



Alcohol Consumption and Risk of Atrial Fibrillation How Much Is Too Much?



Bacchus Roman God of wine

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Bacchus Roman God of wine



Bacchus temple – Baalbeck – Lebanon



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**NO CONFLICT OF
INTEREST TO
DECLARE**

Questions

- Have you ever had a dinner with wine in Venice?
- *Does this put one at risk for an arrhythmia?*
- *Does alcohol exacerbate an existing arrhythmia?*
- *How much, if any, alcohol is acceptable?*



Holiday Heart Syndrome

- Although it is clear that binge drinking can precipitate AF, it is also known that **individuals vary in their susceptibility to alcohol.**
- Some patients develop arrhythmia after only one drink. We do not understand why this is, just that it is.
- **Making the proper diagnosis may spare the patient from inappropriate treatments.**

Conflicts

Patients who ask about alcohol intake are most often conflicted

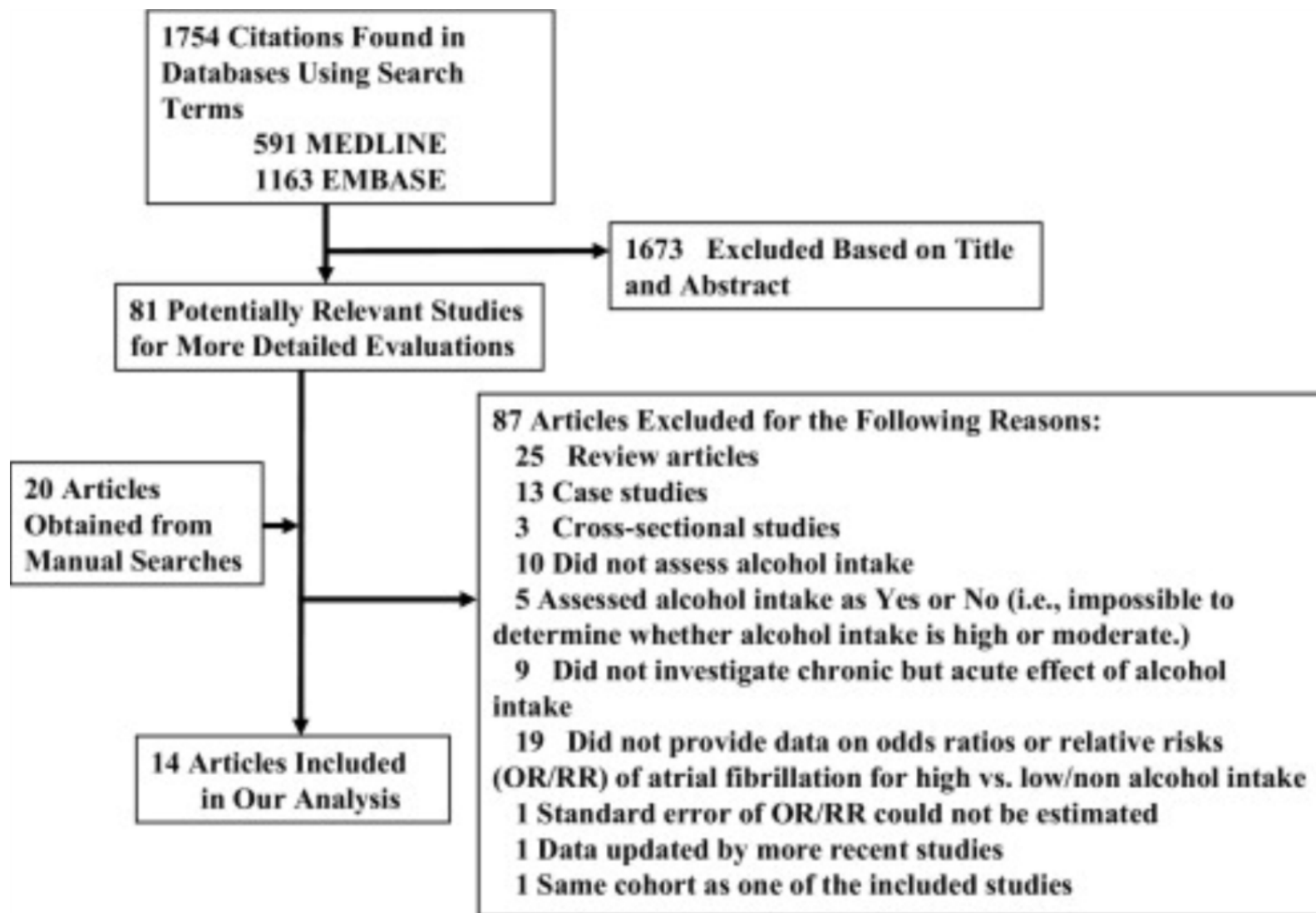
- They hate the idea that their heart is under duress, but forever giving up a beer, a glass of wine, or a cocktail is equally troublesome.
- it is hard for us to tell a patient, “*yes, that’s it, no more beer or wine for you, forever.*”

