



# **ECHO IDAHO:** **Opioids, Pain & Substance Use Disorders**

## **Long-Term Complications of Alcohol Use**

### **9/12/2024**

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None of the planners or presenters for this educational activity have relevant financial relationship(s) to disclose with ineligible companies whose primary business is producing, marketing, selling, re-selling, or distributing healthcare products used by or on patients.

# Disclosures

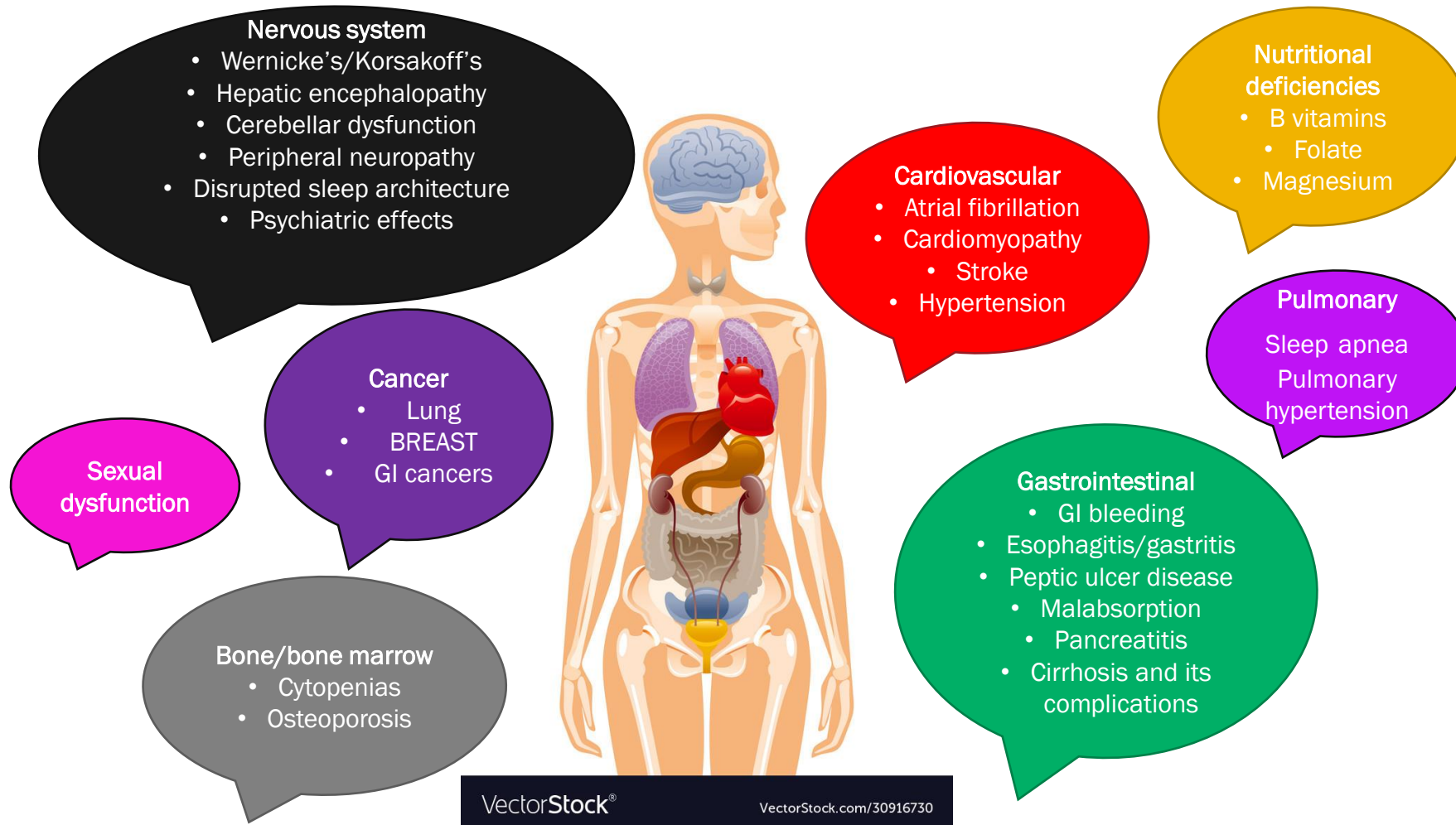
I have no financial interests or conflicts to disclose

# Learning Objectives

Disclaimer: this 20 minute overview is far from comprehensive!

- Understand that alcohol affects every organ system in the body, with widespread physiologic consequences
- Recognize common, but less frequently discussed medical complications of alcohol use
- A note about alcohol and women

# “Alcohol is rather promiscuous”<sup>1</sup>



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\*Not comprehensive!

