

# Les complications cardiovasculaires III

## La prévention primaire

- Style de vie:
  - IMC
  - Alimentation (régime méditerranéen)
  - Alcool
  - Exercice physique

# Prévention primaire

# Les mesures de style de vie

- Arrêt du tabagisme et éviter le tabagisme passif
- Correction des habitudes alimentaires : au niveau des lipides, graisses saturées, cholestérol, acides gras polyinsaturés (d'origine végétale et marine), fruits frais et légumes, nombre de calories, sel et alcool: cf régime méditerranéen
- Activité physique régulière



# Indice de masse corporelle



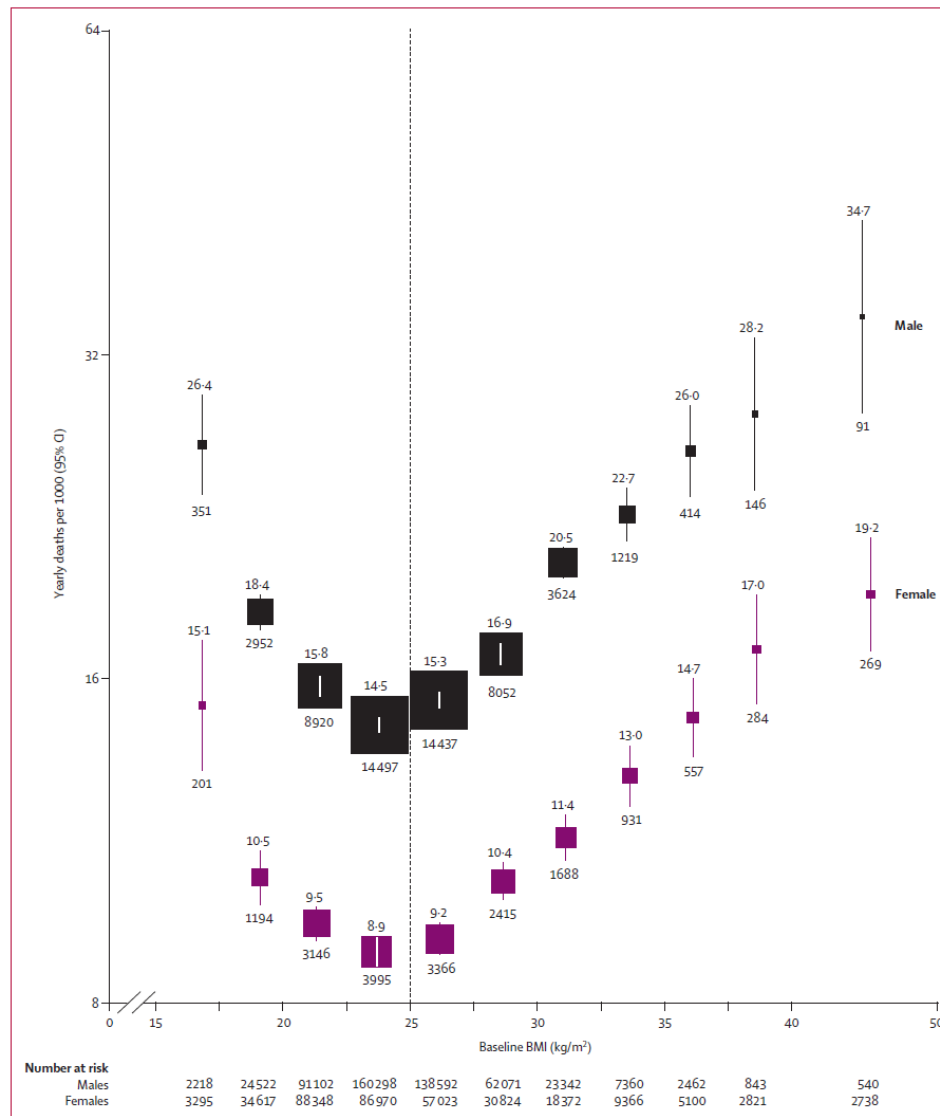
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## Body-mass index and cause-specific mortality in 900 000 adults: collaborative analyses of 57 prospective studies



*Prospective Studies Collaboration\**

*Lancet 2009; 373: 1083–96*



**Figure 2: All-cause mortality versus BMI for each sex in the range 15-50 kg/m<sup>2</sup> (excluding the first 5 years of follow-up)**  
 Relative risks at ages 35-89 years, adjusted for age at risk, smoking, and study, were multiplied by a common factor (ie, floated) to make the weighted average match the PSC mortality rate at ages 35-79 years. Floated mortality rates shown above each square and numbers of deaths below. Area of square is inversely proportional to the variance of the log risk. Boundaries of BMI groups are indicated by tick marks. 95% CIs for floated rates reflect uncertainty in the log risk for each single rate. Dotted vertical line indicates 25 kg/m<sup>2</sup> (boundary between upper and lower BMI ranges in this report).

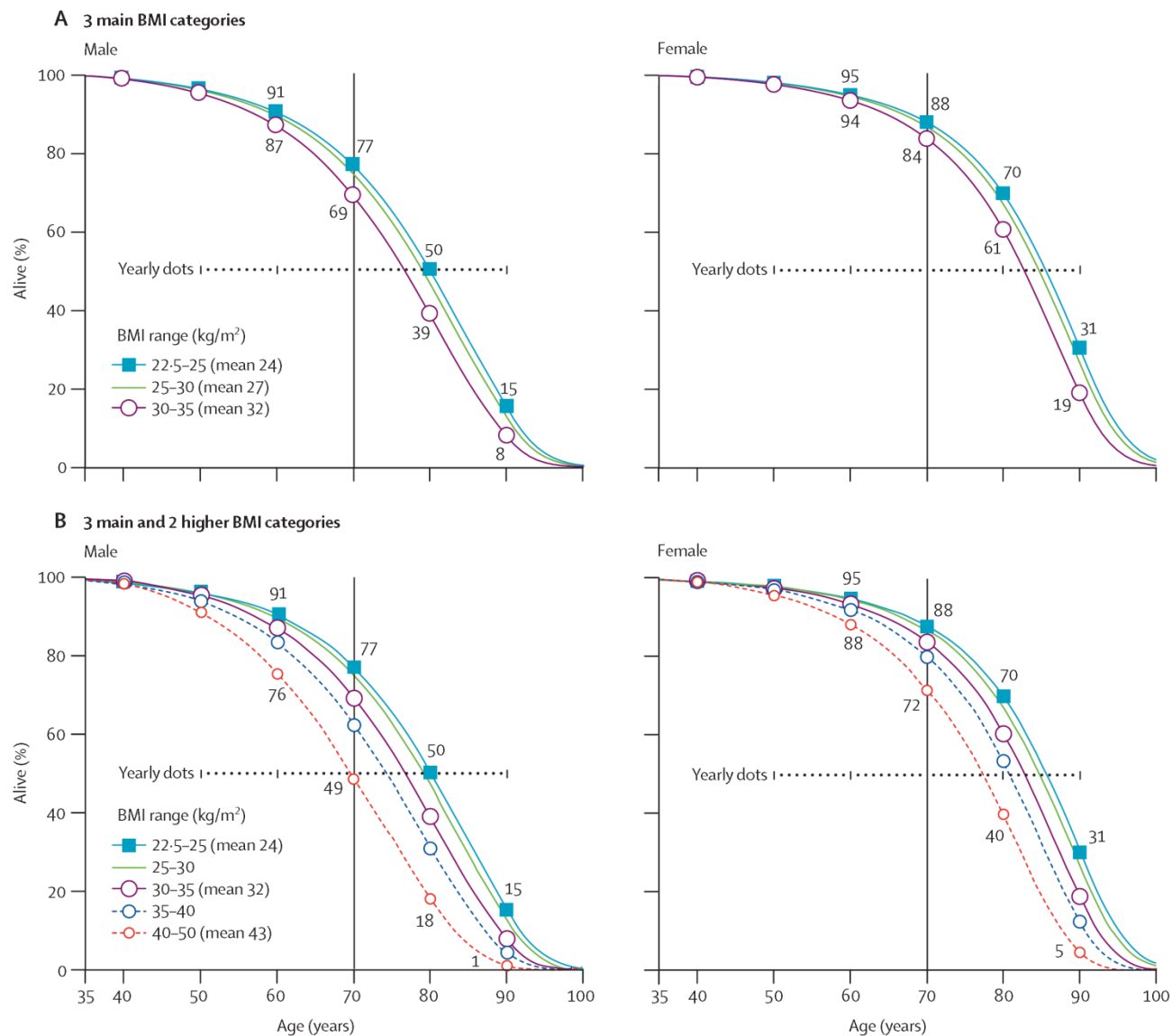
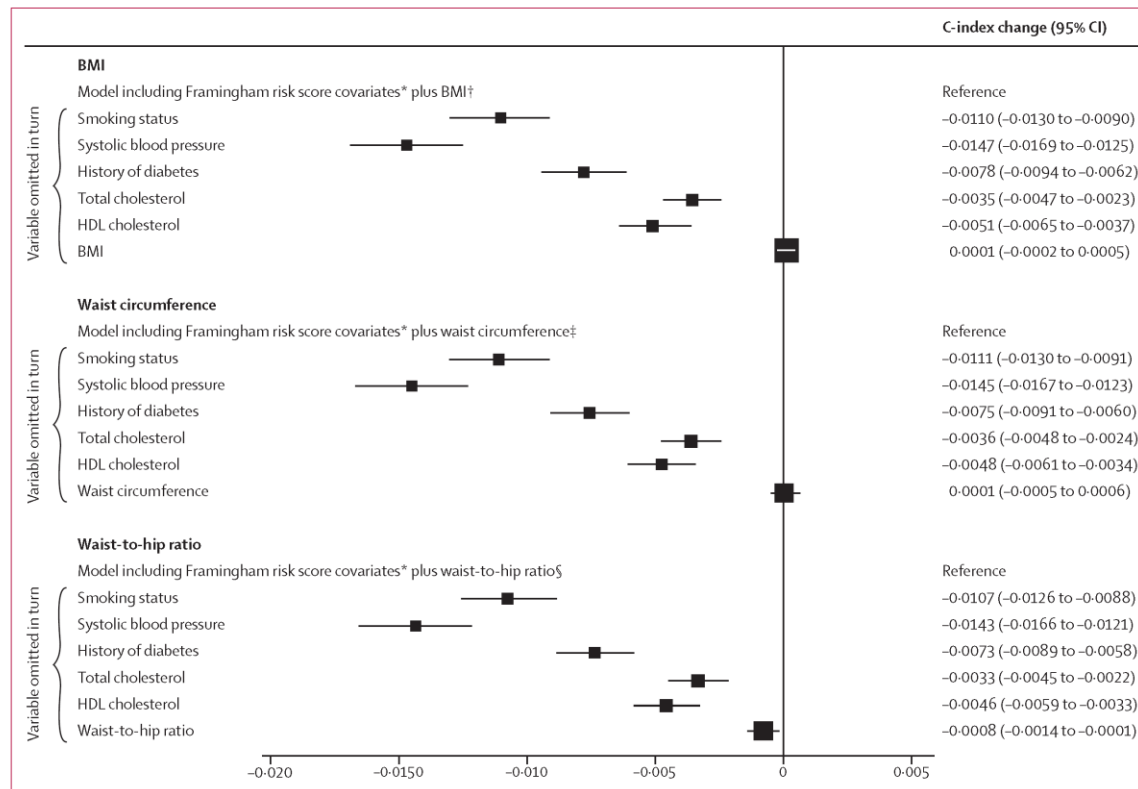


Figure 7: BMI versus lifespan in western Europe, year 2000



# Separate and combined associations of body-mass index and abdominal adiposity with cardiovascular disease: collaborative analysis of 58 prospective studies

The Emerging Risk Factors Collaboration\*



**Figure 6: Changes in C-index for cardiovascular disease risk prediction from omission of individual risk factors from a full model containing Framingham risk score covariates plus BMI, waist circumference, or waist-to-hip ratio**

Analyses were based on 144 795 participants (8347 cardiovascular events) in 39 studies. Analyses were restricted to participants with BMI of 20 kg/m<sup>2</sup> or higher. BMI=body-mass index. \*Framingham risk score covariates include age, smoking status, systolic blood pressure, history of diabetes, and total and HDL cholesterol, and model was stratified by sex. †Reference C-index of 0.7324 (95% CI 0.7272 to 0.7375). ‡Reference C-index of 0.7324 (95% CI 0.7273 to 0.7376). §Reference C-index of 0.7333 (95% CI 0.7281 to 0.7384).



# Régime méditerranéen

- Consommation de céréales accrue : pain, pâtes, riz, semoule...
- Consommation accrue de pommes de terre, fruits et légumes dont légumineuses (haricots, fèves...)
- Consommation accrue de noix, noisettes, amandes  
Huile d'olive : principale source de graisses
- Consommation modérée de poissons et volailles et de yaourts et fromages
- Réduction de la consommation en viande rouge
- Vin en quantité modérée aux repas

## **Mediterranean alpha-linolenic acid-rich diet in secondary prevention of coronary heart disease**

*Michel de Lorgeril, Serge Renaud, Nicole Mamelie, Patricia Salen, Jean-Louis Martin, Isabelle Monjaud, Jeannine Guidollet, Paul Touboul, Jacques Delaye*

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*Lancet* 1994; **343**: 1454–59

## **Mediterranean Diet, Traditional Risk Factors, and the Rate of Cardiovascular Complications After Myocardial Infarction**

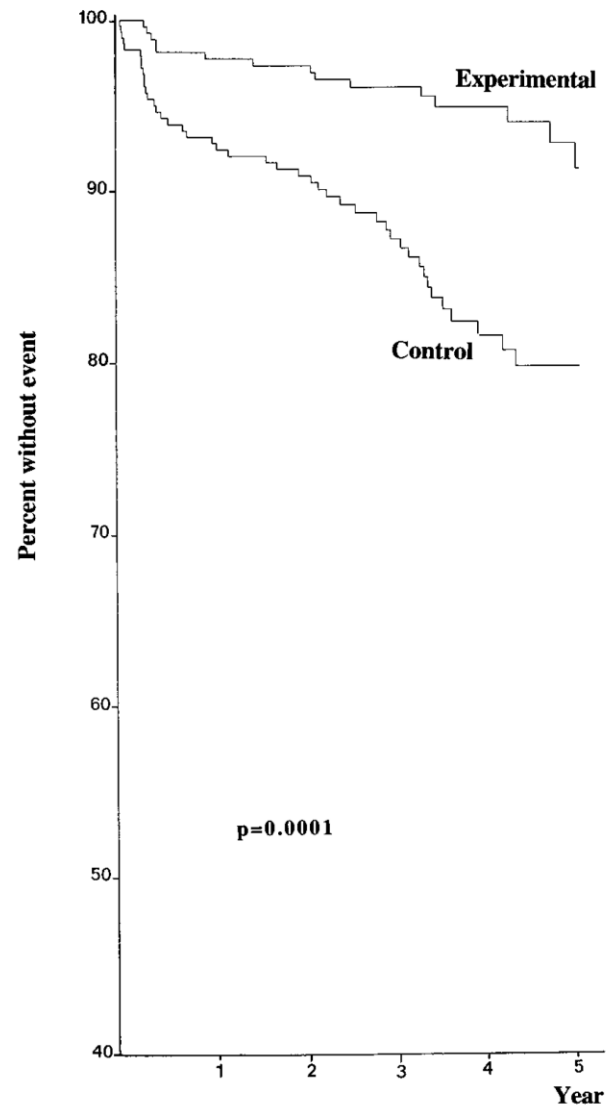
### **Final Report of the Lyon Diet Heart Study**

Michel de Lorgeril, MD; Patricia Salen, BSc; Jean-Louis Martin, PhD; Isabelle Monjaud, BSc; Jacques Delaye, MD; Nicole Mamelie, PhD

*(Circulation. 1999;99:779-785.)*

# régime dit méditerranéen

- augmentation de la consommation de pain, de légumes verts, de légumes à base de racines, de fruits et de poissons
- diminution de la consommation de viande et remplacement du bœuf, de l'agneau et du porc par des volailles
- utilisation de l'huile d'olive ou de colza pour les salades et la cuisine
- remplacement du beurre et de la crème de lait par une margarine à base de colza
- quantité modérée de vin autorisée (mais non conseillée) au cours des repas



**Figure 1.** Cumulative survival without nonfatal myocardial infarction (CO 1) among experimental (Mediterranean group) patients and control subjects.