Mechanism linking alcohol consumption to AF

- Shortening the atrial effective refractory period
- Through alteration of vagal tone in susceptible individuals

Pacing Clin Electrophysiol 2008;31:266–72
Am J Cardiol 2012;110:364–8.

From: Alcohol Consumption and Risk of Atrial Fibrillation: A Meta-Analysis

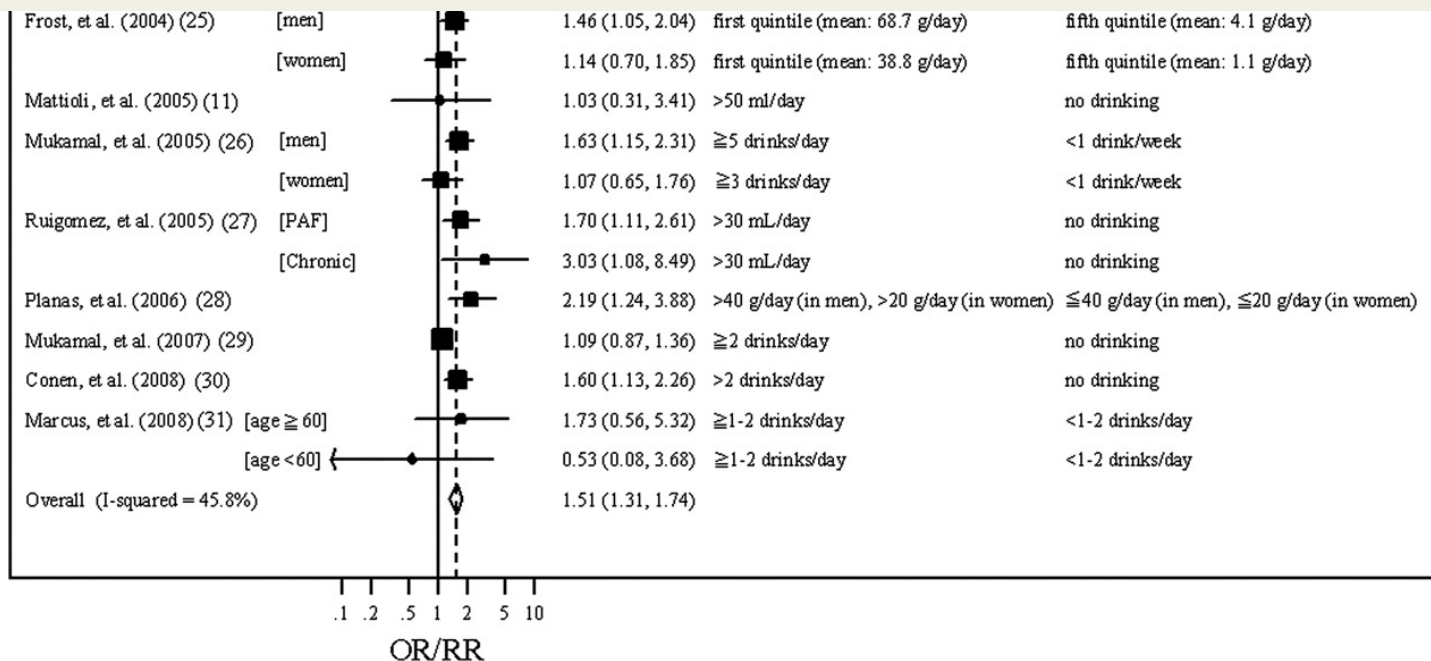


Alcohol Consumption and Risk of Atrial Fibrillation

A Meta-Analysis

Study source	Alcohol consumption	
	High drinking group	Reference group
Rich, et al. (1985) (9)	>70 ml/day	≤70 ml/day
Cohen, et al. (1988) (10)	≥6 drinks/day	<1 drink/day
Krahn, et al. (1995) (21)	alcoholism	not alcoholism
Wilhelmsen, et al. (2001) (22)	alcohol abuser	not alcohol abuser

Results of this meta-analysis suggest that not consuming alcohol is most favorable in terms of AF risk reduction.



Alcohol consumption and the risk of incident atrial fibrillation among people with cardiovascular disease

Data from ONTARGET - TRANSCEND

- Regular alcohol consumption was defined as at least 1 drink per week of a standard glass of beer (355 mL), wine (150 mL) or shot of hard liquor (45 mL).
- **low** (< 1 drink/week, reference category),
- **moderate** (up to 2 drinks/day [1–14 drinks/week] for women and up to 3 drinks/day [1–21 drinks/week] for men)
- **high** (> 2 drinks/day for women and > 3 drinks/day for men).
- **Binge drinking** was defined as having more than 5 drinks per day at any one time or a calculated average ingestion of more than 5 drinks per day.

Alcohol consumption and the risk of incident atrial fibrillation among people with cardiovascular disease