# Starting at the mouth...

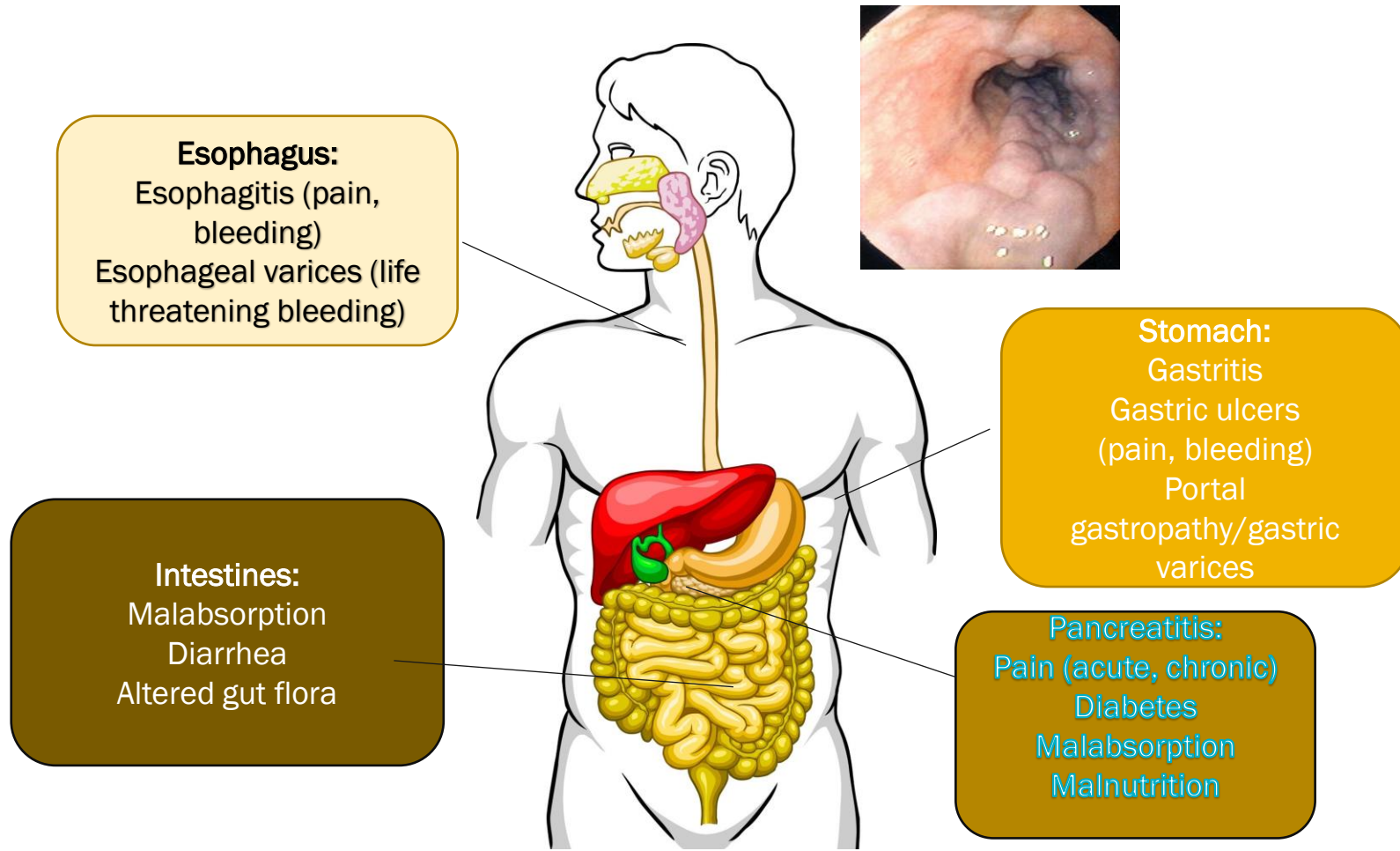


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# Alcohol-related liver disease