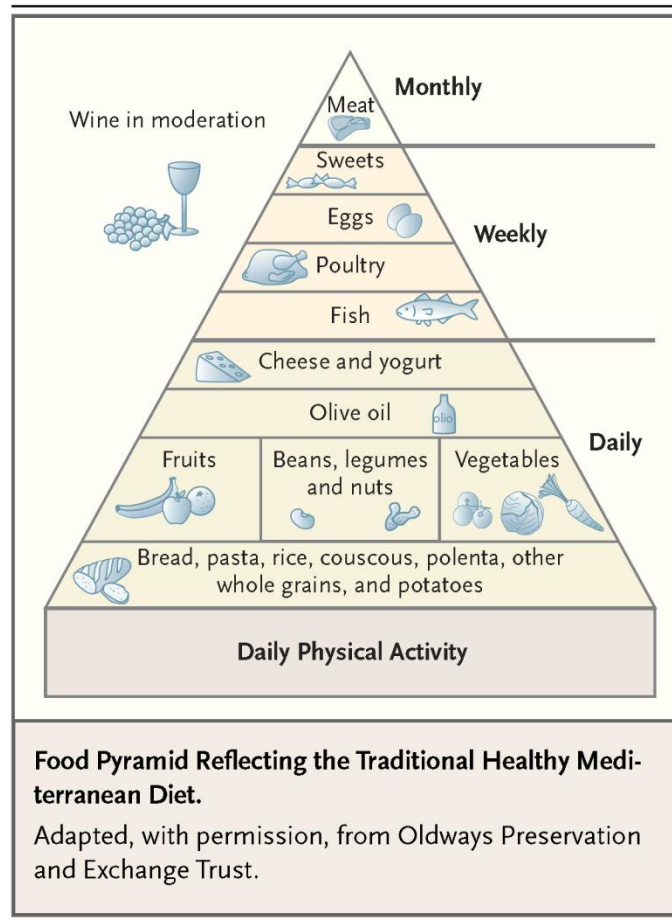
**TABLE 1. End Points in the 2 Groups and Risk Ratios for the 3 Composite Outcomes Calculated With the Cox Proportional-Hazards Model**

|                                                          | Control |       | Experimental |      | Risk Ratio† (95% CI) | P      |
|----------------------------------------------------------|---------|-------|--------------|------|----------------------|--------|
|                                                          | Number  | Rate* | Number       | Rate |                      |        |
| Major primary end points                                 |         |       |              |      |                      |        |
| Cardiac deaths                                           | 19      | 1.37  | 6            | 0.41 | 0.35 (0.15–0.83)     | 0.01   |
| Nonfatal AMI                                             | 25      | 2.70  | 8            | 0.83 |                      |        |
| Total primary end points (composite outcome 1)           | 44      | 4.07  | 14           | 1.24 | 0.28 (0.15–0.53)     | 0.0001 |
| Noncardiac deaths                                        | 5       | 0.36  | 8            | 0.54 | 0.44 (0.21–0.94)     | 0.03   |
| All-cause deaths                                         | 24      | 1.74  | 14           | 0.95 |                      |        |
| Major secondary end points                               |         |       |              |      |                      |        |
| Periprocedural infarction                                | 2       |       | 0            |      | 0.33 (0.21–0.52)     | 0.0001 |
| Unstable angina                                          | 24      |       | 6            |      |                      |        |
| Heart failure                                            | 11      |       | 6            |      |                      |        |
| Stroke                                                   | 4       |       | 0            |      |                      |        |
| Pulmonary embolism                                       | 3       |       | 0            |      |                      |        |
| Peripheral embolism                                      | 2       |       | 1            |      |                      |        |
| Total secondary end points                               | 46      | 4.96  | 13           | 1.35 |                      |        |
| Total primary+secondary end points (composite outcome 2) | 90      | 9.03  | 27           | 2.59 |                      |        |
| Minor secondary end points                               |         |       |              |      |                      |        |
| Stable angina                                            | 29      |       | 21           |      | 0.53 (0.38–0.74)     | 0.0002 |
| Elective myocardial revascularization                    | 45      |       | 37           |      |                      |        |
| Post-PTCA restenosis                                     | 15      |       | 9            |      |                      |        |
| Thrombophlebitis                                         | 1       |       | 2            |      |                      |        |
| Total minor end points                                   | 90      | 9.71  | 68           | 7.04 |                      |        |
| Total major and minor end points (composite outcome 3)   | 180     | 18.74 | 95           | 9.63 |                      |        |

AMI indicates acute myocardial infarction.

# The Mediterranean Diet and Mortality — Olive Oil and Beyond

Frank B. Hu, M.D., Ph.D.





# En prévention primaire

THE NEW ENGLAND JOURNAL OF MEDICINE

ORIGINAL ARTICLE

## Primary Prevention of Cardiovascular Disease with a Mediterranean Diet

Ramón Estruch, M.D., Ph.D., Emilio Ros, M.D., Ph.D., Jordi Salas-Salvadó, M.D., Ph.D.,  
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Rosa Maria Lamuela-Raventós, D.Pharm., Ph.D., Lluís Serra-Majem, M.D., Ph.D.,  
Xavier Pintó, M.D., Ph.D., Josep Basora, M.D., Ph.D., Miguel Angel Muñoz, M.D., Ph.D.,  
José V. Sorlí, M.D., Ph.D., José Alfredo Martínez, D.Pharm., M.D., N Engl J Med 2013.  
Miguel Angel Martínez-González, M.D., Ph.D., for the PREDIMED Study DOI: 10.1056/NEJMoa1200303

## CORRESPONDENCE



### Retraction and Republication: Primary Prevention of Cardiovascular Disease with a Mediterranean Diet. N Engl J Med 2013;368:1279-90.

**TO THE EDITOR:** Because of irregularities in the randomization procedures, we wish to retract the following article: Primary Prevention of Cardiovascular Disease with a Mediterranean Diet. N Engl J Med 2013;368:1279-90. DOI: 10.1056/NEJMoa1200303.<sup>1</sup> We have reanalyzed the data and have published a new report: Primary Prevention of Cardiovascular Disease with a Mediterranean Diet Supplemented with Extra-Virgin Olive Oil or Nuts. N Engl J Med. DOI: 10.1056/NEJMoa1800389.<sup>2</sup>

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ORIGINAL ARTICLE

# Primary Prevention of Cardiovascular Disease with a Mediterranean Diet Supplemented with Extra-Virgin Olive Oil or Nuts

R. Estruch, E. Ros, J. Salas-Salvadó, M.-I. Covas, D. Corella, F. Arós,  
E. Gómez-Gracia, V. Ruiz-Gutiérrez, M. Fiol, J. Lapetra, R.M. Lamuela-Raventos,  
L. Serra-Majem, X. Pintó, J. Basora, M.A. Muñoz, J.V. Sorlí, J.A. Martínez, M. Fitó,  
A. Gea, M.A. Hernán, and M.A. Martínez-González,  
for the PREDIMED Study Investigators\*

N Engl J Med 2018;378:e34.  
DOI: 10.1056/NEJMoa1800389

**Table 1. Summary of Dietary Recommendations to Participants in the Mediterranean-Diet Groups and the Control-Diet Group.**

| Food                                                     | Goal                |
|----------------------------------------------------------|---------------------|
| <b>Mediterranean diet</b>                                |                     |
| Recommended                                              |                     |
| Olive oil*                                               | ≥4 tbsp/day         |
| Tree nuts and peanuts†                                   | ≥3 servings/wk      |
| Fresh fruits                                             | ≥3 servings/day     |
| Vegetables                                               | ≥2 servings/day     |
| Fish (especially fatty fish), seafood                    | ≥3 servings/wk      |
| Legumes                                                  | ≥3 servings/wk      |
| Sofrito‡                                                 | ≥2 servings/wk      |
| White meat                                               | Instead of red meat |
| Wine with meals (optionally, only for habitual drinkers) | ≥7 glasses/wk       |
| Discouraged                                              |                     |
| Soda drinks                                              | <1 drink/day        |
| Commercial bakery goods, sweets, and pastries§           | <2 servings/wk      |
| Spread fats                                              | <1 serving/day      |
| Red and processed meats                                  | <1 serving/day      |
| <b>Low-fat diet (control)¶</b>                           |                     |
| Recommended                                              |                     |
| Low-fat dairy products                                   | ≥3 servings/day     |
| Bread, potatoes, pasta, rice                             | ≥3 servings/day     |
| Fresh fruits                                             | ≥3 servings/day     |
| Vegetables                                               | ≥2 servings/day     |
| Lean fish and seafood                                    | ≥3 servings/wk      |
| Discouraged                                              |                     |
| Vegetable oils (including olive oil)                     | ≤2 tbsp/day         |
| Commercial bakery goods, sweets, and pastries§           | ≤1 serving/wk       |
| Nuts and fried snacks                                    | ≤1 serving/wk       |
| Red and processed fatty meats                            | ≤1 serving/wk       |
| Visible fat in meats and soups                           | Always remove       |
| Fatty fish, seafood canned in oil                        | ≤1 serving/wk       |
| Spread fats                                              | ≤1 serving/wk       |
| Sofrito‡                                                 | ≤2 servings/wk      |

**Table 2. Baseline Characteristics of the Participants, According to Intervention Group.\***

| Characteristic                              | Mediterranean Diet with EVOO (N=2543) | Mediterranean Diet with Nuts (N=2454) | Control Diet (N=2450) |
|---------------------------------------------|---------------------------------------|---------------------------------------|-----------------------|
| Female sex — no. (%)†                       | 1493 (58.7)                           | 1326 (54.0)                           | 1463 (59.7)           |
| Age — yr†                                   | 67.0±6.2                              | 66.7±6.1                              | 67.3±6.3              |
| Race or ethnic group — no. (%)‡             |                                       |                                       |                       |
| White, from Europe                          | 2470 (97.1)                           | 2390 (97.4)                           | 2375 (96.9)           |
| Hispanic, from Central or South America     | 35 (1.4)                              | 29 (1.2)                              | 38 (1.6)              |
| Other                                       | 38 (1.5)                              | 35 (1.4)                              | 37 (1.5)              |
| Smoking status — no. (%)                    |                                       |                                       |                       |
| Never smoked                                | 1572 (61.8)                           | 1465 (59.7)                           | 1527 (62.3)           |
| Former smoker                               | 618 (24.3)                            | 634 (25.8)                            | 584 (23.8)            |
| Current smoker                              | 353 (13.9)                            | 355 (14.5)                            | 339 (13.8)            |
| Body-mass index†§                           | 29.9±3.7                              | 29.7±3.8                              | 30.2±4.0              |
| Waist circumference — cm                    | 100±10                                | 100±10                                | 101±11                |
| Waist-to-height ratio†¶                     | 0.63±0.06                             | 0.63±0.06                             | 0.63±0.07             |
| Hypertension — no. (%)                      | 2088 (82.1)                           | 2024 (82.5)                           | 2050 (83.7)           |
| Type 2 diabetes — no. (%)†**                | 1282 (50.4)                           | 1143 (46.6)                           | 1189 (48.5)           |
| Dyslipidemia — no. (%)††                    | 1821 (71.6)                           | 1799 (73.3)                           | 1763 (72.0)           |
| Family history of premature CHD — no. (%)‡‡ | 576 (22.7)                            | 532 (21.7)                            | 560 (22.9)            |
| Medication use — no. (%)                    |                                       |                                       |                       |
| ACE inhibitors                              | 1236 (48.6)                           | 1223 (49.8)                           | 1216 (49.6)           |
| Diuretics†                                  | 534 (21.0)                            | 477 (19.4)                            | 562 (22.9)            |
| Other antihypertensive agents               | 725 (28.5)                            | 710 (28.9)                            | 758 (30.9)            |
| Statins                                     | 1039 (40.9)                           | 964 (39.3)                            | 983 (40.1)            |
| Other lipid-lowering agents                 | 121 (4.8)                             | 145 (5.9)                             | 126 (5.1)             |
| Insulin                                     | 124 (4.9)                             | 126 (5.1)                             | 134 (5.5)             |
| Oral hypoglycemic agents†                   | 768 (30.2)                            | 680 (27.7)                            | 757 (30.9)            |
| Antiplatelet therapy                        | 475 (18.7)                            | 490 (20.0)                            | 513 (20.9)            |
| Hormone-replacement therapy§§               | 42 (2.8)                              | 35 (2.6)                              | 39 (2.7)              |

| End Point                                  | Mediterranean Diet with EVOO (N = 2543) | Mediterranean Diet with Nuts (N = 2454) | Control Diet (N = 2450) |
|--------------------------------------------|-----------------------------------------|-----------------------------------------|-------------------------|
| No. of person-yr of follow-up              | 11852                                   | 10365                                   | 9763                    |
| Primary end point†                         |                                         |                                         |                         |
| No. of events                              | 96                                      | 83                                      | 109                     |
| Incidence rate per 1000 person-yr (95% CI) | 8.1 (6.6–9.9)                           | 8.0 (6.4–9.9)                           | 11.2 (9.2–13.5)         |
| 5-yr absolute risk — % (95% CI)‡           | 3.6 (2.8–4.5)                           | 4.0 (3.1–5.0)                           | 5.7 (4.6–6.9)           |
| Secondary end points                       |                                         |                                         |                         |
| Stroke                                     |                                         |                                         |                         |
| No. of events                              | 49                                      | 32                                      | 58                      |
| Incidence rate per 1000 person-yr (95% CI) | 4.1 (3.1–5.5)                           | 3.1 (2.1–4.4)                           | 5.9 (4.5–7.7)           |
| 5-yr absolute risk — % (95% CI)            | 1.7 (1.3–2.4)                           | 1.5 (1.1–2.3)                           | 3.0 (2.3–3.9)           |
| Myocardial infarction                      |                                         |                                         |                         |
| No. of events                              | 37                                      | 31                                      | 38                      |
| Incidence rate per 1000 person-yr (95% CI) | 3.1 (2.2–4.3)                           | 3.0 (2.0–4.2)                           | 3.9 (2.8–5.3)           |
| 5-yr absolute risk — % (95% CI)            | 1.4 (1.0–2.1)                           | 1.6 (1.1–2.3)                           | 2.1 (1.5–2.9)           |
| Death from cardiovascular causes           |                                         |                                         |                         |
| No. of events                              | 26                                      | 31                                      | 30                      |
| Incidence rate per 1000 person-yr (95% CI) | 2.2 (1.4–3.2)                           | 3.0 (2.0–4.2)                           | 3.1 (2.1–4.4)           |
| 5-yr absolute risk — % (95% CI)            | 1.0 (0.6–1.5)                           | 1.4 (0.9–2.1)                           | 1.6 (1.1–2.3)           |
| Death from any cause                       |                                         |                                         |                         |
| No. of events                              | 118                                     | 116                                     | 114                     |
| Incidence rate per 1000 person-yr (95% CI) | 10.0 (8.2–11.9)                         | 11.2 (9.3–13.4)                         | 11.7 (9.6–14.0)         |
| 5-yr absolute risk — % (95% CI)            | 4.4 (3.6–5.4)                           | 5.4 (4.4–6.6)                           | 5.4 (4.4–6.7)           |

ITT analysis: hazard ratio for each Mediterranean diet vs. control (95% CI)<sup>§</sup>

Primary end point

|                       |                  |                  |            |
|-----------------------|------------------|------------------|------------|
| Unadjusted            | 0.70 (0.53–0.92) | 0.70 (0.53–0.94) | 1.00 (ref) |
| Adjusted <sup>¶</sup> | 0.69 (0.53–0.91) | 0.72 (0.54–0.95) | 1.00 (ref) |

