



EXCLUSIVE WEBINAR PRESENTATION

THE FRENCH PARADOX

New Research on Wine, Alcohol, and Heart Health

April 30, 2020, 2-3 PM

PRESENTED BY
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Learning Objectives

- 1 Explain what the French Paradox is and how researchers discovered this health phenomenon.
- 2 Evaluate current research connecting wine intake to cardiovascular health in France and other countries.
- 3 Describe current alcohol intake recommendations for clients based on the most up-to-date research.

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Defining the French Paradox

History and Research

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A **paradox** is a seemingly **absurd or self-contradictory** statement, proposition, or theory that when investigated, may ultimately prove to be **correct or true**.

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Defining the French Paradox

- Originally observed by French epidemiologists in 1980s
- Low coronary heart disease** (CHD) death rates in France, despite diets high in dietary cholesterol and saturated fat
- "The French Paradox suggests that consuming red wine daily **not only helps** the cardiovascular system but also **increases lifespan** due to the resveratrol in red wine"
- The French have **longer life expectancy** while drinking wine - 2-3 glasses/day - and consuming bread, cheese, and rich desserts^{1,3}
- WHO, 2009**: heart disease mortality/stroke 50/100,000 compared to US 129/100,000³

1. Renaud S, De Lorgeril M. Wine, alcohol, platelets, and the French paradox for coronary heart disease. *Lancet*. 1992;339:1523-6.
 2. Petyaev IM, Bashmakov YK. Could cheese be the missing piece in the French paradox puzzle? *Medical Hypotheses*. 2012 Dec 1;79(6):745-9.
 3. World Health Organization. WHO Mortality Database. https://www.who.int/healthinfo/mortality_data/en/. Accessed 4/29/20

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Coronary Heart Disease in Middle-Aged Frenchmen: Comparisons between Paris Prospective Study, Seven Countries Study, and Pooling Project

- *The Lancet*, 21 June 1980.

by Pierre Ducimetiere, Francois Cambien, Jacques L. Richard, Roger Roakotavao, Jean R. Claude

ABSTRACT: A systematic comparison was made of the incidence rates of major coronary heart disease (CHD), defined as fatal and non-fatal myocardial infarction and probable CHD deaths, observed in the Paris Prospective Study, the European and American cohorts of the Seven Countries Study, and the populations of the Pooling Project. The Paris study results were adjusted to the age-distribution and follow-up duration of the other studies. The major CHD incidence rate in the Paris study proved to be intermediate between those observed in Northern...

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Defining the French Paradox

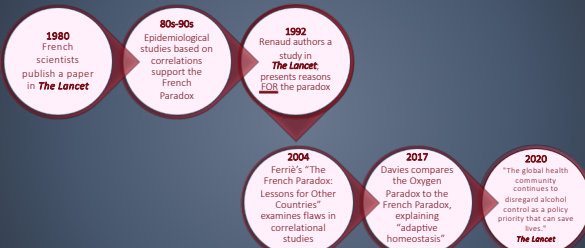
Research in the US has **backed up** this concept:

- **Framingham study:** U-shaped curve between wine and ischemic heart disease (IHD)¹
- **Large meta-analysis** have shown drinkers with an average intake of <30 g/day (no episodic heavy drinking) had the lowest IHD risk (relative risk = 0.64, 95% CI 0.53-0.71)²
- Drinkers with episodic heavy drinking had **a risk similar to** lifetime abstainers (relative risk = 1.12, 95% CI 0.91 to 1.37)²

1. Friedman L.A., Kimball A.W. Coronary heart disease mortality and alcohol consumption in Framingham. *American journal of epidemiology*. 1986;124(3):481-9.
2. Roerecke M, Rehm J. Alcohol consumption, drinking patterns, and ischemic heart disease: a narrative review of meta-analysis and a systematic review and meta-analysis of the impact of heavy drinking occasions on risk for moderate drinkers. *BMC Med*. 2014;12(1):192.

