



Alcohol Related Dementia (ARD)

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OVERVIEW OF SESSION

- **Dementia Defined**
- **Differentiation**
 - **Alzheimer's Disease and Alcohol-Related Dementia**
- **Alcohol-Related Dementia**
- **Wernicke-Korsakoff Syndrome**
 - **Symptoms, Diagnosis, Treatment, Prevention**

Dementia (Neurocognitive Disorder) Defined

- Newly named “major neurocognitive disorder (NCD)” in the DSM-5
- A clinical syndrome characterised by cognitive impairment as the most prominent feature; characterized by deficiencies in thinking and related processes
- Characterized by acquired deficits, which represent a decline from previous functioning
- Social, Occupational Activities and Behaviour are influenced
- Decline in the activities of daily living

• APA, 2013

DSM-5 Criteria – Cognitive Impairment & Dementia

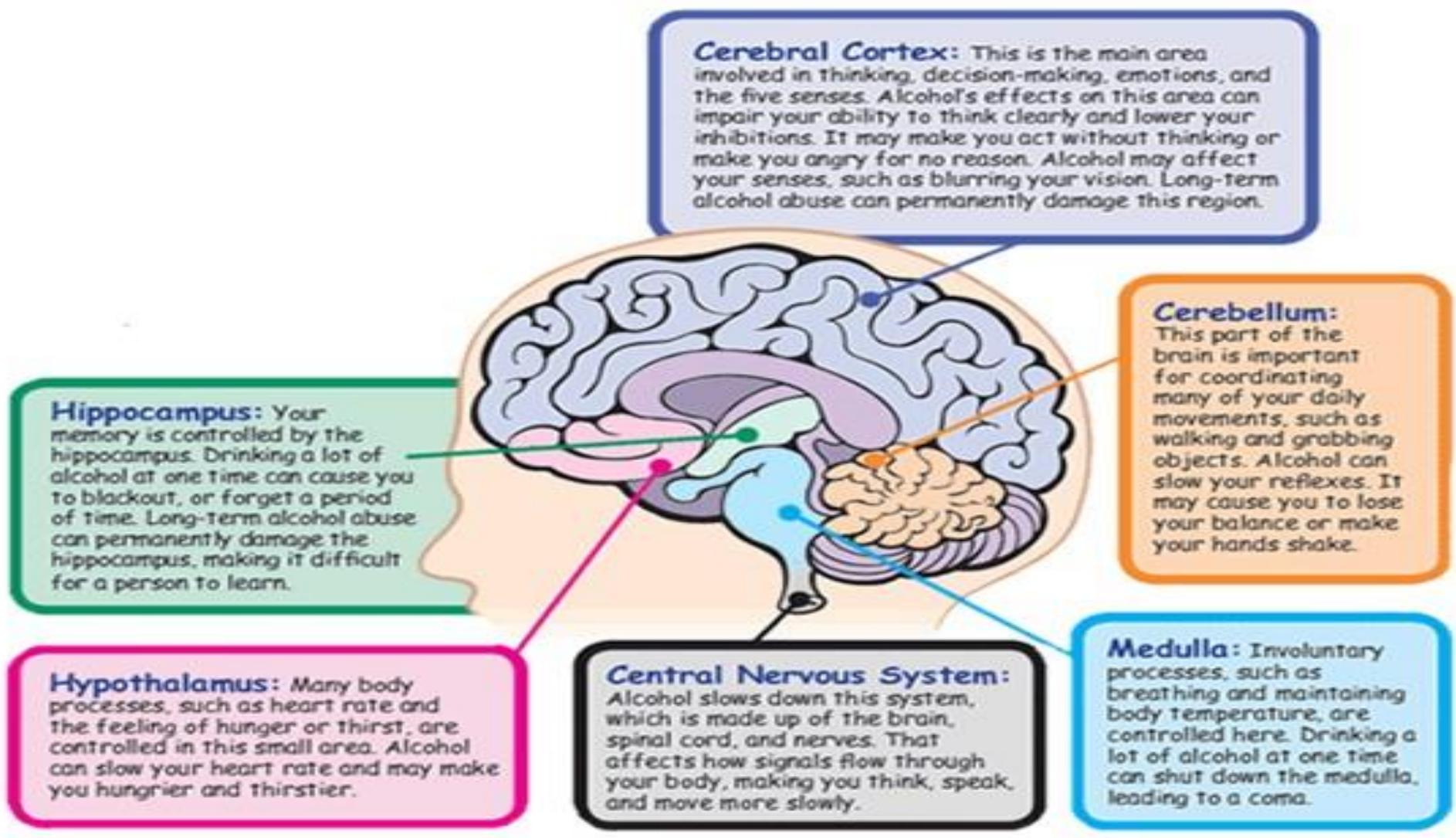
- **A decline in:**
- Complex attention
- Executive function
- Learning and Memory
- Language
- Perceptual-motor function
- Social cognition

• APA, 2013

Alcohol-Related Dementia (ARD)

- ARD broad term currently most used
- Also referred to as Alcohol-Related Brain Damage
- Sometimes referred to as Alcohol (or Alcoholic) dementia
- A common form of ARD is known as “wet brain” or Wernicke-Korsakoff Syndrome, characterized by short-term memory loss and thiamine (vitamin B₁) deficiency

• APA, 2013



Cerebral Cortex: This is the main area involved in thinking, decision-making, emotions, and the five senses. Alcohol's effects on this area can impair your ability to think clearly and lower your inhibitions. It may make you act without thinking or make you angry for no reason. Alcohol may affect your senses, such as blurring your vision. Long-term alcohol abuse can permanently damage this region.

