Injury should be encouraged to eat foods containing thiamine every day as part of a healthy balanced diet.

Thiamine (Vit B1) Rich Foods

Canned or fresh fish such as tuna mackerel, sardines, trout or tuna.
- Tuna Sandwich
- Sardines on toast
- Fish, oven chips and peas

Breakfast Cereals - Many breakfast cereals are fortified with Vitamin B1.
- Special K
- Branflakes
- Sprinkle cereals with chopped nuts or dried fruit.

Pork - Bacon, Gammon, or Ham
- Pork chop with boiled potato and vegetables

Nuts - Macademia, Pecan, Pistachio, Brazil nuts
- Add some chopped nuts to a yoghurt
- Provide a handful of nuts as a snack

Bread
- Tuna or ham sandwich

Green Peas
- Pasta with peas and ham
- Put frozen peas in packet soup while heating, they take 2-3 minutes to cook.

Beans - Baked Beans, Kidney Beans
- Baked Beans on Toast

Fruit - Fresh, dried or tinned
- Tinned Fruit Salad and small scoop of icecream
- Freshly squeezed orange juice with breakfast

Potatoes - Baked, boiled or chips
- Baked Potato and Beans

Marmite or Bovril
- A slice of toast with Marmite
- A hot cup of bovril

Soup: Tinned, packet or homemade
- Serve a small breadroll with soup to make it more filling
- Add frozen vegetables while cooking

Other Considerations

Omega-3
Fish derived omega-3 fatty acids have been shown to counteract the deterioration of cognition in alcohol misusers[210]. This raises the possibility that fish oil may have the potential of helping prevent brain injury in chronic alcohol misusers. However, the team conducting this research states that further studies are needed to confirm their findings.

Green Tea
The prevention of cerebrovascular diseases or stroke by green tea has been evidenced during a 4 year study.

Thiamine During Cooking
Vitamin B1 is among the nutrients most prone to destruction by cooking. In order to preserve as much of thiamine within food, it is recommended that you:

- Eat food as soon as it is cooked
- Try steaming instead of boiling vegetables
- Check recommended cooking times for meats etc.
- If boiling vegetables, use as little water as possible or use the cooking water in soups etc.

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