Secondary end points<sup>¶</sup>

|                                  |                  |                  |            |
|----------------------------------|------------------|------------------|------------|
| Stroke                           | 0.65 (0.44–0.95) | 0.54 (0.35–0.82) | 1.00 (ref) |
| Myocardial infarction            | 0.82 (0.52–1.30) | 0.76 (0.47–1.25) | 1.00 (ref) |
| Death from cardiovascular causes | 0.62 (0.36–1.06) | 1.02 (0.63–1.67) | 1.00 (ref) |
| Death from any cause             | 0.90 (0.69–1.18) | 1.12 (0.86–1.47) | 1.00 (ref) |

ITT analysis: hazard ratio for Mediterranean diets combined vs. control (95% CI)<sup>§</sup>

Primary end point

|                       |                  |            |
|-----------------------|------------------|------------|
| Unadjusted            | 0.70 (0.55–0.89) | 1.00 (ref) |
| Adjusted <sup>¶</sup> | 0.70 (0.55–0.89) | 1.00 (ref) |

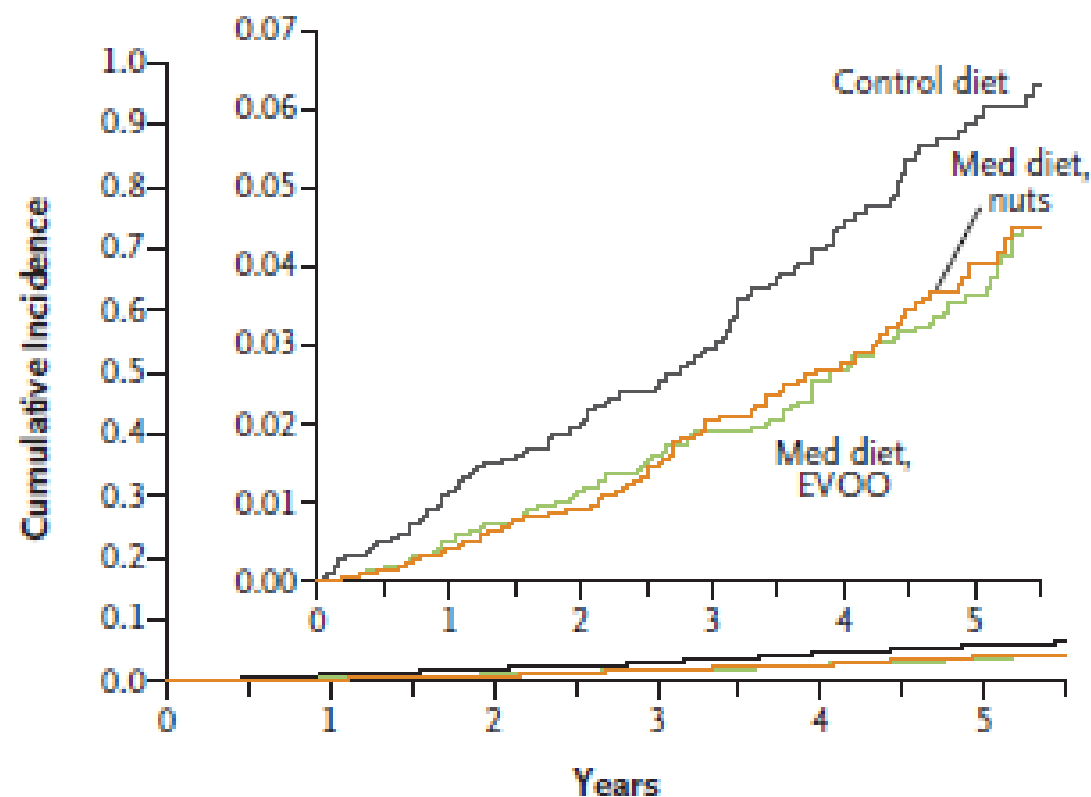
Secondary end points<sup>¶</sup>

|                                  |                  |            |
|----------------------------------|------------------|------------|
| Stroke                           | 0.58 (0.42–0.82) | 1.00 (ref) |
| Myocardial infarction            | 0.80 (0.53–1.21) | 1.00 (ref) |
| Death from cardiovascular causes | 0.80 (0.51–1.24) | 1.00 (ref) |
| Death from any cause             | 0.98 (0.77–1.24) | 1.00 (ref) |

**A Primary End Point (acute myocardial infarction, stroke, or death from cardiovascular causes)**

Med diet, EVOO: hazard ratio, 0.69 (95% CI, 0.53–0.91)

Med diet, nuts: hazard ratio, 0.72 (95% CI, 0.54–0.95)



**No. at Risk**

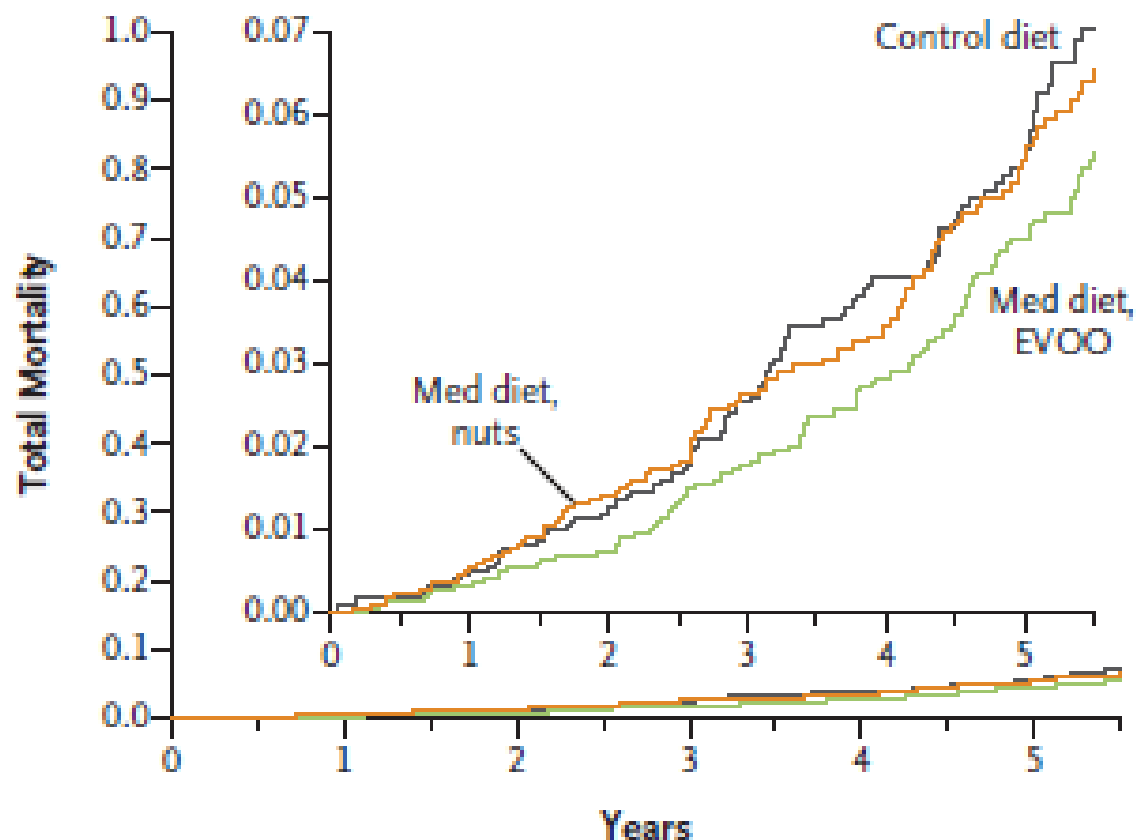
|                |      |      |      |      |      |      |
|----------------|------|------|------|------|------|------|
| Control diet   | 2450 | 2268 | 2020 | 1583 | 1268 | 946  |
| Med diet, EVOO | 2543 | 2486 | 2320 | 1987 | 1687 | 1310 |
| Med diet, nuts | 2454 | 2343 | 2093 | 1657 | 1389 | 1031 |



## B Total Mortality

Med diet, EVOO: hazard ratio, 0.90 (95% CI, 0.69–1.18)

Med diet, nuts: hazard ratio, 1.12 (95% CI, 0.86–1.47)



### No. at Risk

|                |      |      |      |      |      |      |
|----------------|------|------|------|------|------|------|
| Control diet   | 2450 | 2270 | 2027 | 1586 | 1272 | 949  |
| Med diet, EVOO | 2543 | 2486 | 2324 | 1991 | 1691 | 1310 |
| Med diet, nuts | 2454 | 2345 | 2097 | 1662 | 1395 | 1037 |

reduced-fat diet. Our findings support a beneficial effect of the Mediterranean diet for the primary prevention of cardiovascular disease.

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Disclosure forms provided by the authors are available with the full text of this article at NEJM.org.

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# En prévention secondaire



## Long-term secondary prevention of cardiovascular disease with a Mediterranean diet and a low-fat diet (CORDIOPREV): a randomised controlled trial

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### Summary

**Lancet** 2022; 399: 1876–85

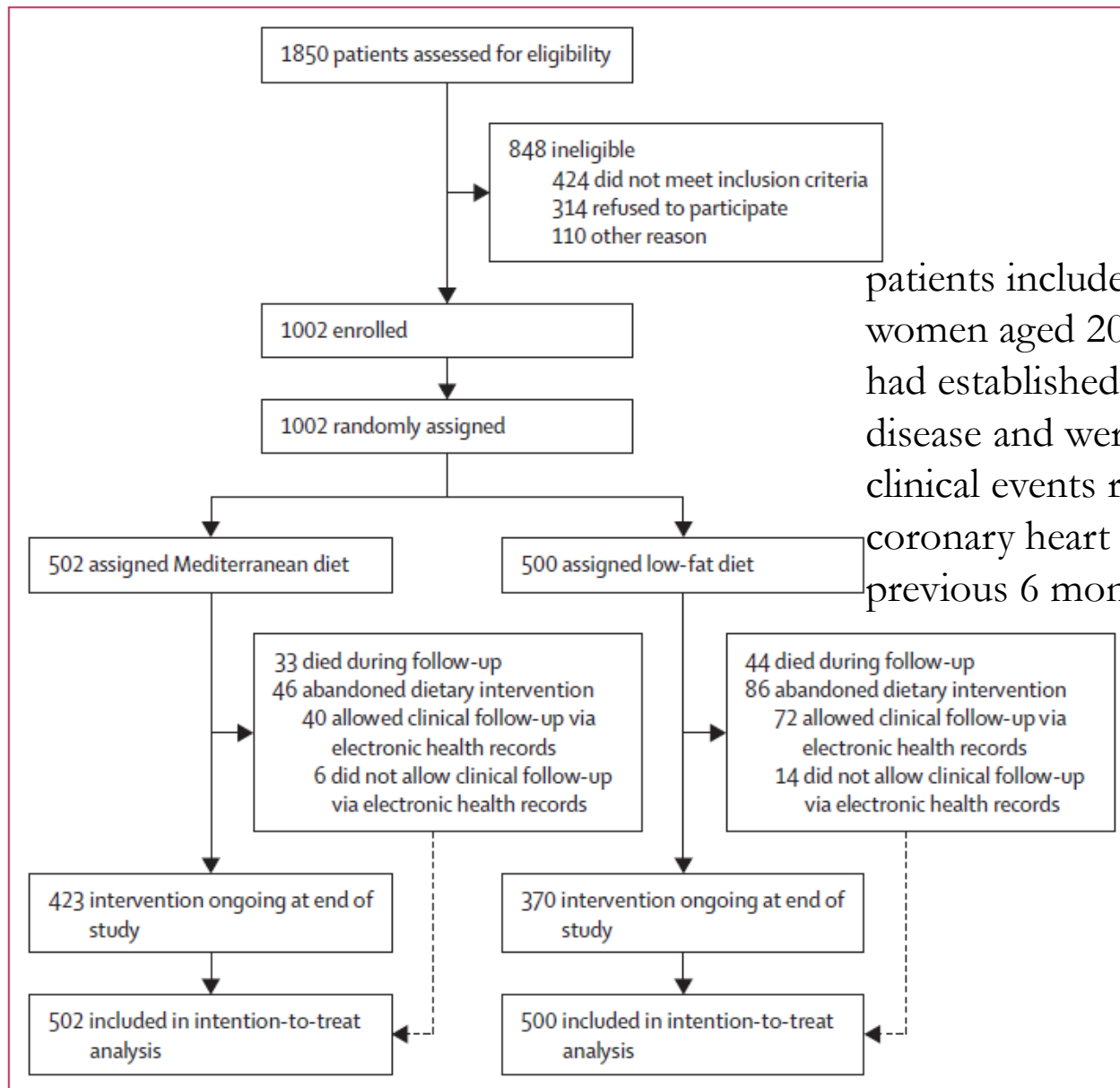
Published Online  
May 4, 2022

**Background** Mediterranean and low-fat diets are effective in the primary prevention of cardiovascular disease. We did a long-term randomised trial to compare the effects of these two diets in secondary prevention of cardiovascular disease.

**Funding** Fundacion Patrimonio Comunal Olivarero; Fundacion Centro para la Excelencia en Investigacion sobre Aceite de Oliva y Salud; local, regional, and national Spanish Governments; European Union.

