Article:
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SUPPLEMENTAL MATERIAL

Supplemental Table 1: Summary of cohort studies used in meta-analysis

Study Author	Study Name	Country	Patient Characteristics	Duration of Follow up (years)	Total	Cases	AAA Assessment	Alcohol Assessment (units)	Adjustments in model used
Bengtsson et al (1991)[33]	Men born in 1914 in Malmö	Sweden	Age 68 at baseline 100% male	5	499	39	Ultrasound	Structured questionnaire (grams/day)	None
Alcorn et al (1996)[34]	Cardiovascular Health Study	USA	Age 41% male	5	4741	729	Ultrasound or history of repair	Self-reported (drinks/week) 1 drink = 14g ethanol	None
Tornwall et al (2001)[35]	Alpha-Tocopherol, Beta-Carotene Cancer Prevention Study	Finland	Age 50-69 years at baseline Median age 57 years 100% male smokers	5-8	27111	181	Hospital, autopsy and death records	Self- administered diet-history questionnaire (grams/day)	Age, smoking, total cholesterol, HDL, SBP, DBP, total energy intake, alpha-tocopherol and beta-carotene supplementation
Iribarren et al (2007)[36]	Kaiser Multiphasic Health Checkup Cohort Study	USA	≥18 years old 45% male	33	104813	605	Hospital records	Self-administered questionnaire (drinks/day)	Age, smoking, sex, total cholesterol, history of hypertension, education, height, weight, DM, IHD, race/ethnicity, abdominal diameter, WBC, COPD, Stroke, Intermittent Claudication, eGFR
Wong et al (2007)[37]	Health	USA	Age 40-75 years	16	39352	376	Self-reported	Semi-quantitative	Age, smoking,

	Professionals Follow-up Study		at baseline 100% males				diagnosis confirmed with medical records	FFQ (grams/day)	hypertension, BMI DM, PA,
Lederle (2008)[38]	Women's Health Initiative	USA	Age 50-79 at baseline 0% males	8	161808	184	Hospital records	FFQ	None comparing different levels of intake
Sode et al (2013)[39]	Copenhagen City Heart Study (CCHS)	Denmark	Age 20-80+ at baseline 47% male	34	15072	335	Hospital and death records	Not stated (g/week)	Age, smoking, sex, cholesterol, lipid-lowering medication, SBP, hypertension
Sode et al (2013)[39]	Copenhagen General Population Study (CGPS)	Denmark	Age 20-80+ at baseline 44% male	7	56211	169	Hospital and death records	Not stated (g/week)	Age, smoking, sex, cholesterol, lipid-lowering medication, SBP, hypertension
Stackelberg et al (2014)[40]	Cohort of Swedish Men (CSM)	Sweden	Age 45-83 at baseline 100% male	14	44715	1020	Data linkage to hospital and death records	FFQ (Glasses/week) 1 glass= 12g ethanol	Age, smoking, hypercholesterolaemia, hypertension, education, waist circumference, DM, CVD, fruit consumption
Stackelberg et al (2014)[40]	Swedish Mammography Cohort (SMC)	Sweden	Age 45-83 at baseline 100% female	14	35569	194	Data linkage to hospital and death records	FFQ (Glasses/week) 1 glass= 12g ethanol	Age, smoking, hypercholesterolaemia, hypertension, education, waist circumference, DM, CVD, fruit consumption
Jahangir et al (2015)[41]	Southern Community Cohort Study	USA	Age 65+ at baseline 36% male	5	18782	281	Insurance records	Personal interview and self-administered questionnaire (drinks/day) 1 drink = 14g	None

ethanol

BMI= Body Mass Index, COPD= Chronic Obstructive Pulmonary Disease, CVD= cardiovascular disease, DBP= Diastolic blood pressure, DM= Diabetes Mellitus, eGFR= Estimated Glomerular Filtration Rate, FFQ= Food Frequency Questionnaire, HDL= High Density Lipoprotein, LDL= Low Density Lipoprotein, PA=Physical Activity, SBP= systolic blood pressure, WBC= White Blood Cells

