



# Alcohol / Drug Related Brain Injury

**Alcohol is a poison, or neurotoxin, that can cause physical injury to the brain. This is known as Alcohol Related Brain Injury (ARBI). Other drugs, which fall into the category of stimulants, depressants or hallucinogens, can also lead to impairments. A person under the influence of alcohol or drugs is also at risk of Traumatic Brain Injury (TBI) due to accidents.**

## In this article

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## Alcohol Related Brain Injury (ARBI)

Moderate to high levels of alcohol consumption over a long period of time, or excessive drinking over shorter periods, can lead to ARBI. In the short term, it can reduce inhibitions and affect judgement, balance and coordination, increasing the risk of Traumatic Brain Injury (TBI) as a result of accidents.

A major reason for ARBI is thiamin (vitamin B1) deficiency. Thiamin, which is an essential nutrient for healthy brains, is not produced by the body and must be consumed in food or supplements. Alcohol interferes with the absorption of thiamin due to swelling of the stomach lining. Excessive drinking is often associated with a poor diet, which means thiamin can be lacking in the first place.

The effects of ARBI can result in:

- impaired judgment and self-awareness
- social isolation
- depression and mood disorders
- lack of motivation
- distractibility and concentration issues
- impulsivity and reckless behaviour.

There are various types of ARBI depending on where the brain injury occurs:

- Cerebellar atrophy – causes balance and coordination issues
- Peripheral neuropathy – leads to sensory issues with the hands, feet and legs
- Hepatic encephalopathy - can result from liver disease

- Frontal lobe dysfunction – affects cognition, behaviour and personality
- Wernicke's encephalopathy – can develop due to extreme thiamine deficiency
- Korsakoff's amnesic syndrome – also a result of extreme thiamine deficiency.

## Drug related brain injury

The toxic effect of drugs varies according to the type of drug and how much is taken.

The consequences of drug misuse can be serious and include:

- Seizures
- Stroke
- Heart attack
- Hypoxic brain injury

Psychoactive drugs can be divided into three general categories according to how they affect the central nervous system:

- Stimulants
- Depressants
- Hallucinogens

Stimulants stimulate the central nervous system, increasing alertness and physical activity. Legal drugs include nicotine from cigarettes and caffeine in coffee or cola drinks. Illicit drugs in this area include amphetamines and Ecstasy. Many drugs commonly used in the treatment of brain injury can cause serious illness or death when mixed with ecstasy. For example anti-depressant drugs, such as Prozac, Aropax, Zoloft, Nardil, Parnate and Marplan, can interact dangerously.

Depressants depress the central nervous system. In a normal dose, they can lead to euphoria, relaxation, reduced coordination, disinhibition and lack of concentration. Larger doses may lead to nausea, unconsciousness and even death. The most popular legal depressant is alcohol. Cannabis is the most popular illegal depressant. Chronic cannabis use can exacerbate many of the problems experienced by people with an acquired brain injury and delay or prevent relearning lost skills.

Benzodiazepines are prescription medications that are often used for their depressant effects. The opiate family of drugs includes heroin, morphine, codeine and pethidine. Heroin is particularly dangerous if there is an overdose, especially when injected. Many deaths have happened when heroin has been used with other central nervous system depressants, like alcohol or benzodiazepines.

Inhalants are a range of chemical products that are inhaled to produce a high feeling. Many of these have a depressant effect and can be obtained from a variety of household products such as glue, aerosols and petrol. The long-term use of inhalants can cause brain damage and damage to the central nervous system as well as hearing loss, bone marrow, liver and kidney damage and depletion of blood-oxygen levels.

Hallucinogens affect a person's perceptions, sensations, thinking and emotions. Examples include LSD, mescaline and psilocybin. Psilocybin is found in certain mushrooms that are known as "magic mushrooms" or "golden tops".

## References and further information

Benzo.org.uk: Benzodiazepines: How they work and how to withdraw

Epilepsy Action: Alcohol

Department of Health – Information about drugs

HealthDirect – What is addiction?

Drug information online

New Scientist: Long-term Marijuana use may fog the brain

National Institute on Drug Abuse, Neurological Effects

Brain Injury Association of American – The Solution to Opioids is Treatment