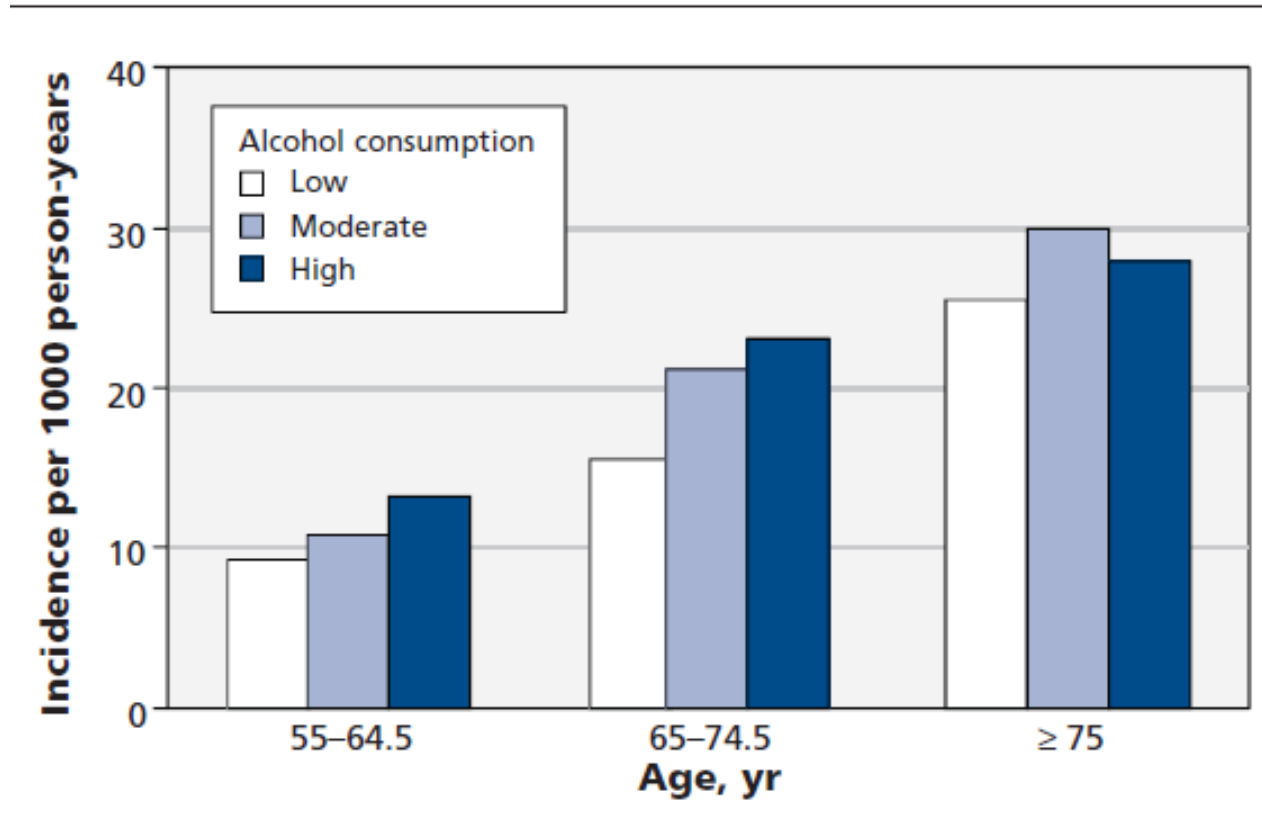


Figure 1: Incidence of atrial fibrillation per 1000 person-years among 30 433 patients who had existing cardiovascular disease or diabetes with end-organ damage, by age and level of alcohol consumption.

Alcohol consumption and the risk of incident atrial fibrillation among people with cardiovascular disease

Table 4: Incidence of atrial fibrillation per 1000 person-years, by level of alcohol consumption*

Alcohol consumption	Men		Women		All		Standardized rate†
	Events, n/N	Rate	Events, n/N	Rate	Events, n/N	Rate	
Low	761/11 311	15.4	418/7 464	12.6	1 179/18 775	14.2	14.5
Moderate	759/9 593	17.8	112/1 546	15.9	871/11 139	17.5	17.3
High	38/465	18.5	5/54	20.0	43/519	18.7	20.8
All	1 558/21 369	16.5	535/9 064	13.2	2 093/30 433	15.5	–

*Low = < 1 drink/wk; moderate = 1–14 drinks/wk (about 2 drinks/d) for women and 1–21 drinks/wk (about 3 drinks/d) for men; high = > 14 drinks/wk (> 2 drinks/d) for women and > 21 drinks/wk (> 3 drinks/d) for men.