Supplemental Table 2: Medline search strategy

1	exp Aortic Aneurysm, Abdominal/
2	exp Aortic Aneurysm/
3	AAA.mp
4	abdominal aortic aneurysm.mp
5	aortic aneurysm.mp.
6	aortic diameter.mp
7	aortic dilat*.mp.
8	1 or 2 or 3 or 4 or 5 or 6 or 7
9	exp Alcohol Drinking/
10	alcohol*.mp.
11	diet.mp.
12	exp Diet/
13	Ethanol/
14	Binge Drinking/
15	Alcoholics/
16	Alcoholism/
17	ethanol.mp.
18	binge drinking.mp
19	(risk adj factor*).mp
20	9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18
21	8 and 20
22	exp Cohort Studies/
23	cohort*.tw.
24	exp Cross-Sectional Studies/
25	(cross adj sectional*).tw.
26	exp Case-Control Studies/
27	(case adj control*).tw.
28	Epidemiologic Methods/
29	22 or 23 or 24 or 25 or 26 or 27 or 28
30	(animals not (humans and animals)).sh.
31	29 not 30
32	randomi#ed controlled trial.pt.
33	controlled clinical trial.pt.

34 randomi#ed.ab.
35 placebo.ab.
36 drug therapy.fs.
37 randomly.ab.
38 trial.ab.
39 groups.ab.
40 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39
41 exp animals/ not humans.sh.
42 40 not 41
43 31 or 42
44 21 and 43

Supplemental Table 3: Risk of bias table, using the Newcastle-Ottawa quality assessment scale for studies included in meta-analysis of alcohol consumption and AAAs

Author	Study Name	Selection*	Comparability†	Outcome‡
Jahangir et al, 2015	Southern Community Cohort Study	****		**
Stackelberg et al, 2014	Cohort of Swedish Men	****	**	**
Stackelberg et al, 2014	Swedish Mammography Cohort	****	**	**
Sode et al, 2013	Copenhagen City Heart Study	**	**	***
Sode et al, 2013	Copenhagen General Population Study	**	**	**
Lederle et al, 2008	Women's Health Initiative	****		***
Iribarren et al, 2007	Kaiser Multiphasic Health Checkup Cohort Study	***	**	***
Wong et al, 2007	Health Professionals Follow-up Study	**	**	***
Tornwall et al, 2001	Alpha-Tocopherol, Beta Carotene Cancer Prevention Study	**	**	**
Alcorn et al, 1996	Cardiovascular Health Study	***		**
Bengtsson et al, 1991	Men born in 1914 in Malmö	***		**

*Stars awarded for adult participants sampled from the general population who were representative of alcohol consumption in that population, selection of unexposed participants from the same population, alcohol consumption assessed via a structured interview or questionnaire or via patient records and demonstration that an AAA diagnosis was not present at the beginning of the study.

†Stars awarded for adjustment for age, smoking and gender in results contributing towards the linear dose-response meta-analysis.

‡Stars awarded for the AAA diagnosis being made based on medical or death records instead of self-report, for follow up till the study completion, AAA diagnosis or death, at least 70% follow-up and follow-up for at least 15 years.