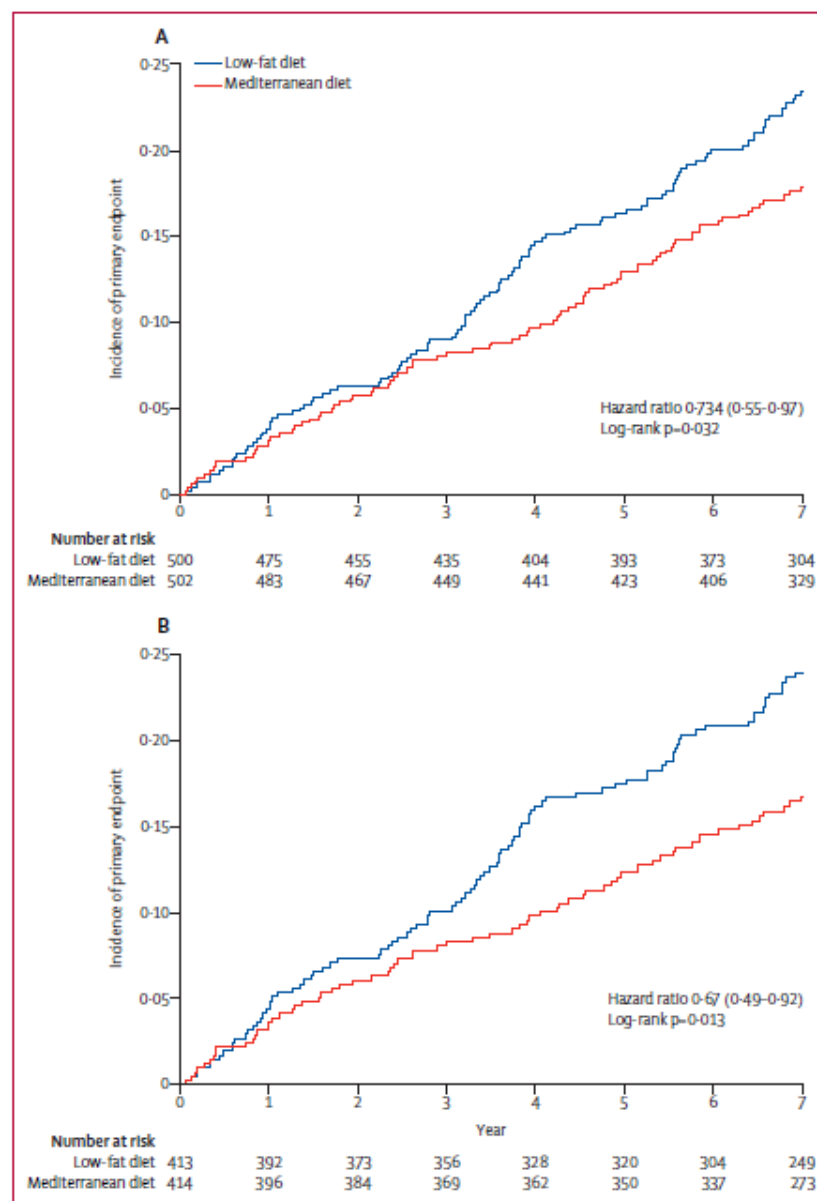
|                                                                                         | Mediterranean diet group                                                                                                           | Low-fat diet group                                                                                                                                                        |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Oil (including the oil used for cooking, dressing, and meals consumed outside the home) | Four or more tablespoons of extra virgin olive oil per day (40–60 g per day)                                                       | Less than two tablespoons of vegetable oils (eg, sunflower oil or regular olive oil) per day (20–30 g per day)                                                            |
| Fruit                                                                                   | Three or more servings of fresh fruit and natural fruit juices per day                                                             | Three or more servings of fresh, frozen, canned, or dried fruits per day                                                                                                  |
| Vegetables                                                                              | Two or more servings per day (at least one serving raw or as a salad)                                                              | Two or more servings per day (fresh, frozen, or canned, without added fat, sauce, or salt)                                                                                |
| Grains and potatoes                                                                     | Six servings of preferably whole grains per day                                                                                    | Six to 11 servings of grains (preferably whole grains), potatoes, and legumes per day                                                                                     |
| Legumes                                                                                 | Three or more servings per week                                                                                                    | Six to 11 servings of grains (preferably whole grains), potatoes, and legumes per day                                                                                     |
| Dairy                                                                                   | Two servings per day                                                                                                               | Two to three servings of low-fat or fat-free dairy products per day                                                                                                       |
| Tree nuts                                                                               | Three or more servings of raw, non-roasted, or fried nuts per week                                                                 | Occasional consumption (one serving or less) of raw, non-roasted, or fried nuts per week                                                                                  |
| Fish and seafood                                                                        | Three or more servings of especially fatty fish per week                                                                           | Choose lean fish; limit fatty fish and seafood canned in oil to one serving or fewer per week                                                                             |
| White meat                                                                              | Consume white meat (eg, chicken, turkey, or rabbit) instead of red meat; remove skin and visible fat                               | Choose skinless poultry and lean cuts (eg, loin or round)                                                                                                                 |
| Red or processed meats                                                                  | Less than one serving per week                                                                                                     | One serving or fewer per week                                                                                                                                             |
| Eggs                                                                                    | Two to four units per week                                                                                                         | Two or fewer egg yolks per week                                                                                                                                           |
| Commercial bakery products, sweets, and pastries                                        | One serving or fewer per week                                                                                                      | One serving or fewer per week                                                                                                                                             |
| Butter and margarine                                                                    | Not allowed                                                                                                                        | One serving or fewer per week                                                                                                                                             |
| Wine                                                                                    | Optional consumption, only in case of a habitual wine drinker (one glass per day for women and two glasses per day for men)        | Not allowed                                                                                                                                                               |
| Sweet or carbonated beverages                                                           | Less than one drink per day                                                                                                        | Less than one drink per day                                                                                                                                               |
| Culinary techniques                                                                     | Use of sofrito (a homemade sauce with garlic, onion, aromatic herbs, and tomato slow cooked in olive oil) two or more times a week | Use low-fat cooking methods (eg, broiling, grilling, roasting, baking, microwaving, and poaching); avoid frying and use of sofrito; remove the visible fat before cooking |

**Table 1: Summary of dietary recommendations to the patients in the two intervention groups of the CORDIOPREV study**



patients included men and women aged 20–75 years who had established coronary heart disease and were free of clinical events related to coronary heart disease in the previous 6 months

Figure 1: Trial profile



**Figure 2:** Kaplan-Meier estimates of the incidence of the composite primary endpoints of myocardial infarction, revascularisation, ischaemic stroke, documented peripheral artery disease, and cardiovascular death events (A) Total study population of the CORDIOPREV study. (B) Male population (827 [82.5%] of 1002) of the CORDIOPREV study. Hazard ratios and confidence intervals are from the multivariable-adjusted Cox model (adjusted for diet, age, family history of coronary disease, and smoking).

|                                                                                                                                                                                            | Mediterranean diet<br>(n=502) | Low-fat diet<br>(n=500) | p value |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-------------------------|---------|
| Unadjusted                                                                                                                                                                                 | 0.745 (0.563–0.986)           | 1 (ref)                 | 0.040   |
| Multivariable adjusted for age and sex                                                                                                                                                     | 0.738 (0.558–0.978)           | 1 (ref)                 | 0.034   |
| Multivariable adjusted for age, sex, family history of early coronary heart disease, and smoking                                                                                           | 0.734 (0.555–0.974)           | 1 (ref)                 | 0.032   |
| Multivariable adjusted for age, sex, family history of early cardiovascular disease, smoking, BMI, LDL cholesterol, diabetes, and hypertension                                             | 0.753 (0.568–0.998)           | 1 (ref)                 | 0.049   |
| Multivariable adjusted for age, sex, hypertension, LDL cholesterol (<100 mg/dL), BMI, smoking, statins (intensity), and diabetes                                                           | 0.747 (0.564–0.990)           | 1 (ref)                 | 0.042   |
| Multivariable adjusted for age, sex, family history of early coronary heart disease, smoking, and pharmacological treatments* at baseline                                                  | 0.748 (0.562–0.997)           | 1 (ref)                 | 0.048   |
| Multivariable adjusted for age, sex, hypertension, LDL cholesterol (<100 mg/dL), BMI, smoking, statins (intensity), diabetes, and changes in weight and physical activity during follow-up | 0.740 (0.558–0.982)           | 1 (ref)                 | 0.035   |
| Multivariable adjusted for all covariates used in the different models and randomisation order                                                                                             | 0.719 (0.541–0.957)           | 1 (ref)                 | 0.024   |

Data are hazard ratio (95% CI) or p value. All p values were calculated with Cox proportional-hazards models. The primary endpoint was a composite of myocardial infarction, revascularisation, ischaemic stroke, documented peripheral artery disease, and cardiovascular death events. BMI=body-mass index. \*Statins, other lipid-lowering drugs, angiotensin-converting enzyme inhibitors, angiotensin II receptor blockers,  $\beta$ -blockers, calcium antagonists, diuretics, insulin, oral antidiabetics, antiplatelets, and anticoagulants.

**Table 3:** Hazard ratios for the main outcome of the Mediterranean diet and low-fat diet groups





# Consommation d'alcool

# 1 verre standard = 10 g d'alcool

- 7 cl d'apéritif à 18°
- 2,5 cl de digestif à 45°
- 10 cl de champagne à 12°
- 25 cl de cidre "sec" à 5°
- 2,5 cl de whisky à 45°
- 25 cl de bière à 5°
- 2,5 cl de pastis à 45°
- 10 cl de vin rouge ou blanc à 12°

25 cl de bière forte correspond à 2 verres standard et une bouteille de vin à 8 verres standard

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## Association of alcohol consumption with selected cardiovascular disease outcomes: a systematic review and meta-analysis

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**Table 2** | Stratified analyses of pooled relative risks (95% CI) for cardiovascular and stroke outcomes (number of pooled studies in parentheses after each effect estimate)

|                                       | Cardiovascular disease<br>mortality (n=21 studies,<br>1 184 956 subjects) | Coronary heart disease                       |                                                 | Stroke                                       |                                               |
|---------------------------------------|---------------------------------------------------------------------------|----------------------------------------------|-------------------------------------------------|----------------------------------------------|-----------------------------------------------|
|                                       |                                                                           | Incident (n=29 studies,<br>549 504 subjects) | Mortality (n=31 studies,<br>1 925 106 subjects) | Incident (n=17 studies,<br>458 811 subjects) | Mortality (n=10 studies,<br>723 571 subjects) |
| Active drinkers v non-drinkers:       |                                                                           |                                              |                                                 |                                              |                                               |
| Least adjusted models                 | 0.84 (0.75 to 0.95) (11)                                                  | 0.73 (0.65 to 0.82) (14)                     | 0.80 (0.70 to 0.91) (10)                        | 1.01 (0.88 to 1.16) (10)                     | 1.13 (0.96 to 1.32) (3)                       |
| Most adjusted models                  | 0.75 (0.70 to 0.80) (21)                                                  | 0.71 (0.66 to 0.77) (29)                     | 0.75 (0.68 to 0.81) (31)                        | 0.98 (0.91 to 1.06) (17)                     | 1.06 (0.91 to 1.23) (10)                      |
| Active drinkers v lifetime abstainers | 0.82 (0.78 to 0.86) (9)                                                   | 0.73 (0.61 to 0.88) (9)                      | 0.75 (0.66 to 0.85) (7)                         | 0.93 (0.85 to 1.02) (7)                      | 1.29 (1.09 to 1.53) (3)                       |
| Former drinkers v non-drinkers        | 1.48 (1.23 to 1.79) (6)                                                   | 1.10 (0.91 to 1.33) (8)                      | 1.31 (1.02 to 1.68) (6)                         | 0.87 (0.72 to 1.07) (4)                      | Not reported (2)                              |
| Alcohol intake (g/day) v none:        |                                                                           |                                              |                                                 |                                              |                                               |
| <2.5                                  | 0.71 (0.57 to 0.89) (7)                                                   | 0.96 (0.86 to 1.06) (6)                      | 0.92 (0.80 to 1.06) (6)                         | 0.81 (0.74 to 0.89) (3)                      | 1.00 (0.75 to 1.34) (3)                       |
| 2.5–14.9                              | 0.77 (0.71 to 0.83) (15)                                                  | 0.75 (0.65 to 0.88) (9)                      | 0.79 (0.73 to 0.86) (18)                        | 0.80 (0.74 to 0.87) (3)                      | 0.86 (0.75 to 0.99) (6)                       |
| 15–29.9                               | 0.75 (0.70 to 0.80) (13)                                                  | 0.66 (0.59 to 0.75) (15)                     | 0.79 (0.71 to 0.88) (15)                        | 0.92 (0.82 to 1.04) (5)                      | 1.15 (0.86 to 1.54) (6)                       |
| 30–60                                 | 0.85 (0.73 to 0.98) (10)                                                  | 0.67 (0.56 to 0.79) (9)                      | 0.77 (0.72 to 0.83) (12)                        | 1.15 (0.98 to 1.35) (4)                      | 1.10 (0.85 to 1.45) (5)                       |
| >60                                   | 0.99 (0.84 to 1.17) (6)                                                   | 0.76 (0.52 to 1.09) (9)                      | 0.75 (0.63 to 0.89) (9)                         | 1.62 (1.32 to 1.98) (4)                      | 1.44 (0.99 to 2.10) (3)                       |
| Sex:                                  |                                                                           |                                              |                                                 |                                              |                                               |
| Men                                   | 0.80 (0.73 to 0.87) (13)                                                  | 0.71 (0.66 to 0.77) (25)                     | 0.77 (0.72 to 0.82) (21)                        | 1.02 (0.92 to 1.13) (11)                     | 1.07 (0.89 to 1.28) (9)                       |
| Women                                 | 0.69 (0.60 to 0.78) (9)                                                   | 0.71 (0.66 to 0.77) (11)                     | 0.78 (0.64 to 0.94) (10)                        | 0.87 (0.75 to 1.01) (4)                      | 0.81 (0.67 to 0.98) (3)                       |
| Adjustment for confounding factors*:  |                                                                           |                                              |                                                 |                                              |                                               |
| Weak                                  | 0.74 (0.67 to 0.82) (10)                                                  | 0.69 (0.62 to 0.76) (11)                     | 0.72 (0.63 to 0.83) (15)                        | 0.99 (0.86 to 1.13) (7)                      | 1.30 (1.11 to 1.52) (5)                       |
| Strong                                | 0.76 (0.70 to 0.83) (11)                                                  | 0.72 (0.65 to 0.79) (18)                     | 0.80 (0.75 to 0.86) (16)                        | 0.99 (0.89 to 1.09) (10)                     | 0.96 (0.81 to 1.14) (5)                       |
| Median follow-up time†:               |                                                                           |                                              |                                                 |                                              |                                               |
| Short                                 | 0.76 (0.71 to 0.83) (8)                                                   | 0.71 (0.65 to 0.79) (14)                     | 0.75 (0.67 to 0.85) (12)                        | 0.98 (0.90 to 1.07) (9)                      | 1.01 (0.82 to 1.24) (5)                       |
| Long                                  | 0.75 (0.67 to 0.84) (13)                                                  | 0.72 (0.64 to 0.80) (15)                     | 0.75 (0.67 to 0.84) (19)                        | 1.00 (0.88 to 1.13) (8)                      | 1.18 (1.02 to 1.37) (5)                       |

\*Adjustment for confounding factors was dichotomised as weak (<median value) or strong (≥median value). Cut points: ≥5 for coronary heart disease and stroke mortality, ≥6 for cardiovascular disease mortality and incident coronary heart disease, ≥7 for incident stroke.

†Total follow-up time was dichotomised as short (<median value) or long (≥median value). Cut points: ≥9 for incident coronary heart disease, ≥10 for cardiovascular disease mortality, ≥12 for coronary heart disease mortality and incident stroke, ≥14 for stroke mortality.

# Alcohol Drinking and Cardiovascular Risk in a Population With High Mean Alcohol Consumption

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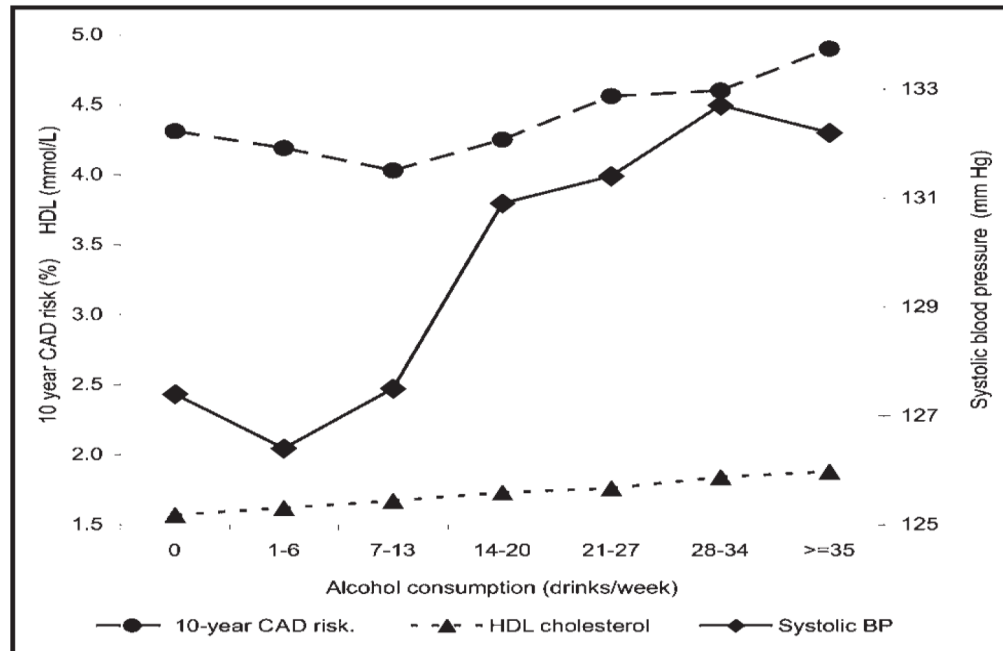


Figure 1. Association between alcohol consumption, cardiovascular risk factors, and 10-year CAD risk. HDL cholesterol, systolic blood pressure (BP), and 10-year CAD risk according to last week alcohol consumption. Values are adjusted for age, gender, education, units of weekly physical activity, tobacco use, body mass index, statins (for HDL cholesterol), and antihypertensive medications (for systolic BP). Alcohol consumption was associated with increased HDL cholesterol (p for trend <0.001), systolic BP (p for trend <0.001), and 10-year CAD risk (p for trend = 0.03).