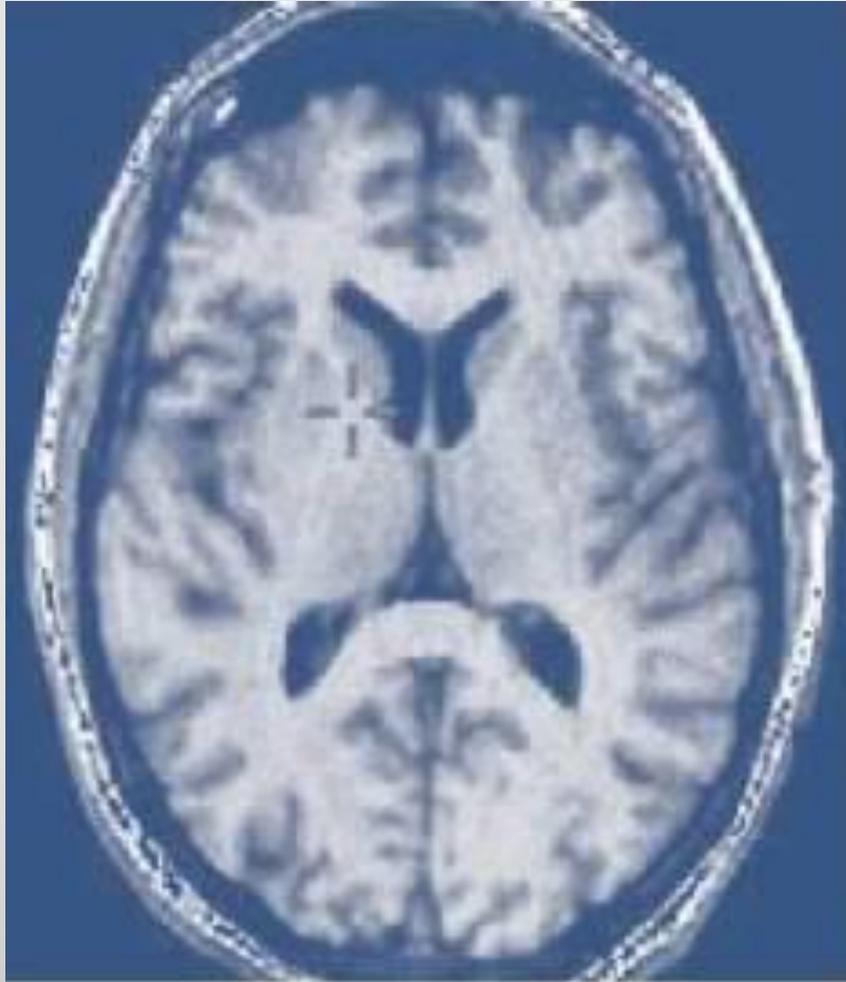
Cerebellum: This part of the brain is important for coordinating many of your daily movements, such as walking and grabbing objects. Alcohol can slow your reflexes. It may cause you to lose your balance or make your hands shake.

Hippocampus: Your memory is controlled by the hippocampus. Drinking a lot of alcohol at one time can cause you to blackout, or forget a period of time. Long-term alcohol abuse can permanently damage the hippocampus, making it difficult for a person to learn.

Hypothalamus: Many body processes, such as heart rate and the feeling of hunger or thirst, are controlled in this small area. Alcohol can slow your heart rate and may make you hungrier and thirstier.

Central Nervous System: Alcohol slows down this system, which is made up of the brain, spinal cord, and nerves. That affects how signals flow through your body, making you think, speak, and move more slowly.

Medulla: Involuntary processes, such as breathing and maintaining body temperature, are controlled here. Drinking a lot of alcohol at one time can shut down the medulla, leading to a coma.



Normal



Not Normal

Comparison

Alcohol-Related Dementia

- Toxic effect of alcohol on the brain and liver
- Vitamin deficiency (particularly thiamine)
- General malnutrition
- Intoxication/withdrawal cycle
- Increased risk of stroke and head injury

• Perminder, 2016

Alzheimer's Disease

- Amyloid plaques and neurofibrillary tangles cause nerve cell death
- Chemicals involved in the transmission of messages within the brain decrease
- Brain damage becomes more extensive as disease progresses
- Brain shrinkage

Alzheimers Society, 2009

Comparison Statistical Differences

Alzheimer's Disease

- 65% of all cases of Dementia

• Alzheimer Society of MB

Alcohol-Related Dementia

- 4 – 20% of all cases of dementia – alcohol plays a role

• Moriyama, 2006

Comparison Statistical Continuities

- Approximately 22-29% of adults with dementia are also heavy drinkers.
- Between 9-23% of older adults with alcohol use disorder have a non-alcohol related diagnosis of dementia.