 †Standardized for age and sex.

Alcohol consumption and the risk of incident atrial fibrillation among people with cardiovascular disease

Table 5: Crude and adjusted hazard ratios (HRs) for incident atrial fibrillation, by level of alcohol consumption*

Alcohol consumption	% (no.) of patients with incident atrial fibrillation	HR (95% CI)				
		Unadjusted analysis	Model 1†	Model 2‡	Model 3§	Model 4¶
Low	6.3 (1 179/18 775)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
Moderate	7.8 (871/11 139)	1.23 (1.12–1.34)	1.15 (1.05–1.26)	1.16 (1.06–1.28)	1.14 (1.04–1.26)	1.14 (1.04–1.26)
High	8.3 (43/519)	1.31 (0.97–1.78)	1.29 (0.95–1.76)	1.34 (0.99–1.83)	1.32 (0.97–1.80)	1.32 (0.97–1.80)
<i>p</i> value for trend		< 0.001	0.001	< 0.001	0.002	0.002

Note: CI = confidence interval, ref = reference category.

*Low = < 1 drink/wk; moderate = 1–14 drinks/wk (about 2 drinks/d) for women and 1–21 drinks/wk (about 3 drinks/d) for men; high = > 14 drinks/wk (> 2 drinks/d) for women and > 21 drinks/wk (> 3 drinks/d) for men.