Suisse

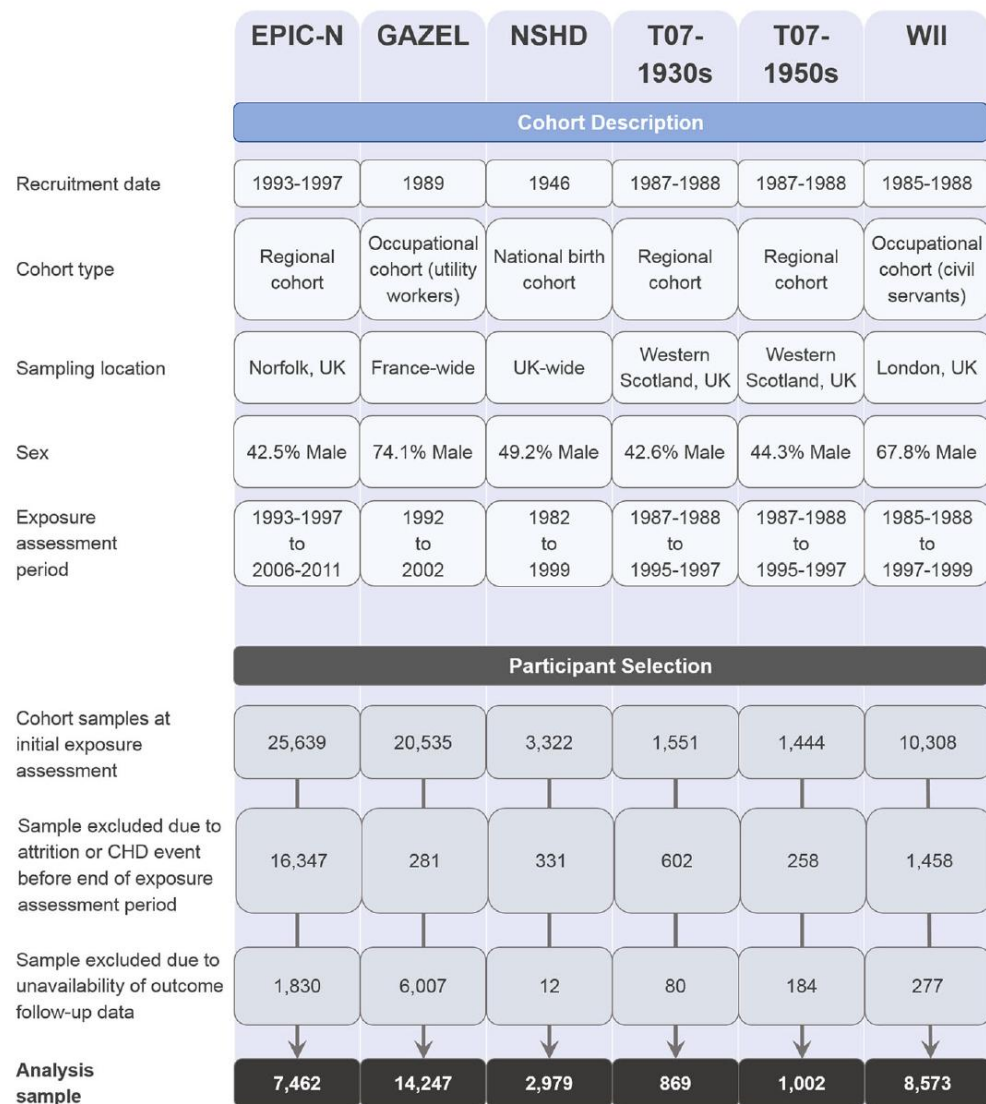
RESEARCH ARTICLE

Open Access



# Association of longitudinal alcohol consumption trajectories with coronary heart disease: a meta-analysis of six cohort studies using individual participant data

Dara O'Neill<sup>1\*</sup> , Annie Britton<sup>2</sup>, Mary K. Hannah<sup>3</sup>, Marcel Goldberg<sup>4</sup>, Diana Kuh<sup>2,5</sup>, Kay Tee Khaw<sup>6</sup> and Steven Bell<sup>7</sup>

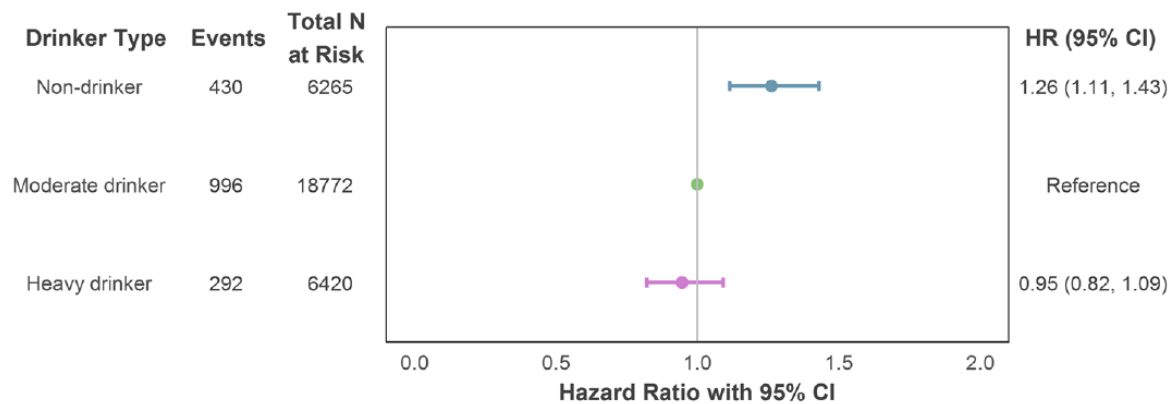


**Fig. 1** Cohort description and participant selection flowchart. CHD coronary heart disease, EPIC-N European Prospective Investigation of Cancer, Norfolk, GAZEL Gaz et Electricité, T07-1930s West of Scotland Twenty-07 Study 1930s, T07-1950s West of Scotland Twenty-07 Study 1950s, WII Whitehall II

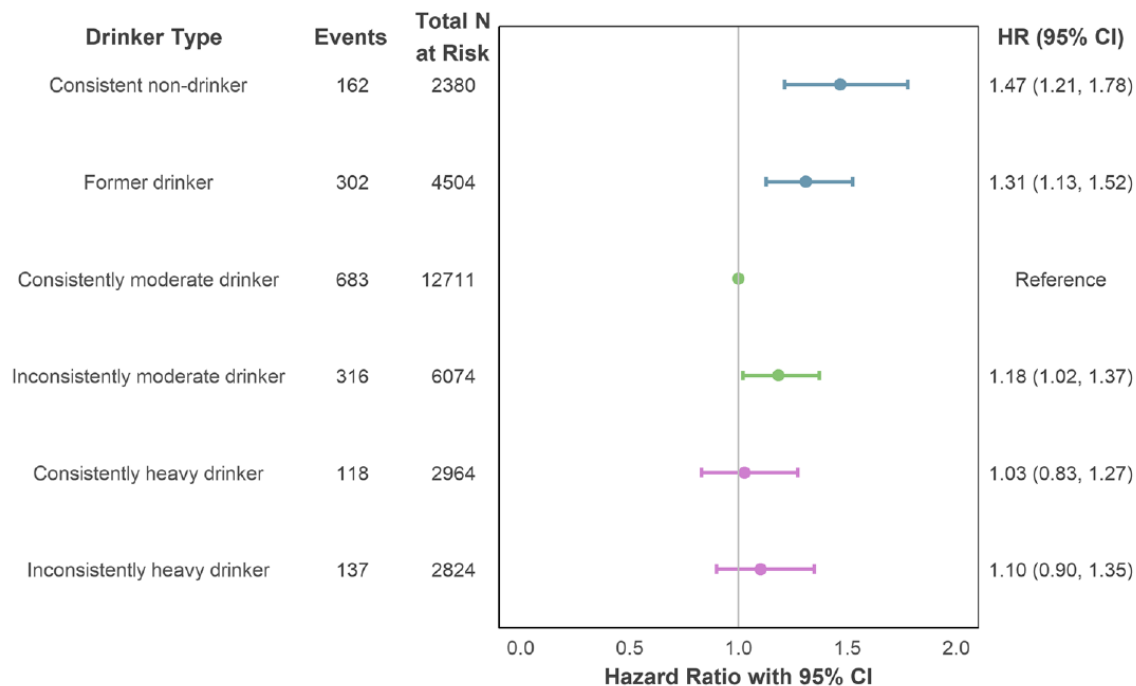
**Table 1** Drinker type definitions with observed counts and percentages (within sex and overall)

| Drinker type            | Weekly alcohol intake                                | <i>N</i> (%) |             |               |
|-------------------------|------------------------------------------------------|--------------|-------------|---------------|
|                         |                                                      | Male         | Female      | Total         |
| Consistent non-drinker  | 0 g at each wave of data collection                  | 807 (4.6)    | 1335 (12.4) | 2142 (7.5)    |
| Former drinker          | 0 g at last wave but intake >0 g at any earlier wave | 1831 (10.4)  | 2249 (21.0) | 4080 (14.4)   |
| Consistently moderate   | Male: 1–168 g at each wave                           | 7249 (41.0)  | 4161 (38.8) | 11,410 (40.2) |
|                         | Female: 1–112 g at each wave                         |              |             |               |
| Inconsistently moderate | Male: 1–168 g for most but not all waves             | 3599 (20.4)  | 2037 (19.0) | 5636 (19.8)   |
|                         | Female: 1–112 g for most but not all waves           |              |             |               |
| Consistently heavy      | Male: >168 g at each wave                            | 2216 (12.5)  | 349 (3.3)   | 2565 (9.0)    |
|                         | Female: >112 g at each wave                          |              |             |               |
| Inconsistently heavy    | Male: >168 g for most but not all waves              | 1979 (11.2)  | 598 (5.6)   | 2577 (9.1)    |
|                         | Female: >112 g for most but not all waves            |              |             |               |

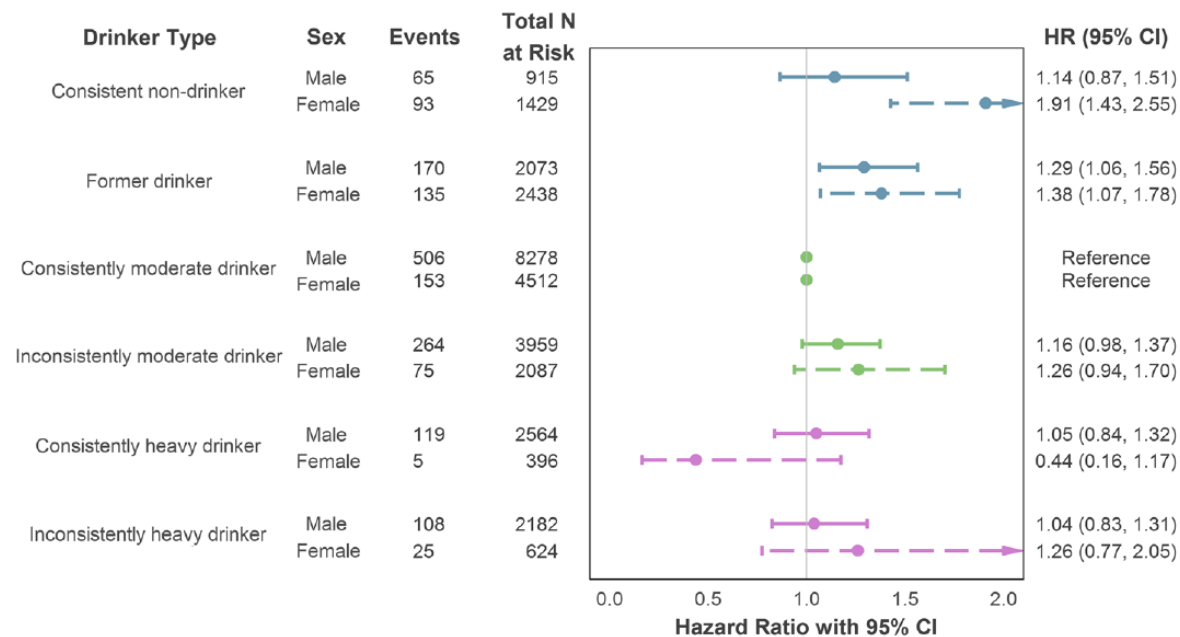




**Fig. 2** Association of drinker type (single intake measurement) with incident (fatal or non-fatal) CHD using maximal adjustment for confounding. Adjustment variables comprised age, sex (reference category: male), socioeconomic position (reference category: intermediate), smoker status (reference category: non-smoker) and intake assessment interval. CHD coronary heart disease, CI confidence interval, HR hazard ratio



**Fig. 3** Association of drinker type (longitudinal intake measurement) with incident (fatal or non-fatal) CHD using maximal adjustment for confounding. Adjustment variables comprised age, sex (reference category: male), socioeconomic position (reference category: intermediate), smoker status (reference category: non-smoker) and intake assessment interval. CHD coronary heart disease, CI confidence interval, HR hazard ratio



**Fig. 5** Sex-stratified association of drinker type (longitudinal intake measurement) with incident (fatal or non-fatal) CHD using maximal adjustment for confounding. Adjustment variables comprised age, socioeconomic position (reference category: intermediate), smoker status (reference category: non-smoker) and intake assessment interval. CHD coronary heart disease, CI confidence interval, HR hazard ratio

# Conclusions

- À l'aide de données sur l'alcool enregistrées de manière prospective, cette étude a montré comment l'instabilité des comportements de consommation au fil du temps est associée au risque de coronaropathie.
- Outre les personnes qui s'abstiennent de boire (à long terme ou plus récemment), les personnes dont la consommation d'alcool n'est pas modérée de façon consistante ont un risque plus élevé de contracter une coronaropathie.
- Cette découverte suggère que les politiques et les interventions encourageant spécifiquement la cohérence dans le respect des directives de consommation à faible risque pourraient avoir des effets bénéfiques sur la santé publique en réduisant le fardeau de la coronaropathie pour la population.
- L'absence d'effet chez les grands buveurs doit être interprétée avec prudence, compte tenu des risques plus généraux connus pour la santé liés à une telle consommation.

# Alcohol intake in relation to non-fatal and fatal coronary heart disease and stroke: EPIC-CVD case-cohort study

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## ABSTRACT

### OBJECTIVE

To investigate the association between alcohol consumption (at baseline and over lifetime) and non-fatal and fatal coronary heart disease (CHD) and stroke.

### DESIGN

Multicentre case-cohort study.