- Moriyama, 2006

Alcohol-Related Dementia vs. Alzheimer's Disease

- The signs and symptoms of ARD are very similar to the symptoms present in other types of dementia, making ARD difficult to diagnose.
- Very few qualitative differences between the way that ARD and Alzheimer's disease present and therefore often difficult to distinguish between the two on symptom presentation. (without observation over time)

• Pingitore 2016

Signs and Symptoms of ARD

- Language Impairment
- Decline in complex motor tasks i.e. getting dressed
- Psychiatric issues including psychosis, depression, anxiety, personality changes, apathy
- Heavy alcohol use related damage:
 - the nerves – arms and legs i.e. peripheral neuropathy
 - The cerebellum – controls coordination and can lead to ataxia
 - Carlen, 1994

Diagnosing ARD

- The development of multiple cognitive deficits with the presentation of both:
 - Memory Impairment (learning new info or recalling previously learned info)
 - One (or more) of the following cognitive issues:
 - Aphasia
 - Apraxia
 - Agnosia
 - Executive functioning disturbance

• EFNS, 2010

Problem with current criteria?

- Criteria are vague and subjective
- Inspired by the clinical presentation of Alzheimer's Disease
- Poorly adapted to the diagnosis of all other dementia's
 - Oslin, 1998; APA, 2013

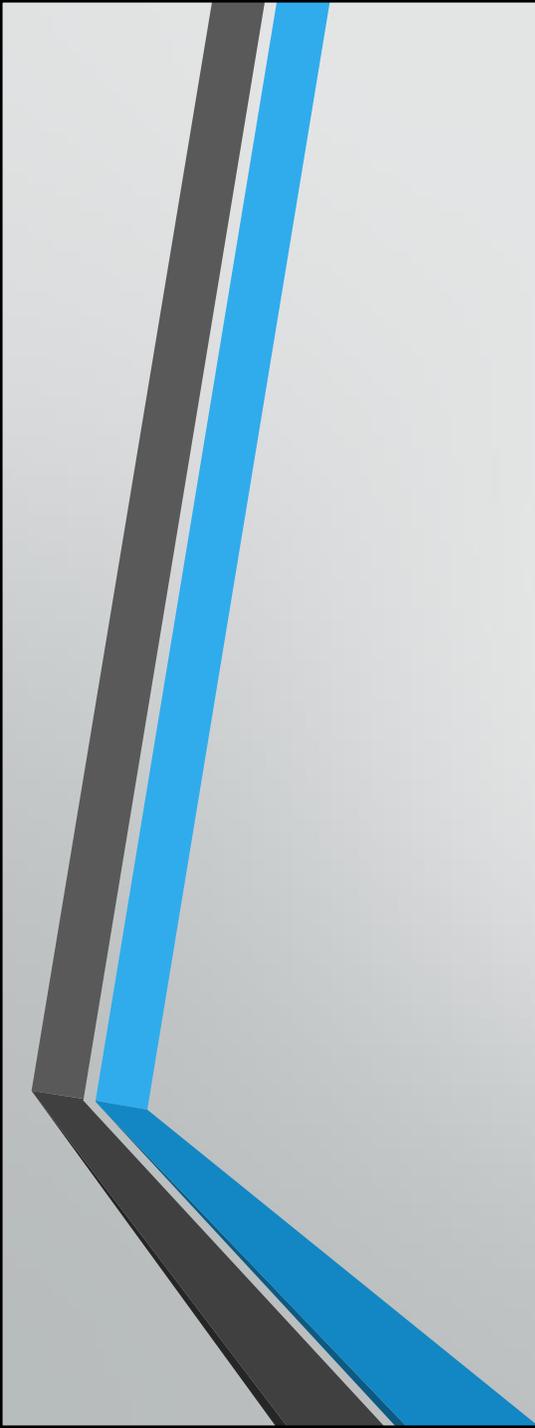
Oslin's (1998) Proposed Classification of ARD