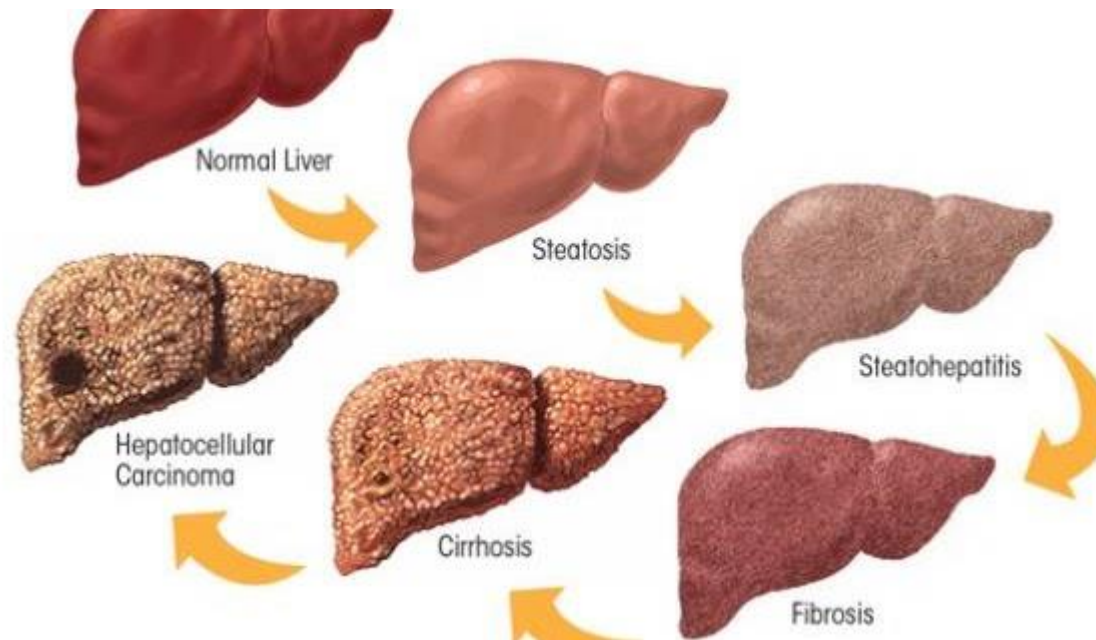
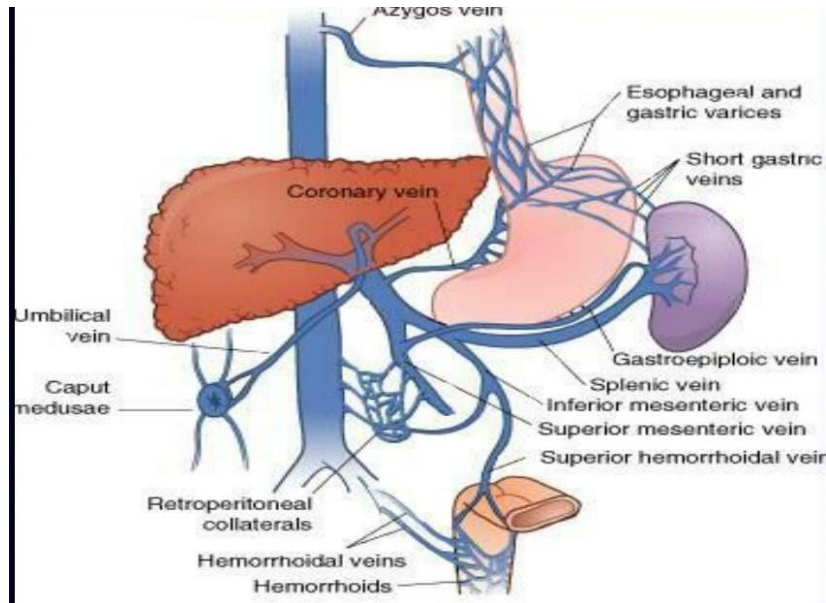


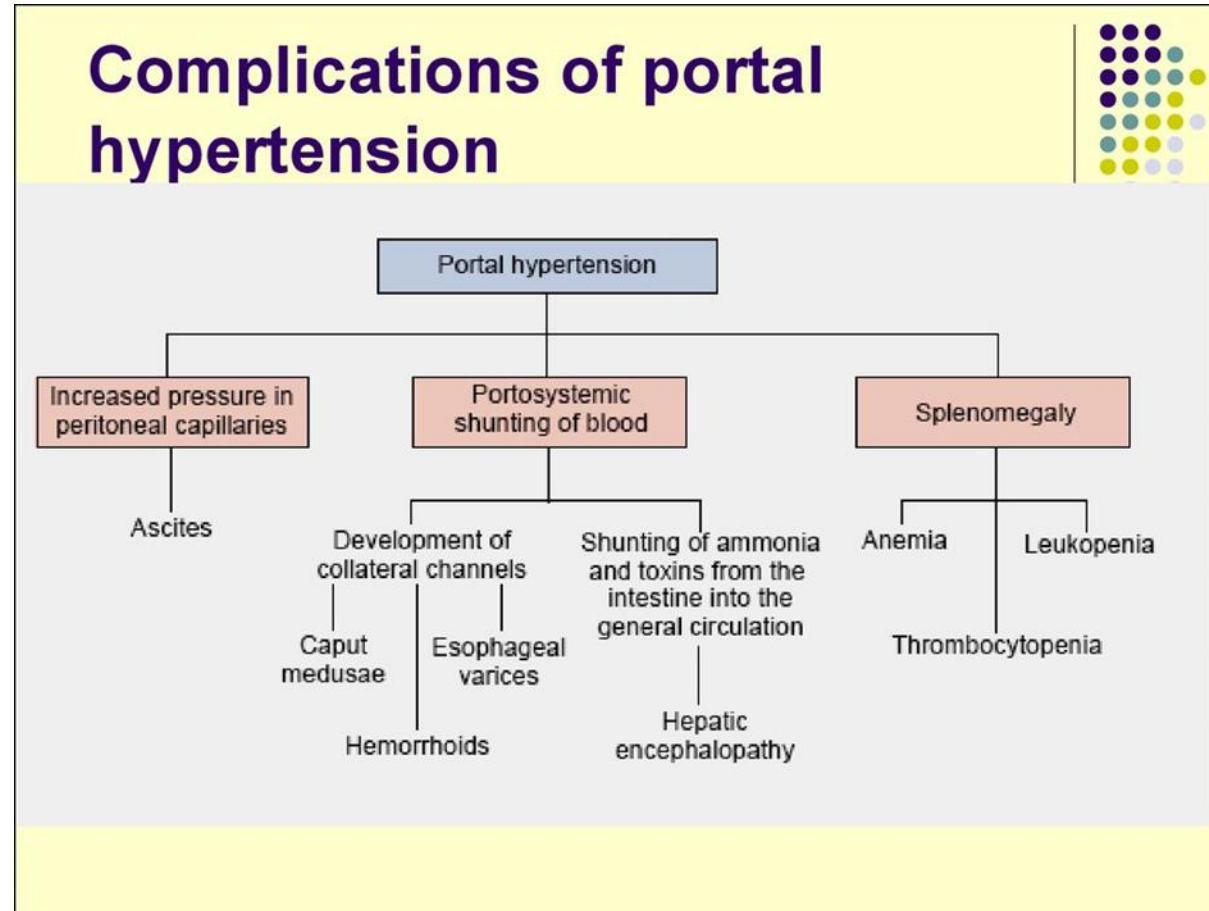
Image source: [https://1.bp.blogspot.com/-pUq2WzBHJdc/XPi4\\_sZYFWI/AAAAAAAA0qw/KQe1GjuCEVU6vCjRHGt9a6dVnfLaMEU6ACLcBGAs/w1200-h630-p-k-no-nu/How%2Bto%2BCure%2Bliver%2BCirrhosis%2BUsing%2BMillet%2BSiridhanyalu.jpg](https://1.bp.blogspot.com/-pUq2WzBHJdc/XPi4_sZYFWI/AAAAAAAA0qw/KQe1GjuCEVU6vCjRHGt9a6dVnfLaMEU6ACLcBGAs/w1200-h630-p-k-no-nu/How%2Bto%2BCure%2Bliver%2BCirrhosis%2BUsing%2BMillet%2BSiridhanyalu.jpg)