## RESULTS

There were 9307 non-fatal CHD events, 1699 fatal CHD, 5855 non-fatal stroke, and 733 fatal stroke. Baseline alcohol intake was inversely associated with non-fatal CHD, with a hazard ratio of 0.94 (95% confidence interval 0.92 to 0.96) per 12 g/day higher intake. There was a J shaped association between baseline alcohol intake and risk of fatal CHD. The

**Table 1 | Sex and country specific numbers of cardiovascular events (n=17 594) and descriptive statistics about baseline and lifetime alcohol status and consumption (g/day) among the subcohort (n=16 244)**

|                 |              | CHD       |       | Stroke    |       | Baseline alcohol |           | Lifetime alcohol   |            | Types of alcohol |           |          |
|-----------------|--------------|-----------|-------|-----------|-------|------------------|-----------|--------------------|------------|------------------|-----------|----------|
| Country         | Total events | Non-fatal | Fatal | Non-fatal | Fatal | Non-drinkers (%) | Drinkers* | Never drinkers (%) | Drinkers*  | Wine             | Beer      | Spirits† |
| Men             |              |           |       |           |       |                  |           |                    |            |                  |           |          |
| Italy           | 622          | 472       | 25    | 115       | 10    | 5                | 26 (1-65) | 3                  | 24 (2-60)  | 22 (0-59)        | 1 (0-5)   | 2 (0-11) |
| Spain           | 1265         | 797       | 93    | 343       | 32    | 13               | 33 (2-88) | 3                  | 46 (3-111) | 26 (0-73)        | 3 (0-16)  | 4 (0-17) |
| UK              | 1568         | 1042      | 292   | 161       | 73    | 11               | 11 (1-39) | 1                  | 14 (1-38)  | 5 (0-29)         | 4 (0-22)  | 2 (0-8)  |
| The Netherlands | 498          | 385       | 31    | 75        | 7     | 10               | 18 (1-55) | NA                 | NA         | 3 (0-14)         | 9 (0-35)  | 3 (0-22) |
| Greece          | 399          | 177       | 62    | 104       | 56    | 9                | 20 (1-67) | 5                  | 32 (0-96)  | 10 (0-43)        | 4 (0-19)  | 6 (0-28) |
| Germany         | 761          | 383       | 93    | 263       | 22    | 4                | 26 (2-68) | 1                  | 29 (3-76)  | 8 (0-44)         | 15 (0-60) | 2 (0-7)  |
| Sweden          | 2763         | 1220      | 407   | 1,057     | 79    | 11               | 11 (1-36) | NA                 | NA         | 3 (0-12)         | 4 (0-12)  | 4 (0-16) |
| Denmark         | 2158         | 1055      | 154   | 922       | 27    | 2                | 29 (2-78) | 1                  | 21 (3-51)  | 11 (0-30)        | 14 (0-55) | 4 (0-11) |
| All             | 10 034       | 5531      | 1157  | 3040      | 306   | 8                | 24 (1-70) | 2                  | 30 (2-87)  | 13 (0-51)        | 7 (0-32)  | 3 (0-15) |
| Women           |              |           |       |           |       |                  |           |                    |            |                  |           |          |
| Italy           | 596          | 403       | 10    | 160       | 23    | 23               | 11 (0-36) | 16                 | 8 (1-23)   | 9 (0-35)         | 1 (0-3)   | 1 (0-11) |
| Spain           | 630          | 311       | 23    | 260       | 36    | 50               | 9 (0-30)  | 37                 | 7 (0-22)   | 7 (0-30)         | 1 (0-8)   | 0 (0-17) |
| UK              | 1233         | 780       | 142   | 203       | 108   | 16               | 7 (0-29)  | 6                  | 7 (0-22)   | 5 (0-12)         | 1 (0-4)   | 2 (0-8)  |
| The Netherlands | 1444         | 986       | 67    | 321       | 70    | 20               | 11 (0-37) | 11                 | 9 (1-24)   | 6 (0-24)         | 1 (0-3)   | 4 (0-22) |
| Greece          | 271          | 87        | 30    | 91        | 63    | 36               | 6 (1-18)  | 34                 | 5 (0-17)   | 3 (0-12)         | 1 (0-6)   | 1 (0-28) |
| Germany         | 318          | 112       | 23    | 172       | 11    | 5                | 10 (0-36) | 3                  | 7 (1-23)   | 7 (0-26)         | 2 (0-14)  | 1 (0-7)  |
| Sweden          | 1866         | 641       | 187   | 950       | 88    | 18               | 7 (0-21)  | NA                 | NA         | 3 (0-12)         | 1 (0-5)   | 2 (0-16) |
| Denmark         | 1202         | 456       | 60    | 658       | 28    | 2                | 14 (1-41) | 6                  | 9 (1-24)   | 6 (0-30)         | 3 (0-12)  | 2 (0-11) |
| All             | 7560         | 3776      | 542   | 2815      | 427   | 24               | 10 (0-33) | 15                 | 8 (0-23)   | 6 (0-27)         | 2 (0-7)   | 2 (0-7)  |

NA=Information on lifetime consumption not available in Bilthoven (The Netherlands), Naples (Italy), and Sweden.

\*Mean and 5th-95th centile values calculated among drinkers only.

†Spirits, liquors, and fortified wine.

**Table 2 | Number of events and hazard ratios for coronary heart disease and stroke by levels of baseline alcohol consumption (g/day)**

| Characteristic                | Non-fatal |                       | Fatal     |                       |
|-------------------------------|-----------|-----------------------|-----------|-----------------------|
|                               | Events    | Hazard ratio (95% CI) | Events    | Hazard ratio (95% CI) |
| <b>Coronary heart disease</b> |           |                       |           |                       |
| Non-drinkers                  | 1592      | 1.15 (1.03 to 1.28)   | 332       | 1.25 (1.01 to 1.53)   |
| 0.1-4.9                       | 2797      | 1 (ref)               | 497       | 1 (ref)               |
| 5.0-14.9                      | 2207      | 0.82 (0.75 to 0.90)   | 418       | 0.83 (0.70 to 0.98)   |
| 15.0-29.9                     | 1324      | 0.78 (0.70 to 0.87)   | 198       | 0.65 (0.53 to 0.81)   |
| 30.0-59.9                     | 1027      | 0.73 (0.65 to 0.83)   | 174       | 0.82 (0.65 to 1.03)   |
| ≥60.0                         | 360       | 0.68 (0.57 to 0.81)   | 80        | 0.98 (0.70 to 1.37)   |
| P value*                      |           | <0.001                |           | 0.002                 |
| 12 g/day increase             | Linear    | 0.94 (0.92 to 0.96)   | Linear    | 0.92 (0.85 to 0.99)   |
|                               |           |                       | Quadratic | 1.01 (1.00 to 1.02)   |
| P value for trend†            |           | <0.001                | P value‡  | 0.003                 |
| <b>Stroke</b>                 |           |                       |           |                       |
| Non-drinkers                  | 924       | 1.26 (1.12 to 1.43)   | 187       | 1.41 (1.12 to 1.79)   |
| 0.1-4.9                       | 1573      | 1 (ref)               | 214       | 1 (ref)               |
| 5.0-14.9                      | 1508      | 1.03 (0.93 to 1.14)   | 167       | 1.04 (0.83 to 1.31)   |
| 15.0-29.9                     | 872       | 1.08 (0.96 to 1.22)   | 88        | 1.07 (0.81 to 1.42)   |
| 30.0-59.9                     | 704       | 1.10 (0.96 to 1.26)   | 61        | 1.20 (0.87 to 1.67)   |
| ≥60.0                         | 274       | 1.31 (1.07 to 1.60)   | 16        | 1.14 (0.65 to 2.01)   |
| P value*                      |           | 0.109                 |           | 0.863                 |
| 12 g/day increase             | Linear    | 1.04 (1.02 to 1.07)   | Linear    | 1.05 (0.98 to 1.13)   |
| P value for trend†            |           | 0.002                 |           | 0.136                 |

**Table 4 | Number of events and hazard ratios for non-fatal coronary heart disease (CHD) and non-fatal stroke by levels of types of alcohol consumption at baseline (g/day)**

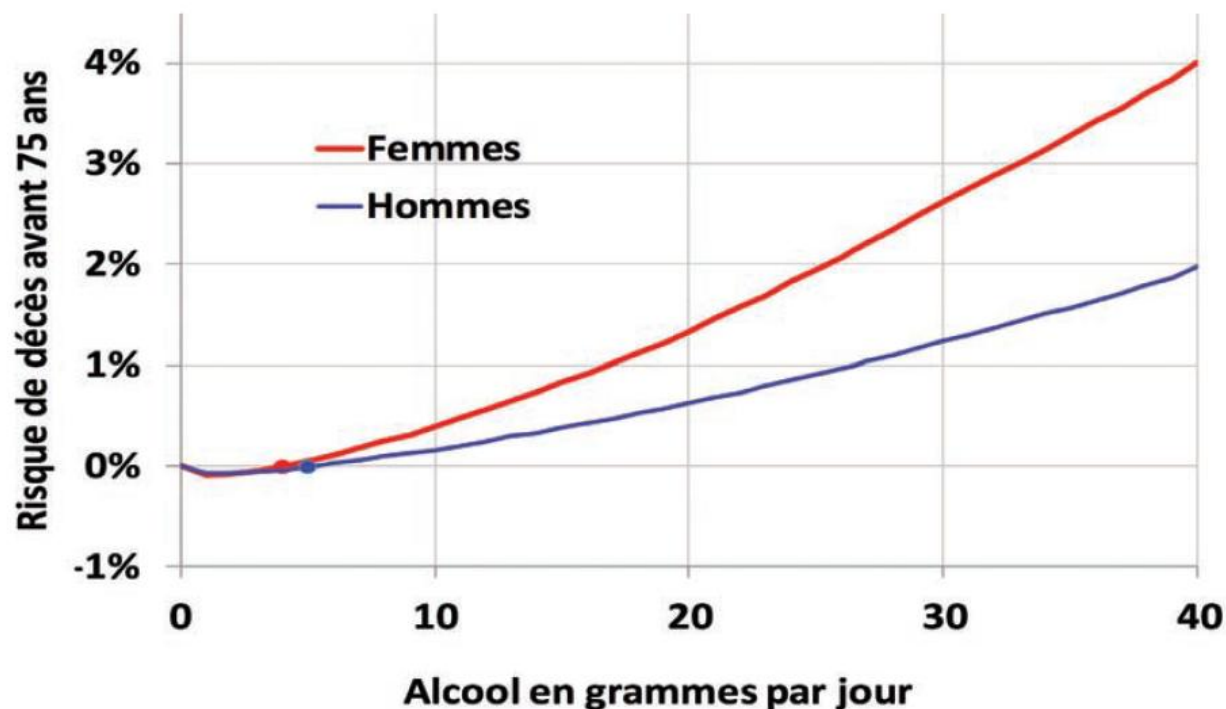
| Characteristic          | Wine intake |                       | Beer intake |                       |
|-------------------------|-------------|-----------------------|-------------|-----------------------|
|                         | Events      | Hazard ratio (95% CI) | Events      | Hazard ratio (95% CI) |
| <b>Non-fatal CHD</b>    |             |                       |             |                       |
| Non-drinkers            | 2932        | 1.14 (1.03 to 1.25)   | 4021        | 1.08 (0.98 to 1.18)   |
| 0.1-2.9                 | 2823        | 1 (ref)               | 2733        | 1 (ref)               |
| 3.0-9.9                 | 1869        | 0.86 (0.77 to 0.93)   | 1611        | 1.07 (0.97 to 1.19)   |
| 10.0-19.9               | 649         | 0.86 (0.75 to 0.98)   | 473         | 0.98 (0.84 to 1.15)   |
| 20.0-39.9               | 686         | 0.76 (0.66 to 0.86)   | 317         | 0.86 (0.71 to 1.04)   |
| ≥40.0                   | 348         | 0.73 (0.61 to 0.87)   | 152         | 0.79 (0.59 to 1.05)   |
| P value*                |             | <0.001                |             | 0.069                 |
| 12 g/day increase       |             | 0.94 (0.91 to 0.97)   |             | 0.94 (0.89 to 0.99)   |
| P value for trend†      |             | <0.001                |             | 0.013                 |
| <b>Non-fatal stroke</b> |             |                       |             |                       |
| Non-drinkers            | 1764        | 1.13 (1.01 to 1.25)   | 2094        | 1.14 (1.03 to 1.26)   |
| 0.1-2.9                 | 1671        | 1 (ref)               | 1829        | 1 (ref)               |
| 3.0-9.9                 | 1398        | 0.95 (0.85 to 1.05)   | 1167        | 1.21 (1.08 to 1.35)   |
| 10.0-19.9               | 391         | 1.00 (0.85 to 1.16)   | 369         | 1.16 (0.98 to 1.37)   |
| 20.0-39.9               | 436         | 1.01 (0.87 to 1.17)   | 248         | 1.31 (1.07 to 1.60)   |
| ≥40.0                   | 195         | 1.05 (0.84 to 1.30)   | 148         | 1.40 (1.06 to 1.84)   |
| P value*                |             | 0.762                 |             | 0.002                 |
| 12 g/day increase       |             | 1.03 (0.99 to 1.07)   |             | 1.07 (1.03 to 1.12)   |
| P value for trend†      |             | 0.204                 |             | 0.002                 |



# Conclusions

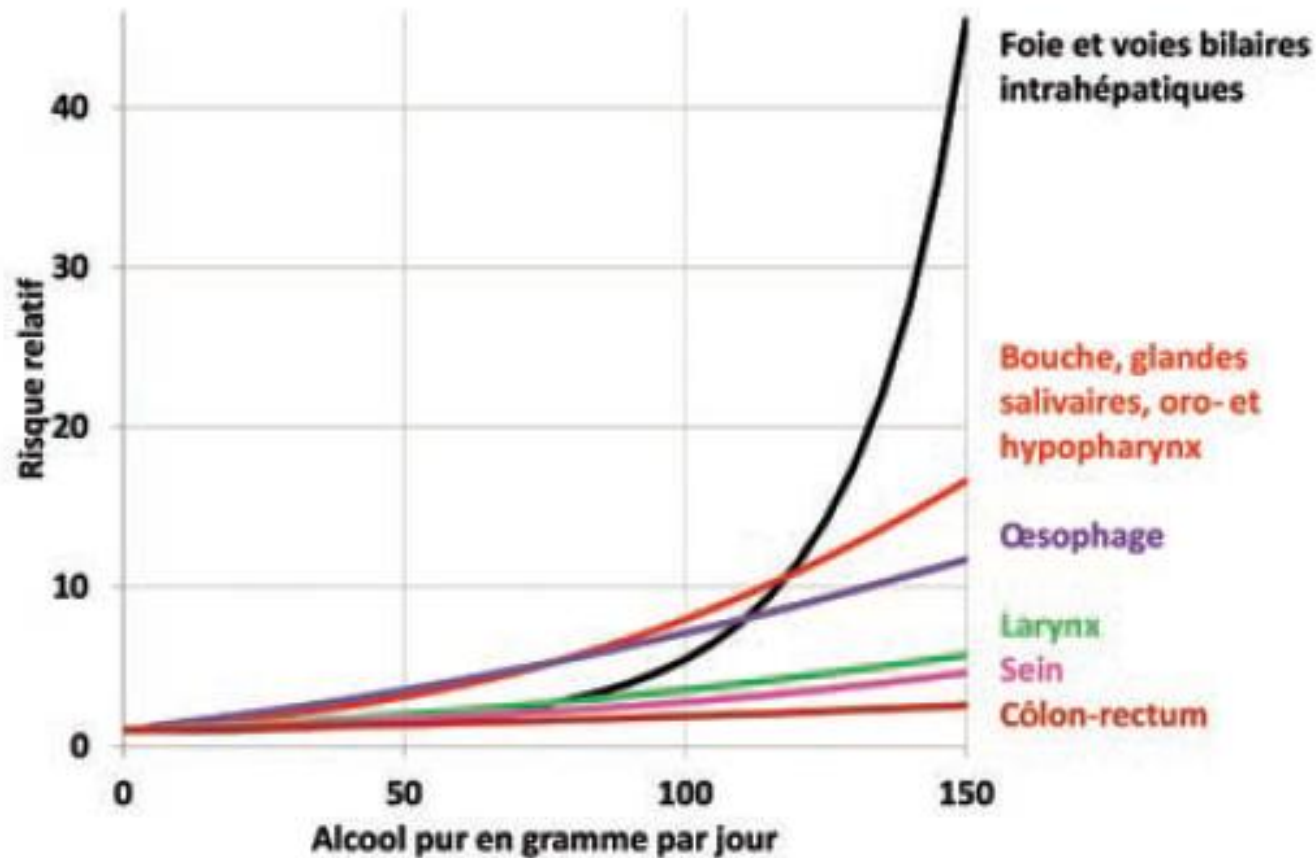
- « La consommation d'alcool est inversement associée au risque de cardiopathie non mortelle, mais positivement au risque d'accident vasculaire cérébral, soulignant les associations opposées de la consommation d'alcool avec différents types de MCV.
- Compte tenu des connaissances antérieures sur l'association positive de l'alcool à la mortalité toutes causes confondues et au risque de cancer, nos résultats renforcent les politiques visant à réduire la consommation d'alcool ».