- **Probable Alcohol-Related Dementia**

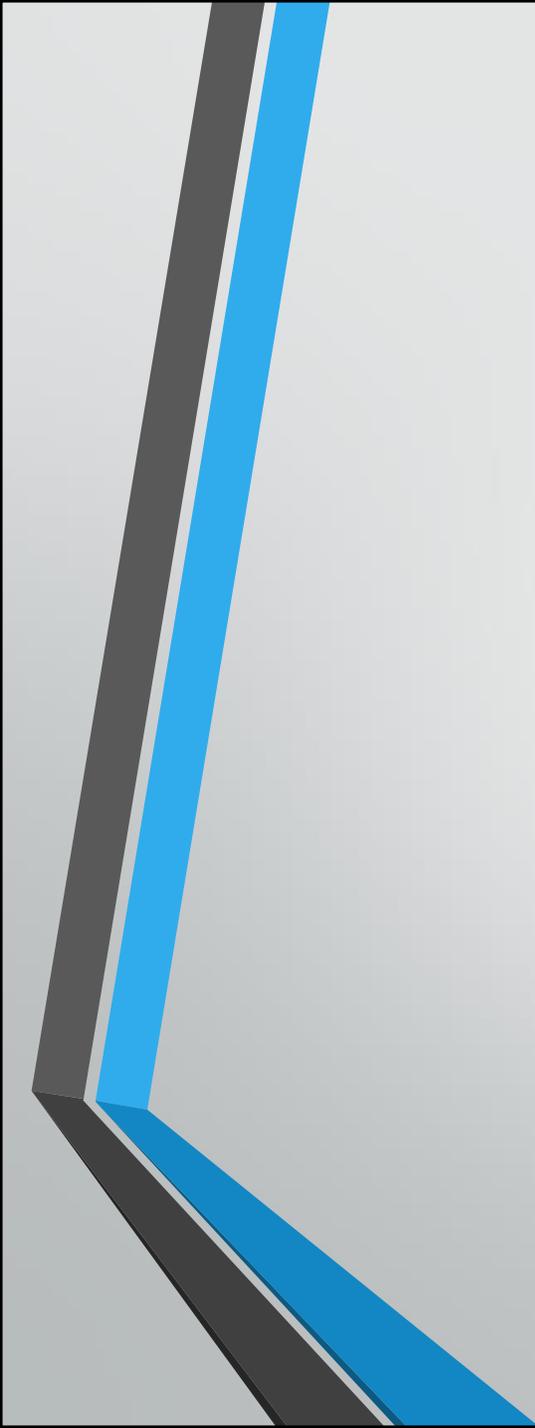
- A clinical diagnosis of dementia at least 60 days after last alcohol exposure
- Heavy alcohol use = 35 standard drinks/week for men and 28/week for women for a period of 5 years or more.
- The period of significant alcohol use must occur within 3 years of the initial onset of dementia.

Oslin's (1998) Proposed Classification of ARD

- Alcohol related hepatic, pancreatic, gastrointestinal, cardiovascular, or renal disease (also includes other end organ damage)
- Ataxia
- Cognitive impairment stabilizes or improves after the 60 days – neuroimaging may be utilized to confirm before and after
 - Neuroimaging evidence of cerebellar atrophy/shrinkage



Wernicke Who???



Nick M., 53, from the UK was a successful business owner and electrical engineer. He is 1 in 8 individuals with alcohol use disorder who end up developing Wernicke-Korsakoff's Syndrome. The syndrome is usually diagnosed in men between the ages of 45 though 65. Nick found himself in the hospital, not knowing where he was and was immediately treated with B1. It took him over a year to "recover ". He still has problems with his memories and is seemingly a shell of the man who was a successful business owner. He now fills his days framing pictures as a form of re-establishing himself into a productive member of society.

Unknown Author, 2016

History

- **Background:** In 1881, Carl Wernicke (physician, psychiatrist, neurologist) first described an illness that consisted of paralysis of eye movements, ataxia, and mental confusion in 3 patients. The patients, 2 males with alcoholism and a female with persistent vomiting following sulfuric acid ingestion, exhibited these symptoms. Wernicke also detected hemorrhaging affecting areas of the gray matter.

- Adams, 1989

History

- S.S. Korsakoff, a Russian psychiatrist, described the disturbance of memory in the course of long-term alcoholism in a series of articles from 1887-1891. He termed this syndrome psychosis polyneuritis, believing that these typical memory deficits, in conjunction with polyneuropathy (Wernicke's encephalopathy), represented different facets of the same disease.

- Adams, 1989

Wernicke-Korsokoff Syndrome ("Wet-Brain", Alcohol Encephalopathy, Korsokoff's Psychosis)

- Wernicke Encephalopathy and Korsokoff Syndrome are different conditions; both due to brain damage caused by lack of Thiamine (B1).
- Wernicke-Korsokoff Syndrome/Psychosis (WKS) is the combined presence of both disorders.
- Preventable, treatable, life-threatening neuropsychiatric syndrome generally associated with chronic alcohol abuse.
- Characterized by damage to the brain that can lead to irreversible brain damage, and memory loss and can result in death.

• Adams, 1989

The Role of Thiamine (B₁) & Wernicke's

- Thiamine (B₁) helps brain cells produce energy from sugar. When levels fall below a specific threshold, brain cells are unable to generate enough energy to function properly.
- Alcohol – Thiamine interaction:
 - Ethanol interferes directly with thiamine uptake in the gastrointestinal tract
 - Ethanol disrupts thiamine storage in the liver