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Research History: *The French Paradox*



Renaud S, de Legeret M. Wine, alcohol, phytols, and the French paradox for CHD *Lancet*. 1992;339(8938):1220-1226.
Ferrière J. Coronary Disease. The French Paradox: lessons for other countries. Vol 95. 2004. www.hs-niederrhein.de
Davies JM, Gifford J, Fingleton B, et al. The Oxygen Paradox, the French Paradox, and age-related diseases. *Geriatrics*. 2017;38(5-6):499-550.

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French Paradox: *How Does It Work?*

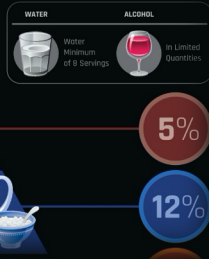
Theory	Substantiation
Alcohol raises HDL	Alcohol raises high density lipoprotein (HDL) cholesterol. Approximately 50% of the risk reduction due to alcohol consumption is explained by HDL?
Flavonoids inhibit LDL oxidation	Flavonoids (catechin, epicatechin, quercetin, anthocyanins, and procyanidins), resveratrol (3,5,4-trihydroxystilbene), and polymeric tannins.
Alcohol lowers fibrinogen	Alcohol (not just wine) thins the blood slightly
Cultures who drink red wine often eat a Mediterranean-style diet	See Mediterranean Diet Pyramid on the next slide
Adaptive homeostasis	A paradoxical observation that treatment with low doses of a substance toxic at high concentrations may cause adaptations that protect against a subsequent exposure to the same (or similar) toxin
Alcohol lowers C-reactive protein (CRP)	Small studies have shown that moderate alcohol intake can lower CRP significantly in men and women
The role of a polymorphism in the gene for alcohol dehydrogenase	Homozygosity for alcohol dehydrogenase type 3 (ADH3) associated with a reduced risk of myocardial infarction (MI) due to higher HDL levels

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Mediterranean Diet + Wine?

The Mediterranean Diet (MD):

- Upholds the DGAs (fruits, veggies, whole grains, lower sat fat, sodium, sugar)
- Reduces risk for CVD (and possibly cancer, diabetes, neurodegenerative diseases)
- Flavonoids are in fruits/veggies (including grapes)
- Should be coupled with physical activity for maximum benefit



Romaguera DF, Salmeron DL. Mediterranean diet and prevention of chronic diseases. *Nutrition today*. 2017 Sep;52(3):208.

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Other Theories: Smoking

Does red wine counter the adverse vascular effects of smoking?

- Red wine **may help improve** endothelial function
- Smoking **increases** leukocytosis, neutrophilia, lymphopenia, and eosinopenia and inflammatory markers (IL-6/TNF α)
- A small human study (n=20) of casual smokers found participants who smoked 3 cigarettes 1 hour after drinking 40mL red wine **experienced reduced markers** of vascular injury compared to those who smoked **without wine**



Schwarz V, Bacheller K, Schirmer SH, Warner C, Laufs U, Böhm M. Red wine prevents the acute negative vascular effects of smoking. *The American journal of medicine*. 2017 Jan 1;130(1):96-100.

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Other Theories: Cheese

- A small study found that cheese and dairy consumption **reduced** urinary choline and Trimethylamine N-oxide (TMAO) levels
- Cheese proteomics have found peptides that inhibit angiotensin-converting enzyme, possibly **reducing risk for HTN**
- **Moldy cheese** contain fungi and other secondary metabolites
- Dietary studies in France show **saturated fat intake** up to 40% of total calories

Metabolomics Investigation To Shed Light on Cheese as a Possible Piece in the French Paradox Puzzle

American Chemical Society, 2015

by Hong Zheng, Christian C. Yde, Morten R. Clausen, Mette Kristensen, Jøanne Lorenzen, Anne Astrup, Hanne C. Bertram

ABSTRACT: An NMR-based metabolomics approach was used to investigate the differentiation between subjects consuming cheese or milk and to elucidate the potential link to an effect on blood cholesterol level. Fifteen healthy young men participated in a full crossover study during which they consumed three isocaloric diets with similar fat contents that were either (i) high in milk, (ii) high in cheese with equal amounts of dairy calcium, or (iii) a control diet for 14 days. Urine and feces samples were collected and analyzed by NMR-based metabolomics. Cheese and milk consumption decreased urinary choline and TMAO levels and increased fecal excretion of acetate, propionate, and lipid. Compared with milk ...