# Effet protecteur à petites doses

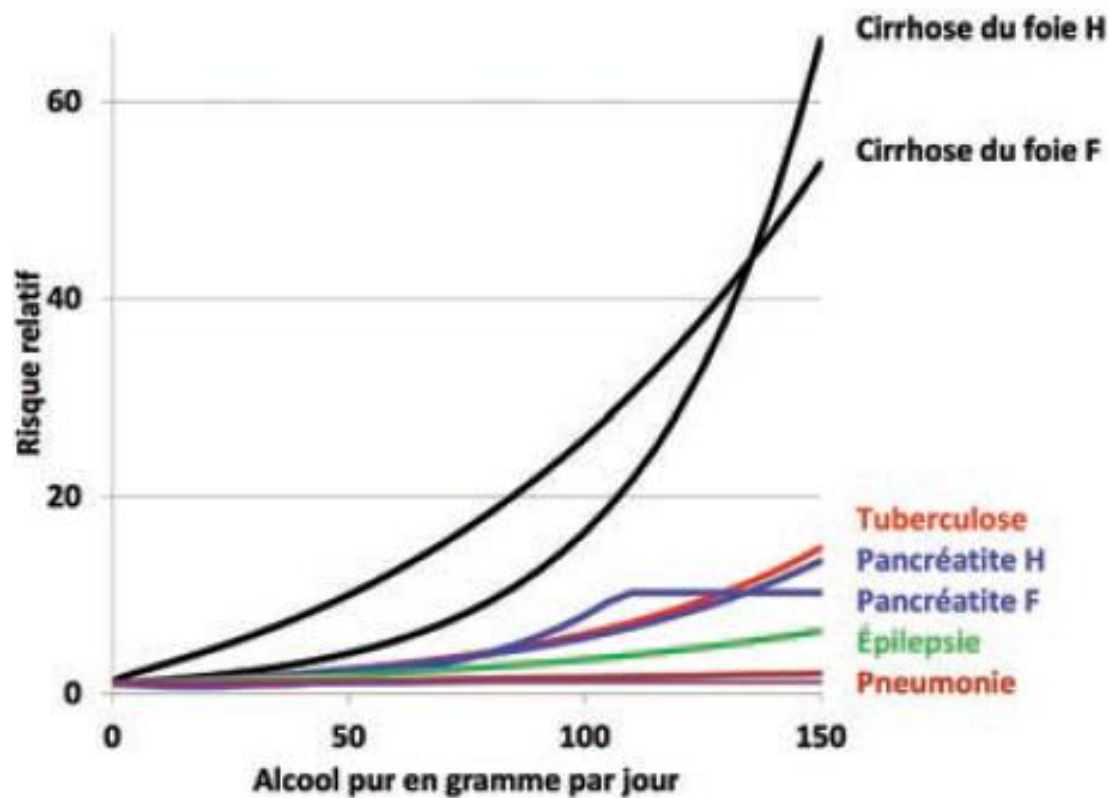


**Figure 2.** Risque d'un décès attribuable à l'alcool avant 75 ans en France en 2012, en fonction de la dose quotidienne d'alcool. D'après la réf. 3. Picturefalse\\* MERGEFORMAT

# Les autres risques : les cancers



# Les autres risques: maladies bénignes



# Ne pas oublier

## Causes externes

Accident véhicule à moteur

Empoisonnements

Chutes

Incendies

Noyades

Autres accidents

Suicides

Homicides

# Revue systématique sur l'effet global (mortalité)



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**Original Investigation** | Substance Use and Addiction

## **Association Between Daily Alcohol Intake and Risk of All-Cause Mortality** A Systematic Review and Meta-analyses

Jinhui Zhao, PhD; Tim Stockwell, PhD; Tim Naimi, MD; Sam Churchill, MSc; James Clay, MSc; Adam Sherk, PhD

107 études sur la consommation d'alcool et la mortalité toutes causes confondues publiées de 1980 à juillet 2021.

- Modèles ajustés pour les effets de confusion potentiels de la variation d'échantillonnage, du biais des anciens buveurs et d'autres critères de qualité prédéfinis : aucune réduction significative du risque de mortalité toutes causes confondues chez les occasionnels ( $> 0$  à  $< 1,3$  g d'éthanol par jour ; risque relatif [RR], 0,96 ; IC à 95 %, 0,86-1,06 ;  $P = 0,41$ ) ou buveurs à faible volume (1,3-24,0 g par jour ; RR, 0,93 ;  $P = 0,07$ ) par rapport aux non-buveurs à vie.
- Modèle entièrement ajusté : augmentation non significative du risque de mortalité toutes causes confondues chez les buveurs qui buvaient de 25 à 44 g par jour (RR, 1,05 ;  $P = 0,28$ ) et risque significativement accru pour les buveurs qui buvaient de 45 à 64 et 65 ou plus grammes par jour (RR, 1,19 et 1,35 ;  $P < 0,001$ ). Il y avait des risques de mortalité significativement plus élevés chez les femmes buveuses que chez les femmes non-buveuses à vie (RR, 1,22 ;  $P = 0,03$ )

Table 2. Mean Relative Risk Estimates of All-Cause Mortality Due to Alcohol Consumption Up to 2022 According to 107 Studies With 724 Relative Risk Estimates

| Drinking categories                   | Studies,<br>No./risk<br>estimates, No. | Unadjusted <sup>a</sup> |         | Partially adjusted <sup>b</sup> |         | Fully adjusted <sup>c</sup> |         |
|---------------------------------------|----------------------------------------|-------------------------|---------|---------------------------------|---------|-----------------------------|---------|
|                                       |                                        | RR (95% CI)             | P value | RR (95% CI)                     | P value | RR (95% CI)                 | P value |
| Reference group = lifetime nondrinker |                                        |                         |         |                                 |         |                             |         |
| Abstainer                             | 107/191                                | 1 [Reference]           |         | 1 [Reference]                   |         | 1 [Reference]               |         |
| Any drinker vs abstainer              | 107/724                                | 1.06 (0.90-1.25)        | .42     | 1.03 (0.89-1.19)                | .65     | 1.11 (0.96-1.28)            | .12     |
| Former drinker vs abstainer           | 28/56                                  | 1.22 (1.11-1.33)        | <.001   | 1.17 (1.08-1.26)                | <.001   | 1.26 (1.12-1.42)            | .0001   |
| Active drinker vs abstainer, g/d      | 107/668                                | 0.97 (0.94-1.00)        | .02     | 0.93 (0.90-0.96)                | <.001   | 1.02 (0.93-1.13)            | .61     |
| Occasional (<1.30)                    | 24/57                                  | 0.92 (0.84-1.01)        | .08     | 0.89 (0.83-0.95)                | <.001   | 0.96 (0.86-1.06)            | .41     |
| Low-volume (1.30 to <25)              | 99/306                                 | 0.85 (0.81-0.88)        | <.001   | 0.86 (0.83-0.88)                | <.001   | 0.93 (0.85-1.01)            | .08     |
| Medium volume (25 to <45)             | 80/146                                 | 1.02 (0.96-1.08)        | .55     | 0.97 (0.92-1.02)                | .21     | 1.05 (0.96-1.14)            | .28     |
| High volume (45 to <65)               | 52/76                                  | 1.07 (0.99-1.16)        | .09     | 1.11 (1.03-1.21)                | .009    | 1.19 (1.07-1.32)            | .001    |
| Higher volume (≥65)                   | 45/83                                  | 1.35 (1.26-1.46)        | <.001   | 1.24 (1.16-1.32)                | <.001   | 1.35 (1.23-1.47)            | .0001   |
| Reference group = occasional drinker  |                                        |                         |         |                                 |         |                             |         |
| Abstainer                             |                                        | 1.09 (0.99-1.19)        | .07     | 1.12 (1.05-1.20)                | <.001   | 1.04 (0.94-1.16)            | .45     |
| Any drinker vs occasional drinker     | 107/724                                | 1.15 (0.95-1.39)        | .14     | 1.16 (0.99-1.36)                | .08     | 1.16 (0.97-1.38)            | .11     |
| Former drinker vs abstainer           | 28/56                                  | 1.33 (1.18-1.50)        | <.001   | 1.31 (1.19-1.46)                | <.001   | 1.31 (1.13-1.52)            | .0007   |
| Active drinker vs abstainer, g/d      | 107/668                                | 1.05 (0.96-1.16)        | .29     | 1.04 (0.97-1.13)                | .25     | 1.06 (0.92-1.23)            | .41     |
| Occasional (<1.30)                    | 24/57                                  | 1 [Reference]           | NA      | 1 [Reference]                   | NA      | 1 [Reference]               |         |
| Low-volume (1.30 to <25)              | 99/306                                 | 0.92 (0.84-1.02)        | .12     | 0.97 (0.90-1.04)                | .36     | 0.97 (0.85-1.11)            | .65     |
| Medium volume (25 to <45)             | 80/146                                 | 1.11 (0.99-1.24)        | .07     | 1.09 (1.00-1.19)                | .047    | 1.09 (0.96-1.25)            | .19     |
| High volume (45 to <65)               | 52/76                                  | 1.16 (1.03-1.31)        | .02     | 1.25 (1.12-1.39)                | <.001   | 1.24 (1.07-1.44)            | .004    |
| Higher volume (≥65)                   | 45/83                                  | 1.47 (1.30-1.65)        | <.001   | 1.39 (1.27-1.53)                | <.001   | 1.41 (1.23-1.61)            | .0001   |

Abbreviations: NA, not applicable; RR, relative risk.

<sup>a</sup> Natural log of the RR estimated using the rate ratio or hazard ratio without weighting and adjusting for between-study variation or covariates.

<sup>b</sup> Weighted estimates adjusted for between-study variation.

<sup>c</sup> Weighted estimates adjusted for between-study variation, abstainer biases, median age, sex, country in which a study was conducted, study publication year, follow-up years of study samples, drinking pattern, and whether studies controlled for heart problem, social status, race, diet, exercise, body mass index, and smoking status.



Table 4. Mean RRs of All-Cause Mortality Due to Alcohol Consumption by Sex (Men or Women) Up to 2022

|                                   | Studies,<br>No./risk<br>estimates, No. | Unadjusted <sup>a</sup> |         | Partially adjusted <sup>b</sup> |         | Fully adjusted <sup>c</sup> |         |
|-----------------------------------|----------------------------------------|-------------------------|---------|---------------------------------|---------|-----------------------------|---------|
| Drinking categories by median age |                                        | RR (95% CI)             | P value | RR (95% CI)                     | P value | RR (95% CI)                 | P value |
| Men                               |                                        |                         |         |                                 |         |                             |         |
| Abstainer                         | NA                                     | 1 [Reference]           | NA      | 1 [Reference]                   | NA      | 1 [Reference]               | NA      |
| Any drinker vs abstainer          | 73/343                                 | 1.05 (0.88-1.24)        | .52     | 1.05 (0.89-1.22)                | .49     | 1.12 (0.95-1.34)            | .14     |
| Former drinker vs abstainer       | 20/24                                  | 1.24 (1.08-1.42)        | <.001   | 1.29 (1.20-1.39)                | <.001   | 1.39 (1.21-1.58)            | <.001   |
| Active drinker vs abstainer, g/d  | 73/319                                 | 0.97 (0.93-1.01)        | .09     | 0.96 (0.92-1.00)                | .05     | 1.05 (0.96-1.15)            | .27     |
| Occasional (<1.30)                | 13/15                                  | 0.95 (0.80-1.13)        | .58     | 0.93 (0.85-1.01)                | .07     | 1.00 (0.91-1.09)            | .97     |
| Low-volume (1.30 to <25)          | 66/141                                 | 0.84 (0.80-0.89)        | <.001   | 0.87 (0.84-0.91)                | <.001   | 0.94 (0.88-1.01)            | .07     |
| Medium volume (25 to <45)         | 54/70                                  | 0.97 (0.89-1.05)        | .43     | 0.94 (0.90-0.98)                | .008    | 1.01 (0.93-1.10)            | .81     |
| High volume (45 to <65)           | 37/41                                  | 1.01 (0.91-1.12)        | .87     | 1.07 (1.01-1.12)                | .01     | 1.15 (1.03-1.28)            | .01     |
| Higher volume (≥65)               | 36/52                                  | 1.35 (1.23-1.48)        | <.001   | 1.25 (1.16-1.32)                | <.001   | 1.34 (1.23-1.47)            | <.001   |
| Women                             |                                        |                         |         |                                 |         |                             |         |
| Abstainer                         | NA                                     | 1 [Reference]           | NA      | 1 [Reference]                   | NA      | 1 [Reference]               | NA      |
| Any drinker vs abstainer          | 48/226                                 | 1.12 (0.88-1.44)        | .28     | 1.03 (0.85-1.26)                | .69     | 1.22 (1.02-1.46)            | .04     |
| Former drinker vs abstainer       | 16/22                                  | 1.16 (0.98-1.37)        | .08     | 1.09 (1.03-1.14)                | .001    | 1.27 (1.13-1.43)            | <.001   |
| Active drinker vs abstainer, g/d  | 47/204                                 | 0.99 (0.93-1.05)        | .64     | 0.88 (0.84-0.92)                | <.001   | 1.03 (0.92-1.15)            | .65     |
| Occasional (<1.30)                | 15/25                                  | 0.87 (0.74-1.01)        | .08     | 0.83 (0.78-0.88)                | <.001   | 0.99 (0.87-1.11)            | .82     |
| Low-volume (1.30 to <25)          | 45/106                                 | 0.87 (0.81-0.94)        | <.001   | 0.84 (0.80-0.89)                | <.001   | 0.99 (0.90-1.10)            | .90     |
| Medium volume (25 to <45)         | 37/42                                  | 1.16 (1.03-1.31)        | .01     | 1.03 (0.96-1.11)                | .44     | 1.21 (1.08-1.36)            | .001    |
| High volume (45 to <65)           | 17/19                                  | 1.12 (0.94-1.34)        | .21     | 1.13 (0.95-1.35)                | .15     | 1.34 (1.11-1.63)            | .003    |
| Higher volume (≥65)               | 11/12                                  | 1.77 (1.41-2.21)        | <.001   | 1.37 (1.28-1.47)                | <.001   | 1.61 (1.44-1.80)            | <.001   |

Abbreviations: NA, not applicable; RR, relative risk.

<sup>a</sup> Natural log of the RR estimated using the rate ratio or hazard ratio without weighting and adjusting for between-study variation or covariates.

<sup>b</sup> Weighted estimates adjusted for between-study variation.

<sup>c</sup> Weighted estimates adjusted for between-study variation, abstainer biases, median age, country in which a study was conducted, study publication year, follow-up years, drinking pattern, and whether studies controlled for heart problem, social status, race, diet, exercise, body mass index, and smoking status.



# Exercice physique et sédentarité

# DÉFINITION DU MET

Le *metabolic equivalent task* [MET] ou équivalent métabolique est une unité qui indexe la dépense énergétique lors de la tâche considérée sur la dépense énergétique de repos.

La valeur 1 MET chiffre la dépense énergétique de repos et équivaut à une consommation de l'ordre de 3,5 mL O<sub>2</sub>/min/kg. 7,5 MET.h/sem correspond à 150 min/sem d'activité physique d'intensité modérée et 15 MET.h/sem équivaut à 300 min/sem d'activité physique d'intensité modérée.