• APA, 2000

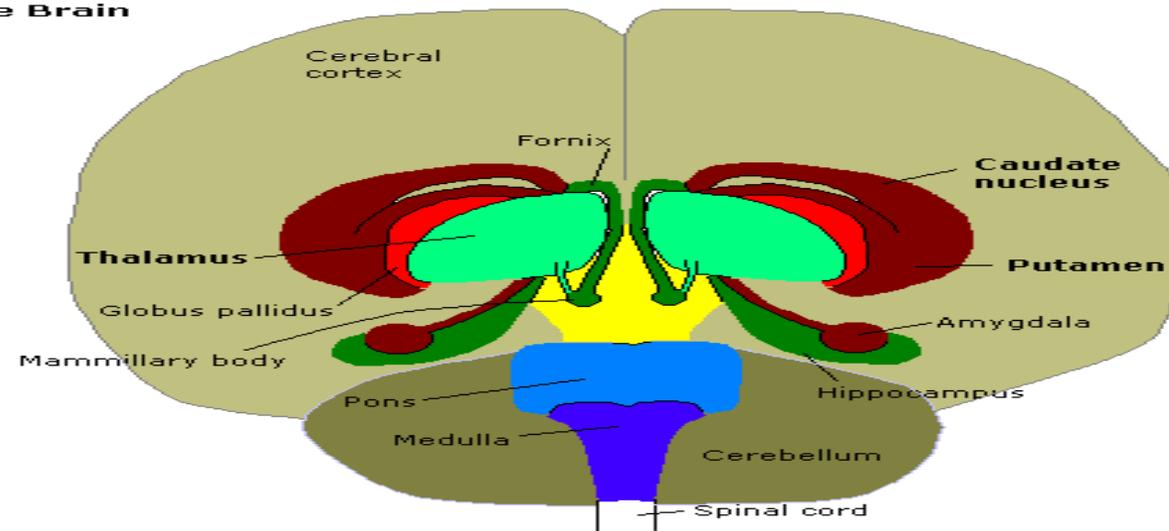
Classic Triad of Symptoms for Wernicke's

- Encephalopathy - demonstrative of damage to the frontal lobes, mammillary bodies, thalamus, cerebellum
- Ataxic Gait
- Some variant of oculomotor dysfunction

Perminder, 2014

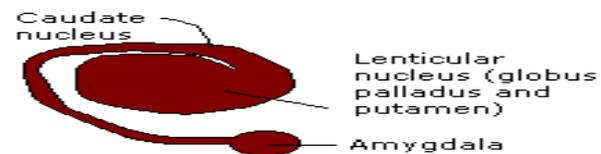
Mammillary Bodies

The Brain



The brain as viewed from the underside and front. The thalamus and Corpus Striatum (Putamen, caudate and amygdala) have been splayed out to show detail.

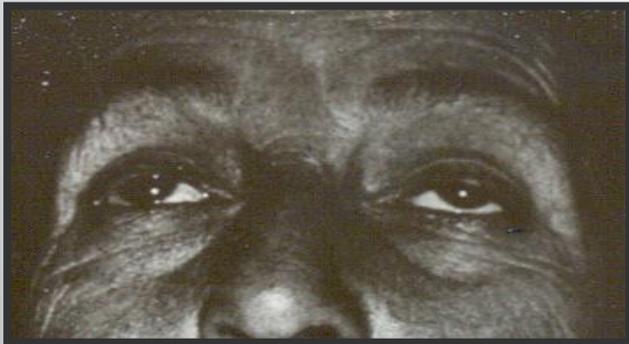
Corpus Striatum



Presentation of Patient with Wernicke-Korsokoff Syndrome

OPHTHALMOPLEGIA (PALSY)

Within 3 days



Clinical Considerations for Diagnosis

- Thorough nutritional and alcohol use history (with confirmation from an informant if possible)
- Evidence of chronic alcohol misuse and suspected WE requires immediate treatment with parenteral thiamine - Dose 200mg/3x per day until adequate plasma level attained
- Baseline and ongoing cognitive assessment
- Neuroimaging if possible to determine atrophy in mammillary bodies, thalamus and cerebellum

Clinical Diagnosis of Wernicke's Encephalopathy:

- Thiamine deficiency and two of the following:
 - Dietary deficiencies
 - Eye signs
 - Cerebellar dysfunction
 - Altered mental state or mild memory impairment

Moriyama, 2006

DIAGNOSIS OF WERNICKE-KORSOKOFF SYNDROME

- Only 20% of cases are identified accurately.
- Failure to accurately diagnose and provide treatment leads to death in approximately 20% of cases.
- Approximately 75% are left with permanent brain damage.
- Of these 75%, 25% will require long term personal care.

• DSM, 2013

WKS

Preventable & Treatable

Prevention

- Limit alcohol use
- Thiamine rich diet and/or supplements
- Counselling and support for addiction related issues