# Cirrhosis complications: Portal Hypertension



- Increased vascular resistance in the portal venous system due to cirrhosis
- Dilation of the vessels that drain into the portal vein
- Shunting with collateral circulations formed

# Cirrhosis Complications



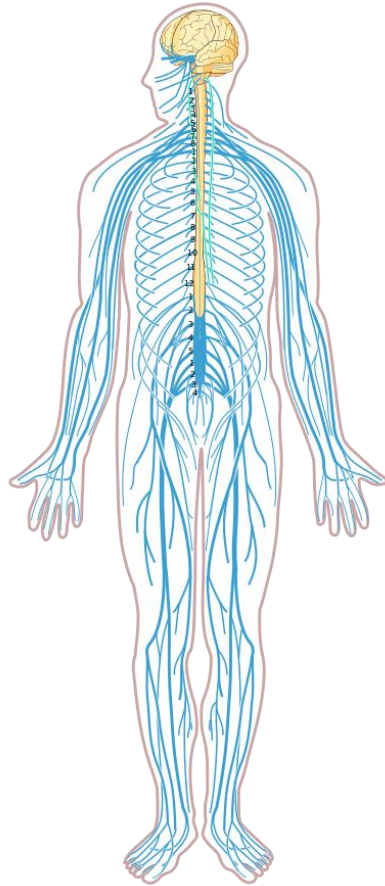
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# Additional Cirrhosis Complications

- Hepatorenal syndrome (kidney failure)
- Hepatic hydrothorax (fluid in the lungs)
- Spontaneous bacterial peritonitis (infection in the abdomen)
- Thrombophilia (increased risk of clotting)
- Coagulopathy (increased risk of bleeding)

# Nervous system



- Alcohol is a direct neurotoxin
- Alcohol also causes neurologic disease from nutritional deficiencies and toxin build-up

## Central Nervous System

- Wernicke's encephalopathy
- Korsakoff's dementia
- Hepatic encephalopathy
- Alcoholic dementia
- Cerebellar degeneration

## Peripheral nervous system

- Polyneuropathy
- Myopathy

Image source: [https://s3-us-west-2.amazonaws.com/courses-images/wp-content/uploads/sites/102/2018/11/23201930/408px-Nervous\\_system\\_diagram\\_unlabeled.svg.png](https://s3-us-west-2.amazonaws.com/courses-images/wp-content/uploads/sites/102/2018/11/23201930/408px-Nervous_system_diagram_unlabeled.svg.png)