†Model 1: Adjusted for age, sex, body mass index and region (Europe or Americas v. Australia/Asia).

‡Model 2: Adjusted for covariates in model 1, plus medical history of coronary artery disease, stroke or transient ischemic attack, hypertension, diabetes, chronic renal disease, and sleep apnea.

§Model 3: Adjusted for covariates in model 2, plus smoking status, education (1–8 yr, 9–12 yr or college/trade v. none), physical activity (2–4 times/wk or ≥ 5 times/wk v. < 1 time/wk) and stress.

¶Model 4: Adjusted for covariates in model 3, plus use of statin and treatment allocation (ramipril, telmisartan or both v. placebo) in the trials.

Alcohol consumption and the risk of incident atrial fibrillation among people with cardiovascular disease

Table 6: Crude and adjusted hazard ratios (HRs) for incident atrial fibrillation, by binge-drinking status*

Alcohol consumption*	% (no.) of patients with incident atrial fibrillation	HR (95% CI)				
		Unadjusted analysis	Model 1†	Model 2‡	Model 3§	Model 4¶
Low	6.3 (1179/18 775)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
Moderate or high						
No binge drinking	7.8 (814/10 454)	1.22 (1.12–1.33)	1.14 (1.03–1.25)	1.15 (1.05–1.26)	1.13 (1.03–1.24)	1.13 (1.03–1.24)
Binge drinking	8.3 (100/1 204)	1.31 (1.07–1.61)	1.34 (1.09–1.65)	1.38 (1.12–1.69)	1.36 (1.10–1.67)	1.35 (1.10–1.67)
<i>p</i> value for trend		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

Note: CI = confidence interval, ref = reference category.

*Binge drinking = > 5 drinks/d at any one time or a calculated average intake of > 5 drinks/d; non-binge drinking = ≥ 1 drink/wk but not meeting the criterion for binge drinking; low = < 1 drink/wk; moderate = 1–14 drinks/wk (about 2 drinks/d) for women and 1–21 drinks/wk (about 3 drinks/d) for men; high = > 14 drinks/wk (> 2 drinks/d) for women and > 21 drinks/wk (> 3 drinks/d) for men.

†Model 1: Adjusted for age, sex, body mass index and region (Europe or Americas v. Australia/Asia).

‡Model 2: Adjusted for covariates in model 1, plus medical history of coronary artery disease, stroke or transient ischemic attack, hypertension, diabetes, chronic renal disease, and sleep apnea.

§Model 3: Adjusted for covariates in model 2, plus smoking status, education (1–8 yr, 9–12 yr or college/trade v. none), physical activity (2–4 times/wk or ≥ 5 times/wk v. < 1 time/wk) and stress.

¶Model 4: Adjusted for covariates in model 3, plus use of statin and treatment allocation (ramipril, telmisartan or both v. placebo) in the trials.

Alcohol consumption and the risk of incident atrial fibrillation among people with cardiovascular disease

Interpretation:

- Moderate to high alcohol intake was associated with an increased incidence of atrial fibrillation among people aged 55 or older with cardiovascular disease or diabetes.
- Among moderate drinkers, the effect of binge drinking on the risk of atrial fibrillation was similar to that of habitual heavy drinking.

Alcohol Consumption and Risk of Atrial Fibrillation

A Prospective Study and Dose-Response Meta-Analysis

BACKGROUND Although high alcohol consumption has been associated with increased risk of atrial fibrillation (AF), the role of light to moderate drinking remains unclear.

OBJECTIVES The study sought to investigate the association between alcohol consumption and AF risk in a prospective study of Swedish men and women and to conduct a meta-analysis of prospective studies to summarize available evidence.