Zheng H, Yde CC, Clausen MR, Kristensen M, Lorenzen J, Astrup A, Bertram HC. Metabolomics investigation to shed light on cheese as a possible piece in the French paradox puzzle. *Journal of agricultural and food chemistry*. 2015 Mar 18;63(12):2830-5.
Petyaev RA, Bakhmurov YL. Could cheese be the missing piece in the French paradox puzzle? *Medical hypotheses*. 2012 Dec 1;79(6):740-5.

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Other Theories: *Portion Sizes*

Portion sizes in France are documented as smaller:

- In restaurants
- Individual portions in supermarkets
- Portions specified in cookbooks
- French people take longer to eat than Americans (McDonalds study, France vs US: 22.2 minutes vs 14.4 minutes)
- BMI differences in French vs Americans: 24.4 vs 26.6
- BMI 30+ French vs Americans: 7.4% vs 26.6%



Rain P, Kibrick K, Petit E, Richier C, Shields C. The ecology of eating: smaller portion sizes in France than in the United States help explain the French paradox. *Psychological science*. 2003; 14(3):400-4.

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The French Paradox Controversy

“**The French Paradox** is a way of presenting provocative results from epidemiological studies and **does not** take into account **causality** between risk factors and **CHD** mortality.”

J. Ferrières

Ferrière J. Coronary Disease: The French paradox: lessons for other countries. Vol 90, 2004. www.hearstjnl.com.

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Diving Deeper into Alcohol

Research on Health Effects

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“Civilization begins with distillation.”

William Faulkner

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Alcohol is Controversial

Significance of Alcohol:

- Part of human history
- Linked to culture and art
- Culinary importance
- Religious ceremony
- Part of social celebrations
- Health benefits?



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Alcohol is Controversial

Dangers:

- Known carcinogen
- Linked to violence and motor vehicle accidents
- Delirium tremens (DTs)
- Alcohol poisoning
- Liver cirrhosis/pancreatitis
- Fetal Alcohol Syndrome (FAS)



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Alcohol Research is Conflicting

- **Headlines:** "Alcohol-Fueled Deaths Double in U.S. Over Past 20 Years"
- **Facts:** "The number of Americans dying from alcohol abuse each year has doubled since 1999, a new study reveals."
- **Stats:**
 - In 2017, 2.6% of deaths in the United States were due to alcohol abuse
 - Of these deaths, 50% were from liver disease or overdoses (from alcohol alone or combined with other drugs)
 - Alcohol-related deaths were highest among men, people ages 45-74, Native Americans, and Native Alaskans.



<https://www.webmd.com/brain/news/20190307/alcohol-related-deaths-double-in-us-over-past-20-years>

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Alcohol Research is Conflicting

- **Headlines:** "Drinking Alcohol Key to Living Past 90"
- **Facts:** "When it comes to making it into your 90s, booze actually beats exercise, according to a long-term study."
- **Stats:** Those who drank 2 glasses of beer or wine a day were 18% less likely to experience a premature death than those who abstained from alcohol.



<https://www.webmd.com/brain/news/20190307/alcohol-related-deaths-double-in-us-over-past-20-years>

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Recent Research on Wine and CVD

With moderate red wine intake:

- HDL **increases** ~12%
- Decreased platelet aggregation, fibrinogen effects
- Anti-inflammatory effects (decreased CRP)
- Polyphenols **protect the body** from atherosclerotic plaques and increase nitric oxide release, inducing vasodilation
- Zutphen study (n 1373): long term light alcohol intake was **strongly inversely related** to cerebral vascular, cardiovascular, and all-cause mortality
- Low intakes (10 g/d) appears to **decrease risk** for ischemic stroke compared to heavy drinkers or non-drinkers

See next slide for references.



