

# Alcohol Related Brain Injury (ARBI)

A guide for general practitioners and other health workers

ARBI refers to the physiological and biochemical changes in the brain associated with regular, prolonged and excessive use of alcohol. Injury to the brain is caused by thiamine deficiency due to poor nutrition and alcohol-related depletion of thiamine. The extent and nature of the ARBI occurs on a spectrum of severity.

## Risk factors

A person has a high probability of ARBI if:

- > the person is more than 40 years of age and has two or more of the following:
  - 10 years or more of regular harmful (60mgs daily) alcohol use
  - poor nutrition
  - regular binge pattern of alcohol use
  - experienced an episode of Wernicke's Encephalopathy
  - has needed multiple admissions for medically assisted alcohol withdrawal.

The main manifestations of significant ARBI are:

### *Disturbances in executive functions*

- > difficulties in planning and organising
- > problem solving difficulties
- > rigid 'concrete thinking' - problems with abstract thinking
- > rigid, repetitive behaviour patterns
- > inability to recognise consequences of behaviour
- > difficulty in practical goal setting
- > difficulty coping with environmental changes, even small changes in normal routines
- > difficulty learning new information such as new procedures or instructions.

### *Memory disturbances*

- > short-term memory problems (attention span usually within normal limits). The memory problems relate to the person's difficulty in retrieving information. Using prompts can facilitate short-term memory.

### *Non-verbal disturbances*

- > visual-spacial and perceptual-motor problems (impaired eye-hand coordination and perception-related tasks).

## Assessment

Psychometric assessment by a registered psychologist can help in determining the nature and extent of the ARBI symptoms and how they may impact on daily functioning and treatment.

The assessment needs to occur at least six weeks after alcohol withdrawal in the context of abstinence and proper nutrition. Repeat assessment

at three months is recommended, as significant recovery in functioning can occur during this time and up to 12 months after alcohol withdrawal.

ARBI can occur in the context of dementia, psychological problems (especially mood disorder), medical problems and pre-morbid functional deficits. As such, the clinical presentation may be confusing so it is important not to label the person with ARBI without further investigations.

NOTE: Given recent evidence of adolescent brain development, adolescents are at significant risk of psychological problems due to the effects of alcohol, including binge drinking, on the developing brain.

Patients with significant ARBI may:

- > confabulate - make up stories to compensate for memory loss
- > show chronological confusion
- > not comprehend the association between their symptoms and alcohol use and show no concern for their symptoms
- > demonstrate an acquiescent response set - appear to passively agree to do most things asked of them
- > show a lack of insight
- > demonstrate a lack of motivation
- > have significantly slowed reaction times
- > live in a restricted environment as they easily become disoriented in unfamiliar surroundings
- > have well-ingrained routines.

## Radiological correlates of ARBI

CT scans commonly show one or more of the following:

- > generalised cerebral atrophy
- > occasionally widening of the cortical sulci, especially the Sylvian Fissure
- > enlargement of the cerebral ventricles, especially the third.

However, there is not a close correlation between radiological findings and the severity of cognitive deficits.

## Responding to ARBI

If you suspect your patient has ARBI, it is important to share your thoughts with the patient in a sensitive, empathic manner.

If you suspect ARBI, inform them that some recovery of functioning, given abstinence and proper nutrition, is possible. Furthermore, there are strategies that they can be taught by a psychologist that will help them improve and cope with the cognitive effects of ARBI.

Long-term use of benzodiazepines should be avoided.

If ARBI is suspected, the patient should be counselled with regard to cessation of alcohol use and referred to an alcohol and other drug service. Phone the **Alcohol and Drug Information Service (ADIS) on 1300 13 1340**.

If clinical advice is needed, ring the **Drug and Alcohol Clinical Advisory Service on 7087 1742** (8:30am - 10pm 7 days/week including public holidays).

It is suggested that you advise them to:

- > reduce or cease alcohol use
- > eat a substantial meal every day
- > take a multivitamin capsule daily (with Zinc and Magnesium) and 100-300mgs Thiamine (Vitamin B1)
- > keep regular contact with their doctor/health worker for regular assessment of physical condition and general functioning.

ARBI does not affect:

- > well learned behaviour / skills (e.g. driving)
- > accumulated knowledge
- > long-term memory
- > vocabulary and language.

## Driving

Whereas the person may be able to go through the motions of driving a vehicle, their ability to multi-task, respond to emergency situations, navigate and reliably assess traffic conditions would be impaired according to the nature and extension of the ARBI. This would put them and the community at risk. As such, if you have any doubts about the person's abilities in the aforementioned areas, reference should be made to the Austroads 'Assessing Fitness to Drive'.

## Psychotherapy

If the investigations and/or the patient's self report regarding cognitive changes (especially short-term memory) suggest a probability of ARBI, then referral to a psychologist should be considered.

Psychotherapy or counselling should consider the nature and intensity of related cognitive deficits. Insight, problem solving and goal-oriented psychotherapies may have limited use given the nature and extent of the deficits.

## Family involvement

The involvement of significant others and social welfare agencies is strongly recommended in the management of these patients. There may need to be a consideration of legal capacity.

## Other alcohol-related conditions

Excessive use of alcohol over a prolonged period can also cause other neurological conditions.

## Cerebellar atrophy

This is associated with ataxia that mainly affects the lower limbs, manifesting in a wide based gait and poor coordination of leg movements. Abstinence, vitamin supplements and proper nutrition can result in some recovery of function, however, this is limited as the condition is usually permanent.

## Peripheral neuropathy

This condition refers to the direct and indirect effects of alcohol on the peripheral nerves. This can manifest as loss of ankle jerk, pain, tingling, numbness and 'pins and needles'. Muscle wasting may also be evident. Exacerbation of this condition can be prevented by taking vitamin supplements (especially thiamine) and abstaining.

## Wernicke's encephalopathy

This is an acute, life threatening condition usually associated with thiamine deficiency.

It manifests as one or more of the following:

- > global confusional state
- > oculomotor disturbances (ophthalmoplegia, nystagmus)
- > ataxia.

Only one of the above needs to be present in order for a diagnosis.

Given it is life-threatening, this condition should be regarded as a medical emergency. If untreated it can also develop into Korsakoff's Syndrome in the long term. The treatment consists of high doses of thiamine.

## Korsakoff's Syndrome

This can occur in the absence of Wernicke's encephalopathy. It can resemble a dementing process, however it can occur rapidly unlike the more common dementias.

This condition is characterised by global cognitive deficits marked by significant short-term memory, disorientation, rigid cognitive set and routines. It can include difficulty in learning new information and skills, paucity of initiation and elaboration in conversation, lack of insight into their condition and minimal emotional reactivity unless they are frustrated.

The condition is also associated with significant morphological brain changes as evidenced in brain scans.

The condition is irreversible.

## For more information

**Alcohol and Drug Information Service (ADIS)**

**Phone: 1300 13 1340**

**Confidential telephone counselling and information available between 8.30am and 10pm every day.**

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