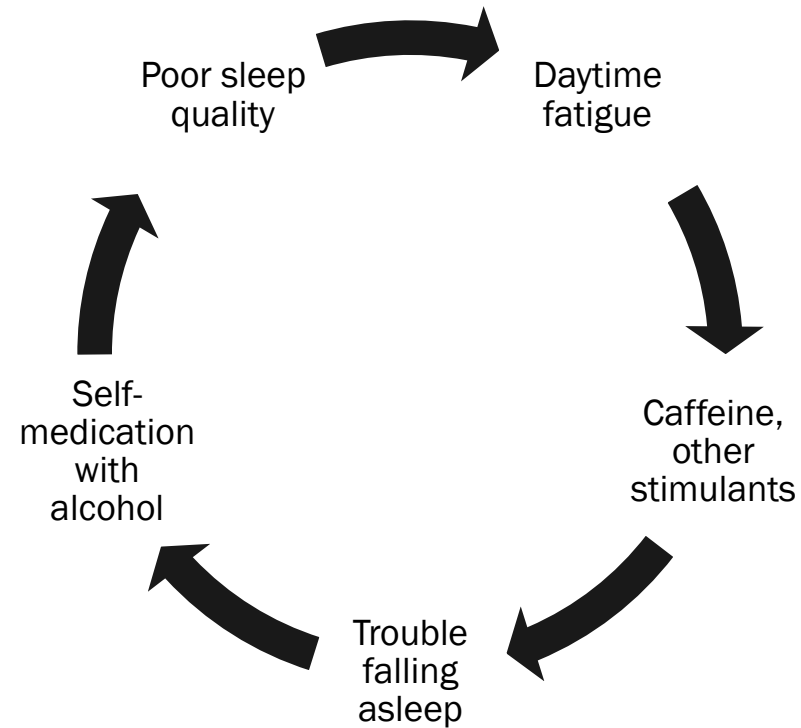
# Alcohol $\neq$ Sleep

Alcohol disrupts sleep architecture



While alcohol decreases sleep latency (fall asleep faster), the quality of the sleep is poor

Leads to viscous cycle



<https://www.sleepfoundation.org/nutrition/alcohol-and-sleep>

# Atrial fibrillation

- Atrial fibrillation is an irregularly irregular cardiac arrhythmia, leading to:
  - Cardiac remodeling and **heart failure**
  - Embolic **stroke**

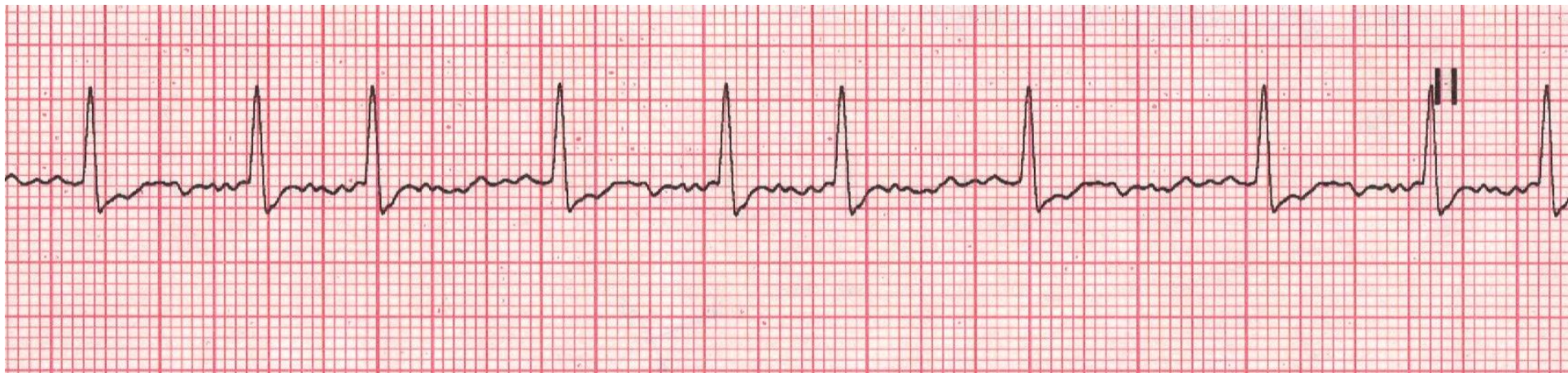
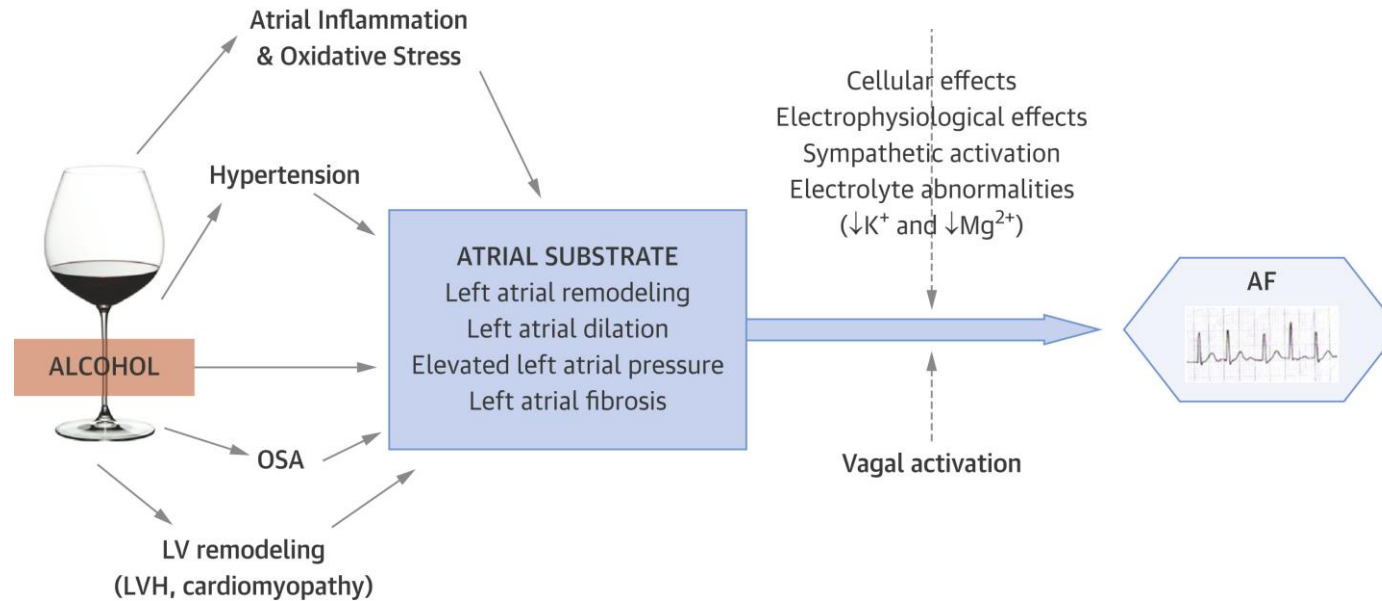