We followed 79,019 men and women who, at baseline, were free from AF and had completed a questionnaire about alcohol consumption and other risk factors for chronic diseases. Incident AF cases were ascertained by linkage to the Swedish Inpatient Register

For the meta-analysis, studies were identified by searching PubMed through January 10, 2014, and by reviewing references of pertinent publications. Study-specific relative risks (RRs) were combined using a random effects model

(95% CI: 1.01 to 1.28) for 15 to 21 drinks/week, and 1.39 (95% CI: 1.22 to 1.58) for >21 drinks/week. Results were similar after excluding binge drinkers. In a meta-analysis of 7 prospective studies, including 12,554 AF cases, the RRs were 1.08 (95% CI: 1.06 to 1.10) for 1 drink/day, 1.17 (95% CI: 1.13 to 1.21) for 2 drinks/day, 1.26 (95% CI: 1.19 to 1.33) for 3 drinks/day, 1.36 (95% CI: 1.27 to 1.46) for 4 drinks/day, and 1.47 (95% CI: 1.34 to 1.61) for 5 drinks/day, compared with nondrinkers.

CONCLUSIONS These findings indicate that alcohol consumption, even at moderate intakes, is a risk factor for atrial fibrillation. (J Am Coll Cardiol 2014;64:281-9) © 2014 by the American College of Cardiology Foundation.

Alcohol Consumption and Risk of Atrial Fibrillation

JACC VOL. 64, NO. 3, 2014

JULY 22, 2014:281-9

A Prospective Study and Dose-Response Meta-Analysis

TABLE 1 Risk Evaluation for Atrial Fibrillation and Alcohol Use

Alcohol Drinking Status*	Number of Cases	Person-Yrs	Age- and Sex-Adjusted RR (95% CI)	Multivariable RR (95% CI)†	Multivariable RR (95% CI)‡
Never	820	66,101	1.02 (0.93-1.12)	1.03 (0.94-1.12)	1.07 (0.97-1.18)
Past	406	36,765	1.02 (0.91-1.14)	0.96 (0.85-1.08)	1.01 (0.89-1.16)
Current, drinks/week§					
<1 (0.4)	1,232	132,869	1.00 (reference)	1.00 (reference)	1.00 (reference)
1-6 (4.6)	2,909	381,029	0.99 (0.92-1.06)	1.01 (0.94-1.09)	1.06 (0.98-1.15)
7-14 (10.0)	1,162	158,611	1.05 (0.96-1.14)	1.07 (0.98-1.17)	1.12 (1.02-1.23)
15-21 (16.6)	381	48,969	1.15 (1.02-1.30)	1.14 (1.01-1.28)	1.18 (1.03-1.35)
>21 (28.4)	335	35,076	1.42 (1.25-1.62)	1.39 (1.22-1.58)	1.43 (1.25-1.65)
p for trend¶			<0.0001	<0.0001	<0.0001
Liquor, drinks/week					
<1 (0.1)	3,993	629,590	1.00 (reference)	1.00 (reference)	1.00 (reference)
1-6 (2.3)	1,603	188,686	1.08 (1.02-1.15)	1.04 (0.98-1.10)	1.05 (0.98-1.12)
7-14 (8.8)	314	32,352	1.25 (1.11-1.41)	1.13 (1.01-1.28)	1.14 (1.00-1.30)
>14 (18.8)	109	8,792	1.69 (1.39-2.05)	1.43 (1.14-1.74)	1.46 (1.18-1.81)
p for trend¶			<0.0001	0.0002	0.0002
Wine, drinks/week					
<1 (0.2)	3,465	484,708	1.00 (reference)	1.00 (reference)	1.00 (reference)
1-6 (2.6)	2,128	319,913	0.99 (0.93-1.04)	1.01 (0.96-1.07)	1.02 (0.96-1.09)
7-14 (8.6)	331	45,248	1.11 (0.99-1.24)	1.09 (0.97-1.23)	1.07 (0.94-1.21)
>14 (18.6)	95	9,551	1.37 (1.11-1.68)	1.30 (1.06-1.61)	1.35 (1.08-1.68)
p for trend			0.003	0.009	0.01
Beer, drinks/week					
<1 (0.1)	2,954	443,987	1.00 (reference)	1.00 (reference)	1.00 (reference)
1-6 (2.7)	2,196	303,557	0.95 (0.90-1.01)	0.96 (0.91-1.02)	1.00 (0.93-1.06)
7-14 (9.1)	584	72,041	1.09 (0.99-1.20)	1.07 (0.98-1.12)	1.11 (1.00-1.23)
>14 (21.2)	285	39,835	1.12 (0.98-1.27)	1.06 (0.93-1.23)	1.03 (0.87-1.19)
p for trend¶			0.02	0.14	0.28