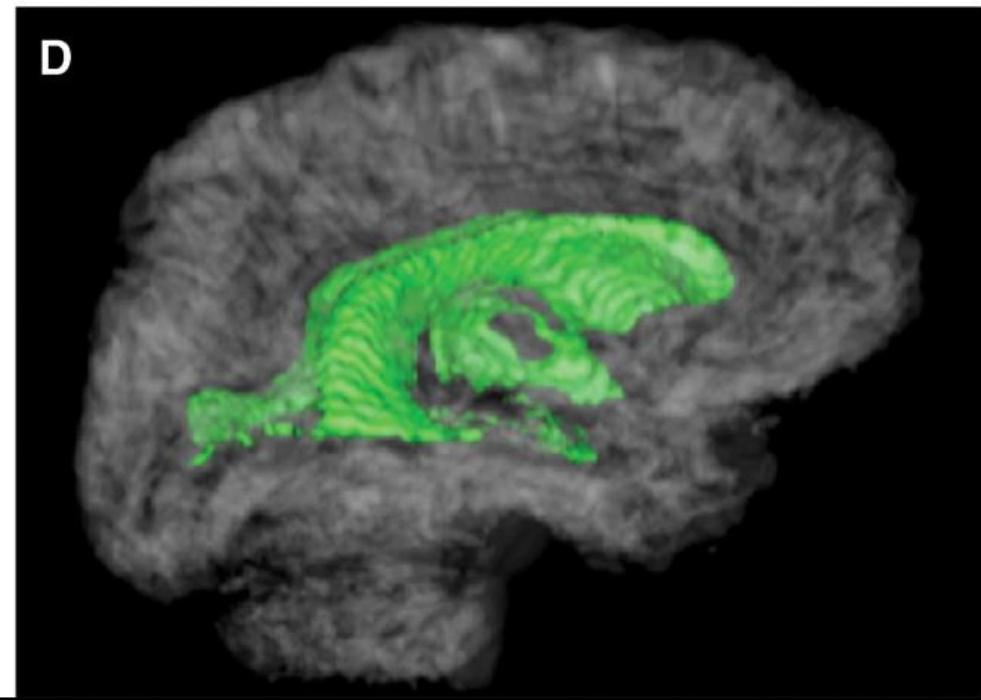
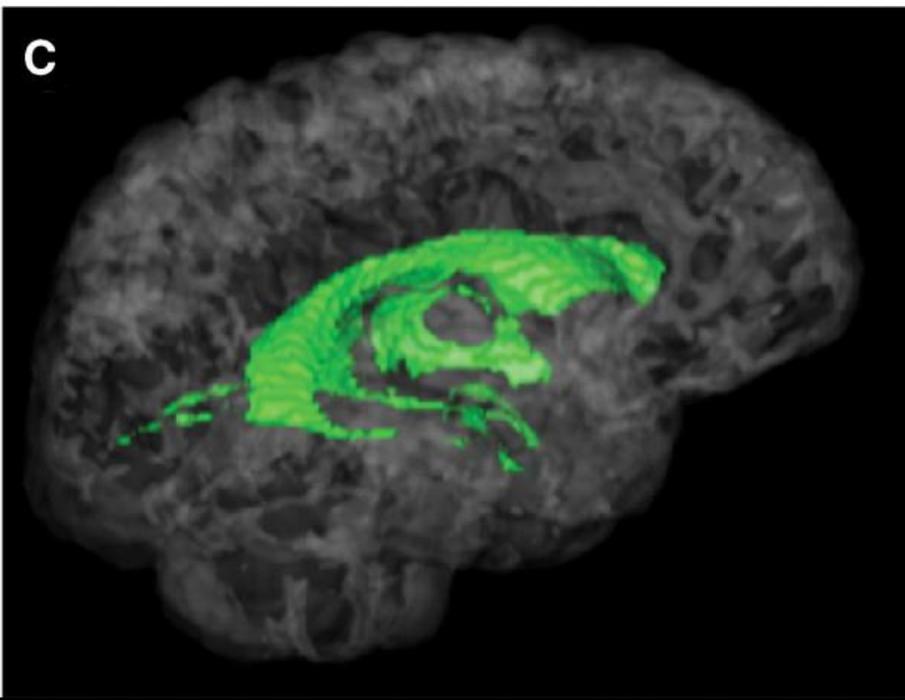
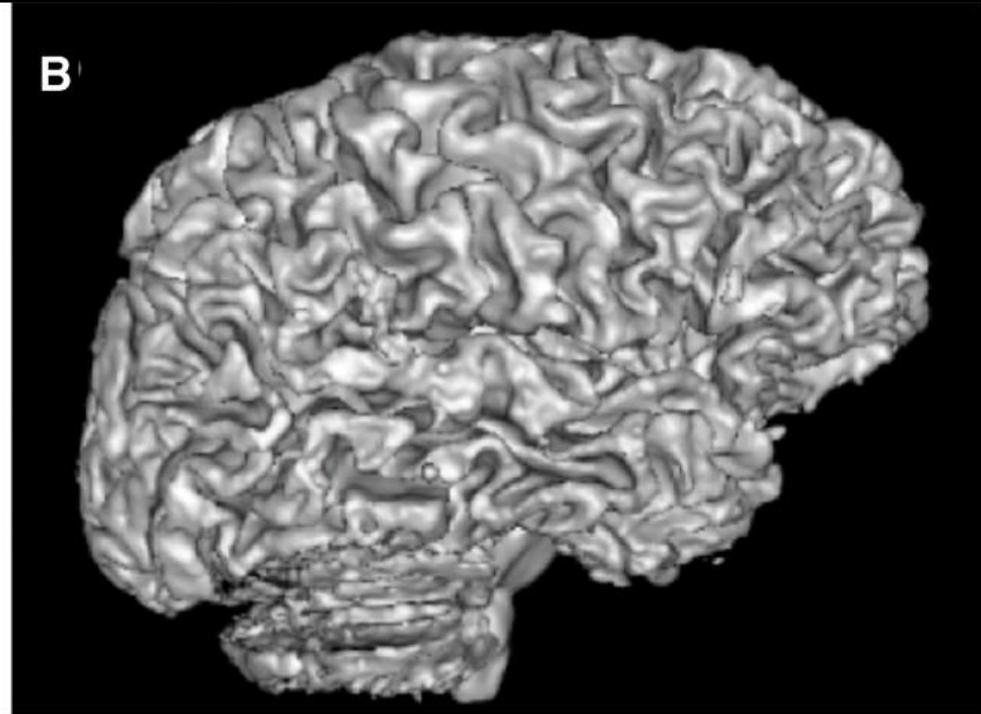
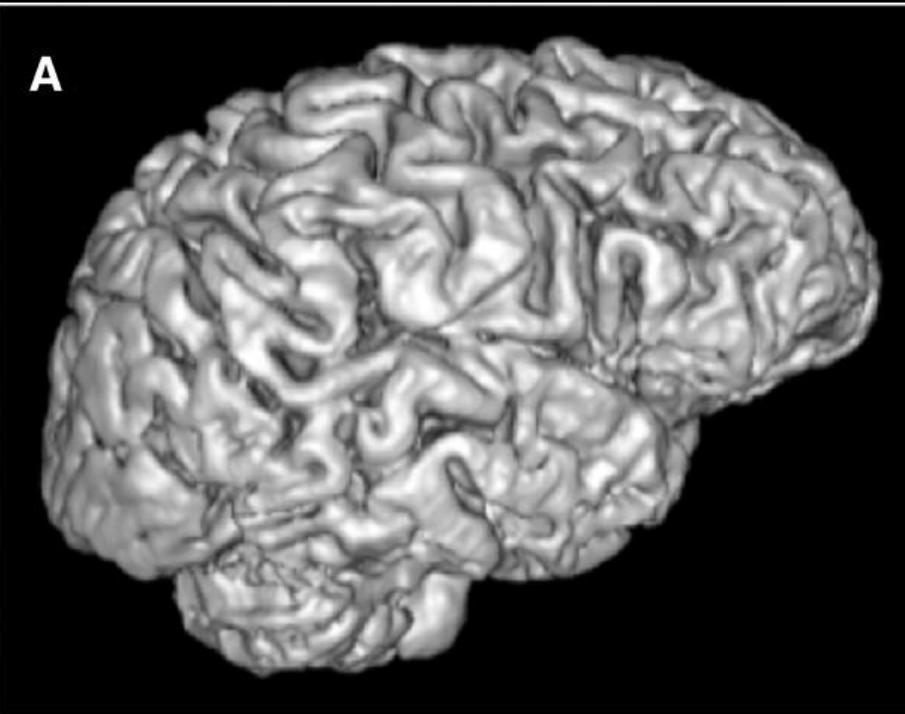
Treatment