Image source: <https://ecgmedical.com/wp-content/uploads/2013/06/afib-tracing.jpg>

# Alcohol and A-fib



Source: [Journal of the American College of Cardiology](#)  
Volume 68, Issue 23, 13 December 2016, Pages 2567-2576

# Alcohol and A-fib

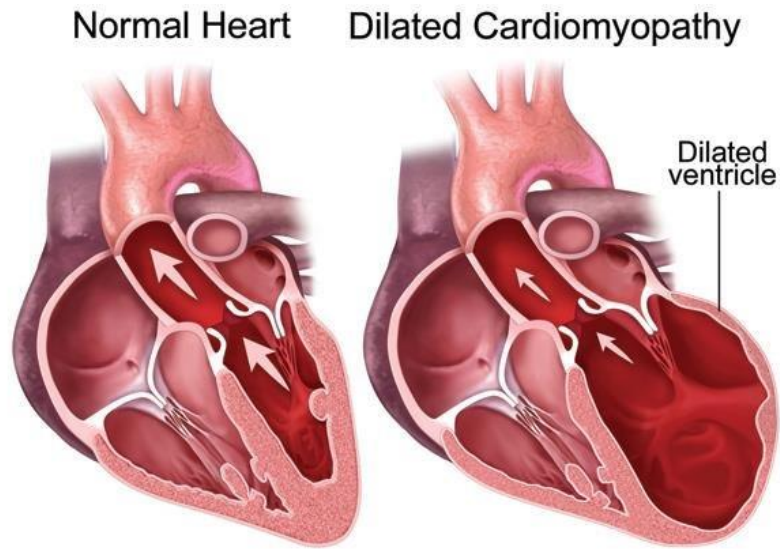
- Habitual drinking
  - A single drink per day linked to a 16% higher risk of developing a-fib compared with not drinking at all
  - Dose-dependent. For each extra alcoholic drink *per day*, a-fib incidence increases by 8%
- Binge drinking, aka “Holiday heart syndrome”
  - 35%-62% of ER presentations of a-fib are attributable to alcohol

# Alcohol decreases chances of successful a-fib treatment

- Cardioversion success rates
  - 81.3% in alcohol abstainers
  - 69.2% in moderate drinkers
  - 35.1% in heavy drinkers
- Catheter ablation of a-fib
  - 7% increase in a-fib recurrence for each day per week that alcohol was consumed.



# Alcohol-induced Cardiomyopathy



- Mechanism of injury from alcohol multi-factorial (direct cardiotoxicity, oxidative stress, nutritional deficiencies)
- Diagnostic criteria include > 80g (5-6 standard drinks) of alcohol per day for at least 5 years
- Results in common signs and symptoms of congestive heart failure, including volume overload and arrhythmias
- Significant improvement can occur with alcohol cessation

Images: [https://www.issup.net/files/inline-images/shutterstock\\_1328733041\\_1.jpg](https://www.issup.net/files/inline-images/shutterstock_1328733041_1.jpg), <https://arrhythmia.center/wp-content/uploads/2018/03/morfologiya-alkogolnogo-serdca-768x576.jpg>  
Data: UptoDate "Alcohol-Induced Cardiomyopathy" Accessed 4/12/2023



**But wait, isn't moderate  
drinking good for the heart???**

**No!**

- Historically, the relationship between alcohol and cardiovascular disease was thought to follow a J-shaped curve
  - Low-moderate use protective
  - High use harmful