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Recent Research on Wine and CVD

With moderate red wine intake:

- 100+ prospective studies show light/moderate drinking (0.5-4 drinks/day) shows a 25-40% reduction in the risk of:
 - Myocardial infarction (MI)
 - Ischemic stroke
 - Peripheral Vascular disease
 - Sudden cardiac death
 - Death from all CVD
- 30% reduced risk of developing diabetes mellitus type 2 (DM2; n=369,862)
- 4+ drinks per day greatly increase risk of
 - HTN
 - Abnormal heart rhythms
 - Stroke
 - MI
 - CVD-related death

Cuddihy LM, Mosca L, Piana M, Rhee EA. Wine and your heart: a science advisory for healthcare professionals from the Cardiovascular Nursing of the American Heart Association. *Circulation*. 2013;127(1):172-3. Koppes LL, Ockene JK, Handberg SL, et al. Moderate alcohol consumption lowers the risk of type 2 diabetes: a meta-analysis of prospective observational studies. *Diabetologia*. 2010;53(1):119-25.

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Recent Research on Alcohol

2019: "No amount of alcohol is safe"

- Alcohol use is the 7th highest risk of death globally across ages
- For people aged 15-49 years, alcohol use was the top risk factor for death in 2016
- For people 50+, cancer is a large portion of the alcohol-related deaths
- Any amount of alcohol (besides zero) increased risk of death

Morton R, Arnold DR, Casswell S. Alcohol: global health's blind spot. *The Lancet Global Health*. 2019;9(1):e139-50. Griswold MG, Fullman N, Hawley C, et al. Alcohol use and burden for 195 countries and territories, 1990-2016: a systematic analysis for the Global Burden of Disease Study 2016. *The Lancet*. 2018;391(10152):1015-35.

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Is It Wine or All Alcohol?

Wine, Beer, and Spirits

Are They Really Horses of a Different Color?

Eric B. Rimm and Meir J. Stampfer

A New Perspective on the Health Benefits of Moderate Beer Consumption: Involvement of the Gut Microbiota

by Mar Quesada-Molina, Araceli Muñoz-Garach, Francisco J. Tinahones, Isabel Moreno-Indias

ABSTRACT: Beer is the most widely consumed fermented beverage in the world. A moderate consumption of beer has been related to important healthy outcomes, although the mechanisms have not been...

Rimm EB, Stampfer MJ. Wine, beer, and spirits are they really horses of a different color? *Journal of Internal Medicine*. 2019;265(1):1-12. Quesada-Molina M, Muñoz-Garach A, Tinahones FJ, Moreno-Indias I. A New Perspective on the Health Benefits of Moderate Beer Consumption: Involvement of the Gut Microbiota. *Microbiome*. 2019;9(1):272.

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Current Recommendations

Alcohol and Your Clients

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2015-2020 U.S. Dietary Guidelines

To reduce the risk of alcohol-related harms:

- If alcohol is consumed, it should be in **moderation** (1 drink/day for women; 2 drinks/day for men)
- This is **not intended** as an average over several days, but rather the amount consumed on **any single day**
- The DGAs also **do not recommend** that individuals who do not drink alcohol **start drinking** for any reason



U.S. Department of Health and Human Services and U.S. Department of Agriculture. 2015–2020 Dietary Guidelines for Americans. 8th Edition, December 2015. <https://health.gov/our-work/food-and-nutrition/2015-2020-dietary-guidelines/>

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What is a Serving?

What is a Standard Drink?