- **Wernicke:** Treat aggressively with high dose intravenous thiamine
- **Korsokoff:** If no improvement in mental state after IV thiamine; harm reduction of oral thiamine to prevent further injury
- Diet, Physical Activity, Mental Stimulation, Counselling and Support

LONG TERM IMPACT

- If able to abstain from heavy alcohol use, receive timely thiamine therapy and adopt a healthy lifestyle, research demonstrates the following:
 - 25% will eventually recover
 - 50% will show some improvement
 - 25% will remain unchanged

DSM, 2013



Epidemiology

- Onset of alcohol-related dementia can occur as early as age 30 years
- Generally onset is anywhere from age 50-70 years
- Onset and severity directly correlated to amount of alcohol that a person consumes over their lifetime

- Buddy, 2016; Carlen, 1994

Epidemiology

- Epidemiological studies show an association between long-term alcohol intoxication and dementia
- There is a high incidence of Alcohol Abuse in older persons
- Alcohol related dementia is under-diagnosed
 - John Libbey Eurotext, 2016

Comparison of Damage

W-K Syndrome

- Lesions on the thalamus, damage to mammillary bodies, possible frontal lobe atrophy, cerebellum deficits
- Disorientation, attention deficits and confabulation
- Reversibility – likely with Wernicke's encephalopathy; unlikely with Korsakoff's syndrome

Alzheimer's Disease

- Global atrophy, medial temporal lobe with amyloid plaques and neurofibrillary tangles
- Aphasia, apraxia, agnosia, disturbance in executive functioning
- Reversibility – progressive degenerative disease with no known cure

Case Example

- A 37 year old first nations man arrived at a hospital complaining that his wife had placed poisonous ants in his hat. His face is covered with cuts and scratches from persistent scratching. On further examination, it is clear that he is confused, has mildly slurred speech, tremors and mint odor on his breath. _ **Conclusion?**