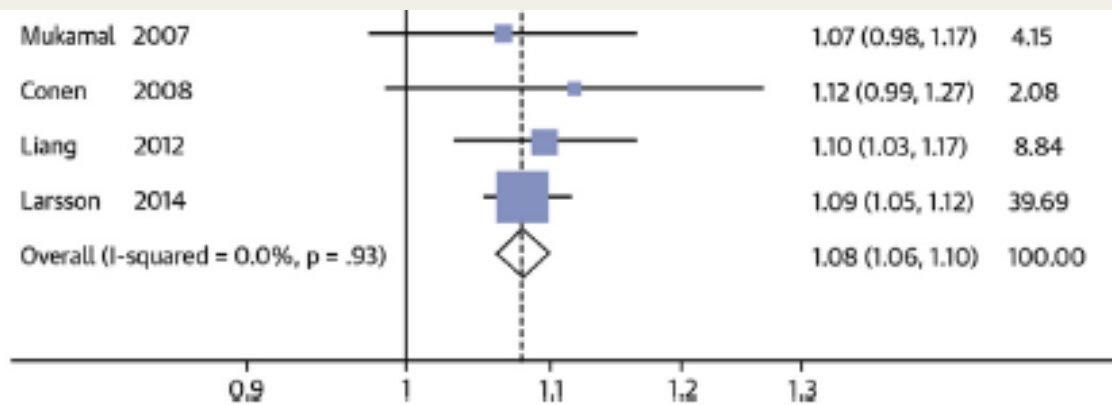
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A Prospective Study and Dose-Response Meta-Analysis

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These findings indicate that alcohol consumption, even at moderate intakes, is a risk factor for atrial fibrillation.



CENTRAL ILLUSTRATION Forest Plot of Relative Risks of Atrial Fibrillation Per 1 Drink/Day Increment in Alcohol Consumption

Alcohol Consumption and Risk of Atrial Fibrillation

How Much Is Too Much?*

David Conen, MD, MPH,^{†‡} Christine M. Albert, MD, MPH^{†§||}

Editorial comment

- Binge drinking (>5 drinks on a single occasion) reported by 18% of the population, was associated with an increased risk of new onset AF, independent of the number of drinks consumed per week.
- These results combined with prior results in patients with established cardiovascular Disease argue strongly that the pattern of alcohol consumption is an important determinant of AF risk.

Net clinical benefit of alcohol reduction

- The question of how much is too much is not definitely answered by this study.
- When assessing the potential net clinical benefit of alcohol reduction, elevations in AF risk associated with small-to-moderate amounts of alcohol intake need to be balanced against risk reductions observed in other cardiovascular outcomes at similar levels of intake *

* N Engl J Med 2003;348:109–18.

2 major questions regarding the relationship between alcohol and incident AF remain unanswered.

- First, although binge drinking and chronic levels of moderate-to-high alcohol intake have pro-arrhythmic effects and direct toxic effects on the myocardium, the mechanisms by which small-to moderate amounts of alcohol consumption may increase AF risk are unclear.
- Second, it remains unclear from the present data whether small intakes of alcohol are associated with AF risk.

Conclusion

- Because the AF risk related to consuming low-to-moderate amounts of alcohol (i.e., <2 drinks per day) is small, actual data in isolation should not discourage individuals from safely consuming and enjoying such modest amounts of alcohol.



Looking forward to welcoming you
in Lebanon