12 fl oz of regular beer	=	8–9 fl oz of malt liquor (served in a 12 oz glass)	=	5 fl oz of table wine	=	1.5 fl oz shot of distilled spirits (gin, rum, tequila, vodka, whiskey, etc.)
						
about 5% alcohol		about 7% alcohol		about 12% alcohol		about 40% alcohol

Each beverage portrayed above represents one standard drink (or one alcohol drink equivalent), defined in the United States as any beverage containing 8 fl oz or 14 grams of pure alcohol. The percentage of pure alcohol, expressed here as alcohol by volume (ABV), varies within and across beverage types. Although the standard drink amounts are helpful for following health guidelines, they may not reflect customary serving sizes.

National Institute of Alcohol Abuse and Alcoholism. <https://www.niaaa.nih.gov/What-Standard-Drink>. Accessed April 7, 2020.

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AHA Alcohol Intake Guidelines


If you don't drink, don't start!

Don't drink if you are:

- Pregnant, trying to become pregnant, people under 21, and people with some health conditions

Only drink in **moderation**:

- **Excessive drinking** can cause high blood pressure, cardiomyopathy, cardiac arrhythmia, and death from alcohol poisoning
- **Binge drinking** = 5+ drinks for men and 4+ drinks for women in 2 hours
- **Higher risk** of atrial fibrillation, can lead to blood clots, stroke, and heart failure



<https://www.heart.org/health-topics/alcohol-and-heart-healthy-living/prevention/preventing-disease/preventing-disease/alcohol-and-heart-healthy>

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People Who Should NOT Drink

- CDC*: "There is **no known safe amount** of alcohol use during **pregnancy** or while trying to get pregnant. There is also no safe time during pregnancy to drink. All types of alcohol are equally harmful, including all wines and beer."
- People with **alcohol abuse disorder**
- People on **medications** that interact with alcohol:
 - Allergy and cold medicines
 - Anxiety/depression and epilepsy or seizure medicines
 - Arthritis medicines
 - Blood thinners or pain medications/inflammation and fever reducers
 - Blood sugar control medications
 - Anti-hypertensives and statins



*mixed research noted


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Other Factors Influencing CHD and CVD

Smoking:

- **Major cause** of CVD and hypertension
- **25% of deaths** from CVD are caused by smoking



U.S. Department of Health and Human Services. "Health Consequences of Smoking—A Report of the Surgeon General." 4th ed. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. 2014. Approved 2018 Mar 29.


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Other Factors Influencing CHD and CVD

Lack of physical activity:

- **Reduced CHD risk** by ~30% with 150 minutes of moderate physical activity each week




<https://www.shutterstock.com/image-photo/young-woman-tied-her-shoelaces-1500000000>

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Other Factors Influencing CHD and CVD

Sleep deprivation:

- Participants who sleep <6 hours/night are **20-32% more likely** to develop HTN than those who sleep 7-8 hours
- Postmenopausal women who slept <5 hours/night had a **25% increased risk** for CHD compared to those with 7-8 hours



Covassin N, Singh P. Sleep duration and cardiovascular disease risk: epidemiologic and experimental evidence. Sleep medicine clinics. 2018 Mar 1;11(1):83-9.

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Supporting Your Clients Who Drink

- **Educate** on the current guidelines
- **Listen** without judgement
- Dive in with **motivational interviewing**



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Starting the Conversation About Alcohol


- Do you drink alcohol?
- How would you describe your relationship to alcohol?
- What role do you think alcohol plays in your health goals?
- What questions do you have about how alcohol affects your health?
- On a scale from 1-10, how interested are you in cutting back on alcohol?
- How do you feel about keeping the conversation about alcohol open?
- What are your ideas about where you could reduce drinking in your diet?



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Options for You!

- Get creative with **infused waters**
- Make it a **mocktail**
- Pay attention to **alcohol by volume (ABV)**
- Educate with a **holistic approach**
- Jump on the **sparkling water** bandwagon



<https://www.champagnenutrition.com/blogs/healthy-living/infused-water/>

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Questions?

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3. Click "Take Course" on the webinar description page.
4. Select "Start/Resume" to complete the course and submit the evaluation.
5. Download and print your certificate.