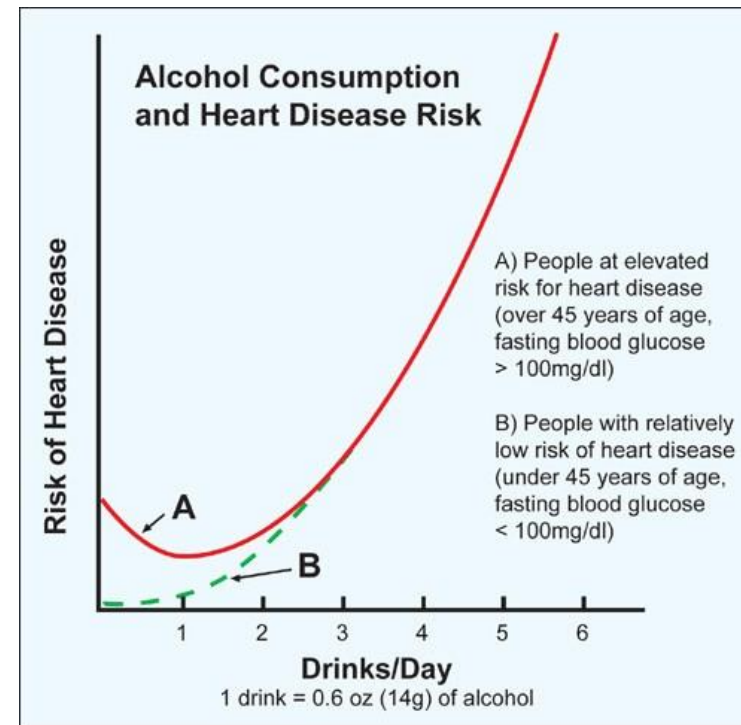


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# However, recent data refutes that

**Original Investigation** | Cardiology

March 25, 2022

## Association of Habitual Alcohol Intake With Risk of Cardiovascular Disease

Kiran J. Biddinger<sup>1,2,3</sup>; Connor A. Emdin, MD, DPhil<sup>1,2</sup>; Mary E. Haas, PhD<sup>1,2,4</sup>; [et al](#)

» [Author Affiliations](#) | [Article Information](#)

*JAMA Netw Open.* 2022;5(3):e223849. doi:10.1001/jamanetworkopen.2022.3849

**Conclusions and Relevance** In this cohort study, adjustment for coincident, favorable lifestyle factors attenuated the observational benefits of modest alcohol intake. Genetic epidemiology suggested that alcohol consumption of all amounts was associated with increased cardiovascular risk, but marked risk differences exist across levels of intake, including those accepted by current national guidelines.

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The New York Times

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April 4, 2023

## ***Moderate Drinking Has No Health Benefits, Analysis of Decades of Research Finds***

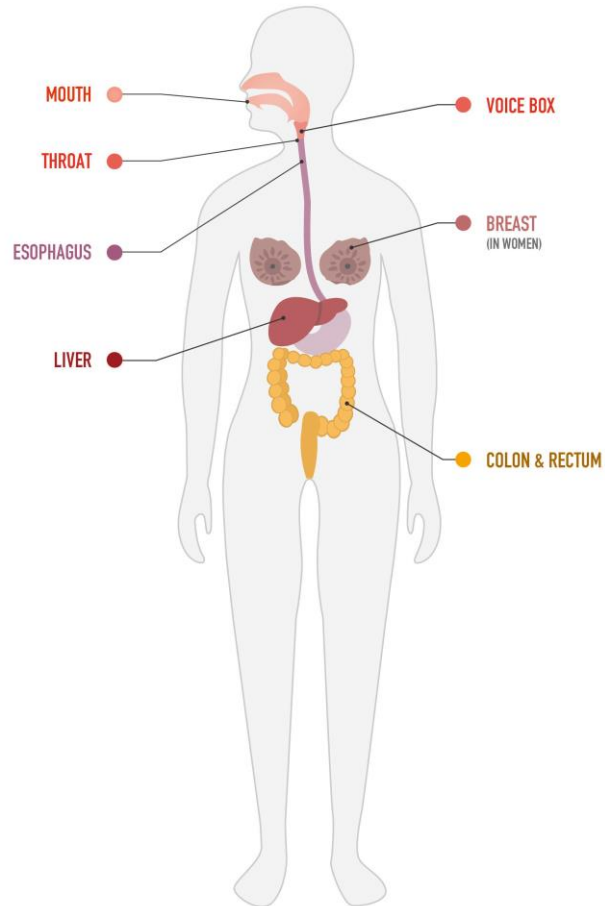
The review found that the methodology of many previous studies was flawed and that risk of myriad health problems increased significantly after less than two drinks a day for women and after three for men.

But the moderate alcohol hypothesis has come under increasing criticism over the years as the alcohol industry's role in funding research has come to light, and newer studies have found that even moderate consumption of alcohol — including red wine — may contribute to cancers of the breast, esophagus and head and neck, high blood pressure and a serious heart arrhythmia called atrial fibrillation.

