

# Wernicke-Korsakoff syndrome

This disorder consists of two conditions: **Wernicke's encephalopathy** and **Korsakoff syndrome**. Wernicke's encephalopathy is a rapid, life-threatening brain reaction to severe thiamine deficiency. This reaction can damage certain brain areas. Korsakoff syndrome can develop after the onset of Wernicke's encephalopathy. Korsakoff syndrome develops gradually; it is caused by damage to small areas in the middle region of the brain and may severely affect short-term memory.

Due to its association with **heavy alcohol consumption**, Wernicke-Korsakoff syndrome has also been referred to as alcoholic dementia, alcohol-related dementia or alcoholic encephalopathy.

## Symptoms of Wernicke's encephalopathy develop rapidly and require immediate medical attention.

If a person who is malnourished – meaning they do not eat enough food or do not eat nutritious food – **suddenly** starts experiencing the following symptoms, Wernicke's encephalopathy should be suspected:

- Confusion
- Difficulty walking
- Poor coordination and balance
- Changes in vision (such as double vision or involuntary eye movements)

These symptoms can progress rapidly to coma, low blood pressure and hypothermia.

## If Wernicke's encephalopathy goes untreated or is not treated soon enough, symptoms of Korsakoff syndrome may result.

Symptoms of Korsakoff syndrome generally **appear gradually**. People with Korsakoff syndrome typically experience **short-term memory loss**. As with any condition that affects short-term memory, people with Korsakoff syndrome may make up imaginary experiences to help fill in the gaps in their memory. Other symptoms of Korsakoff syndrome include:

- Difficulty learning new information or skills
- Lack of insight into own memory loss
- Hallucinations
- Repetitive behaviour and speech

## Wernicke's encephalopathy is diagnosed by assessing patterns and types of symptoms to rule out other conditions.

A doctor will also assess for at least two of the following conditions:

- Nutritional deficiency
- Oculomotor abnormalities (such as double vision or rapid involuntary eye movements)
- Cerebellar dysfunction (such as uncoordinated movements, imbalance or speech problems)
- Altered mental state or mild memory impairment

### Thiamine deficiency link

- Thiamine (vitamin B1) helps our brain cells make energy from sugar. While our bodies cannot produce thiamine, they can store thiamine from our diet (e.g. whole grains, meat and fish) or supplements.
- When thiamine levels fall too low (known as thiamine deficiency), our brain cells cannot make enough energy to function properly. Heavy alcohol consumption and poor nutrition are the most common causes of thiamine deficiency.
- Other conditions that may result in thiamine deficiency and increase the risk of developing Wernicke-Korsakoff syndrome include: eating disorders, severe vomiting, cancer, some kidney problems and certain cancer treatments (such as chemotherapy).

A diagnosis will also include a thorough assessment that may include:

- Neurological and psychiatric exams
- A complete review of the person's medical and family history (including daily alcohol consumption habits)
- Blood tests to rule out other causes of the person's symptoms
- CT or MRI of the brain to rule out other causes of the person's symptoms

**Korsakoff syndrome is diagnosed using the same or similar assessments and medical tests used for suspected Wernicke's encephalopathy.**

- If the person is known to be heavy alcohol consumer, they must first stop drinking alcohol for several weeks to allow time for the immediate effects of heavy alcohol consumption and withdrawal to slow down. During this time, the person should receive a high-dose supplementation of thiamine.
- If the person's symptoms continue to worsen without the consumption of alcohol, then they may be diagnosed with another type of dementia, such as Alzheimer's disease.
- Alcohol-related dementia typically stabilizes; this is different than in Alzheimer's disease, where there will be obvious decline in memory and function.

**If treated promptly, most symptoms of Wernicke-Korsakoff syndrome are reversible and can be prevented from progressing.**

- It is estimated that about **25%** of people who develop Korsakoff syndrome recover, **50%** improve but don't fully recover and **25%** do not recover.
- Treatment begins in hospital, where the **focus is on improving levels of thiamine through vitamin B1 supplements**. These are often administered into a vein or into a muscle.
- A **balanced diet, proper hydration and support to stop drinking** are also a part of treatment.
- Alcohol drinkers should stop drinking alcohol to achieve full benefits. If they continue to drink alcohol, further damage to the brain will often result.
- Because alcohol withdrawal can quickly use up the body's levels of thiamine, heavy consumers of alcohol may need to seek medical care to stop drinking.

Typically, recovery can take up to one year before stability is reached. Improvements in memory function are often slow and may not be completely restored.

**Support is available.**

Contact your local Alzheimer Society for more information about dementia.

Visit [alzheimer.ca/helpnearyou](https://alzheimer.ca/helpnearyou)

**This resource is informed by research and the experiences of people living with dementia and their caregivers.** We thank Dr. Elie Isenberg-Grzeda, MD, Department of Psychiatry, University of Toronto, for his generous contribution to the development of this resource.

To provide feedback on this factsheet, please email [publications@alzheimer.ca](mailto:publications@alzheimer.ca)

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