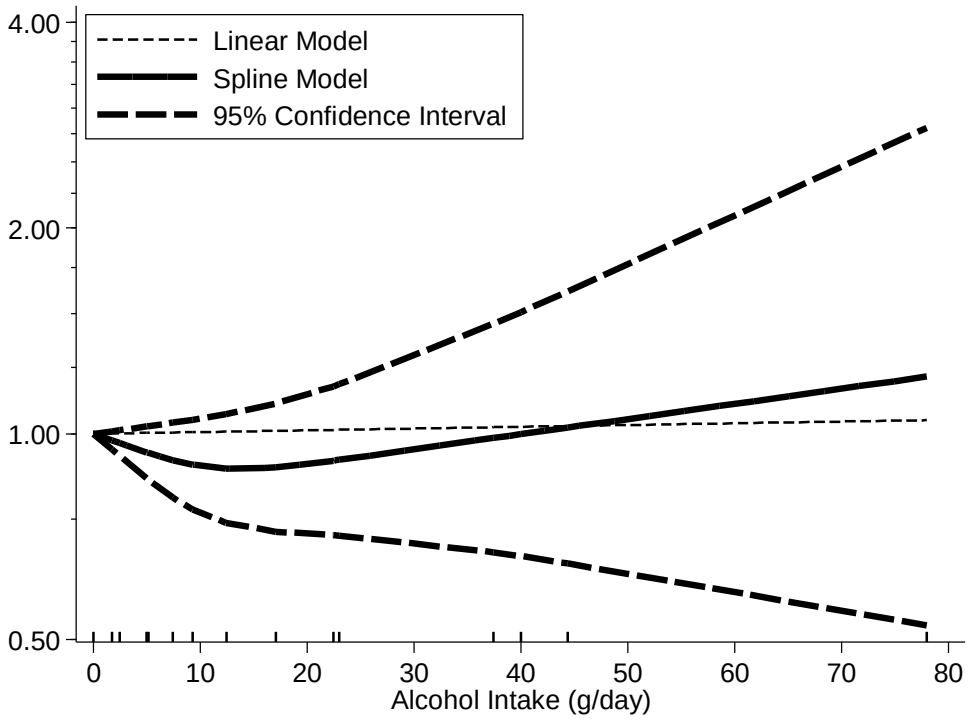
Supplemental Table 4. Subgroup analyses for alcohol consumption and incidence of abdominal aortic aneurysm.

Subgroup		RR (95% CI)	I^2	n	P_{het} *	P_{het} †
sex ‡	only males	1.00 (0.95, 1.06)	73%	6	0.002	
	only females	0.94 (0.79, 1.12)	81%	4	0.001	
geographic location	Americas	0.99 (0.94, 1.04)	72%	7	0.001	
	Europe	1.02 (0.97, 1.08)	71%	4	0.02	0.03
mean alcohol consumption	≤14g/day	1.01 (0.95, 1.07)	72%	6	0.003	
	>14g/day §	1.00 (0.95, 1.04)	74%	5	0.004	0.09
adjusted for age	no	1.10 (0.97, 1.26)	80%	4	0.002	
	yes	0.99 (0.96, 1.03)	71%	7	0.002	0.4
adjusted for sex	no	0.99 (0.95, 1.04)	0%	2	0.9	
	yes	1.01 (0.96, 1.05)	78%	9	<0.001	0.9
adjusted for smoking	no	1.10 (0.97, 1.26)	80%	4	0.002	
	yes	0.99 (0.96, 1.03)	71%	7	0.002	0.4
adjusted for plasma cholesterol	no	1.08 (0.98, 1.18)	75%	5	0.003	
	yes	0.98 (0.95, 1.02)	71%	6	0.004	0.08
adjusted for anthropometry	no	1.02 (0.98, 1.06)	60%	7	0.02	
	yes	0.96 (0.89, 1.03)	80%	4	0.002	0.01
adjusted for socio-economic factors	no	1.02 (0.99, 1.06)	58%	8	0.02	
	Yes	0.94 (0.87, 1.01)	77%	3	0.01	0.001

* P for heterogeneity within each subgroup. † P for heterogeneity between each subgroup. ‡ between subgroup comparison unavailable because of overlap between studies.

§ equivalent to 1 standard drink/day in the USA

Supplemental Figure 1: Non-linear dose response curve for alcohol consumption and AAA risk in males only



Supplemental Figure Legends

Supplemental Figure 1: Non-linear dose response curve for alcohol consumption and AAA risk in males only