# Cancer

NATIONAL CANCER INSTITUTE

## Cancers Associated with Drinking Alcohol



[cancer.gov/alcohol-fact-sheet](https://www.cancer.gov/alcohol-fact-sheet)

Researchers have hypothesized multiple ways that alcohol may increase the risk of cancer, including

- metabolizing (breaking down) ethanol in alcoholic drinks to acetaldehyde, which is a toxic chemical and a probable human carcinogen; acetaldehyde can damage both DNA (the genetic material that makes up genes) and proteins
- generating reactive oxygen species (chemically reactive molecules that contain oxygen), which can damage DNA, proteins, and lipids (fats) in the body through a process called oxidation
- impairing the body's ability to break down and absorb a variety of nutrients that may be associated with cancer risk, including vitamin A; nutrients in the vitamin B complex, such as folate; vitamin C; vitamin D; vitamin E; and carotenoids
- increasing blood levels of estrogen, a sex hormone linked to the risk of breast cancer

Alcoholic beverages may also contain a variety of carcinogenic contaminants that are introduced during fermentation and production, such as nitrosamines, asbestos fibers, phenols, and hydrocarbons.

Source: <https://www.cancer.gov/about-cancer/causes-prevention/risk/alcohol/alcohol-fact-sheet>

# Alcohol and Breast Cancer Risk



- Compelling, rigorous evidence of causal association dating back at least to NEJM article in 1987<sup>1</sup>
- Risk of breast cancer increases by 7-10% for every 10g of alcohol consumed each day (standard drink is 14g)<sup>2</sup>
- Women who have 2-3 standard drinks/day have 20% greater risk compared to those who abstain<sup>3</sup>
- Dose-dependent relationship

1. Willett WC, Stampfer MJ, Colditz GA, et al. Moderate alcohol consumption and the risk of breast cancer. *New Engl J Med.* 1987;316(19):1174-1180. doi: 10.1056/nejm198705073161902
2. *Alcohol Res.* 2020; 40(2): 11.. doi: 10.35946/arcr.v40.2.11
3. <https://www.komen.org/breast-cancer/risk-factor/alcohol-consumption/>

# Alcohol and Breast Cancer Risk

- Risk of breast cancer increases by 7-10% for every 10 oz of alcohol consumed each day (standard drink)
- Women who have 2 or more drinks per day have a 20% greater risk
- Dose-dependent

Alcohol is a  
modifiable risk  
factor for breast  
cancer!





# But awareness is low

- Despite strength of the evidence connecting alcohol to breast cancer, public knowledge about the association is low
- Worldwide study of university students in 23 countries revealed only 3.3% knew about the association

# But awareness is low

- Despite strength of the evidence connecting alcohol to breast cancer, public knowledge of this link is low
- Worldwide study of 10 countries revealed only 3.3% knew alcohol was a risk factor for breast cancer
  - US students knew 10%

Public health  
opportunity!



# A note about women and alcohol

- Women are more vulnerable to health effects of alcohol than men
- For equivalent amounts of alcohol consumed, women have higher blood alcohol concentrations
  - Lower volumes of distribution
  - Lower levels of alcohol dehydrogenase
  - = **increased physiologic exposure!**
- “Telescoped Course”
  - Negative consequences occur at lower levels of consumption and after much shorter periods of drinking

# Alcohol is the only drug you have to justify *not* using

- Alcohol is ubiquitous and socially *expected* in our society
  - This makes it really hard for some people to stop drinking
- Motivation for recovery is everything
  - Motivation for recovery is very personal and individualized
  - Social and psychological consequences of alcohol use disorder often associated with shame
  - Medical consequences can be an inroads

# Key Points

- Alcohol affects every organ system in the body
- Medical consequences of alcohol use are common and can be devastating and life threatening
- Alcohol use is a modifiable risk factor for many serious diseases
- Recent data suggest no health benefits of alcohol consumption at any level
- Patients with alcohol-related health problems or risk factors need to be aware of alcohol's impact

# Questions?

# Review

- Person-first language.
- Addiction vs physical dependence.
- Addiction is a treatable chronic medical disease.
- It involves complex interactions between neurobiology, genetics, environment, and life experience.
- It is defined as a “chronic, relapsing disorder characterized by compulsive drug-seeking and use despite adverse consequences”.
- Prevention and treatment approaches are about as successful as methods for other chronic diseases.

# Words are Important

## Words to Use

Person with a substance use disorder

Person with alcohol use disorder

Substance use disorder

Drug misuse, harmful use

Substance use

Not actively using

Testing positive for substance use

Actively using

Testing positive for substance use

Person in recovery, person in long-term recovery

## Words to Avoid

Addict/drug abuser

Alcoholic

Drug problem, drug habit

Drug abuse

Substance abuse

Clean

A clean drug screen

Dirty

A dirty drug screen

Former/reformed addict/alcoholic