Case Example

- A 44 year old white female, 2 days postsurgical hysterectomy, is complaining of rabbits running across the room and demands the nurses stop intruding “every minute of every hour”. She is tremulous, disoriented to time and place, and irritable. A review of her lab data shows an elevated gamma-glut amyl transferase (GGT) and elevated liver function test values. White blood cell count is normal. Urinalysis is normal and blood alcohol level is 0.01. **Conclusion?**

Case Example

- Early morning hours a 66 year old male presents at the ER appearing to be under the influence of alcohol and extremely intoxicated. This individual presents at the ER on a frequent basis and is known in the community to be homeless, to abuse alcohol and solvents. The male falls down several times and is incoherent. After 15 minutes, he settles in a position on the floor and appears to be sleeping. Police are called and the man is escorted to a holding cell “drunk tank”. **Problem?**

Prevention

- The low cost and safety of oral thiamine argues for widespread supplementation in alcohol abusers and others at risk for developing thiamine deficiency.
- Fortification of alcoholic beverages has also been proposed – not a useful preventative strategy.

- Adams, 1989; Pingitore, 2016

Support & Counselling Considerations

- Education, support and counselling for the person with ARD and the Caregiver(s)/Care-partner(s) regarding Alcohol Use Disorder and Addiction
 - Community-based counselling options
 - Residential Treatment options
 - Individual and group counselling options
 - Self-help group options e.g. Alcoholics Anonymous, Co-Dependent's Anonymous

Support & Counselling Considerations

- Valuing the person, which includes:
 - Information about trying to be flexible and tolerant.
 - Listening to the person with dementia.
 - Showing affection.
 - Finding activities which can be done together.

Support & Counselling Considerations

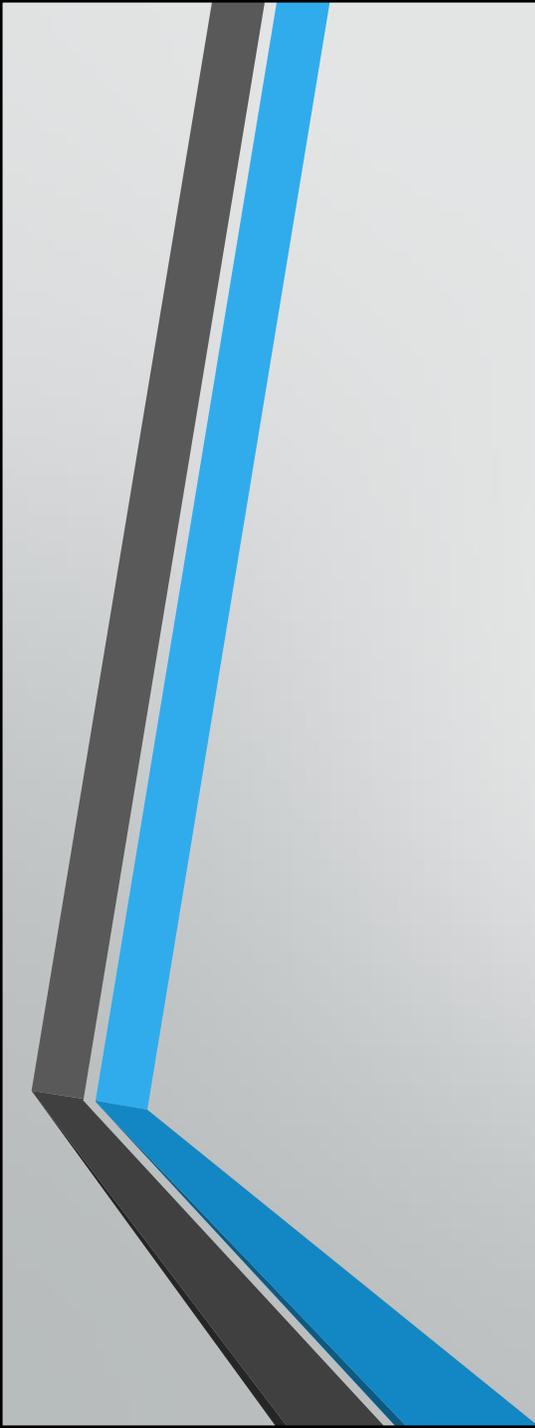
- Showing respect:
 - Using the person's preferred name and form of address (ie first name vs title and surname).
 - Establishing cultural and religious preferences - dress, food, religious occasions, appropriate touch and gestures, etc.
 - Not patronising or talking down to the person with dementia, but being kind and reassuring.

Support & Counselling Considerations

- Avoiding talking over the head of the person with dementia about them as if they weren't there.
- Avoiding scolding and criticising.
- Respecting privacy.
- Being sensitive if help is needed with personal activities such as washing or going to the toilet.

Support & Counselling Considerations

- Helping the person with dementia make simple choices.
- Looking for activities and tasks the person with dementia can manage and enjoy. Doing things WITH them rather than FOR them where possible.
- Helping the person with dementia look their best, which impacts positively on their self-esteem.
- Looking after oneself while still caring for a person with dementia.



Questions?