# Marcher réduit le risque coronarien

Eur J Epidemiol (2009) 24:181–192  
DOI 10.1007/s10654-009-9328-9

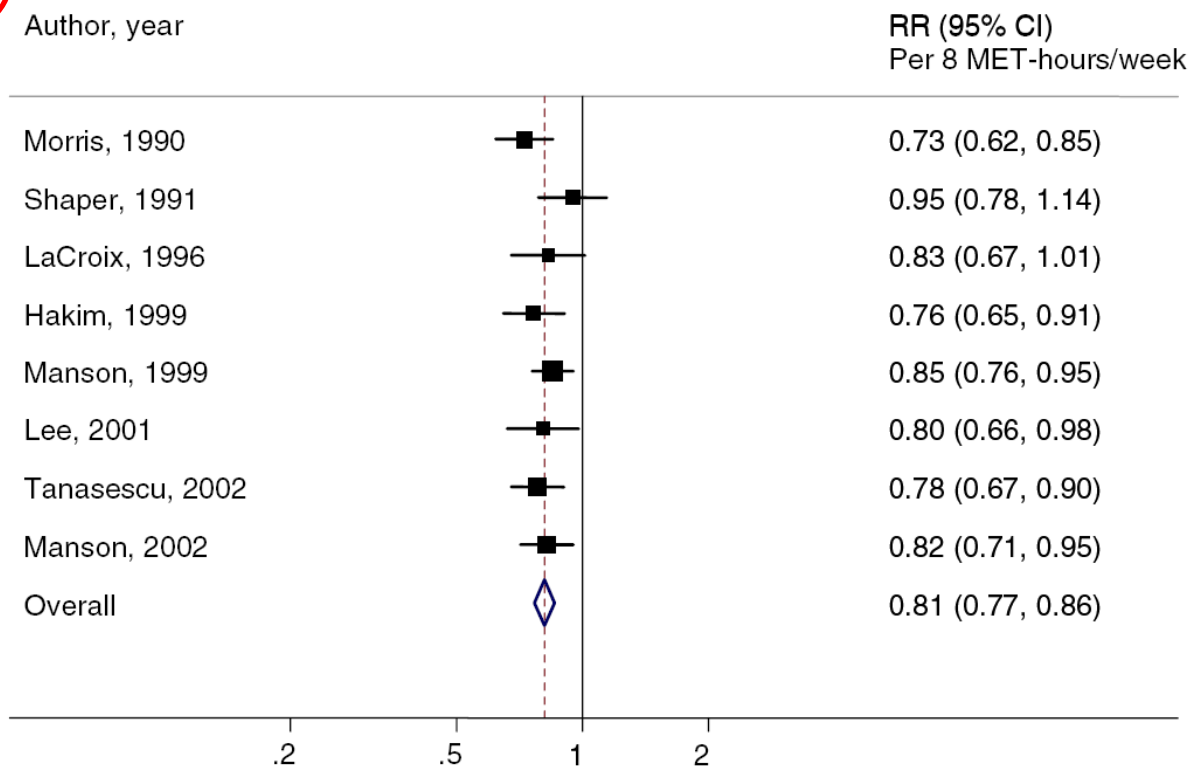
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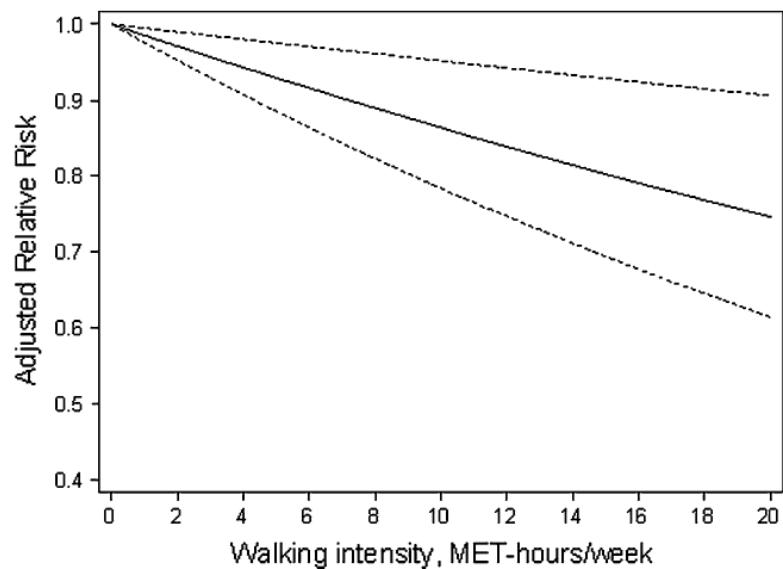
CARDIOVASCULAR DISEASE

## **Quantifying the dose-response of walking in reducing coronary heart disease risk: meta-analysis**

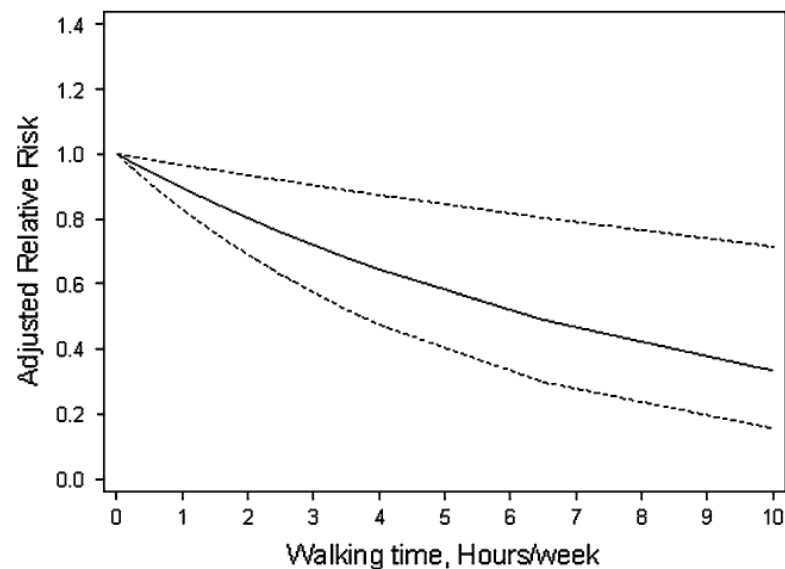
Henry Zheng · Nicola Orsini · Janaki Amin ·  
Alicja Wolk · Van Thi Thuy Nguyen · Fred Ehrlich

**Fig. 6** Summary of study-specific trends (8 MET-h/week is equivalent to 30 min of normal walking a day for 5 days a week) examining the association between walking and risk of coronary heart disease. *Squares* indicate study-specific trend estimates (size of the squares reflects the inverse of the variance); *horizontal lines* indicate 95% confidence intervals; *diamond* indicates the summary relative risk estimate with 95% confidence interval. Test for heterogeneity:  $Q = 5.81$ ,  $P = 0.56$ ;  $I^2 = 0\%$



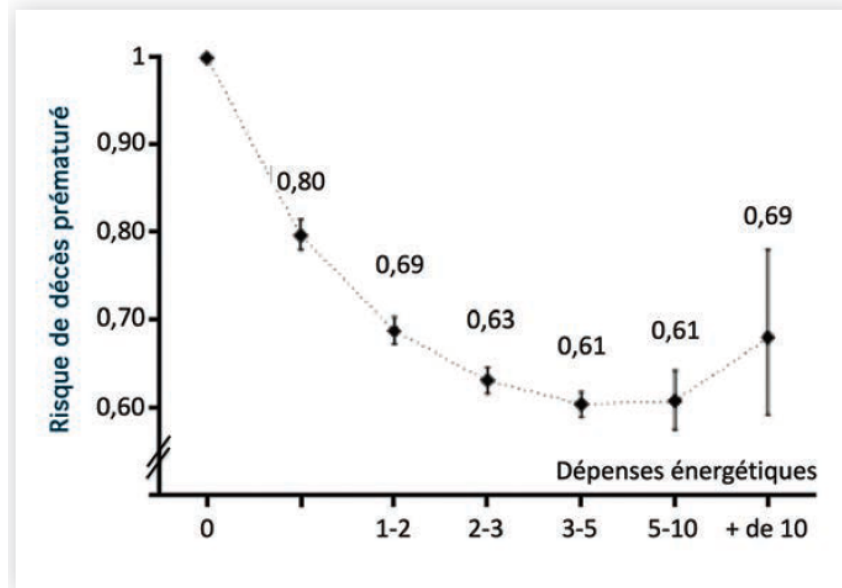


**Fig. 2** Dose-response relationship between walking intensity (MET-hours/week) and risk of coronary heart disease. *Dotted lines* represent 95% confidence limits for the linear trend



**Fig. 4** Dose-response relationship between walking time (h/week) and risk of coronary heart disease. *Dotted lines* represent 95% confidence limits for the linear trend

# L'effet est surtout marqué pour les niveaux les plus faibles



**Figure 1. Relation non linéaire entre la dépense énergétique hebdomadaire liée aux activités physiques de loisir et le risque de mortalité générale (toutes causes confondues).** Les dépenses énergétiques sont exprimées sous la forme de multiples des recommandations, de la valeur 0 pour les personnes qui ne les atteignent pas à des multiples de 1 pour ceux qui excèdent ces recommandations. On remarquera que le bénéfice santé le plus important est observé pour les très faibles niveaux d'activité physique. En d'autres termes, le degré de diminution du risque est beaucoup plus important pour les faibles niveaux de pratique que pour les niveaux de pratique supérieurs : passer de l'état d'inactivité totale (0) à l'atteinte des recommandations en activité physique (1) a plus d'effets relatifs que de passer de 4 à 5-6 fois les recommandations (d'après la réf. 6).



# Le sport

*The NEW ENGLAND JOURNAL of MEDICINE*

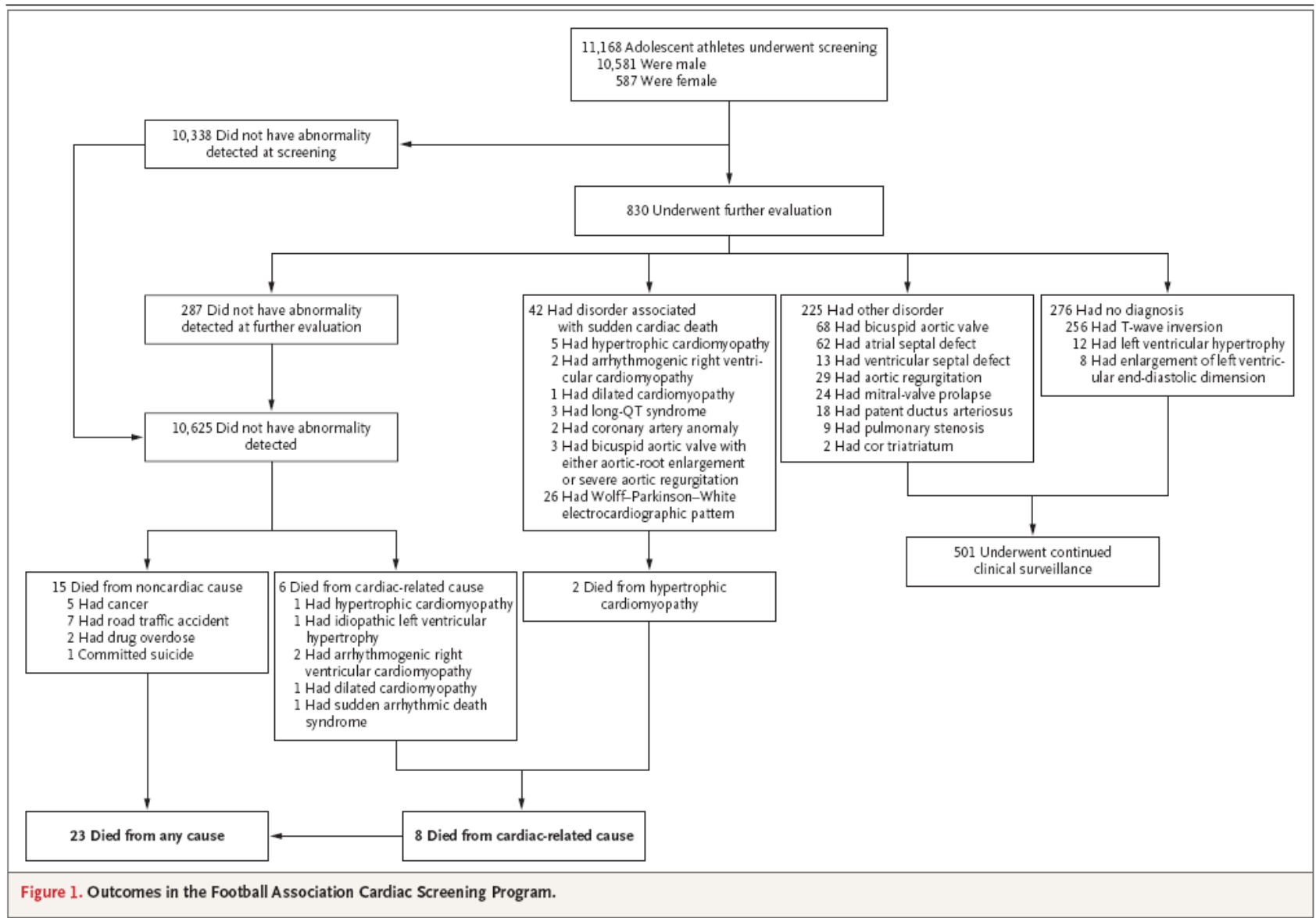
ORIGINAL ARTICLE

## Outcomes of Cardiac Screening in Adolescent Soccer Players

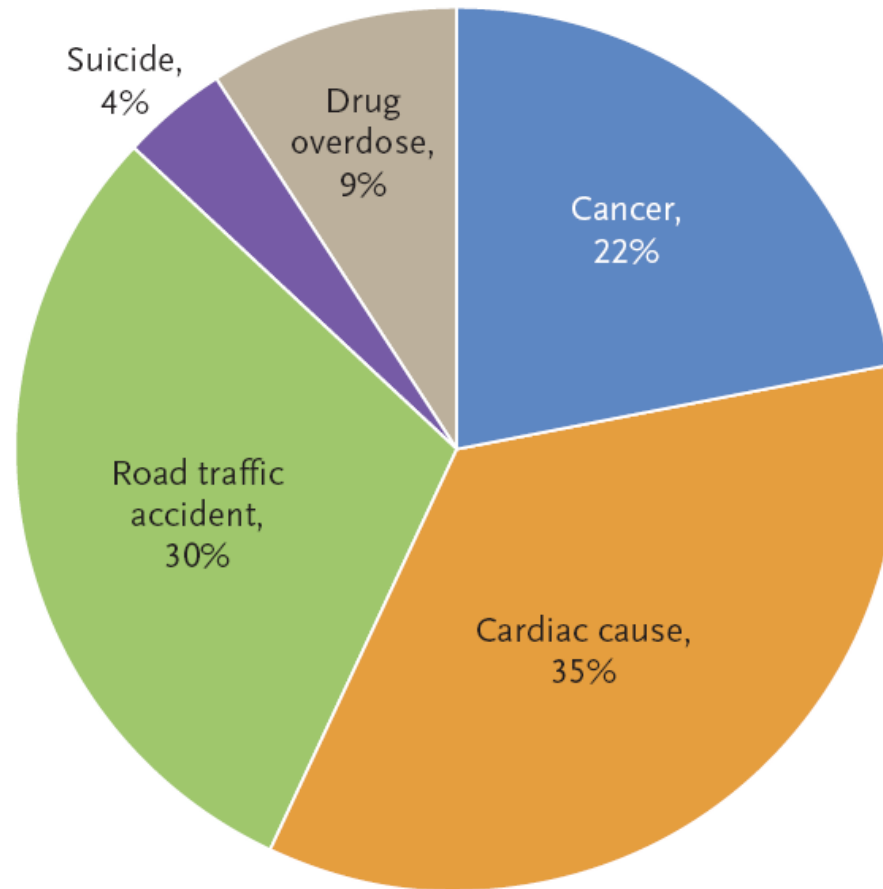
Aneil Malhotra, M.B., B.Chir., Ph.D., Harshil Dhutia, M.B., B.S.,  
Gherardo Finocchiaro, M.D., Sabiha Gati, M.B., B.S., Ph.D.,  
Ian Beasley, M.B., B.S., Paul Clift, M.B., B.S., M.D., Charlotte Cowie, M.B., B.S.,  
Antoinette Kenny, M.B., B.S., M.D., Jamil Mayet, M.B., B.S., M.D.,  
David Oxborough, Ph.D., Kiran Patel, M.B., B.Chir., Ph.D.,  
Guido Pieves, M.B., B.S., Ph.D., Dhrubo Rakhit, M.B., B.S., Ph.D.,  
David Ramsdale, M.B., B.S., M.D., Leonard Shapiro, M.B., B.S., M.D.,  
John Somauroo, M.B., B.S., Graham Stuart, M.B., Ch.B.,  
Amanda Varnava, M.B., Chir.B., M.D., John Walsh, M.B., B.S., D.M.,  
Zaheer Yousef, M.B., B.S., M.D., Maite Tome, M.D., Ph.D.,  
Michael Papadakis, M.B., B.S., M.D., and Sanjay Sharma, M.B., Ch.B., M.D.

**N Engl J Med 2018;379:524-34.**

**DOI: 10.1056/NEJMoal714719**



**Figure 1.** Outcomes in the Football Association Cardiac Screening Program.



**Figure 2.** Causes of Death among the 23 Screened Adolescent Soccer Players Who Died.