Clin-IQ Project

Clinical Question: In adults with normal cardiovascular function, at what level of consumption (daily, weekly, etc.) is wine or other alcohol found to be cardio-protective compared to cardio-adverse?

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Answer: 1-3 drinks per day

Level of Evidence for the Answer: B

Search Terms:

Cardiovascular Disease, Ethanol consumption, outcome

Date Search was Conducted:

September 25th 2012

Inclusion and Exclusion Criteria:

Inclusion Criteria: ethanol consumption, men and women

Exclusion Criteria:

septal ablation, abnormal cardiovascular function

Summary of the Issues:

Cardiovascular disease is a broad category of disease processes with many common pathways leading to end organ failure. Today in the United States 1 in 3 deaths and approximately 400 billion

dollars of health care funding are attributable to cardiovascular disease.[1] Our understanding of what causes cardiovascular disease was pioneered with the Framingham Heart study. Researchers determined that several risk factors could be associated with cardiovascular disease. These risk factors can be divided into modifiable, such as tobacco use, alcohol use, high blood pressure, high cholesterol, obesity, physical inactivity, unhealthy diets high in saturated fats and non-modifiable factors such as age, race and gender. In the early 1990's the French Paradox was identified as an anomaly in this pattern, where the French enjoyed lower rates of cardiovascular disease and a diet rich in saturated fats. The confounder initially was thought to have been a habit of moderate wine drinking with meals, but subsequent studies have raised more questions. Still there is an association between moderate ethanol consumption and reduced cardiovascular mortality. We question how much is enough, and what to advise our patients. As shown by the French Paradox and evidenced by multiple peer reviewed studies, consumption of alcohol has been shown to have positive effects on HDL, decrease in HbA1c, decrease in LDL and CRP in dose a dependant fashion.[2.] The current accepted recommendations are no more than two drinks daily for men and one drink daily for women. In the United States one portion of alcohol is defined as ten to fifteen grams of ethanol, which can be found in one can of beer (330ml), one five ounce serving of wine (150ml) or one shot (50ml) of eighty proof distilled spirits. Moderate drinking can be defined as three to fourteen servings of alcohol per week.
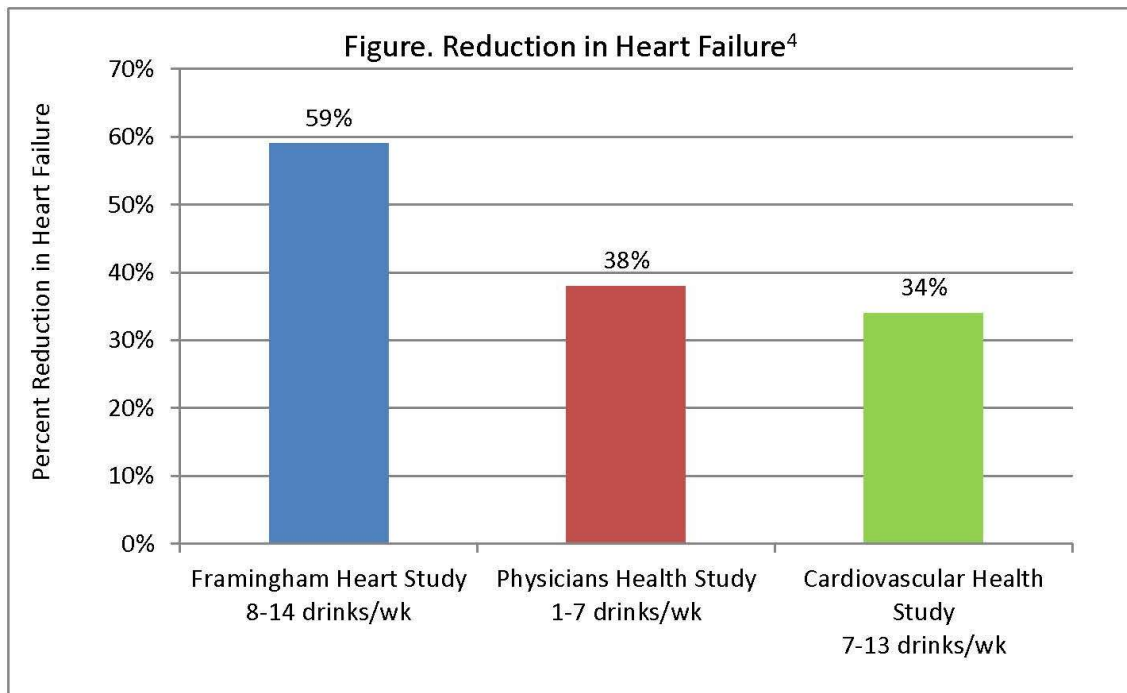
Summary of the Evidence:

Mukamal et al performed case-control studies of 32,826 women enrolled in the Nurses Health Study followed in the 1990's and 18,225 men in the Health Professionals Follow-Up Study around the same time. A total of 249 women and 266 men with incident myocardial infarction were matched on

age, smoking, and date of entry to 498 female and 532 male control participants. They determined that among women and men, alcohol drinking frequency tended to be associated with lower risk of myocardial infarction, with the lowest risks among those who drank 3 to 7 days per week. Further assessment revealed the levels of high-density lipoprotein cholesterol, hemoglobin A1c, and fibrinogen explained 75% of the association of frequent drinking with risk reduction among women and fully explained the association among men.[3] This associates moderate drinking with decreased cardiovascular events. Among women, multivariable analysis suggested an OR of 0.76 (95% CI 0.59 to 0.97), whereas among men, the OR associated with frequent intake of alcohol (in drinking days per week) was 0.86 (95% CI 0.74 to 1.00).

In 2006, a Canadian study by Gigleux et al set out to evaluate the relationship of alcohol consumption, the metabolic syndrome, and the risk of ischemic heart disease (IHD).[2] They followed 1,966 men from the Quebec Cardiovascular Study who did not suffer from ischemic heart disease at the beginning of the study. Over the following 13 years 219 cases of IHD were diagnosed and they found that after adjustment for a series of coronary risk factors, alcohol consumption ≥ 15.2 g/d was associated with a 39% reduction in the 13-y risk of IHD (RR of IHD = 0.61, $P = 0.02$). This was attributed to the cardioprotective effect including an increase in HDL, decrease in insulin resistance and CRP. The benefits of daily consumption were greater in men with an altered metabolic profile (metabolic syndrome). They concluded by stating '*we do not recommend that non drinkers begin drinking, however, there is now compelling evidence to support the concept that light-to-moderate alcohol intake may be part of a healthy lifestyle.*'

Other than a randomized controlled trial the most compelling evidence is typically a meta

analysis. Such an analysis was done by Djoussé and Gaziano in 2007.[4] They searched PubMed through 2005 and identified 34 unique studies with just over a million subjects and around 100,000 deaths. They noted heavy drinking (more than 14 drinks per week) has been shown to increase the risk of heart failure (HF), whereas light-to-moderate drinking (seven to fourteen drinks per week) has been associated with a lower risk of HF.   The percentages of lowered risk varied from 34% to 59%. The meta-analysis suggested optimal benefit at approximately half a drink per day. Fewer than 4 drinks per day in men and fewer than 2 per day in women appeared to confer most benefit.

Figure. Reduction in Heart Failure[4]

Study	Percent Reduction in Heart Failure
Framingham Heart Study 8-14 drinks/wk	59%
Physicians Health Study 1-7 drinks/wk	38%
Cardiovascular Health Study 7-13 drinks/wk	34%

Conclusion:

The authors asked the question 'does drinking hurt my heart.' We were interested in what advice to give our patients with normal heart function about the cardioprotective effect of alcohol, what type of alcohol, if any, is better and is there a gender or racial difference in its effect. After review of the literature it appears that the answer favors that a daily drink might be cardioprotective, but that our

advice should focus on individuals with normal cardiovascular function. In addition, we conclude that women should probably not exceed 1 to 2 drinks per day, while men should probably not exceed 4 drinks per day as these levels have shown to be cardio adverse. The literature search did not adequately answer whether wine is more cardioprotective versus beer or other spirits. A further detailed search should be conducted before specific advice can be given to patients regarding the use of wine versus beer or spirits.

Reference List (1-2 review articles, 2 evidence articles):

1. Million Hearts: Strategies to Reduce the Prevalence of Leading Cardiovascular Disease Risk Factors --- United States, 2011 .*Centers for Disease Control and Prevention*. Centers for Disease Control and Prevention, 16 Sept. 2011. Web. 25 Sept. 2012.http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6036a4.htm?s_cid=mm6036a4_w>.

2. Gigleux I., Gagnon J., St-Pierre A.; et al. Moderate alcohol consumption is more cardioprotective in men with the metabolic syndrome, J Nutr 136 2006 3027-3032

3. Mukamal, K. J. Drinking Frequency, Mediating Biomarkers, and Risk of Myocardial Infarction in Women and Men. *Circulation* 112.10 (2005): 1406-413.

4. Djoussé, L., and Gaziano, J. Michael. Alcohol Consumption and Heart Failure: A Systematic Review. *Current Atherosclerosis Reports* 10.2 (2008): 117-20.